Analysis of the Influence of Assessment Time on Grading Weight in Online Learning

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Received: 2026-Agustus-1
Rev. Req: 2026-Agustus-2
Accepted: 2026-Agustus-3

ABSTRACT: *This study aims to analyze the influence of assessment time on grading weight in online learning using a public dataset from the Open University Learning Analytics Dataset (OULAD) via Kaggle. A quantitative approach with correlational research design was applied, utilizing simple linear regression as the analytical method processed with IBM SPSS Statistics. The independent variable in this study is assessment execution time (date), while the dependent variable is grading weight (weight). The results of the ANOVA test show a significance value of 0.008 (< 0.05), indicating that the regression model is statistically significant. Meanwhile, the correlation coefficient (R) of 0.189 indicates a weak positive relationship, and the coefficient of determination (R Square) of 0.036 reveals that assessment time only explains 3.6% of the variance in grading weight. These findings confirm that assessment time has a statistically significant but practically weak influence on grading weight. Other variables, such as assessment type, material complexity, and institutional policies, are likely to have a larger contribution. This study provides theoretical and practical implications for the design of digital instructional systems, especially in the context of facilitating learning and improving human performance through structured assessment management.*

ABSTRAK: *Penelitian ini bertujuan untuk menganalisis pengaruh waktu pelaksanaan asesmen terhadap bobot penilaian dalam pembelajaran daring dengan menggunakan dataset publik dari Open University Learning Analytics Dataset (OULAD) melalui Kaggle. Pendekatan kuantitatif dengan desain penelitian korelasional diterapkan, menggunakan regresi linear sederhana sebagai metode analisis yang diproses dengan IBM SPSS Statistics. Variabel bebas dalam penelitian ini adalah waktu pelaksanaan asesmen (tanggal), sedangkan variabel terikatnya adalah bobot penilaian (weight). Hasil uji ANOVA menunjukkan nilai signifikansi sebesar 0,008 (< 0,05), yang menandakan bahwa model regresi bersifat signifikan secara statistik. Sementara itu, koefisien korelasi (R) sebesar 0,189 menunjukkan hubungan positif yang lemah, dan koefisien determinasi (R Square) sebesar 0,036 mengungkapkan bahwa waktu asesmen hanya menjelaskan 3,6% variansi bobot penilaian. Temuan ini menegaskan bahwa waktu pelaksanaan asesmen memiliki pengaruh yang signifikan secara statistik namun lemah secara praktis terhadap bobot penilaian. Variabel lain, seperti jenis asesmen, kompleksitas materi, dan kebijakan institusi, kemungkinan memberikan kontribusi yang lebih besar. Penelitian ini memberikan implikasi teoretis dan praktis bagi perancangan sistem instruksional digital, khususnya dalam konteks memfasilitasi pembelajaran dan peningkatan kinerja manusia melalui manajemen asesmen yang terstruktur.*

Keywords: *Online Learning Assessment, Grading Weight, Simple Linear Regression, Learning Analytics, OULAD.*

I. INTRODUCTION

Advances in information technology have brought significant changes to the world of education, especially in the implementation of online learning. Various educational institutions have now adopted Learning Management Systems (LMS) as the primary platform to support a more flexible and efficient teaching and learning process. Through LMS, students can access materials, submit assignments, take quizzes, and complete exams anytime and anywhere without being limited by space and time (Al-Fraihat et al., 2020).

In the context of Educational Technology, assessment or learning evaluation is an essential component that not only functions as an evaluation tool but also as a means to facilitate the learning process. A well-designed assessment can help students understand the extent of their learning achievements and what needs to be improved. On the other hand, from the perspective of improving human performance, a structured and targeted assessment system can directly contribute to increasing student motivation and overall learning performance.

One interesting aspect that has not been widely explored is the relationship between the time of assessment implementation and the grading weight assigned. Does earlier or later assessment execution within a learning cycle correlate with the assigned weight? This question is relevant because in digital curriculum design, the assignment of grading weights reflects the priority and complexity of the material being taught.

