Study of the Correlation between Academic Achievement and Interaction Preferences of Online Learners

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Abstract

The goal of this study is to determine the interaction preference of college junior students taking Learning Management Systems course. This study is conducted among the Education Faculty students majoring in Computer and Education Technologies. The interaction preference of the students has two options of either the other students in the lectures or the instructor. The change in the academic success of the students is studied as a function of interaction preference. The interaction preferences are classified into 4 categories: face-to-face, asynchronous online, synchronous online, both face-to-face and online. It is shown that majority of 80 students whose preferences of either the other students or the instructor were studied selected face-to-face interaction, followed by the preference of both face-to-face and synchronous online. There was no correlation found between the interaction preferences of the students and their academic success.

Keywords: interaction choices, learning management systems course, online learning

Introduction

The technological advances change the computer and communication technology. These changes result in alterations in education methods. Access to knowledge and information is provided by various channels. As the E-learning systems become more common, there is Learning Management Systems developed in order to simplify the e-learning, and to form it more systematically(Erkoç & Tutgun, 2008).

The Learning Management System (LMS) is the information management softwareallowing to follow students in remote or blended learning course selection and course registration, delivery of the content, assessment and evaluation of user(Watson & Watson, 2007).An LMS, served as a basis of publishing e-learning system, serving the learning materials, learning material to share and discuss, managing course catalog and make students' enrollments, providing faculty and administrators the records of students' class attendance and progress records, is used to manage learning environments(Cebeci, 2003; İnner, 2007; Paulsen, 1995).

LMS contains student access content or learning materials to be delivered to students; manages the interaction between student and instructor, monitors, reports software components to be distributed.

In the era of the information age with the philosophy of lifelong learning, accessing information, both asynchronously and synchronously providing education in all environments has gained more importance. Recent developments in information technology, particularly in the education process usage of internet have become an indispensable element. With the use of Internet technologies in education, e-learning concept has emerged. Running through the internet or intranet web-based learning independent of time and space programs generally is known as e-learning (Erkunt & Akpınar, 2002).

One of the most important factors in e-learning is the interaction(Kearsley, 1995; Michael G. Moore & Kearsley, 2004; Sadik & Reisman, 2003).Wagner(1994) defines interaction as events of at least two objects and two actions. When these objects and events mutually affect one another, there is interaction established. Portway & Lane(1997) define interaction as the participation degree of an individual actively in the exchange of information.In essence, the interaction of two-way communication process is one of the basic requirements of the people. In various environments people interact with different people or objects almost every day. One of these environments is the educational environment.

Education-*especially in open and distance learning*-environment interaction has been detected as a process by the following;

- Attention to the stimulation and proliferation
- Distractions continuity
- Perception of training objectives by learners
- Varying the presentation of the information making suitable for different learning styles
- Asking questions and by answering on performance feedback
  (M. G. Moore, 1989; Smith & Ragan, 2004; Wagner, 1994).

Different studies show that there is increase in motivation with the increase in interaction degrees, elevation in positive attitudes towards learning,and although there is higher satisfaction from teaching,the increase in interaction results in establishing environments for deeper, more meaningful learning, and for higher success rates(Garrison, 1990; Hackman & Walker, 1990).

Online e-learning interaction takes place between the properties. This resolves, in particular, one of the shortcomings of traditional distance education, the lack of interpersonal communication(I. Jung, Lim, Choi, & Leem, 1998). Online e-learning makes it possible for learners to interact with each other or with external experts and multimedia resources.

Online learning expert educators define four types of interaction: *learner-content, learner-paced, learner-learner and learner-interface*(Hillman, Willis, & Gunawardena, 1994; M. G. Moore, 1989). The fourth type of interaction, that is learner-interface interaction, unique to online learning was added to M. G. Moore's(1989) three types of interaction by Hillman et al., (1994). These investigators defined learner-interface interaction as the one resulted from the interaction between technology and the learner. In order to interact with the content, the instructors and the other learners, the learners should use technology.In most of the distance education classrooms, without the learning-interface interaction, the other three interacting species cannot occur. Besides Hwang (1994), stated that through the process of open and distance learning learner interacts with himself as well. M. G. Moore(1989) has addressed this as content interaction and as part of the process.

