

Prediction Research on Cyber Learners' Course Satisfaction and Learning Persistence

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This study investigated whether college students' self-efficacy, learning strategy utilization, academic burnout, and school support predict course satisfaction and learning persistence. To this end, self-efficacy, learning strategy utilization, academic burnout, and school support were used as prediction variables; and course satisfaction and learning persistence, as criterion variables. The subjects were 178 students who registered for online and mobile "Culture and Art History" courses at K online university. They participated in an online survey. Multiple regression analysis revealed that self-efficacy and learning strategy utilization positively predicted course satisfaction and learning persistence, academic burnout negatively predicted them, and school support predicted neither. Accordingly, we suggest that raising self-efficacy and learning strategy utilization, and reducing academic burnout in the learning environment will improve the course satisfaction and learning persistence of online learners.

Keywords: Self-efficacy, Learning strategy utilization, Academic burnout, School support, Course satisfaction, Learning persistence

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Introduction

The development of information and communication technology, which has overcome the limitations of time and space, has made education possible in a variety of environments. One such environment is the Internet-based learning that is offered by online universities. Online universities provide educational opportunities to different types of students, such as office workers, people with disability, and school-age and adult learners who had been prevented from obtaining education. Students who are now enrolled in online universities include adult learners who missed their chance to enter the university and people with special circumstances, such as students from the industry and military bases, Koreans living overseas, and foreigners (Ministry of Education, Science and Technology, Korea Education and Research Information Service, 2014). At present, more than 80% of the Korean population has smart phones and domestic mobile units (Gallup Korea Daily Opinion, 2014). Thus, in Korea, 17 out of 22 online universities are able to support mobile learning services that provide ubiquitous learning environments (Ministry of Knowledge and Economy, 2014).

Since the launch of online universities in 2001, the number of enrollees continuously increased, but dropouts are more frequent compared with traditional universities (Lim, 2007). This has therefore raised doubts about the performance of online universities. Furthermore, some have pointed out problems with the quality of education at online universities (Kwon, 2009; Jeon, 2010). Thus, research to improve learning outcomes such as course satisfaction and learning persistence in online learning environments may help improve the quality of online universities (Maki & Maki, 2003; Martinez, 2003).

Because administration, teaching, and learning in online universities are conducted through the Internet, the learners' active participation is very important for successful learning outcomes. Therefore, self-efficacy in online learning environments and the degree to which learners' use learning strategies for more effective learning are important variables (Bandura, 1977; Park & Choi, 2008).

Unlike traditional college students, online learners more frequently drop out due to internal and external stress factors (Jeon, 2010; Kwon, 2009). In particular, given that 69% of online university students have jobs (Ministry of Education, Science, and Technology, 2011), it is important to investigate whether academic stress and psychological variables such as mental load undermine their learning persistence (Jeon & Kim, 2012b; Joo, Jung, & Lim, 2012). Previous studies have reported that academic burnout reduces learning achievement and school life satisfaction (Jeon & Kim, 2012a). It investigated whether intrinsic motivation variables such as self-efficacy, learning strategy utilization, and academic burnout predicted course satisfaction and learning persistence.

Meanwhile, school support, which has been shown to affect learning outcomes in traditional learning environments (Joo, Kim, & Kim, 2010), was added as an external environmental variable in this study. School support can include support from school, instructor or operator, colleague learners and learning environment (Joo, Kim, & Kim, 2010). It can be expected to have a positive correlation with learning satisfaction and learning achievement based on most of relevant studies (Holder, 20007; Joo, Choi, Lee & Lee, 2010; Paechter, Maier, and Macher, 2010; Park & Choi, 2009; Shin, Park, & Kim, 2005; Song & Heo, 2009).

Some study has reported that school support is effective on course satisfaction but not on learning persistence (Joo et al., 2010). As a result of investigating research hypotheses by establishing self-efficacy, internal locus of control, and organizational support as external variable, flow, satisfaction, and learning persistence as internal variable using a structural equation modeling, organizational support appeared to affect satisfaction but learning persistence did not (Joo et al. 2010). These results discovered that school support provided by Cyber University is relatively lower than the level of support from school or organization (Barefoot, 2004). We can confirm that as learners perceive more school support, they have higher learning persistence (Barefoot, 2004).

Therefore, the research investigating whether school support predicts subject

satisfaction and learning persistence in Cyber University will be meaningful since the previous research results were somewhat different. The current research aimed to look into the sustainability of online universities by investigating the positive and negative variables related to course satisfaction and learning persistence. Accordingly, the specific research questions are as follows:

Research Question 1: Do online university students' self-efficacy, learning strategy utilization, academic burnout, and school support predict the level of satisfaction?

Research Question 2: Do online university students' self-efficacy, learning strategy utilization, academic burnout, and school support predict learning persistence?

