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ASSOC. PROF. DR. PARVIN AHANCHI  
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# EXAMINING STUDENT VIEWS ON THE USE OF THE LEARNING ANALYTICS DASHBOARD OF A SMART MOOC

Fatma Gizem KARAOGLAN YILMAZ <sup>1\*</sup>, Ramazan YILMAZ <sup>2</sup>

<sup>1</sup>Faculty of Science, Department of Computer Technology & Information Systems, Bartin University, Bartin, Turkey

ORCID Code: 0000-0003-4963-8083

<sup>2</sup>Faculty of Science, Department of Computer Technology & Information Systems, Bartin University, Bartin, Turkey

ORCID Code: 0000-0002-2041-1750

## Abstract

In this study, the views of students using the adaptive dynamic intelligent tutoring system supported by learning analytics designed as smart MOOCs on the learning dashboard of the system were examined. The learning dashboard of the system in question shows the results of video analytics indicators, exam analytics indicators, and system usage indicators from the data obtained from students' interactions with the system. In addition, the system's learning dashboard provides the descriptive statistics results of the students and the predictive statistics results that can reveal the student's status for the following weeks of the course. In other words, the student learning dashboard shows results that predict both the current and future situations. The research was carried out on 36 university students. The study's data were obtained through the researchers' semi-structured student opinions determination form. Content analysis was performed in the analysis of the data. The research findings reveal that the learning dashboard helps show the status of students' engagement, seeing how much time they spend on the lesson and how often they study, telling what to do in terms of being successful in the future, and increasing student motivation. In addition, the visuals in the learning dashboard helped increase the intelligibility of the results of learning analytics, enabling the students to determine their own level and see where they are, allowing them to see the topics they learned well and to self-evaluate. The majority of the students stated that the learning dashboard has no disadvantages. A few students stated that insufficient results in the learning dashboard could lead to decreased student motivation. In line with the findings obtained from the research, a discussion was made about what should be considered in terms of learning dashboard design and its effective use, and various suggestions were made.

**Keywords:** Smart learning environments; Smart MOOCs; learning dashboard; learning analytics

## 1.Introduction

Learning analytics dashboards are an interface where students present performance indicators related to a specific goal or learning process with the help of graphs. Learning analytics dashboards are a user interface where data visualization is done. In an online learning environment such as a learning management system, the behavior of users is stored in the database in the form of log data. These data in the database are processed with data mining and machine learning methods, and meaningful results are

tried to be drawn about the learning goals and processes of the students. These results are presented to the user on the dashboard as learning analytics indicators (Karaoglan Yilmaz, 2022a, 2022b).

In learning analytics dashboards, the current performance status of students can be revealed as well as predictions about the future (Han et al., 2021). Thus, students can see their current situation, realize their learning deficiencies and take measures to complete them (Tepgec et al., 2021a, 2021b; Valle et al., 2021). Learning analytics dashboards are as helpful for teachers as they are for students. By looking at the learning analytics results, the teacher can check the students' success and performance, dropping out of the course and can intervene with the students accordingly (Karaoglan Yilmaz et al., 2021; Karaoglan Yilmaz & Yilmaz, 2022; Sahin et al., 2021).

Previously published studies have been carried out on the design and use of learning analytics dashboards. However, in these studies, it is understood that the number of studies examining user experience is limited and the diversity of research on this subject should be increased (Yilmaz et al., 2022). This research examined students' views on the learning analytics dashboard developed for the Smart MOOC environment. Aforementioned Smart MOOC dashboard, descriptive statistical results regarding the current performance status of the students are presented, as well as the predictive statistical results regarding the future performance status of the students. In addition, on the Smart MOOC dashboard, the video analytics results of the students watching the lecture videos, the exam analytics results of the exams made over the system, and the system usage analytics results of the system usage are also given to the students. Smart MOOC provides student-oriented advice and guidance based on learning analytics results. Again, these advice and guidance messages are shown on the system's dashboard. No research has been found in the literature that examines student views on a comprehensive dashboard design that includes the above features. In this respect, the study will contribute to the literature.

## 2. Method

The study was carried out within the scope of the qualitative research method. In this direction, taking and analyzing students' views on the Smart MOOC dashboard was carried out within the scope of the study.

### 2.1. Participants

The research participants are 36 university students who take the statistical methods in education course through Smart MOOC (mooc.bartın.edu.tr). Students are studying at a state university in Turkey and have taken the course through the Smart MOOC system.

### 2.2. Data Collection Tools and Analysis of Data

In order to obtain the research data, a semi-structured student opinion determination form developed by the researchers was used. The questions to be included in the form were determined as a result of the literature review. The questions were then sent to three educational technology field experts for expert evaluation. In line with the opinions and suggestions from the experts, the questions in the form were finalized. Content analysis was conducted to analyze the data obtained from the students. Students' opinions were thematized separately by two different researchers, and then the researchers came together to examine the consistency of the coding.

## 3. Findings, Discussion and Conclusion

In line with the first sub-purpose of the research, an answer was sought for the following question. What do you think are the benefits and aspects of the dashboard of the mooc.bartın.edu.tr site you have used? The content analysis results regarding the students' opinions are given in Table 1.

