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Online Military Training: Using a Social Cognitive View of Motivation and  
Self-Regulation to Understand Students' Satisfaction, Perceived Learning, and Choice

### Abstract

Using a social cognitive framework, the present study investigated the relations between two motivational constructs, prior experience, and several adaptive outcomes. Participants ( $n = 204$ ) completed a survey that assessed their perceived task value, self-efficacy, prior experience, and a collection of outcomes that included their satisfaction, perceived learning, and intentions to enroll in future online courses (choice behaviors). Results indicate that task value, self-efficacy, and prior experience with online learning were significantly related to positive outcomes. Additionally, results from several independent samples *t*-tests indicate that students' reporting on a course they chose to take exhibited significantly higher mean scores on task value, satisfaction, perceived learning, and choice behaviors than students reporting on a required course. Educational implications and suggestions for future research are discussed.

## Online Military Training: Using a Social Cognitive View of Motivation and Self-Regulation to Understand Students' Satisfaction, Perceived Learning, and Choice

With the rapid expansion of Internet-based technologies, online learning has emerged as a viable alternative to traditional classroom instruction (Moore, 2003; Tallent-Runnels et al., 2006). As a subset of a much larger form of instruction – distance education – online learning has become the format-of-choice for countless institutions eager to provide students with the opportunity and convenience of learning from a distance (Moore & Kearsley, 2005; Simonson, Smaldino, Albright, & Zvacek, 2003). For example, the Department of Defense, an organization that spends more than \$17 billion annually on military schools for almost three million personnel, recently committed to transforming the majority of its classroom training to computer-supported distance learning (United States General Accounting Office, 2003). Similarly, institutions of higher education have recognized the utility of online learning. A recent survey of 1,000 U.S. colleges and universities by the Sloan Consortium (2005) found that 63% of schools offering undergraduate face-to-face courses also offer undergraduate courses online; 56% of schools identified online education as a critical long-term strategy (up from 49% in 2003); and overall online enrollment increased from 1.98 million in 2003 to 2.35 million in 2004.

The recent growth in online learning has resulted in a major shift in education and training from an instructor-centered to a learner-centered focus (Dillon & Greene, 2003; Garrison, 2003; Gunawardena & McIsaac, 1996). With this shift has come the suggestion that, in the absence of an ever-present instructor, students learning at a distance must take greater responsibility for the management and control of their own learning (Kearsley, 2000; King, Young, Drivere-Richmond, & Schrader, 2001; Schunk & Zimmerman, 1998). As Moore and Kearsley (2005) so aptly stated in their extensive book on distance education, “Students

frequently do not understand that they must take a large degree of responsibility for their learning in a distance education course” (p. 178).

In light of these concerns, numerous researchers have argued that online students, to an even greater extent than traditional learners, require well-developed self-regulated learning (SRL) skills to guide their cognition and behavior (Bandura, 1997; Dillon & Greene, 2003; Hartley & Bendixen, 2001; Hill & Hannafin, 1997). Self-regulated learners are generally characterized as active participants who efficiently control their own learning experiences in many different ways, including establishing a productive work environment and using resources effectively; organizing and rehearsing information to be learned; and holding positive *motivational* beliefs about their capabilities, the value of learning, and the factors that influence learning (Schunk & Zimmerman, 1994, 1998).

The purpose of the present study was to investigate the relations between two motivational constructs, task value and self-efficacy; prior experience with online learning; and several adaptive outcomes. Task value, self-efficacy, and prior experience were chosen as predictors because past research in both traditional and online environments has found them to be positively related to students’ use of SRL strategies and academic achievement, as well as other adaptive outcomes, including satisfaction and intent to participate in future courses (see, for example, Hodges, 2005; Joo, Bong, & Choi, 2000; Lim, 2002; Miltiadou & Savenye, 2003; Pintrich, 1999). The present study was designed to determine if these linkages extend to military students learning in the context of self-paced, online training.<sup>1</sup>

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<sup>1</sup> Self-paced, online training is a specific type of online learning in which students use a Web browser to access a course management system and complete Web-based courses at their own pace. While completing these courses, students do not interact with an instructor or other students.