Researchers draw attention to the importance of three types of interaction in online e-learning(I. S. Jung & Sasaki, 2008). Interaction is *academic interaction* that happens when learners study online materials and perform activities to get feedback from the instructors (Moller, 1998; M. G. Moore, 1993). Interaction is also based on *collaborative interaction* that occurs while either learners discuss the problems on the bulletin board or solve the problems by collaborations(Adelskold, Aleklett, Axelsson, & Blomgren, 1999; Moller, 1998). Interaction involves getting feedback from the instructor or communicating with community interpersonally or socially, and called *interpersonal or social interaction*(Gunawardena & Zittle, 1997).

Theoretical background and the implementation phase leading this study laid down by Jung and Sasaki (2006), and the current study deals with the types of interaction based on the size of academic and collaborative interaction.

Goal

The goal of this study is to determine the relationship between the interaction choice and the academic success of the students taking the course entitled “Learning Management Systems”. Within the framework of this major goal, answers were sought for the following sub-goals.

Sub-Goals

1. What are the preferences of the students in an online learning environment in interacting with friends?
2. What are the preferences of the students in an online learning environment in interacting with the instructor?
3. Is there any meaningful correlation between the interaction preferences and the academic success of the students?

Limitations

This study is limited to 80 junior students majoring in Computer and Learning Technology Education and taking the course during the spring term of 2012-2013.

Method

In this study, among various models interactive scanning model was preferred since the major goal was to determine the academic success of the students correlated to interaction preferences. Scanning models is the approach of describing a situation as it exists, independent of whether the situation was in the past or is existing currently(Karasar, 2000).

Working Group

The universe of the current study is the Faculty of Education at a state university in Turkey. The sampling of this study is 80 junior students majoring in Computer and Learning Technology Education and taking the course during the spring term of 2012-2013.

Data collection tool

Interaction Preferences Inventory (IPI) is utilized as data collection tool. This tool was developed byErgü, Usluel & Yurdugül (2013). It was approved by 8 experts at Ankara and Hacettepe Universities. IPI contains 24 inventories. The inventory includes "interactions with friends", "interact with teachers", "when feedback", "doing work related to the course", "exam while", "in the exercise of teaching resources" under the general heading of interaction preferences. In addition, there are face-to-face, asynchronous and synchronous online communications, both online and face-to-face communication types, including both substances under each heading, making a total of four. Thus, there is an inventory of 24 items in total.

Data Analysis

The data used in this study to respond to the sub-objectives have been satisfactorily resolved. For achieving the first and second sub-goals of the study, tables were formed based on the frequency and the percentage of the answers of the students. Square test was employed for analyzing preferred interaction between students and academic achievement record. Analysis was performed in SPSS 15 statistical software package. Significance coefficient is taken as 0.05.

Results and Discussion

Descriptive statistics for research and the bottom of the distribution purposes and research findings with data collected are givenin this section. The change by gender in frequency and percentage distribution of different type of interactions of working group preferences in interacting with friends are given in Table 1.

Table1.The distribution by gender in frequency and percentage of different type of interactions of working group preferences in interacting with friends.

		Preferences of Interaction with Friends				
		Face-to-face	Asynchronous Online	Synchronous Online	Both face to face and online (Mixed)	Total
Male	**Frequency**	20	6	6	16	48
	Percentage	41.7%	12.5%	12.5%	33.3%	100.0%
Female	**Frequency**	12	9	0	11	32
	Percentage	37.5%	28.1%	%,0	34.4%	100.0%
Total	**Frequency**	32	15	6	27	80
	Percentage	40.0%	18.8%	7.5%	33.8%	100.0%

According to Table 1, a total of 80 students participating in the survey depicted differentiation in preference of interactions. Accordingly, among the prospective teachers, 40.0% (32 students) prefer face to face interaction, while 33.8% (27 students) are interested in face-to-face as well as online interaction, 18.8% (15 students) have asynchronous online interaction preference and 7.5% (6 students) direct their interests towards synchronous online interaction only. In addition, according to Table 1 among the surveyed males and females the most preferred type of interaction is face-to-face interaction, whereas the least preferred type of interaction was online interaction.

Table 2.The academic grades distribution of working groups related to interaction preference with the other friends and the results of square test.

