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EXAMINING STUDENT SATISFACTION WITH THE USE OF SMART MOOC

Fatma Gizem KARAOĞLAN YILMAZI*, **Ramazan YILMAZ²**,

*¹Faculty of Science, Department of Computer Technology & Information Systems, Bartın University, Bartın, Turkey

ORCID: 0000-0003-4963-8083

²Faculty of Science, Department of Computer Technology & Information Systems, Bartın University, Bartın, Turkey

ORCID: 0000-0002-2041-1750

ABSTRACT

This research aims to examine the students' views on the educational use of the smart MOOC environment, which is formed by the combination of learning analytics, recommendation system, adaptive learning, adaptive mastering test, dynamic assessment, intelligent tutoring system components. This study was conducted on 51 students who took the statistical methods in education course in the smart MOOC environment, which was created by bringing together the components. The study's data was obtained through the satisfaction questionnaire for the smart MOOC environment developed by the researchers. When the research findings are examined, the majority of the students state that they are satisfied with the smart MOOC system, the system helps them to learn. They can access the information and resources they are looking for in the system. In addition, the students found the support services provided by the system useful, the system was helpful in preparing for the exam, and they were satisfied with the instructional support (hint, similar example, guiding explanation) provided by the system in the problem encountered while solving questions. Based on these results, it is seen that the students' general satisfaction regarding the use of the smart MOOC environment is high. This finding facilitates the acceptance and use of the smart MOOC environment. In line with the results obtained from the research, various suggestions were made for educators and researchers.

Keywords: Smart MOOCs, learning analytics, recommendation system, adaptive learning, adaptive mastering testing, dynamic assessment, intelligent tutoring system

INTRODUCTION

Parallel to the development of technology, it is revealed that MOOCs need differentiation with the paradigm shifts in education. One of the main points needed for MOOCs is to provide individualized learning in accordance with the needs of the student, taking into account the individual needs of the student. This need has brought with it an effort to make MOOCs smarter (Karaoglan-Yilmaz et al., 2021; Tepgec et al., 2021a, 2021b).

Considering the individual differences of students, it is thought that students with different characteristics may have different needs. Therefore, it is important that MOOCs systems are designed to take into account each student's needs. However, this design need is a very difficult and complex process (Sahin et al., 2021a, 2021b). This need reveals the basis of the data-oriented approach.

Data-oriented approaches to direct decision-making processes in learning environments are not a new phenomenon, but the potential impact of data-oriented approaches in learning-teaching processes with e-learning environments has reached different dimensions (Jaakonmaki et al., 2020). New technologies such as interactive learning environments, learning management systems, intelligent tutoring systems, and the widespread use of online learning have provided access to big data on learners (Gasevic, Dawson, & Siemens, 2015). The ability to access this data, which is automatically obtained from the learners through these systems, does not mean that it will provide useful information for the learning-teaching processes (Greller & Drachsler, 2012). The use of big data with appropriate approaches in order to facilitate learning and increase performance is within the scope of the field of artificial intelligence research in education.

In this study, it is aimed to examine student satisfaction with a smart MOOC, which identifies the individual needs of students and provides personalized learning to students in line with these needs. The smart MOOC developed within the scope of the research analyzes the log data obtained from the behavior of the students in the online learning environment by using data mining and machine learning techniques. Then, according to the learning analytics results obtained, student-specific recommendations and guidance are made. These recommendations and guidance are given on the dashboard of the developed smart MOOC (Yilmaz et al., 2022). The examination of student satisfaction with the use of the system in question is discussed within the scope of this research.

METHOD

In this section, information about the research model, participants, data collection tools and data analysis is given.

Participants

51 participants were reached in order to determine the users' satisfaction with the system. Participants consist of 7 female and 44 male students studying at the Computer Technology and Information Systems department at Bartın University.

Data Collection Tools and Analysis of Data

The data of this research were obtained by using the personal information form, the adaptive-dynamic-intelligent teaching system (SMIT) (Yilmaz et al., 2022) general satisfaction questionnaire and the content satisfaction questionnaire.

Within the scope of the personal information form developed by the researchers, questions about personal information such as gender, grade level of education were asked to the students.

Two questionnaires were developed by the researchers in order to determine the students' general satisfaction with SMIT and their satisfaction with the contents. Questionnaire items were developed using the literature. Some of the items in the questionnaire developed by Öztürk, Kara, Özkeskin, and Uça Güneş (2017) to determine the satisfaction of students with the learning management system and learning materials were arranged and included in the item pool in this context. The questionnaires developed in this direction were formed as 'SMIT general satisfaction' and 'satisfaction with the contents'. Accordingly, item pools were created by writing 9 items for the SMIT general satisfaction survey and 7 items for the content satisfaction survey. A total of 14 items were determined, 7 for SMIT general satisfaction and 7 for content satisfaction. Items are scored with a 10-point Likert-type rating structure. In this context, it was presented to the opinion of a Turkish language expert, an assessment and evaluation expert, and three educational technology experts in order to ensure validity. Expert opinions on the draft questionnaire items were received. Adjustments were made on the items in line with the suggestions of the experts. Then, a pilot study was conducted on 11 students who used the

SMIT system before to evaluate the language validity, intelligibility and level compatibility of the questionnaire items. After the pilot application, arrangements were made regarding the items that were not understood by the students and the items were finalized. The final version of the questionnaire was structured as ‘SMIT general satisfaction (7 items)’ and ‘satisfaction with the contents (7 items)’ as a 10-likert scale.