Review of the Literature

Self-efficacy

Self-efficacy is well known to affect the level of activity, resistance, and efforts that individuals select (Bandura, 1977; Joo, Lee, Jeong, & Lee, 2011). Therefore, self-efficacy is crucial in predicting learning effects and outcomes (Kim, 2004; Pintrich & Degroot, 1990). Self-efficacy, an important characteristic that affects learning outcomes, is self-judgment and self-belief regarding the ability performing one's own learning task. The study on the relationships between self-efficacy, purpose of use, and achievement among 424 cyber learners in BLACKBOARD (Liaw, 2008) showed that self-efficacy is the strongest variable affecting learners' satisfaction. Regarding goal orientation, Song & Park (2000) argued that self-regulated learning affects learning achievement, and self-efficacy appeared to be the strongest predicting variable. Joo, Lee, Jeong, and Lee (2011) surveyed 103 cyber learners in a college engineering department and found that scholastic

self-efficacy affected satisfaction, achievement, and learning persistence.

Moreover, research on the relationship between cyber learners' perception of cyber learning and self-efficacy, and course satisfaction and learning persistence (Han, Lee, & Kim, 2010) confirmed that the higher the learner's perception of cyber learning, the higher his or her satisfaction and learning persistence will be.

Learning strategy utilization

Learners need to choose and control their strategy in seeking resources, gathering information, and planning the learning process in cyber learning (Park, 2009). Learning strategy utilization is an important variable affecting learning outcome. It consists of ① metacognitive strategies (planning, goal setting, and search and correction), ② cognitive strategies (memorizing, identifying main ideas, and practicing), and ③ self-management strategies (seeking information, asking for help, time allocation, configuration, etc.) (Park & Choi, 2008; Pintrich & De Groot, 1990; Zimmerman, 1990; Zimmerman & Martinez-Pons, 1986).

We can confirm from previous research that learners with a higher level of learning strategy utilization have higher course satisfaction and learning persistence. We examined the relationships between them, and the results showed that learning strategies—such as time management, tips for taking a course, and cyber learning study methods—raise the effects of cyber learning.

Rovai (2003) derived the learning strategy variables predicting learning persistence through the learners' ability to use a computer, discuss writing and reading online, manage time, and interact with colleagues. In addition, the research which identified 34 characteristics of cyber learning outcomes collected from a focus group interview with nine high-performance cyber learners and seven educational experts revealed that higher performance learners emphasized the proper selection of media and learning strategies as important success factors (Hong, 2009).

Academic burnout

According to organizational psychologists or behaviorists, burnout is long-term exposure to excessive stress and exhaustion, fatigue, frustration, a sense of distance from work, a feeling of helplessness, hopelessness, and cynical attitudes—a state of physical, emotional, and mental exhaustion (Han, 2005). Thus, academic stress and burden is called academic burnout, a psychological syndrome characterized by emotional exhaustion, apathy to learning, and low academic achievement (Lee, Lee, & Lee, 2009). It has been discovered that academic burnout brings down the level of satisfaction in school life (Jeon & Kim, 2012a).

Studies on exhaustion have been conducted mainly on employees in service jobs, wherein customer and organizational needs have to be satisfied simultaneously (Park, Lee, Choi, Ryu, & Lee, 2010; Han, 2005). However, recent research has expanded to school education, targeting students who are under high stress because of the entrance exam (Kim, 2005; Park & Kim, 2008). Considering that 60% of cyber school students have to work and study simultaneously (Ministry of Education, Science and Technology, Korea Education and Research Information Service, 2011), academic exhaustion in cyber universities is expected to have a high correlation with course satisfaction and learning persistence.

The current research included cyber university-related variables, whose effect has not been proved. It is therefore meaningful to investigate the prediction power of learning outcomes. After examining the relationship between academic burnout, course satisfaction, and learning persistence, Shin and Lee (2008) found a negative correlation between burnout and school life satisfaction. Jeon and Kim (2012a) discovered the negative effects of academic burnout on school life satisfaction and learning persistence.

School support

School support, or organizational support in the corporate educational

environment, creates a school's support atmosphere. The school environment mainly includes instructor support, colleague support, and school atmosphere (Joo, Kim, & Kim, 2010). School support has a positive correlation with learning satisfaction and learning achievement.

Instructor (operator) support means that the instructor (operator) actively support the learning process of the corresponding course. Colleague learner support means to support the other colleague learners each other and provide educational information in the process of learning. School support refers to support learning by creating atmosphere through evaluation or compensation equivalent to the ability of learners based on the educational goals of the course.

Paechter, Maier, and Macher (2010) investigated how learning motivation (self-regulated learning, achievement goals, etc.) and organizational support (teacher's expertise, counseling skills and active support, etc.) predicted the learning outcomes of 2,196 undergraduate students. The results revealed the relative prediction power of teacher support and course satisfaction on achievement. Song and Heo (2009) also analyzed the effects of parents and school support on high school students' achievement. The study proved that variables related to school support, such as the class learning environment and healthy climate of school organization, had positive effects on learning achievement.

Park and Choi (2009) investigated the predicting variable of learning persistence on college students enrolled in online courses. They found that without family support, a learner's drop-out rate increased in the middle of the semester. In addition, organizational support appeared to positively predict learning persistence. Park and Choi (2009) also examined the causal relationships between online task value, school support, satisfaction, and learning persistence on Korean cyber university students, and it appeared that school support had a positive effect on satisfaction and learning persistence (Joo, Choi, Lee, & Lee, 2010).