## Review of the Literature

Self-regulated learning refers to “learning that occurs largely from the influence of student’s self-generated thoughts, feelings, strategies, and behaviors, which are oriented toward the attainment of goals” (Schunk & Zimmerman, 1998, p. viii). Academic self-regulation has been studied in traditional classrooms as a means of understanding how successful students adapt their cognition, motivation, and behavior to improve learning. In general, investigators have found moderate to strong positive relations between motivational components of self-regulation, use of learning strategies, and academic achievement (Pintrich, 1999; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991).

### *Motivational Influences on Self-Regulation and Performance*

While most SRL theorists acknowledge the influence of motivation on self-regulation, Pintrich’s (2000, 2003) model of SRL stresses the importance of motivation in all phases of self-regulation. Pintrich and his colleagues have demonstrated that effective and less effective self-regulated learners differ in several motivational processes. For example, their research suggests that learners’ task value (i.e., the extent to which they find a task interesting, important, and/or valuable) relates positively to several adaptive outcomes, including students’ use of SRL strategies, future enrollment choices, and, ultimately, academic performance. Similarly, Wigfield (1994) reported that achievement values appear to relate to students’ choices about whether or not to become cognitively engaged in a learning task, as well as their intentions to enroll in similar courses in the future (choice behaviors). In short, research findings suggest that students who view a learning task as valuable are more likely to experience superior academic outcomes (Pintrich, 1999).

Self-efficacy is another important motivational construct that has been shown to predict adaptive learning outcomes. According to Schunk (2005), “self-regulated learners are more self-efficacious for learning than are students with poorer self-regulatory skills; the former believe that they can use their self-regulatory skills to help them learn” (p. 87). For example, in a study of middle school students, Pintrich and De Groot (1990) found that students’ self-efficacy beliefs were positively related to their cognitive engagement and academic performance. In part, their results indicated that students who believed they were capable of learning were more likely to report use of SRL strategies and to persist longer at difficult academic tasks. In a more recent study of college students in an online course, Lynch and Dembo (2004) found that students’ efficacy beliefs were among the best predictors of academic achievement, as measured by final course grades. Finally, results from a recent meta-analysis of more than 100 empirical studies conducted over the last 20 years found that of nine commonly researched psychosocial constructs, academic self-efficacy was the strongest single predictor of college students’ academic performance (Robbins et al., 2004).

#### *Prior Experience with Online Learning*

The influence of prior experience on students’ success with online learning is well documented (Hannafin, Hill, Oliver, Glazer, & Sharma, 2003). In general, research has revealed that successful online learners possess more technology knowledge than their less successful counterparts (Kearsley, 2000; Simonson et al., 2003). For example, in a study of adult learners’ use of cognitive strategies in an open-ended, online learning environment, Hill and Hannafin (1997) found that system knowledge impacted students’ ability to successfully find and use resources. Furthermore, the linkages between prior experience and learner success have been well documented within the motivation literature (Pintrich & Schunk, 2002). Specifically,

Bandura (1986, 1997) and his associates (Pajares, 1996; Schunk, 1991) have shown that previous personal experience with a given task is often the strongest predictor of one's confidence and attitude toward that task. With these considerations in mind, previous experience with self-paced, online learning was explored in the present study as a potentially important predictor of students' attitudes toward online instruction.

### *Study Objectives and Research Questions*

Taken together, much of the research on academic self-regulation supports the hypothesized linkages between motivation, self-regulation, and adaptive academic outcomes. The objective of the present study was to explore the relations between students' motivational beliefs, prior experience, and a collection of outcomes, seeking to determine if the pattern of relationships are consistent with those that have been found in traditional academic settings. The specific research questions addressed by this study are:

- (1) When considered individually, how are task value, self-efficacy, and experience with online learning related to students' overall satisfaction, perceived learning, and intentions to enroll in future online courses?
- (2) How accurately can a linear combination of task value, self-efficacy, and experience with online learning predict students' overall satisfaction, perceived learning, and intentions to enroll in future online courses?
- (3) Are there significant differences in the predictor and outcome variables when comparing students' reporting on required courses versus learners reporting on courses they chose to complete?

