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PREDICTING STUDENT SATISFACTION IN DISTANCE EDUCATION AND LEARNING ENVIRONMENTS

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ABSTRACT

The purpose of this study was to analyze characteristics of online learning environments. Data collected using the Distance Education Learning Environments Survey (DELES) were used to explore the relationship between student satisfaction and the following predictor variables: instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy. The participants of this study were 917 undergraduate students at an Anatolian university in Turkey. Results of the regression analysis show that four of the six DELES scales, namely, personal relevance, instructor support, active learning, and authentic learning, were significantly and positively related to student satisfaction. These results provide valuable feedback to institutions offering online classes and to educators evaluating satisfaction of their students.

Keywords: Student Satisfaction; Distance Education; Learning Environment; DELES.

INTRODUCTION

In an era of rapid developing educational technologies, the Internet has become a powerful tool to provide learners with an alternative learning environment worldwide. The Internet and distance education have notably affected the ways in which we communicate and learn (Leh, 1999).

Distance education fosters learning and teaching in a variety of ways. One of the many advantages of distance education is that it offers instructors and students a flexible learning setting in terms of time and location. "Distance education is becoming a good way to acquire knowledge separate from the traditional method of attending the classroom" (Schmidt & Gallegos, 2001, p. 2). Learning does not require students to being physically present in the same place as an instructor (Walker, 2005) nor at the same time.Distance education might be used for different purposes such as supported learning, blended learning (combination of face-to-face and online learning), and entirely online learning (Pearson & Trinidad, 2005). Although the Anatolian University has been successfully implementing a variety of open (distance) learning activities, especially through TV broadcasting, distance education research and practices, in general, are relatively new and limited in Turkey. However, the literature suggests that pressure on faculty members to teach in some form of distance education will increase (Walker, 2005) in response to the demand for distance education research.

In distance education, learning is developed through sharing ideas and thoughts (Palloff & Pratt, 1999) and personal interactions between participants (Walker & Fraser, 2005). Many factors, such as the infrastructure, quality of support systems, quality of content and assessment, and peer support networks, may influence the online learning experience (Arbaugh, 2000; Areti, 2006; Bender, Wood, & Vredevoogd, 2004; Roberts et al., 2005; Trinidad & Pearson, 2004). Schmidt and Gallegos (2001) list other factors such as type of distance delivery method, reasons for enrolling in the course, and learning objectives. In fact, planning and designing distance education courses is a complex task that includes many factors (Pearson &

Trinidad, 2005; Trinidad, Aldridge, & Fraser, 2005; Wilson, 2001). Thus, educators need to consider these factors to provide their students with effective learning environments.

The literature stresses a need for research in distance learning to inform teaching and learning developments (Thiagarajan & Jacobs, 2001; Trinidad & Pearson, 2004) and that learner perceptions and attitudes are central in the development and quality of distance education (Areti, 2006; Biggs, 2006; Clayton, 2004). "Obtaining 'feedback' from students about the design and implementation of the learning environment provided is an essential part of identifying what has worked, and where improvements could be made in the future" (Pearson & Trinidad, 2005, p. 396). On the other hand, research on distance education, especially on issues related to learning environments, is relatively narrow and limited (Walker, 2005). The present study used the Distance Education Learning Environments Survey (DELES) as a research instrument to evaluate the characteristics of online learning environments. In this study, online learning environment perceptions of undergraduate students at an Anatolian university in Turkey were assessed. Especially, the relationship between student satisfaction and the following variables of the distance education learning environment was analyzed: instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy.

THEORETICAL FRAMEWORK AND DELES

Moos's (1974) three psychosocial dimensions form the underlying theoretical structure of the DELES. These psychosocial dimensions are as follows:

- **relationship,**
- **personal development, and**
- **system maintenance and change.**

The relationship dimension refers to individuals, who interact with and support each other in an environment. The personal development dimension assesses the opportunities offered by the learning environment for an individual's growth and achievement. The last dimension, system maintenance and change, basically evaluates the organization, transformation, and control characteristics of an environment which is individual-oriented.