Lee (2003) investigated the factors affecting the degree of learning participation and planning of continuous participation targeting 891 adult learners registered

more than two semesters for the courses at the lifelong education organization. As a result, it appeared that the relevant factors such as program satisfaction, organizational support, and interactions with colleagues affected both the degree of participation and continuous participation planning.

In addition, providing students for chances of exchanging feedback or chances of receiving feedback from teachers appeared increasing learning effects in the cyber learning environments (Shin, Park, Kim, Kye, 2005). In the research targeting 259 adult learners investigated whether variables of external environment, motivation, learning expectation predict learning persistence by pointing out the problems of drop-out (Holder, 2007). It was confirmed that learners with higher learning persistence received more external support from family and colleagues. In the research investigating the structural causal relationships between online task value, school support, satisfaction, and learning persistence, it was appeared that school support significantly affect subject satisfaction and learning persistence. It was confirmed that school support is important variable predicting subject satisfaction and learning persistence even in the cyber university environment (Joo, Choi, Lee, & Lee, 2010).

A variety of variables, such as satisfaction, achievement, transition, involvement, and flow, are used for measuring learning outcomes in cyber education. Among them, course satisfaction is used as the basic index of learning outcome. In this research, course satisfaction refers to the learners' response to the courses for which the learners registered. Learning persistence in a cyber university is an important index, as it measures learning success and failure in cyber education (Martinez, 2003). The definition of learning persistence differs among scholars; in this research, it means the learner's decision to register for the following semester in the Cyber University where he or she is currently enrolled.

The following hypothetical research model in Figure 1 was established based on previous research.

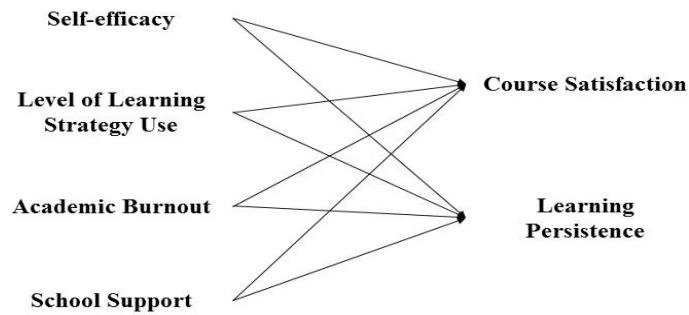


Figure 1. Hypothetical research model

The specific hypotheses based on the hypothetical research model were:

Hypothesis 1: Online university students' self-efficacy, learning strategy utilization, academic burnout, and school support will predict the level of satisfaction.

Hypothesis 2: Online university students' self-efficacy, learning strategy utilization, academic burnout, and school support will predict learning persistence.

Method

Subjects and procedure

The current study aimed to investigate whether cyber university students' self-efficacy, use of learning strategies, academic burnout, and school support predicted course satisfaction and learning persistence. It targeted 228 students from the Department of Culture and Arts Administration at K Cyber University who were taking up "Culture and Art History." Using mobile applications, the students in computer-based online courses were able to attend online video lectures. The mobile applications included a variety of functions, such as announcement

confirmation, score inquiry, and social networking services. A survey was administered two weeks prior to the end of the semester. The survey was administered for two weeks at the end of semester by being uploaded at the corresponding learning management system. 178 surveys from 180 subjects excluding two students were analyzed as final data.

To increase the response rate, the system encouraged students to participate in the survey through announcements and e-mails. One hundred and eighty survey responses were received but two were excluded because they were incomplete. The final dataset comprised 178 subjects, of whom 37 (20.8%) were male and 141 (79.2%), female. The age range was 20–50 years. 69 (38.8%) students were in their 20s; 70 (39.3%), in their 30s; 24 (13.5%), in their 40s; and 15 (8.4%), in their 50s.

In terms of occupation, 122 (68.5%) students were full-time employees; 14 (7.9%), contractual employees; and 42 (23.6%), unemployed. Of the 136 employed subjects, 49 (36.0%) were professional workers; 41 (30.1%), office workers; 36 (26.5%), service workers; and 10 (7.4%), managerial workers.

Measurement instrument

Self-efficacy was measured using nine modified items about self-efficacy from the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & De Groot, 1990). These items were answered using a five-point Likert scale. A sample item is “I expect that I will be able to learn very well in this course.” The Cronbach’s α was .89 in the original instrument and .95 in the current study.

The level of learning strategy utilization was measured using 14 questions about self-assessment, organization and transition, goal setting and planning, information search, record keeping and coordination, configuration, self-reward, demonstration and remembering, asking for help (from peers, teachers, and adults), and data review (paper, notes, and materials) from Zimmerman and Martinez-Pons (1986). The questions were modified for Cyber University learning environments. A

sample questions is “I ask for help from my peers when I encounter a difficult study situation.” To examine their validity, we conducted a factor analysis on the 14 items; a single factor emerged. The single factor loading values were above $\pm .4$, which supports the validity of the extracted factors (Seong, 2007). The Cronbach's α was .87 in the original instrument by Zimmerman and Martinez-Pons (1986) and .92 in the current study.

