EVALUATING THE EFFECTIVENESS OF ONLINE AND FACE-TO-FACE EXAMS IN ENHANCING LEARNING OUTCOMES OF UNIVERSITAS TERBUKA MEDAN STUDENTS

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Abstract

The rapid advancement of Communication and Information Technology has profoundly transformed educational practices, particularly in the realm of learning assessment. Traditional face-to-face examinations are no longer the sole standard; digital platforms now play an equally pivotal role. Universitas Terbuka (UT), as a pioneer in Indonesia's distance learning system, adopts both online examinations (Ujian Online/UO) and face-to-face examinations (Ujian Tatap Muka/UTM) to evaluate student performance. This study aims to assess the effectiveness of both assessment modes in enhancing academic achievement among UT Medan students.

Using purposive sampling, the research involved students from three major regions with substantial UT student populations: Medan City, Binjai City, and Asahan Regency. All participants had taken both UO and UTM exams within the same academic period. The effectiveness was analyzed through a multiple linear regression model, where UO and UTM scores were treated as independent variables, and the Semester Grade Point Average (IPS) served as the dependent variable. In addition, a perception-based questionnaire was distributed to further understand student experiences with both exam formats.

The findings reveal that the regression analysis meets all classical assumption criteria, with a strong model fit ($Y = -0.093 - 0.524X_1 + 1.542X_2$). Interestingly, UTM scores showed a significant positive contribution to IPS, whereas UO scores revealed a notable negative correlation. These statistical outcomes align closely with student perceptions: most respondents expressed doubt about achieving higher scores in online exams compared to face-to-face assessments. Furthermore, a majority rated the face-to-face exam services highly, indicating satisfaction with the traditional exam format. This suggests that despite the flexibility offered by online exams, students still perceive face-to-face assessments as more conducive to their academic success.

Keywords: effectiveness, academic achievement, online exams, face-to-face exams, Universitas Terbuka Medan

1 INTRODUCTION

Universitas Terbuka (UT) is the first state university in Indonesia to adopt a distance learning system, enabling students to access education through various communication media and information technologies without spatial or temporal constraints. This system provides broader opportunities for Indonesians, both in urban centers and in remote regions, who otherwise may not be able to pursue face-to-face higher education. To facilitate distance

learning, UT has established 38 regional offices and one overseas service unit, including Universitas Terbuka Medan (UT Medan), which serves students across North Sumatra. UT Medan provides both administrative and academic services, ranging from enrollment information, registration, face-to-face tutorials, online tutorials, webinar tutorials, to semester examinations delivered in both face-to-face and online formats.

UT has designated specific courses to be assessed either face-to-face or online. Some students undertake a combination of both formats, while others complete all their examinations exclusively in one mode, depending on their course registration. To date, however, no study has specifically examined the effectiveness of online versus face-to-face examinations in enhancing student learning outcomes at UT Medan. Accordingly, this study aims to evaluate the effectiveness of these two examination formats in improving student achievement. Effectiveness is assessed through students' performance in online and face-to-face examinations, their correlation with Grade Point Average (GPA), and students' perceptions of the two exam formats. The findings are expected to inform institutional policies aimed at improving the quality of both online and face-to-face examination practices at Universitas Terbuka.

2 METHODOLOGY

This study employed a descriptive quantitative approach, utilizing multiple linear regression analysis and questionnaire distribution to capture students' perceptions of online and face-to-face examinations. Two independent variables were examined: students' grades in courses assessed online and grades in courses assessed through face-to-face examinations. The dependent variable was the Semester Grade Point Average (GPA). Grade data were obtained from secondary sources, specifically the Student Exam Score List (DNU), involving students who completed both online and face-to-face examinations within the same semester.

The sample was selected using purposive sampling and comprised Universitas Terbuka students from Medan City, Binjai City, and Asahan Regency across various study programs. The final sample consisted of 33 students from non-Primary Education programs in Medan, 5 students from non-Education programs in Asahan, and 42 undergraduate students of Primary Teacher Education (PGSD and PGPAUD) from Binjai and Asahan, all of whom participated in both exam formats. In total, 80 students completed the perception questionnaires regarding the implementation of online and face-to-face examinations.

The questionnaire on online examinations consisted of 10 items, while the questionnaire on face-to-face examinations contained 8 items. Both instruments applied a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The reliability of the online examination questionnaire was confirmed through Cronbach's Alpha with a coefficient of r = 0.850, while the reliability of the face-to-face examination questionnaire was r = 0.861. These results indicate that the items in both questionnaires demonstrate strong internal consistency and effectively measure well-defined constructs of student perception.