The DELES is developed as a guiding framework for assessments in distance learning environments. The survey is constructed by reviewing previously developed instruments and the literature related to online leaning environments and student satisfaction (Walker, 2005). The six DELES scales remaining after the review are:

- **instructor support,**
- **student interaction and collaboration,**
- **personal relevance,**
- **authentic learning,**
- **active learning, and**
- **student autonomy.**

The literature describes the DELES as a "validated instrument for post-secondary distance education" (Biggs, 2006, p. 46). Each DELES scale is categorized according to Moos's (1974) psychosocial dimensions and presented in Table: 1.

Table: 1
Classification of Each DELES Scale based on Moos' Dimensions

Psychosocial Scale	Description *The extent to which*	Sample Survey Item	Moos' Dimension
Instructor Support	... the instructor helps, gives prompt responses to and is accessible to students.	The instructor responds promptly to my questions.	Relationship
Student Interaction and Collaboration	... students have opportunities to interact with each other, exchange information and engage in collaboration.	I share information with other students.	Relationship
Personal Relevance	... there is a link between students' out of school experiences.	I apply my out-of-class experience.	Personal development
Authentic Learning	... students have the chance to solve (authentic) real life problems.	I work on assignments that deal with real world information.	Personal development
Active Learning	... students have opportunities to initiate their own learning.	I explore my own strategies for learning.	Personal development
Student Autonomy	... the course is student oriented and allows them to make their own learning decisions.	I make decisions about my learning.	System maintenance and system change

Although student satisfaction is not directly related to the psychosocial learning environment, it is an added affective scale of the DELES. The student satisfaction scale includes eight items, such as "distance education is worth my time," to assess the "extent to which students enjoy learning in a distance education environment" (Walker, 2005, p. 9).

METHODOLOGY

The DELES was administered online. Data were collected during spring semester 2006. A total of 917 students completed the survey.

Participants

Participants were undergraduate students at an Anatolian university in Turkey. Of the participants, 48% were male (n = 443) and 52% female (n = 474). The students were pursuing degrees in law, justice, primary and history teacher education (see Table: 2). Of these participants, the most representative group was law school undergraduate students (n = 373).

Table: 2
Participants' Departmental Affiliation

Department	Frequency	Percent
Law School-Class A	199	21.7
Law School-Class B	174	19.0
Justice-Class A	185	20.2
Justice-Class B	186	20.3
(Primary School) Teacher Education-Class A	86	9.4
(Primary School) Teacher Education-Class B	48	5.2
History Teacher Education	39	4.3
Total	917	100.0

Research Instrument

The research instrument included all of the DELES scales and items regarding participant demographics. The DELES scales were made up of a total of 42 items. Higher scores indicate higher levels of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and student satisfaction. Participant demographics contained two items—gender and departmental affiliation. A five-point Likert-type set of choices was used for each DELES scale.

Data Analysis

In this study, descriptive statistics and correlation analysis were used. In multiple linear regression analysis, the relationship between the dependent variable, student satisfaction, and the following six predictor variables were tested: instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy. Data were analyzed using SPSS 13.0 (Statistical Package for Social Sciences) software.

FINDINGS

All correlations between the predictor variables and the dependent variable, as well as those between the predictor variables, are statistically significant and positive (see Table 3). These results show that a higher level of each DELES scale indicates a higher level of student satisfaction from distance education. The study by Walker and Fraser (2005) reports approximately the same value for the multiple correlation (*R=0.46*) and the significant correlation results between the variables, confirming the validity of the survey and the findings from this study.

Table: 3
Correlations between DELES Variables

Variable	1	2	3	4	5	6	7
1. Instructor support	-						
2. Student interaction and collaboration	0.42**	-					
3. Personal relevance	0.52**	0.40**	-				
4. Authentic learning	0.52**	0.46**	0.78**	-			
5. Active learning	0.46**	0.32**	0.60**	0.54**	-		
6. Student autonomy	0.64**	0.29**	0.56**	0.49**	0.62**	-	
7. Student satisfaction	0.36**	0.22**	0.38**	0.37**	0.36**	0.33**	-

**: Correlation is significant at the 0.01 level (2-tailed).

Findings from the linear regression analysis are summarized in Table: 4. The results of the regression analysis show that four of the six DELES scales, namely, personal relevance, instructor support, active learning, and authentic learning, were significantly and positively related to student satisfaction. Using the stepwise regression method, the overall model explains 20% of the variance in student satisfaction.