Academic burnout was measured using the instrument originally developed by Schaufeli and his colleagues (2002), validated by Shin and colleagues (2011), and revised for the current learning environment. There were 15 items that covered the following topics: exhaustion (five items), disability (six items), and apathy (four items). Specific questions included, “I am completely exhausted at the end of the course,” “I am wondering whether learning in this course will be helpful in the future,” and “No matter how hard I study for this course, I am not doing well.” Cronbach's α was .90 in the study by Shin et al. (2011), and .97 in the current study.

School support for cyber university students was measured as in Joo(2010). There were six questions, such as “The school or faculty (operator) explained that education is necessary.” The Cronbach's α was .89 in the study by Joo(2010) and .92 in this study.

Course satisfaction and learning persistence were measured by the revised instrument by Shin(2003). Course satisfaction was measured with eight items, including the general satisfaction level, achievement, satisfaction with attending lectures, and intention of recommending to others. A sample question is “It was a valuable experience for me to study this course.” The Cronbach's α was .94 in the study by Shin (2003) and .96 in the present study. Learning persistence was measured with six items, including the importance of completing the course and willingness to overcome impediments to learning persistence. A sample questions is “I will enroll in the next semester.” The Cronbach's α was .83 in the original tool and .90 in this study.

Data analysis

We analyzed the data obtained from the online surveys to find the general nature of each variable. We calculated the mean and standard deviation for self-efficacy, learning strategy utilization, academic burnout, school support, and course satisfaction. We also calculated Pearson's correlation coefficients to analyze the relationships between the variables.

To analyze internal consistency, Cronbach's α coefficients were calculated. A violation of the multicollinearity assumption was found for self-efficacy, learning strategy utilization, academic burnout, and school support. Finally, we performed a multiple regression analysis to determine whether self-efficacy, learning strategy utilization, academic burnout, and school support predicted course satisfaction and learning persistency. We considered the unique contribution of each independent variable by inserting the independent variables simultaneously (Seong, 2007).

Results

Descriptive analysis

We calculated the mean, standard deviation, minimum and maximum value, skewness, and kurtosis of self-efficacy, learning strategy utilization, academic burnout, school support, course satisfaction, and learning persistence. The descriptive statistics for each variable are displayed in Table 1.

As shown in Table 2, there was significant correlation between all measured variables. We verified whether there was a Variance Inflation Factor (VIF) because the correlations between variables were high. Since there were no measured variables with a VIF that was greater than 10, we concluded that there was no multi-collinearity.

Table 1. Descriptive statistics of self-efficacy, learning strategy utilization, academic burnout, school support, course satisfaction, and learning persistence (n = 178)

Variables	Mean	SD	Skewness	Kurtosis	Min.	Max.
Self-efficacy	3.46	.68	-.13	-.15	2.00	5.00
Learning strategy utilization	3.49	.69	.02	-.47	2.00	5.00
Academic burnout	2.18	.83	.73	.40	1.00	5.00
School support	3.03	.88	-.26	-.28	1.00	5.00
Course satisfaction	4.01	.79	-.53	-.46	2.00	5.00
Learning persistence	4.23	.88	-1.17	.53	1.00	5.00

Table 2. Correlation between self-efficacy, learning strategy utilization, academic burnout, school support, course satisfaction, and learning persistence

Variables	1	2	3	4	5	6
1. Self-efficacy	-					
2. Learning strategy utilization	.770*	-				
3. Academic burnout	-.719*	-.660*	-			
4. School support	.484*	.555*	-.279*	-		
5. Course satisfaction	.732*	.750*	-.727*	.455*	-	
6. Learning persistence	.676*	.655*	-.730*	.322*	.808*	-

* $p < .05$

Correlation analysis and verification multi-collinearity verification

We conducted a multiple regression analysis to examine if the cyber students' self-efficacy, learning strategy utilization, academic burnout, and school support predicted course satisfaction. Self-efficacy, learning strategy utilization, academic burnout, and school support were predicting variables, and course satisfaction was the criterion variable seen in the Table 3.

As shown in Table 3, learning strategy utilization, academic burnout, and self-efficacy resulted in two statistically significant regression models. About 67.7%

of the variation in satisfaction was accounted for by self-efficacy, learning strategy utilization, academic burnout, and school support. Academic burnout ($\beta = -.357$), learning strategy utilization, ($\beta = .328$), and self-efficacy ($\beta = .182$) significantly predicted course satisfaction. School support did not predict satisfaction.

Self-efficacy, learning strategy utilization, academic burnout, school support, and course satisfaction

We conducted a multiple regression analysis to determine whether the cyber students' self-efficacy, learning strategy utilization, academic burnout, and school support predicted learning persistence. Self-efficacy, learning strategy utilization, academic burnout, school support, and commitment were predictor variables, and learning persistence was the criterion variable.