## Methods

### *Participants*

A convenience sample of 475 personnel from the U.S. Navy were invited to participate in the present study. A total of 204 individuals completed the survey (response rate = 43%). The sample included 150 men (74%) and 53 women (26%); 1 person did not report gender. The mean age of the participants was 39.0 years (SD = 9.3; range 22-69). Participants reported a wide range of educational experience, including: High School/GED ( $n = 21$ , 10%), Some College ( $n = 51$ , 25%), 2-Year College ( $n = 24$ , 12%), 4-Year College (B.S./B.A.;  $n = 25$ , 12%), Master's Degree ( $n = 48$ , 24%), Doctoral Degree ( $n = 15$ , 7%), and Professional Degree ( $n = 16$ , 8%). Information regarding ethnicity was not collected as part of this study.

### *Procedures*

Naval personnel were contacted via email and invited to complete an anonymous, online survey concerning their experiences with self-paced, online learning. Participants were asked to respond to survey items while keeping in mind what they considered to be the most effective self-paced, online course they had completed within the last two years. This approach was necessary because the survey could not be given at the end of a specific course. One benefit of this approach was that some participants were reporting on a course they chose to complete (i.e., a personal elective), while others were reporting on a course they were required to complete (i.e., a Navy requirement). Participants were asked to indicate which type of course they were reporting on (personal elective or Navy requirement), and these two groups were then used as independent variables in the analysis.

### Measures

The first section of the survey was composed of 25 items with a Likert-type response scale ranging from 1 (*completely disagree*) to 7 (*completely agree*; see Appendix). A principle axis factor analysis with oblique rotation (Oblimin; delta = 0) was carried out on the 25 items from the first section of the survey. Results from the exploratory factor analysis suggested three interpretable factors accounting for 61.6% of the total variance in the items. The resulting three-factor solution included: (1) a 14-item *task value* subscale that assessed learners' judgments of how interesting, useful, and important a recent self-paced, online course was to them ( $\alpha = .95$ ); (2) a 7-item *self-efficacy* subscale that assessed learners' confidence in their ability to learn the material presented in a self-paced, online format ( $\alpha = .89$ ); and (3) a 4-item *satisfaction* subscale that assessed learners' overall satisfaction with a recent self-paced, online course ( $\alpha = .91$ ). Sample items from these three subscales include "I liked the subject matter of this course" (task value); "Even in the face of technical difficulties, I am certain I can learn the material presented in an online course" (self-efficacy); and "Overall, I was satisfied with my online learning experience" (satisfaction).

The second section of the survey contained background and demographics items. This section also included three individual items used as variables in the present study:

(1) *Experience*. Experience was assessed with a single self-report item: "In your estimation, how experienced are you with self-paced, online learning?" The response scale ranged from 1 (*extremely inexperienced*) to 7 (*extremely experienced*).

(2) *Perceived Learning*. Perceived learning was assessed with a single self-report item: "In your estimation, how well did you learn the material presented in this course?" The response scale ranged from 1 (*not well at all*) to 7 (*extremely well*). Although controversial, some research

evidence has suggested that self-reports can be a valid measure of student learning (Mabe & West, 1982; Pace, 1990), particularly when used to assess military training and when coupled with anonymity (Barker & Brooks, 2005; Wisher & Curnow, 1996). Therefore, because a more direct measure of student learning was not accessible, perceived learning was used as a measure of student learning in the present study.

(3) *Choice*. Choice was assessed using a single self-report item: “What is the likelihood that you will enroll in another self-paced, online Navy course if you are not required to do so?” The response scale ranged from 1 (*definitely will not enroll*) to 7 (*definitely will enroll*).

## Results

### *Descriptive Statistics*

Table 1 presents means and standard deviations for the six variables used in the present study. Results indicate a mean slightly above the midpoint of the response scale and a standard deviation between 1.07 and 1.45 for each of the variables; the frequency distributions for the six variables show some evidence of negative skew. Cronbach’s alphas for the three scales are quite good, ranging from .89 to .95 (Clark & Watson, 1995).