Table: 4
Model Summary for Stepwise Regression Analysis

Model [a]	R	R Square	Adj. R Square	Std. Err.	R Square Change	F Change	df_1	df_2	Sig. F Change
1	.379 [b]	.144	.143	6.868	.144	153.852	1	915	.000
2	.425 [c]	.181	.179	6.723	.037	40.950	1	914	.000
3	.445 [d]	.198	.196	6.653	.018	20.111	1	913	.000
4	.451 [e]	.204	.200	6.635	.005	5.974	1	912	.015

[a]: Dependent variable: Satisfaction
[b]: Predictors: (Constant), personal relevance
[c]: Predictors: (Constant), personal relevance, instructor support
[d]: Predictors: (Constant), personal relevance, instructor support, active learning
[e]: Predictors: (Constant), personal relevance, instructor support, active learning, authentic learning

These findings suggest that personal relevance, instructor help, active learning, and authentic learning are key factors to better support students' learning and increase their satisfaction. Personal relevance is the strongest predictor of student satisfaction. This finding indicates that students who are able to link course content with their personal experiences tend to be more satisfied in distance education. This result suggests that online learning environments should be learner-centered and involve students' out-of-school knowledge and skills (Ellis & Cohen, 2005).

The second significant predictor of satisfaction is instructor support. The literature supports this finding that interaction with the instructor in an online learning environment affects student success and learning (Areti, 2006; Chen & Guo, 2005; Schmidt & Gallegos, 2001). This result shows that students who receive enough support from their instructor are expected to be more satisfied in online learning environments. Although distance education is a learner-centered instruction, this finding confirms that instructor support, such as timely help, useful feedback, or easy communication, is still a key factor for student satisfaction in distance learning. Thus, instructors of distance education should be accessible, provide prompt responses, and encourage their students through online learning activities.Active learning is the third strongest variable in predicting students' satisfaction.

This result suggests that students who are allowed to involve their own learning strategies, problems, and solutions in the class are likely to be more satisfied in online learning environments. Thurmond et al. (2002) supports this finding that active learning fosters distance education learning environments. Finally, authentic learning demonstrates a significant association with student satisfaction. This finding indicates that students are expected to be more satisfied in online learning environments if the course involves real life examples, facts, and cases.

CONCLUSIONS

The findings of this study show that DELES is a valuable tool to help educators improve their distance education classes and evaluate the effectiveness of online learning environments. The present study indicates that all of the DELES factors are significantly and positively associated with student satisfaction and with each other. Specifically, the linear regression analysis results suggest that involving instructor support, personal relevance, and real life examples related to student experiences in an online learning environment contributes to student satisfaction that will increase student motivation, participation, and ultimately, learning. These results and the literature confirm that the characteristics of an online learning environment have a great impact on student satisfaction (Thurmond et al., 2002; Trinidad, Aldridge, & Fraser, 2005).

It is important to note that distance education will continue to have an impact on teaching and learning (Schmidt & Gallegos, 2001). However, online learning environments cannot be effective and thrive without considering students' needs and preferences. Obtaining student feedback about the online learning environment is crucial for the successful design and implementation of this environment. Online learning environments should be carefully designed to maximize students' satisfaction with these environments. Distance education instructors and designers should consider the characteristics of an online learning environment to develop successful distance delivery courses and to meet the expectations of their students.Future research could replicate the current study by conducting the DELES survey with students from other fields and compare the results. The variables of this study are limited to the ones described in the DELES. It is clear that other factors may also contribute to distance learners' satisfaction. Future research may include other demographic characteristics, such as computer ownership and Internet access, which may influence students' attitudes toward online learning environments.