Table 3. Variables predicting course satisfaction: self-efficacy, learning strategy utilization, academic burnout, and school support (n = 178)

Dependent variable	Independent variables	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
Course satisfaction	Constant	2.478	.386	-	6.415	.000
	Self-efficacy	.211	.089	.182	2.364	.019
	Learning strategy utilization	.377	.086	.328	4.371	.000
	Academic burnout	-.342	.063	-.357	-5.445	.000
	School support	.077	.048	.086	1.601	.111
$R^2(\text{adj. } R^2) = .677(.669), F = 90.617, p = .000$						

* $p < .05$ ()Adjusted R^2

As shown in Table 3, learning strategy utilization, academic burnout, and self-efficacy resulted in two statistically significant regression models. Approximately 67.7% of the variation in satisfaction was accounted for by self-efficacy, learning strategy utilization, academic burnout, and school support. Academic burnout ($\beta = -.357$), learning strategy utilization ($\beta = .328$), and

self-efficacy ($\beta = .182$) significantly predicted course satisfaction. School support did not predict satisfaction.

Self-efficacy, learning strategy utilization, academic burnout, school support, and learning persistence

We conducted a multiple regression analysis to determine whether the cyber university students' self-efficacy, learning strategy utilization, academic burnout, and school support predict learning persistence. Self-efficacy, learning strategy utilization, academic burnout, school support, and commitment were predictor variables, and learning persistence was the criterion variable.

Table 4. Variables predicting learning persistence: self-efficacy, learning strategy utilization, academic burnout, and school support (n=178)

Dependent variable	Independent variables	<i>B</i>	<i>SE</i>	β	T	<i>p</i>
Course satisfaction	Constant	3.513	.480	-	7.325	.000
	Self-efficacy	.242	.111	.188	2.191*	.030
	Learning strategy utilization	.282	.107	.221	2.638*	.000
	Academic burnout	-.485	.078	-.455	-6.222*	.000
	School support	.018	.060	-.018	-.303	.763
$R^2(\text{adj. } R^2) = .598(.588), F = 64.283, p = .000$						

* $p < .05$ ()Adjusted R^2

As shown in Table 4, the regression model of learning strategy utilization, academic burnout, and self-efficacy as inputs was statistically significant. Self-efficacy, learning strategy utilization, academic burnout, and school support accounted for 59.8% of the variance in learning persistence. Self-efficacy ($\beta = .188$), learning strategy utilization ($\beta = .221$), and academic burnout ($\beta = -.455$) were significant predictors of learning persistence.

Meanwhile, school support did not predict learning persistence. The relationship, based on the analysis of the standardized β coefficient which expresses the standardized relationship between each variable, is illustrated in Figure 2.

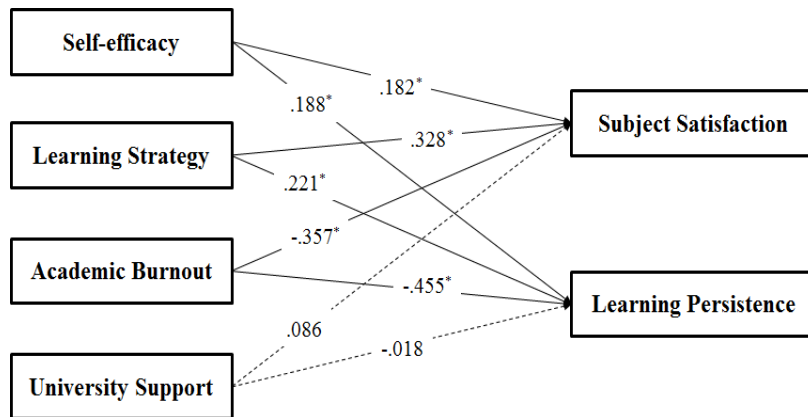


Figure 2. Self-efficacy, learning strategy utilization, academic burnout, school support, course satisfaction, and learning persistency

Discussion and Conclusion

The research results are as follows. First, the online university students' self-efficacy and learning strategy utilization had a significant positive effect on course satisfaction, while academic burnout had a significant negative effect; school support did not predict the level of course satisfaction. Second, the students' self-efficacy and learning strategy utilization had a significant positive effect on learning persistence; academic burnout, a significant negative effect; and school support, no significant effect.

Self-efficacy significantly predicted course satisfaction. The results are consistent with those of previous studies, which dealt with a variety of settings (Artino, 2008; Joo, Kim, & Kim, 2008; Liaw, 2008; Park, Joo, & Bong, 2007; Ryu, 2003). However, school support did not significantly predict course satisfaction, and this was not consistent with the findings of previous studies (Paechter, Maier, & Macher, 2010). The significant effects of self-efficacy, learning strategy utilization, and academic burnout on learning persistence were consistent with the results of previous studies (Jeon & Kim, 2012; Joo, Hong, & Lee, 2011). In particular, the current research

results indicating that academic burnout negatively affects course satisfaction and learning persistence are very meaningful because the research investigated the factor that negatively affects learning outcomes in online learning. In this study, we analyzed the predictive relationships of course satisfaction and learning persistency, which are dependent on a cyber learner's self-efficacy, learning strategy utilization, academic burnout, and school support.