Analysis of Data

Factor load values for the questionnaires were used to determine general satisfaction and content satisfaction with the SMIT, the KMO (Kaiser Meyer-Olkin) coefficient was used to evaluate the suitability of the sample size for data analysis. The Bartlett Test was used to determine the consistency between the questionnaire items. The Cronbach Alpha reliability value was used to determine the scale’s reliability. The factor load values of 7 items in the ADITS general satisfaction questionnaire ranged from .94 to .98. The KMO value was found to be .94. As a result of the findings, it can be said that the sample is sufficient for data analysis. The results of the analyzes were found to be significant with the Bartlett test (Chi-square= 614.151, $p < .01$). The reliability of the questionnaire was calculated to be .98. The calculated value shows that the measurement tool is reliable. The factor load values of 7 items in the content satisfaction questionnaire ranged from .94 to .99. The KMO value was found to be .90. As a result of the findings, it can be said that the sample is sufficient for data analysis. The results of the analyzes were found to be significant with the Bartlett test (Chi-square= 713.428, $p < .01$). The reliability of the questionnaire was calculated to be .99. The calculated value shows that the measurement tool is reliable. Frequency and percentage values were used in the analysis of the data.

FINDINGS AND CONCLUSION

Findings Regarding Students’ General Satisfaction with ADITS

The analysis results of students’ general satisfaction with ADITS are given in Table 1.

Table 1. Descriptive statistics on students' general satisfaction with ADITS

Items		1- I am not satisfied at all ←---→ 10- I am very satisfied										Total
		1	2	3	4	5	6	7	8	9	10	
1. How satisfied were you with the system?	f				1	2	3	5	9	8	23	51
	%				2.0	3.9	5.9	9.8	17.6	15.7	45.1	100.0
2. To what extent do you think the system helps you learn?	f				2	3	1	6	11	6	22	51
	%				3.9	5.9	2.0	11.8	21.6	11.8	43.1	100.0
3. How easy was it to access the information and resource you were looking for in the system?	f				1	2	3	5	8	10	22	51
	%				2.0	3.9	5.9	9.8	15.7	19.6	43.1	100.0
4. To what extent did you find the support services offered regarding the system useful?	f				1	2	4	4	8	6	26	51
	%				2.0	3.9	7.8	7.8	15.7	11.8	51.0	100.0
5. How useful was the system in your preparation for the exam?	f			1	2	1	2	4	9	7	25	51
	%			2.0	3.9	2.0	3.9	7.8	17.6	13.7	49.0	100.0
6. To what extent were you satisfied with the instructional support (hint, similar example, guiding explanation) provided by the system for the problem encountered while solving a question?	f				1	2	3	6	7	8	24	51
	%				2.0	3.9	5.9	11.8	13.7	15.7	47.1	100.0
7. How satisfied were you with the general indicators?	f					3	3	5	7	11	22	51
	%					5.9	5.9	9.8	13.7	21.6	43.1	100.0

When Table 1 is examined, most of the students are satisfied with the system, that the system helps them learn, that they have access to the information and resources they seek in the system, that they find the support services offered regarding the system useful, that the system is useful in preparing for the exam, that the system provides instructional support (hint, similar example, guiding explanation) and they are satisfied with the general indicators. Based on these results, it is seen that the general satisfaction of the students towards the use of ADITS is high. This is a finding that facilitates the acceptance and use of the intelligent tutoring system.

Findings Regarding the Satisfaction of the Students with the Content in the Intelligent Tutoring System

The results of the analysis regarding the satisfaction of the students with the content in the intelligent tutoring system are given in Table 2.

Table 2. Descriptive statistics on students' satisfaction with the content in the intelligent tutoring system

Items		1- I am not satisfied at all ←---→ 10- I am very satisfied									Total	
		1	2	3	4	5	6	7	8	9		10
1. Adaptive mastery testing	f			1	1	2	2	5	7	10	23	51
	%			2.0	2.0	3.9	3.9	9.8	13.7	19.6	45.1	100.0
2. Subject learning analytics	f				2	1	2	4	12	7	23	51
	%				3.9	2.0	3.9	7.8	23.5	13.7	45.1	100.0
3. Topic Lecture Video	f			1	1	2	2	6	7	9	23	51
	%			2.0	2.0	3.9	3.9	11.8	13.7	17.6	45.1	100.0
4. Alternative Content (PDF)	f			1	1	1	1	4	10	11	22	51
	%			2.0	2.0	2.0	2.0	7.8	19.6	21.6	43.1	100.0
5. Alternative Contents (PPTX-Document presentation)	f			1	2		2	5	9	7	25	51
	%			2.0	3.9		3.9	9.8	17.6	13.7	49.0	100.0
6. Alternative Content (Infographic)	f			1		3	1	3	9	9	25	51
	%			2.0		5.9	2.0	5.9	17.6	17.6	49.0	100.0
7. Learning Tasks	f				1	2	2	7	6	9	24	51
	%				2.0	3.9	3.9	13.7	11.8	17.6	47.1	100.0

The results of the questionnaire applied to determine students' satisfaction with the content are given in Table 2. When the results are examined, it is stated that the majority of the students are satisfied with the adaptive mastery testing, subject learning analytics, lecture video, alternative content (pdf), alternative content (PPTX-document presentation), alternative content (infographic), learning tasks. Based on these results, it is seen that students' satisfaction with the content in the intelligent tutoring system is high. This is a finding that facilitates the acceptance and use of the intelligent tutoring system.

Based on the research findings, it has been observed that student satisfaction is high with the smart MOOC system, which was developed within the scope of the research and includes adaptive learning, data mining and machine learning, learning analytics and recommendation systems, adaptive

competency testing, dynamic evaluation components. Based on this finding, it can be said that the system architecture of the smart MOOC system is functional, the interface is usable, and the system can recognize the student and respond to their learning needs. In future studies, experimental studies can be designed to determine the effect of the smart MOOC on learning process and results.

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