Interaction Preference with the Friends		Classified Grades			Ave.	Std. Dev.	Total
		65-75	76-85	86-95			
Face-to-face	Frequency	10	13	9	77.7	8.51	32
	Percentage	31.3%	40.6%	% 28,1			100%
Asynchronous Online	Frequency	7	6	2	76.1	6.84	15
	Percentage	46.7%	40.0%	13.3%			100%
Synchronous Online	Frequency	0	5	1	77.0	5.83	6
	Percentage	0.0%	83.3%	16.7%			100%
Both face to face and online (Mixed)	Frequency	7	8	12	78.3	9.1	27
	Percentage	% 25,9	29.6%	44.4%			100%
Total	Frequency	24	32	24	77.5	8.1	80
	Percentage	30.0%	40.0%	30.0%			100%

(χ^2=10.56, sd=6, p=,103 p>.05)

As seen in Table 2, 40.0% of the surveyed 80 students (32 students) and 30.0% (24 students) had a score between either 65-75 or 86-95, respectively. Friends who prefer face-to-face interaction have arithmetic mean of 77.7, 76.1 is the arithmetic mean of those who prefer asynchronous online interaction, those preferring synchronous online interaction and group interactions have 77.0 and 78.3 as the arithmetic mean. It is seen that there are differentiation between arithmetic means. In this context, the interaction preferences in online environments in which students' academic success is determined depicted no significant difference ($\chi^2 = 10.56$, df = 6, p =, 103 p > .05).

The change by gender in frequency and percentage distribution of different type of interactions of working group preferences in interacting with the instructor are given in Table 3.

Table3.The distribution by gender in frequency and percentage of different type of interactions of working group preferences in interacting with the instructor

		Interaction preference with the instructor				
		Face-to-face	Asynchronous Online	Synchronous Online	Both face to face and online (Mixed)	Total
Male	**Frequency**	25	9	3	11	48
	Percentage	52.1%	18.8%	6.3%	22.9%	100.0%
Female	**Frequency**	14	9	0	0	32
	Percentage	43.8%	28.1%	0.0%	28.1%	100.0%
Total	**Frequency**	39	18	3	20	80
	Percentage	48.8%	22.5%	3.8%	25.0%	100.0%

As shown in Table3, the interaction preference of the students with the instructor indicates differentiation. Accordingly, among the prospective teachers, 48.8% of the (39 students) prefer face-to-face interaction, while 25% (20 students) both face-to-face as well as online, 22.5% (18 students) interact asynchronous online and 3.8% cent (3 students) prefer to interact simultaneously online. In addition, according to Table 4 among the surveyed males and females the most preferred type of interaction is face-to-face interaction, whereas the least preferred type of interaction was synchronous online interaction.

Table 4.The academic grades and the arithmetic average distribution of working groups related to interaction preference with the instructor and the results of square test.

Interaction Preference with the instructor		Classified Grades			x^2	sx	Total
		65-75	76-85	86-95			
Face-to-face	Frequency	14	15	10	76.2	7.71	39
	Percentage	35.9%	38.5%	25.6%			100.0%
Asynchronous Online	Frequency	7	4	7	79.5	9.17	18
	Percentage	38.9%	22.2%	38.9%			100.0%
Synchronous Online	Frequency	0	2	1	79.3	10.9	3
	Percentage	0.0%	66.7%	33.3%			100.0%
Both face-to-face and online	Frequency	3	11	6	78.1	7.7	20
	Percentage	15.0%	55.0%	30.0%			100.0%
Total	Frequency	24	32	24	77.5	8.13	80
	Percentage	30.0%	40.0%	30.0%			100.0%

(χ^2=7,162, sd=6, p=,306 p>.05)

According to Table 4 of the 80 students who participated in the survey, 40% (32 students) had a grade of 76-85 (24 students) 30% had a score between either 65-75 or 86-95. Students who prefer face-to-face interaction with the instructor have the arithmetic mean of 76.2, 79.5 of those who prefer asynchronous online interaction, those preferring synchronous online interaction and group interactions get the arithmetic mean of 79.3 and 78.1. There is no differentiation between the arithmetic means.The interaction preferences with the instructor in online environments where students' academic success is determined depicted no significant difference. (χ^2=7.162, sd=6, p=,306 p>.05).

Conclusion and Recommendations

This study was conducted among junior college students majoring in Computer and Education Technologies. The study was on the correlation between interaction preference and the academic success of the students taking the course “Learning Management Systems”. In the current report, the most preferred interactions of the students in the environment having both the friends and the instructor are face-to-face, followed by both face-to-face and online. In addition, there is no correlation determined between the interaction preference of the prospective teachers taking the "Learning Management Systems" course and the academic achievement.

The recommendations on the results of the current study are as follows:

- Other personality characteristics of students of the same degree program could be investigated for the correlation between the other learning environments and interaction preferences.
- New studies could be conducted by comparing the interaction preferences in different learning environments.

- The interaction preferences of the learners could be studied for larger sampling groups in order to figure out the impact of designing new courses on the academic success.
- Qualitative research about why most of the learners in online courses need face-to-face interaction could be performed.

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