First, the significant results of self-efficacy on course satisfaction were consistent with those of previous research studies, which had been conducted in various learning environments—corporate, university, and cyber-university (Artino, 2008; Joo, & Bong, 2007; Joo, Kim, & Kim, 2008; Liaw, 2008; Park & Ryu, 2003). They confirmed the importance of cyber learner's motivational factors. The effective prediction results of learning strategy utilization on course satisfaction were consistent with those of Puzziferro (2008) and Park and Choi (2008). Thereby it is necessary to raise learner satisfaction by increasing the student's ability to use learning strategy for successful project performance in cyberspace.

Lastly, the current study showed that academic burnout negatively predicted research results; this was consistent with the results achieved by Shin and Lee (2008), which proved that burnout is negatively related with school life satisfaction. This confirms that burnout is an important variable predicting course satisfaction, not only for job and traditional educational environments, but also for the cyber learning environment.

However, it was discovered that school support did not significantly affect course satisfaction, which was inconsistent with the results of previous research (Holder, 20007; Joo, Choi, Lee & Lee, 2010; Paechter, Maier, and Macher, 2010; Park & Choi, 2009; Shin, Park, & Kim, 2005; Song & Heo, 2009). Considering that the mean of school support was somewhat lower than that of other variables (the lowest being that of the question, "The school or instructor strongly supported my participation in the class"), it could be difficult to get strong support from the instructor or the learner's peers because of the lack of face-to-face meetings in cyberspace. Another interpretation is that the factors affecting subject satisfaction -

such as school administration, scholastic support, and counseling - have been conducted in the traditional educational environment (Concannon, Flynn, & Campbell, 2005; Paechter, Maier, & Macher, 2010), but hardly or not at all in the current cyber university. The research results showing that self-efficacy, learning strategy utilization, and academic burnout negatively predict learning persistence were consistent with previous research results (Cheon & Kim, 2012a; Joo, Lee, & Hong, 2011; Rovai, 2003; Saunders, Davis, Williams, & Williams, 2004). In particular, the finding that academic burnout had a relatively strong effect on course satisfaction and learning persistence was meaningful because it proved the effective variables that negatively affected learning outcomes.

However, school academic support did not significantly predict learning persistence. This results were not consistent with those of previous studies (Song & Heo, 2009; Joo, Choi, Lee, & Lee, 2010; Barefoot, 2005; Park & Choi, 2009), but were consistent with the research by Joo et al. (2010), which targeted students in a cyber university. As discussed earlier, the school support of a cyber university, which was the target of the current research, was relatively lower than that of school environments or the level of organizational support ($M = 3.03$). Particularly, it is thought that the organizational climate of a school and friendly class atmosphere, which affect learning persistence (Song & Heo, 2009), are likely to be relatively low because of the characteristics of the cyber learning environment. Since previous studies also says that cyber learning environment has lower Therefore, the construction of specific school support systems

In conclusion, self-efficacy, learning strategy utilization, and academic burnout significantly affected the course satisfaction and learning persistence of cyber university students, but school support did not predict them. Accordingly, to increase course satisfaction and learning persistence, gradual project support should be given to students for them to feel confident in their learning. Likewise, when the students succeed in their performance, they should be accorded due credit, pertinent feedback, and continual encouragement by the instructor. It is thought that SMS or Instant Message in a mobile learning environment will be an effective

feedback tool for instructors in terms of immediacy and accessibility.

Finally, considering the strong effect of academic burnout on course satisfaction and learning persistence, it is necessary to increase the learners' course satisfaction and learning persistence by preparing for strategies that will minimize burnout. The strategies against burnout include establishing counseling systems. It will be desirable to continually explore the factors that negatively affect course satisfaction and learning persistence so that cyber universities can reduce the ratio of students' dropping-out. At the same time, although the current study shows no significance of school support, it will be great to construct strong school support systems particularly for cyber learning environment, which help minimizing students' burnout. Especially, adaptive school support systems customized by learners' characteristics depending on their learning and working environments.

The limitations of this study and suggestions for further studies are as follows. First, since the current study targeted college students who registered for the Cultural History course at K Cyber University based on convenience sampling method, it is hard to generalize the results. Therefore, it is necessary to examine other subjects who are taking up other courses in other cyber universities to find out if the same research results will be obtained.

Second, the current research selected self-efficacy, learning strategy utilization, academic burnout, and school support as learning outcome prediction variables. However, there are various other variables that can predict learning outcomes, such as learner characteristics, sense of presence, and level of participation. Therefore, we need to investigate these variables in a further study.

Third, the current study selected course satisfaction, learning persistence as learning outcome variables. We can also consider achievement, attitudes toward learning, degree of flow, and level of participation as learning outcome variables.

Fourth, this study targeted a learning environment that combined mobile and e-learning. It would be meaningful to investigate the relationships between the variables in a 100% mobile learning environment in a further study.