This study aims to answer that question by utilizing a public online learning assessment dataset, namely the Open University Learning Analytics Dataset (OULAD) (Kuzilek et al., 2017), and using simple linear regression as an analytical approach. The research problem posed in this study is:

Does the time of assessment execution have a significant influence on grading weight in online learning?

Thus, the hypotheses tested are:

H_o: Assessment execution time has no significant influence on grading weight in online learning.

H_1: Assessment execution time has a significant influence on grading weight in online learning.

II. LITERATURE REVIEW

1. Facilitating Learning in Digital Learning

Facilitating learning refers to systematic efforts to assist learners in being able to learn actively, effectively, and independently by utilizing various available learning methods, media, and technologies. In the context of digital learning, LMS functions as the primary infrastructure connecting educators and students virtually (Al-Fraihat et al., 2020).

Digital assessments integrated within LMS enable lecturers to monitor student learning progress in real-time and continuously (Macfadyen & Dawson, 2010). This aligns with the principle of educational technology that emphasizes the importance of rapid and precise feedback in supporting learning progress (Hattie & Timperley, 2007). Therefore, assessment design and management within LMS become one of the keys to the success of high-quality online learning implementation (Gikandi et al., 2011).

2. Improving Human Performance through Assessment

The concept of improving human performance in education refers to a series of planned efforts to optimize the capacity, productivity, and learning outcomes of students through technology-based interventions (Bloom, 1984). Assessment holds a strategic position within this framework as it is able to provide a clear picture of an individual's learning strengths and weaknesses.

The proportional and structured assignment of grading weights for each type of assessment can encourage students to focus more on materials considered essential (Black & Wiliam, 1998). Furthermore, a transparent and consistent evaluation system can increase students' confidence in the learning process, which ultimately has a positive impact on their academic performance (Wiliam, 2011).

3. Simple Linear Regression

Simple linear regression is an inferential statistical method used to model and measure the influence of one independent variable (X) on one dependent variable (Y) quantitatively (Sugiyono, 2021). The simple linear regression model is expressed in the equation:

$$Y = a + bX$$

Where:

Y = dependent variable (grading weight)

X = independent variable (assessment time/date)

a = constant (value of Y when X = 0)

b = regression coefficient (magnitude of influence of X on Y).

The significance of the regression model is tested through several statistical tests, including the F-test (ANOVA) to determine the overall feasibility of the model, the t-test to determine the significance of each predictor coefficient, and the coefficient of determination (R Square) to measure how much proportion of variance in variable Y can be explained by variable X (Arikunto, 2019).

III. METHOD

1. Research Type and Approach

This study uses a quantitative approach with a correlational research design. The analytical method applied is simple linear regression to test whether there is an influence of the assessment execution time variable on the grading weight variable in the context of online learning.

2. Data Source and Dataset Description

The data used in this study is a public dataset on online learning assessments obtained through Google Dataset Search (2026), based on the Open University Learning Analytics Dataset (OULAD) (Kuzilek et al., 2017). This dataset contains complete information related to assessment activities within the LMS system, which includes the following variables:

- code_module: course module code
- code_presentation: presentation/semester code
- id_assessment: unique identity of each assessment
- assessment_type: type of assessment (assignment, quiz, or exam)
- date: assessment execution time (independent variable/X)
- weight: assessment grading weight (dependent variable/Y)

3. Data Analysis Techniques

Data analysis was performed using IBM SPSS Statistics software with simple linear regression analysis procedures. The analysis stages carried out include:

- Importing the dataset into IBM SPSS Statistics
- Setting the independent variable (X = date) and dependent variable (Y = weight)
- Performing simple linear regression test via the menu Analyze > Regression > Linear
- Interpreting SPSS output including Model Summary, ANOVA, and Coefficients tables

IV. RESULT AND DISCUSSION

1. Result

1.1 Model Summary

The analysis results show a correlation coefficient (R) value of 0.189. This figure indicates a positive but weak relationship between the assessment time variable (date) and grading weight (weight). Furthermore, the coefficient of determination (R Square) obtained is 0.036, which means the assessment time variable can only explain 3.6% of the variation in the grading weight variable. Meanwhile, the remaining 96.4% is influenced by other variables not included in this study.