Table 1. Reliability Statistics

Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
.850	10	.861	8

3 FINDINGS AND DISCUSSION

3.1 Student profile of the sample

The demographic and academic characteristics of the student sample in this study are presented in Table 2. This table provides an overview of the participants who served as the subjects of the research.

Table 2. Students profile

Sample Size (n)	Gender	Program Studi	Jumlah
80	Male 11	Management	11
	Female 69	Accounting	1
		Sharia Economics	2
		Development Economics	1
		Statistics	2
		Jurisprudence	1
		Communcation Science	2
		Library Science	1
		Business Administration Science	2
		Public Administration	1
		English Literature: Translation Studies	3
		Educational Technology	10
		Primary Teacher Education	41
		Early Childhood Education Teacher	1
		Economics Education	1

3.2 Results of multiple linear regression analysis

Table 3. Descriptive Statistics

	Mean	Std. Deviation	N
Grade Point Average (GPA)	2.6790	.78705	80
Online exam course grade (UO)	2.6922	.68223	80
Face-to-face exam course grade (UTM)	2.7136	.64075	80

As presented in Table 3, the mean GPA of the sample was 2.6790 with a standard deviation of 0.78705. The mean scores of courses assessed through online examinations (UO) and face-to-face examinations (UTM) were 2.6922 and 2.7136, respectively. These results suggest that courses assessed through face-to-face examinations tend to yield slightly higher average scores compared to those assessed through online examinations.

3.2.1 Classical assumption test

3.2.1.1 Residual normality test

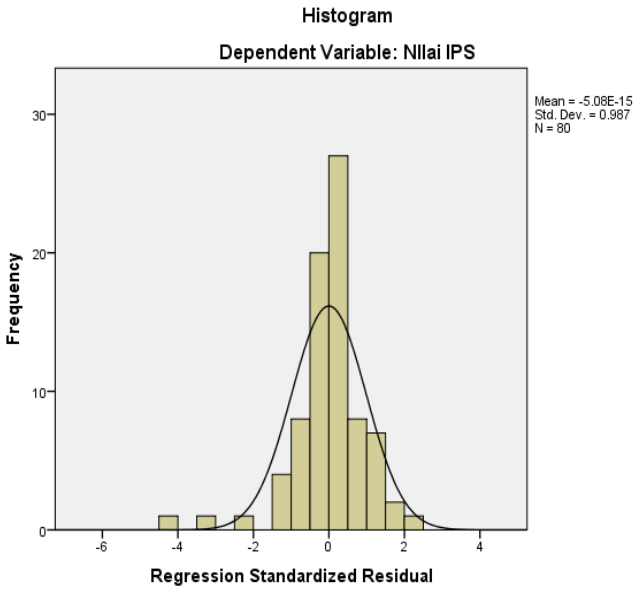

Figure 1. Histogram of the residuals

The histogram and normal probability plot indicate that the residuals follow a normal distribution. Thus, the assumption of residual normality required for regression analysis is satisfied.

3.2.1.2 Multicollinearity test

Table 4. Collinearity Statistics

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Online exam course grade (UO)	.376	2.657
	Face-to-face exam course grade (UTM)	.376	2.657

As shown in Table 4, both the Tolerance and Variance Inflation Factor (VIF) values were below the threshold of 10. This result suggests that multicollinearity was not present in the model.

3.2.1.3 Homoscedasticity test

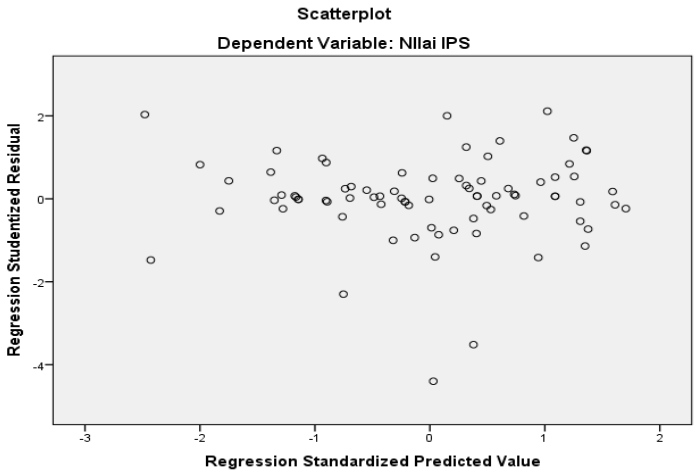

Figure 2. Homoscedasticity test scatterplot

The scatterplot exhibited no discernible pattern, suggesting that the assumption of homoscedasticity required for regression analysis was satisfied.