**Table 1. Student Opinions on the Benefits of Using the Learning Analytics Dashboard**

<b>Sub-Theme</b>	<b>Frequency</b>
Show students' attendance status	25
Allowing to see the status of student performance	24
Provide self-assessment	21
Demonstrate the student's progress in the process	18
Increasing motivation for the lesson	17
Making predictions about the student's course performance in the coming weeks	17
Enabling the student to see their level and compare it with the class average	16
Enabling to see learning deficiencies and mistakes	16
Providing advice and guidance in line with learning needs	13
Making data easier to understand with data visualization	12
Enabling to see the proficiency status regarding the course topic	11
Making learning easier	7
Preventing loss in the system	2

When Table 1 is examined, it is seen that the use of the learning analytics dashboard makes many contributions to the students. Thanks to the learning analytics dashboard, students can see their own situation, compare their levels with those in the classroom, realize their learning deficiencies, and overcome them in line with the system's recommendations and directions.

In line with the second sub-purpose of the research, an answer was sought for the following question. What are the disadvantages/limitations of the Mooc.bartin.edu.tr dashboard that you have used? The content analysis results regarding the students' opinions are given in Table 2.

**Table 2. Student Opinions on the Disadvantages/Limitations of Using the Learning Analytics Dashboard**

<b>Sub-Theme</b>	<b>Frequency</b>
It has no disadvantages or limitations.	30
The low level of individual performance data compared to the class average can reduce motivation.	3
It can make the student feel complacent in terms of performance.	3

When Table 2 is examined, most students state that there is no disadvantage or limitation in using the learning analytics dashboard. A small number of students indicated that viewing learning analytics results in students with low-performance data might lead to a decrease in motivation or complacency.

When evaluated in general, it is seen that the learning analytics dashboard of the Smart MOOC system provides various benefits to students. For this reason, it is necessary to display students' engagement and performance data on the learning analytics dashboards to be designed for similar systems, to include predictive statistics for the future, to include individual performance results in class average results, and to include analytics on video analytics, exam analytics, and system usage can be said. It is also beneficial for the system to give advice and guidance to students based on the results of learning analytics. For this reason, it would be helpful to include the recommendation system feature in dashboard designs.

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## References

- Han, J., Kim, K. H., Rhee, W., & Cho, Y. H. (2021). Learning analytics dashboards for adaptive support in face-to-face collaborative argumentation. *Computers & Education, 163*, 104041.
- Karaoglan-Yilmaz, F. G., Tepgec, M., Muftuoglu, C. T., Sulak, S., Sahin, M., Aydin, F., Yilmaz, R., & Yurdugul, H. (2021). Students' preferences and views about learning in a smart mooc integrated with intelligent tutoring. *18th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2021)*.
- Karaoglan Yilmaz, F. G. (2022a). The effect of learning analytics assisted recommendations and guidance feedback on students' metacognitive awareness and academic achievements. *Journal of Computing in Higher Education, 1-20*.
- Karaoglan Yilmaz, F. G. (2022b). Utilizing learning analytics to support students' academic self-efficacy and problem-solving skills. *The Asia-Pacific Education Researcher, 31(2)*, 175-191.
- Karaoglan Yilmaz, F. G., & Yilmaz, R. (2022). Learning analytics intervention improves students' engagement in online learning. *Technology, Knowledge and Learning, 27(2)*, 449-460.
- Sahin, M., Aydin, F., Sulak, S., Muftuoglu, C. T., Tepgec, M., Karaoglan Yilmaz, F. G., Yilmaz, R., & Yurdugul, H. (2021). Using adaptive mastery testing in assessment management systems. *18th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2021)*, 205-211.
- Tepgec, M., Karaoglan Yilmaz, F.G., Yilmaz, R., Aydin, F., Sulak, S., Yurdugul, H. (2021a). Learning analytics based feed-forward: Designing dashboards according to learner expectations and lecturer perspectives. *The Association for Educational Communications and Technology (AECT) International Convention, Virtual and Chicago, IL, USA, 05-11-2021*.
- Tepgec, M., Karaoglan Yilmaz, F.G., Yilmaz, R., Aydin, F., Sulak, S., Yurdugul, H. (2021b). Finding traces of motivational beliefs in learning analytics supported massive open online courses. *The Association for Educational Communications and Technology (AECT) International Convention, Virtual and Chicago, IL, USA, 05-11-2021*.
- Valle, N., Antonenko, P., Dawson, K., & Huggins-Manley, A. C. (2021). Staying on target: A systematic literature review on learner-facing learning analytics dashboards. *British Journal of Educational Technology, 52(4)*, 1724-1748.
- Yilmaz, R., Yurdugul, H., Karaoglan Yilmaz, F.G., Sahin, M., Sulak, S., Aydin, F., Tepgec, M., Muftuoglu, C., Oral, O. (2022). Smart MOOC integrated with intelligent tutoring: a system architecture and framework model proposal. *Computers & Education: Artificial Intelligence*.