### *Correlational Analyses*

Pearson correlations, also presented in Table 1, indicate that task value, self-efficacy, and experience with online learning were significantly related to each other and to students’ overall satisfaction, perceived learning, and intentions to enroll in future courses. As expected, the extent to which students value the learning task was positively related to their overall satisfaction with the course ( $r = .73, p < .01$ ), perceived learning, ( $r = .58, p < .01$ ), and intentions to enroll in future online courses ( $r = .50, p < .01$ ). Likewise, students’ self-efficacy was positively related to their satisfaction ( $r = .58, p < .01$ ), perceived learning ( $r = .57, p < .01$ ), and self-reported choice

behaviors ( $r = .41, p < .01$ ). Finally, students' prior experience with self-paced, online learning was positively correlated with their satisfaction ( $r = .20, p < .01$ ), perceived learning, ( $r = .36, p < .01$ ), and intentions to enroll in future online courses ( $r = .46, p < .01$ ). Overall, these results indicate that when considered individually, the two motivational variables and prior experience explained from 4% to 53% of the variance in students' satisfaction, perceived learning, and choice behaviors.

Table 1

*Means, Standard Deviations, Cronbach's Alphas, and Pearson Correlations Between the Measured Variables*

Variable	<i>M</i>	<i>SD</i>	$\alpha$	1	2	3	4	5	6
1. Task Value	4.47	1.16	.95	–	.36**	.17*	.73**	.58**	.50**
2. Self-Efficacy	5.36	1.07	.89		–	.43**	.58**	.57**	.41**
3. Experience	5.19	1.37	.91			–	.20**	.36**	.46**
4. Satisfaction	4.56	1.42	–				–	.70**	.59**
5. Perceived Learning	4.53	1.45	–					–	.54**
6. Choice (Intentions to Enroll)	4.32	1.88	–						–

*Note.* \* $p < .05$ . \*\* $p < .01$ .

### *Regression Analyses*

A multivariate regression was conducted to determine if the set of independent variables, task value, self-efficacy, and prior experience, could be used to predict the three outcome variables (Stevens, 2002). Results indicate a statistically significant relationship between the three predictor variables and the dependent variables of satisfaction, perceived learning, and intentions to enroll in future online courses (Wilks' Lambda = .25,  $F = 40.47, p < .001$ ).

Furthermore, univariate *F*-tests indicate that satisfaction, perceived learning, and choice behaviors were all significantly related to the set of predictors.

Table 2 presents a summary of the regression analyses for each dependent variable. As indicated, only task value and self-efficacy were significant positive predictors ( $\beta = .60$  and  $.39$ , respectively) of students' overall satisfaction, accounting for approximately 65% of the variance,  $F(3, 200) = 121.1, p < .001$ . Results from the second analysis predicting students' perceived learning indicate that the three predictors accounted for approximately 50% percent of the variance,  $F(3, 197) = 66.7, p < .001$ . In this case, task value and self-efficacy were both statistically significant at the .001 level ( $\beta = .43$  and  $.36$ , respectively), while prior experience was significant at the .05 level ( $\beta = .12$ ). Finally, results from the third analysis indicate that only task value and prior experience were significant positive predictors ( $\beta = .40$  and  $.33$ , respectively) of students' intentions to enroll in future online courses, accounting for approximately 40% of the variance,  $F(3, 199) = 44.4, p < .001$ .

Table 2

*Summary of Multiple Linear Regression Analyses Predicting Satisfaction, Perceived Learning, and Intentions to Enroll in Future Online Courses*

Variable	Satisfaction			Perceived Learning			Choice (Intentions to Enroll)		
	B	SE B	$\beta$	B	SE B	B	B	SE B	$\beta$
Task Value	.73	.06	.60**	.54	.07	.43**	.64	.10	.40**
Self-Efficacy	.52	.07	.39**	.49	.08	.36**	.22	.11	.12
Experience	-.07	.05	-.07	.13	.06	.12*	.46	.08	.33**
Model Summary	$R^2 = .65, F(3, 200) = 122.1, p < .001$			$R^2 = .50, F(3, 197) = 66.7, p < .001$			$R^2 = .40, F(3, 199) = 44.4, p < .001$		

*Note.* \* $p < .05$ ; \*\* $p < .001$ .

*Group Comparisons*

A one-way multivariate analysis of variance (MANOVA) was conducted to determine if there were differences in the variables when comparing students' reporting on a course they chose to take and those reporting on a course they were required to complete. Significant differences were found, Wilks' Lambda = .86,  $F(6, 191) = 5.15, p < .001$ . Six univariate *t*-tests were then conducted as follow-up tests to the MANOVA (see Table 3). Results indicate that students reporting on a course they chose to take exhibited significantly higher mean scores on task value, satisfaction, perceived learning, and intentions to enroll in future courses than students reporting on a course they were required to complete. The mean differences on all four variables exhibited moderate to large effect sizes (Cohen, 1988).