Table 1. Model Summary of Simple Linear Regression

Model	R	R Square	Adjusted R Square
1	0.189	0.036	0.026

1.2 ANOVA Test

The regression model feasibility test was conducted through ANOVA. The test results show an F-value with a significance of 0.008. Because the significance value obtained is smaller than the determined significance level (0.008 < 0.05), the formed regression model is declared significant and feasible to use for predicting the relationship between variables.

Table 2. ANOVA Test Results

Model	Sum of Squares	df	F	Sig.
Regression	1521.483	1	7.358	0.008
Residual	40634.717	197	-	-
Total	42156.200	198	-	-

1.3 Coefficients Test

The regression coefficient test results show that the date variable has a significance value of 0.008 (< 0.05). This indicates that the assessment time variable has a significant influence on grading weight, so hypothesis H_1 can be accepted. Thus, the formed regression equation illustrates a meaningful relationship between when an assessment is conducted and the magnitude of the assigned weight.

Table 3. Regression Coefficients

Model	B (Unstandardized)	Std. Error	Beta (Standardized)	Sig.
(Constant)	21.145	3.412	-	0.000
Date	0.045	0.017	0.189	0.008

2. Discussion

The findings of this study confirm that assessment execution time has a statistically significant influence on grading weight in online learning. Although the magnitude of the influence is relatively small, this result remains theoretically and practically meaningful in the context of digital evaluation system management.

From the perspective of facilitating learning, this finding underscores the importance of careful assessment scheduling as an integral part of the instructional design of online learning (Gikandi et al., 2011). When assessment execution time is strategically arranged and aligned with the learning flow, students can prepare themselves better, which ultimately has a positive impact on their overall learning experience (Hattie & Timperley, 2007).

From the perspective of improving human performance, the use of a structured digital assessment system is proven to provide greater flexibility for educators in managing and adjusting the evaluation process to learning needs (Al-Fraihat et al., 2020). This condition supports the creation of a more responsive and adaptive learning environment, which is one of the main advantages of technology-based learning (Macfadyen & Dawson, 2010).

Nevertheless, the very low R Square value (3.6%) is an important note that needs to be considered. This finding suggests that assessment time is not the dominant factor in determining grading weight (Romero & Ventura, 2020). Other variables are likely to have a far greater contribution, such as the type of assessment (assignment, quiz, or final exam), the level of difficulty and complexity of the material in each module, and academic policies set by each study program or institution (Peña-Ayala, 2014).

The limitations of this study include the use of only one independent variable, which certainly cannot fully represent the complexity of the assessment system in online learning. Therefore, future research is advised to include additional variables to obtain a more comprehensive and in-depth understanding (Siemens, 2013; Holmes et al., 2019).

V. CONCLUSION

Based on the results of the analysis and discussion, this study concludes that the assessment execution time variable (date) is proven to have a significant influence on grading weight (weight) in online learning. This conclusion is based on the results of simple linear regression analysis that produced a significance value of 0.008, which is smaller than the alpha value of 0.05, so H_1 can be accepted.

However, the influence given by the assessment time variable is classified as very weak, as reflected by an R Square value of only 3.6%. This indicates that there are still many other factors that are more determinant in forming the magnitude of an assessment's grading weight.

Given the limitations of the model used, it is recommended that future research integrate more diverse independent variables, such as assessment type, level of material difficulty, or number of participants, in order to produce a stronger and more representative prediction model. In addition, the use of more complex analytical methods such as multiple regression or path analysis can also be considered.

VI. ACKNOWLEDGMENT

The author would like to thank Kaggle as the provider of the Student Assessment dataset from the Open University Learning Analytics Dataset (OULAD) used in this study. The author also utilized artificial intelligence (AI) technology assistance in language editing to support the preparation of this article.

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