References

- Artino, A. R. (2008). Motivational beliefs and perceptions of instructional quality: Predicting satisfaction with online learning. *Journal of Computer Assisted Learning, 24*(3), 260-270.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.
- Barefoot, B. (2004). Higher education's revolving door: Confronting the problem of student drop out in U.S. Colleges and universities. *Open Learning, 19*(1), 9-18.
- Barefoot, B. (2004). Higher education's revolving door: Confronting the problem of student drop out in U.S. Colleges and universities. *Open Learning, 19*(1), 9-18.
- Chun, H. J., & Kim, Y. G. (2012a). The Impact of Academic Burnout and Environmental Characteristics of Department on Academic Satisfaction and Learning Persistence among Hospitality and Tourism Management Students in Cyber University. *Journal of Food Service Management, 15*(2), 77-95.
- Chun, H. J., & Kim, Y. G. (2012b). The Impact of IT Competency, Academic Burnout, Academic Environment, Vision of Major, Academic Interaction on Scholastic Achievement and Academic Persistence. *Tourism Research, 34*, 23-38. *Communication Service*.
- Concannon, F., Flynn, A., & Campbell, M. (2005). What campus-based students think about the quality and benefits of e-learning. *British Journal of Educational Technology, 36*(3), 501-512.
- Curran, P. J., West, S. G., & Finch, J. (1996). The robustness of test statistics to non-normality and specification error in confirmatory factor analysis. *Psychological Methods, 1*, 16-29.
- Gallup Korea Daily Opinion (2014). *2012 to 2014 research of smartphone usage*.
- Han, K. (2005). The Moderated Effects of Self-efficacy and Group-efficacy on the

- Hotel Employee's Burnout Process. *Korean Journal of Hotel Administration*, 14(2), 63-87.
- Holder, B. (2007). An investigation of hope, academics, environment, and motivation as predictors of persistence in higher education online programs. *Internet and Higher Education*, 10, 245-260.
- Hong, S. Y. (2009). The Comparison of Performance and Perception on the Successful Distance Learners' Characteristics. *The Journal of Educational Information and Media*, 15(4), 149-175.
- Joo, Y. J., Choi, H., Yi, Y., & Yi, Y. (2010). The Structural Relationship among On-line task value, University support, Satisfaction, Learning persistence in Cyber Education. *Journal of the Korean Association of Information Education*, 14(3), 341-354.
- Joo, Y. J., Chung, A. K., & Lim, E. (2012). The prediction of academic self-efficacy, learning flow, academic stress, and emotional exhaustion on course satisfaction of cyber university students. *The Journal of Korean association of computer education*, 15(3), 61-69.
- Joo, Y. J., Kim, N. Y., & Kim, G. Y. (2010). The Structural Relationship among Self-Efficacy, Internal Locus of Control, School Support, Learning Flow, Satisfaction and Learning Persistence in Cyber Education. *Journal of Educational Technology*, 26(1), 25-55.
- Joo, Y. J., Kim, N.Y., Kim, G. Y. (2010). The Structural Relationship among Self-Efficacy, Internal Locus of Control, School Support, Learning Flow, Satisfaction and Learning Persistence in Cyber Education. *Journal of Educational Technology*, 26(1), 25-55.
- Joo, Y. J., Kim, S. N., & Kim, S. M. (2008). The Effects of Self-Efficacy, Self-Regulated Learning and Online Task Value on Satisfaction and Achievement in Corporate Cyber Education. *Journal of Vocational Education & Training*, 11(3), 151-17.
- Joo, Y. J., Lee, K. H., Chung, A. K., & Lee, Y. H. (2011). The Predicts of Academic

- Self-Efficacy, School Support on Learning outcome -Satisfaction, Achievement and Persistence- in College. *Journal of Educational Technology*, 14(1), 1-8.
- Joo, Y. J., Lee, S. Y., Hong, Y. N. (2011). The Structural Relationship among Perceived Instrumentality, Mastery Goal Orientation, Self-Regulated Learning, and Academic Achievement in Cyber University. *Journal of the Korean Association of Information Education*, 15(2), 645-660.
- Jun, J. S. (2010). Identifying At-risk Learners at a Cyber University. *Andragogy Today: International Journal of Adult & Continuing Education*, 13(1), 121-139.
- Kim A. Y. (2004). Self-efficacy and learning motivation. *The Korean Journal of Educational Methodology Studies*, 16(1), 1-38.
- Kim, H. S. (2005). Structural model to explain student`s satisfaction and academic achievement - Analysis on relationship between the physical/process environment in school, burn-out experience and self-regulation. *Korean journal of youth studies*, 12(4), 105-121.
- Korea Education & Research Information Service. (2008). *The Development of a Guideline(ver.2.0) for Quality Control of Higher Education e-Learning*. Korea Education & Research Information Service. Research Report CR1008-4.
- Korea Information Society Development Institute (2012, 12). *Subscriber of Number*
- Kwon, H. J. (2009). The Effects of Personal, School, Social Variables on Determination of the Cyber University Students' Dropout Intention. *The Korea Contents Society*, 10(3), 404-412.
- Lee, S. (2003). Comparing Learners' with Institutions' Factors that Influence on Persistence in University Lifelong Education. *Lifelong Education Research*, 9(1), 117-114.
- Lee, Y. B., Lee, S. M., & Lee, J. (2009). *Development of Korean Academic Burnout Scale*. *The Korea educational review*, 15(3), 59-78.
- Liaw, S-S. (2008). Investigating students' perceived satisfaction, behavioral intention and effectiveness of e-learning: A case study of the Blackboard system.

Computers & Education, 51(2), 864-873.