Table 3

*Results of t-Tests Comparing 35 Students Reporting on a Course They Chose to Take (Elective) and 166 Students Reporting on a Required Course*

Variable	Elective Course		Required Course		<i>t</i>	<i>df</i>	Cohen's <i>d</i>
	M	SD	M	SD			
Task Value	5.21	.86	4.32	1.14	4.29***	62.38	.81
Self-Efficacy	5.56	1.03	5.34	1.06	1.15	50.64	-
Experience	5.49	1.25	5.14	1.39	1.35	53.30	-
Satisfaction	5.24	1.38	4.43	1.38	3.16**	49.36	.59
Perceived Learning	5.00	1.39	4.44	1.45	2.01*	48.89	.39
Choice	5.66	1.45	4.05	1.85	4.83***	59.91	.90

*Note.* \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## Discussion

Findings from the present study support prior research indicating that students' motivational beliefs about a learning task and prior experience are related to positive academic outcomes. In particular, results are significant in that they take much of what has been confirmed in traditional classroom environments and provide some evidence that these relationships extend to self-paced, online learning in the context of military training. Consistent with expectations, students' self-reported task value, efficacy beliefs, and prior experience were significantly related to their overall satisfaction, perceived learning, and self-reported choice behaviors. Furthermore, results indicate that students reporting on an elective course exhibited significantly higher mean scores on task value, satisfaction, perceived learning, and intentions to enroll in future online courses than students reporting on a required course.

### *Predicting Satisfaction, Perceived Learning, and Choice*

Task value, self-efficacy, and prior experience with online learning were linked in important ways to students' self-reported satisfaction, perceived learning, and intentions to enroll in future online courses. When considered alone, task value was positively correlated, as expected, with all three outcome measures. Additionally, after accounting for the other variables, task value was the strongest individual predictor of satisfaction, perceived learning, and choice behaviors. It appears that students who believed the course was interesting and important were more satisfied with the course and felt they learned more than their less interested counterparts.

These findings parallel the work of Pintrich and De Groot (1990), who found that intrinsic value was strongly related to students' cognitive engagement and academic performance. Similarly, in a study of undergraduates enrolled in four different online courses, Lee (2002) found task value to be a significant positive predictor of students' overall satisfaction.

Furthermore, results of the present study indicate that task value was a significant predictor of students' intentions to enroll in future online courses. This finding is similar to work that has been done with expectancy-value theory (see Eccles & Wigfield, 1995; Wigfield, 1994), which shows that value components are closely tied to students' choice of future enrollment in similar courses.

When considered alone, self-efficacy was positively related, as expected, to all three outcome measures. Additionally, after controlling for the other predictors, self-efficacy was a significant individual predictor of satisfaction and perceived learning, but not choice behaviors. These results are consistent with the findings of previous investigations of self-efficacy and its relations to positive outcomes, including student performance and satisfaction in traditional classrooms (Pintrich & De Groot, 1990; Zimmerman & Bandura, 1994; Zimmerman & Martinez-Pons, 1990). Furthermore, results from the present study are consistent with research conducted in traditional classrooms by Eccles and Wigfield (1995). These researchers have shown that value beliefs tend to be better predictors of intentions to take future courses, as well as actual enrollment in those courses, than expectancy beliefs (e.g., self-efficacy), a finding that may be equally true for online learners, as indicated by the present results.

While the links between self-efficacy and adaptive outcomes have been well studied in traditional classrooms, only a few studies have tested these relationships in online courses. For example, Lim (2001) found that computer efficacy was the strongest individual predictor of adult learners' overall satisfaction with online education. Similarly, in a study of online education at the undergraduate level, Lynch and Dembo (2004) obtained a significant positive correlation between academic self-efficacy and achievement. Both of these results appear to be supported by

findings from the present study, which revealed positive relations between self-efficacy and both satisfaction and perceived learning.