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REFERENCE

Arbaugh, J. B. (2000). How classroom environment and student engagement affect learning in Internet-based MBA courses. *Business Communication Quarterly*, *63* (4), 9-26.

Areti, V. (2006). Satisfying distance education students of the Hellenic Open University. *E-mentor, 2* (14), 1-12.

Bender, D. M., Wood, B. J., & Vredevoogd, J. D. (2004). Teaching time: Distance education versus classroom instruction. *The American Journal of Distance Education*, *18* (2), 103-114.

Biggs, M. J. G. (2006). Comparison of student perceptions of classroom instruction: Traditional, hybrid, and distance education. *Turkish Online Journal of Distance Education (TOJDE)*, *7* (2), 46-51.

Chen, D., & Guo, W. Y. (2005). Distance learning in China. *Journal of Distance Education Technologies*, *3* (4), 1-5.

Clayton, J. (2004). Investigating online learning environments. In R. Atkinson, C. McBeath, D. Jonas-Dwyer, R. Phillips, (Eds.), *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference* (pp. 197-200). Perth, Australia: Australasian Society for Computers in Learning in Tertiary Education.

Ellis, T. J., & Cohen, M. S. (2005). Building the better asynchronous computer mediated communication system for use in distributed education. *Proceedings of the 35th Frontiers in Education Conference* (pp. T3E15- T3E20). Piscataway, NJ: IEEE.

Leh, A. (1999). Computer-mediated communication and foreign language learning via telecommunication technology. In B. Collis, R. Oliver, (Eds.), *Ed-Media: Proceedings of World Conference on Educational Multimedia, Hypermedia, and Telecommunications* (pp. 68-73). Charlottesville, VA: Association for the Advancement of Computing in Education.

Moos, R. H. (1974). Systems for the assessment and classification of human environments: An overview. In R.H. Moos, P. M. Insel, (Eds.), *Issues in social ecology: Human milieus* (pp. 5 – 29). Palo Alto, CA: National Press.

Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*. San Francisco: Jossey-Bass.

Pearson, J., & Trinidad, S. (2005). OLES: An instrument for refining the design of e-learning environments. *Journal of Computer Assisted Learning*, *21*, 396-404.

Roberts, T. G., Irani, T. A., Telg, R. W., & Lundy, L. K. (2005). The development of an instrument to evaluate distance education courses using student attitudes. *The American Journal of Distance Education*, *19* (1), 51-64.

Schmidt, E. K., & Gallegos, A. (2001). Distance learning: Issues and concerns of distance learners. *Journal of Industrial Technology*, *17* (3), 2-5.

Thiagarajan, G. & Jacobs, C. (2001). Teaching undergraduate mechanics via distance learning: A new experience. *Journal of Engineering Education*, *1*, 151-156.

Thurmond, V. A., Wambach, K., Connors, H. R., & Frey, B. B. (2002). Evaluation of student satisfaction: Determining the impact of a web-based environment by controlling for student characteristics. *The American Journal of Distance Education*, *16* (3), 169-189.

Trinidad, S., Aldridge, J., & Fraser, B. (2005). Development, validation and use of the Online Learning Environment Survey. *Australasian Journal of Educational Technology*, *21* (1), 60-81.

Trinidad, S. & Pearson, J. (2004). Implementing and evaluating e-learning environments. In R. Atkinson, C. McBeath, D. Jonas-Dwyer, R. Phillips, (Eds.), *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference* (pp. 895-903). Perth, Australia: Australasian Society for Computers in Learning in Tertiary Education.

Walker, S. L. (2005). Development of the Distance Education Learning Environments Survey (DELES) for higher education. *The Texas Journal of Distance Learning*, *2* (1), 1-16.

Walker, S. L., & Fraser, B. J. (2005). Development and validation of an instrument for assessing distance education learning environments in higher education: The Distance Education Learning Environments Survey (DELES). *Learning Environments Research*, *8* (2), 289-308.

Wilson, C. (2001). Faculty attitudes about distance learning. *Educause Quarterly*, *2*, 70-71.