- Lim, Y. (2007). A substantial study on the Relationship between students' variables and dropout in Cyber University. *Journal of the Korean Association of Information Education*, 11(2), 205-220.
- Maki, R. H., & Maki, W. S (2003). Prediction of learning and satisfaction in web-based and lecture courses. *Journal of Educational Computing Research*, 28(3), 197-219.
- Martinez. M. (2003). High attrition Rates in e-Learning: Challenges, Predictors, and Solutions. *The Learning Developers Journal*, 1-7.
- Ministry of Education and Human Resources Development (2007. 2). *2007 Distance University Evaluation Guidelines*. Seoul: Ministry of Education & Human Resources Development
- Ministry of Education and Science Technology, & Korea Education & Research Information Service.(2014).*2011 Education Information White Paper*. Seoul: Korea Education & Research Information Service.
- Ministry of Knowledge Economy, & National IT Industry Promotion Agency. (2014). *A report on the actual condition of e-Learning industry*. Seoul: Information and Communication Research and Development Industry.
- Paechter, M., Maier, B. & Macher, D. (2010). Students' expectations of, and experiences in e-learning: Their relation to learning achievements and course satisfaction. *Computer & Education*, 54(1), 222-229.
- Park, H. J., & Choi, M. S. (2008). Relationships Between e-learning Effectiveness and Its Related Factors in Higher Education. *Journal of Educational Technology*, 24(1), 27-53.
- Park, I. G., Lee, S. M., Choi, B. Y., & Lee, J. Y. (2010). Relationship Between the Big Five Personality Factors and Academic Burnout. *The Korean Journal of Social and Personality Psychology*, 24(1), 81-93.
- Park, J. H., & Choi, H. J. (2009). Factors Influencing Adult Learners' Decision to Drop Out or Persist in Online Learning. *Educational Technology & Society*, 12(4),

207-217.

- Park, J. S. (2009). *Understanding for e-learning study*. Paju: Kyoyookbook.
- Park, R. Y., & Choi, W. S. (2008). The Development of the Measurement Tool of Learning Strategies to Analyze Learners in E-Learning. *Korean Technology Education Association, 8*(2), 103-124.
- Park, S. H., & Kim, H. H. (2008). The Relationship between Children`s and Adolescents` Academic Stress and Learned Helplessness. *Korean journal of youth studies, 15*(3), 159-182.
- Park, S. H., Joo, Y. J., & Bong, M. (2007). Investigation of the Perceived Effectiveness of and User Satisfaction with the Cyber Home-Learning System. *Journal of Educational Technology, 23*(3), 59-87.
- Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33-40.
- Puzziferro, M. (2008). Online Technologies Self-Efficacy and Self-Regulated Learning as Predictors of Final Grade and Satisfaction in College-Level Online Courses. *American Journal of Distance Education, 22*(2), 72-89.
- Rovai, A. (2003). In search of higher persistence rates in distance education online programs. *Internet and Higher Education, 6*, 1-16.
- Saunders, J., Davis, L., Williams, T. & Williams, J. H. (2004). Gender differences in self-perceptions and academic outcomes: A study of African American high school students. *Journal of Youth and Adolescence, 33*(1), 81-90.
- Schaufeli, W. B., Martez, I. M., Marques Pinto, A., Salanova, M. & Bakker, A. B. (2002). Burnout and engagement in university students: Across-national study. *Journal of Cross-Cultural Psychology, 33*, 464-481.
- Seong, T. J. (2007). *Easy Statistical Analysis*. Seoul:Hakjisa.
- Shin, H., & Lee, J. (2008). The Influence of Scholastic Achievement on School Environment for Taxation Majors. *Korea Business Review, 51*(10), 199-219.
- Shin, H., Puig, A., Lee, J., Lee, J. & Lee, S. M. (2011). Cultural validation of the

- Maslach Burnout Inventory for Korean students. *Asia Pacific Educational Review*, 12, 633-639.
- Shin, J. H., Park, I. W., Kim, D. I. (2005). *Influential Factors on Learning Achievement in E-learning Environment*. Korea Education & Research Information Service, Research Report KR 2005-53.
- Shin, N. (2003). Transactional Presence as a critical predictor of success in distance learning. *Distance Education*, 24(1), 69-86.
- Song, I., & Park, S. (2000). A study on the relationships of goal orientation, self-regulated learning, and academic achievement. *Journal of Education Psychology*, 14(2), 29-64.
- Song, K., & Hur, E. J. (2009). A Study on Exploring Parents and School Factors Influencing High School Students' Authentic Achievement. *The Journal of Yeolin Education*, 17(3), 103-126.
- Yoo, P. (2003). Learner-Related Factors Which Have Effects on Learner Participation, Learning Achievement, and Learner Satisfaction of Online Graduate Course. *Korean Association for Educational Information and Broadcasting*, 9(4), 229-267.
- Yoon, H. S. (2010). *(The) structural relationship among the factors related to persistence intention in cyber university*. Unpublished doctoral dissertation, Ewha Womans University.
- Zimmerman, B. J. (1990). Self-regulated learning and academic achievement. *Educational Psychology*, 25, 3-17.
- Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, 23(4), 614-628.



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