### *Educational Implications*

Results from this study suggest some preliminary implications for developers of online training. In particular, instructional designers may do well to consider creating their courses in a way that enhances both their students' valuing of the required learning tasks and their sense of efficacy to complete those tasks. For example, integrating course content with "real-world" issues can not only capture students' immediate interest but can also help them appreciate the broader relevance and importance of what they are learning (Bransford, Brown, & Cocking, 2000). Furthermore, students' sense of efficacy can be promoted in several ways, including providing inexperienced learners with achievable online tasks and scaffolding students' self-regulation by embedding timely and explicit feedback into all self-paced course activities (Bandura, 1997; Pintrich & Schunk, 2002). Although none of these suggestions are unique to online learning, they are considered by many to be "best practices" for all types of instruction (American Psychological Association, 1997; Bransford et al., 2000). Ultimately, more research is needed to determine if these preliminary design suggestions can actually improve students' attitudes and academic performance in self-paced, online situations.

Finally, results from the present study provide some information to organizational leaders and decision makers. Specifically, findings highlight the importance of providing students with choice when it comes to online learning. As discussed, students reporting on electives conveyed significantly more positive attitudes than those reporting on required courses. These findings are consistent with the motivation literature, which has long acknowledged the importance of choice as a means of enhancing students' motivation and academic performance (Dai & Sternberg,

2004; Pintrich & Schunk, 2002). Thus, to the extent that it is feasible, organizational leaders may want to consider providing personnel with opportunities to exercise choice and control over their online learning activities. Although more research is needed, this strategy may assist leaders as they strive to develop self-motivated, lifelong learners who will *choose* to use online learning resources (Bonk & Wisner, 2000).

### Conclusion and Future Directions

Because the data from the present study are correlational, it is not possible to make any causal conclusions about the observed relationships. Despite this and other methodological limitations, results from this study provide insight into the relationships between motivational components, prior experience, and positive academic outcomes. Consistent with social cognitive models of self-regulation (Pintrich, 1999; Zimmerman, 2000), findings support the view that students' success in an online course can be explained, in part, by their motivational beliefs and prior experience with online instruction. These findings suggest that developers of self-paced, online courses should design their instruction in a manner that helps learners not only appreciate the value or importance of content or skills but also supports and scaffolds students' attempts to master them.

Future research should continue to explore the relationships between students' motivational characteristics, prior experience, and, ultimately, their learning gains in online situations. Moreover, future work should include more direct measures of student performance, as well as measures of prior content knowledge in order to more fully understand the relationships between students' motivational characteristics and their online success. Finally, future research should investigate whether online interventions designed to enhance motivation and scaffold self-regulation can also improve academic performance.

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Appendix

Task Value, Self-Efficacy, and Satisfaction Scales

**Task Value ( $\alpha = .95$ ):**

1. I liked the subject matter of this course.
2. I will be able to use what I learned in this course in my job.
3. It was personally important for me to perform well in this course.
4. In the long run, I will be able to use what I learned in this course.
5. I really enjoyed completing this self-paced, online course.
6. Performing well in this course made me feel good about myself.
7. This course provided a great deal of practical information.
8. I was very interested in the content of this course.
9. I felt that doing well in this self-paced, online course was imperative for me.
10. Completing this course moved me closer to attaining my career goals.
11. This self-paced, online course included many interesting activities.
12. It was important for me to learn the material in this course.
13. The knowledge I gained by taking this course can be applied in many different situations.
14. Finishing this online course gave me a sense of accomplishment.

**Self-Efficacy for Learning with Self-Paced, Online Courseware ( $\alpha = .89$ ):**

1. I can perform well in a self-paced, online course.
2. Even in the face of technical difficulties, I am certain I can learn the material presented in an online course.
3. I am confident I can learn without the presence of an instructor to assist me.
4. I find it difficult to comprehend information presented in a self-paced, online learning format. *(Reverse Coded)*
5. I am confident I can do an outstanding job on the activities in a self-paced, online course.
6. I am certain I can understand the most difficult material presented in a self-paced, online course.
7. Even with distractions at work, I am confident I can learn material presented online.

**Satisfaction ( $\alpha = .91$ ):**

1. Overall, I was satisfied with my online learning experience.
2. This online course met my needs as a learner.
3. I was dissatisfied with my overall learning experience. *(Reverse Coded)*
4. I would recommend this online course to a friend who needed to learn the material.