3.2.2 Multiple linear regression analysis

Table 5. Regression coeficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.093	.138		-.676	.501
	Online exam course grade (UO)	-.524	.074	-.455	-7.095	.000
	Face-to-face exam course grade (UTM)	1.542	.079	1.255	19.593	.000

As presented in Table 5, the multiple linear regression equation between the independent variables and the dependent variable Y (Semester Grade Point Average/GPA) was obtained. The regression coefficient for X1 (online examination scores) indicates that a one-unit increase in online exam scores is associated with a 0.524-unit decrease in GPA, assuming face-to-face exam scores remain constant. Conversely, the regression coefficient for X2 (face-to-face examination scores) demonstrates that a one-unit increase in face-to-face exam scores is associated with a 1.542-unit increase in GPA, assuming online exam scores remain constant. These findings suggest that face-to-face examination scores exert a positive influence on GPA, whereas online examination scores have a negative effect. Given the relatively limited sample size of 80 students, further research is recommended to validate and generalize these results.

Table 6. Corellations

		GPA	Online exam course grade (UO)	Face-to-face exam course grade (UTM)
Pearson Correlation	GPA	1.000	.537	.896
	Online exam course grade (UO)	.537	1.000	.790
	Face-to-face exam course grade (UTM)	.896	.790	1.000
Sig. (1-tailed)	GPA	.	.000	.000

	Online exam course grade (UO)	.000	.	.000
	Face-to-face exam course grade (UTM)	.000	.000	.
N	GPA	80	80	80
	Online exam course grade (UO)	80	80	80
	Face-to-face exam course grade (UTM)	80	80	80

Table 6 shows that face-to-face examination scores exhibit a very strong and significant correlation with GPA (r = 0.896). In contrast, online examination scores demonstrate a moderate but significant correlation with GPA (r = 0.537). Furthermore, online and face-to-face examination scores are strongly and significantly correlated (r = 0.790).

Table 7. Model Summary

R Square	Adjusted R Square	Std. Error of the Estimate
.881	.878	.27493

Table 7 indicates that the combined correlation between the two independent variables and the dependent variable is very strong (r = 0.939), with $R^2 = 0.881$ and an adjusted R^2 of 0.878. This suggests that, after adjustment, 87.8% of the variance in GPA is accounted for by the independent variables—online and face-to-face examination scores—while the remaining 12.2% is attributable to other factors not examined in this study, such as learning readiness, study motivation, and related variables.

Table 8. Anova

df	Mean Square	F	Sig.
2	21.558	285.211	.000[b]
77	.076		
79			

Table 8 demonstrates that the overall regression model is statistically significant, indicating that the two independent variables—online and face-to-face examination scores—collectively influence students' GPA.

3.3 Results of student perception analysis

For the statements regarding students' perceptions of the implementation of online exams (UO), online exam participants tended to have an average score above 4.00. This shows that, in general, students agreed or strongly agreed with the statements in the questionnaire. Items with mean scores exceeding 4.00 included statements 2, 3, 5, 7, and 8. Specifically, students agreed that they experienced no difficulties with the exam schedule set by UT (Item 2), found the online examination platform easily accessible (Item 3), understood the rules governing online examinations (Item 5), considered the instructions for answering questions to be clear (Item 7), and regarded the allocated time as sufficient to complete all exam questions (Item 8). The lowest-rated item (mean = 3.5625) was Item 10, which stated: "My online exam scores are better than my face-to-face exam scores." This suggests that students tended to express uncertainty or disagreement with this perception. Notably, these findings align with the multiple linear regression analysis, which demonstrated that face-to-face examination scores positively influenced GPA, whereas online examination scores exerted a negative effect.

Regarding the statements of face-to-face examinations (UTM), the majority of students assigned ratings between 4 and 5, reflecting overall positive to highly positive perceptions of UTM services. Nonetheless, several students (e.g., Respondents 38, 39, 41, and 47) assigned comparatively lower ratings, offering feedback that may be valuable for service improvement. These respondents consistently highlighted scheduling and location issues, suggesting that the first UTM session should commence at 08.00 instead of 07.00 due to the considerable distance of exam venues from students' residences. Additionally, they noted that both online and face-to-face exam venues were less accessible. The detailed suggestions and feedback from these students are presented in Table 9.

Table 9. Percentage of Feedback and Suggestions

No.	Feedback and Suggestions	Percentage (%)
1	My online exam schedule should not be consecutive; I prefer a gap so that there is time to review the module before the next exam date.	3.030
2	The schedule for face-to-face and online exams should not be too far apart. I had face-to-face exams in June and online exams in July, which disrupted my activities and felt inefficient.	3.030
3	The online exam schedule should be consecutive in one day without empty sessions or gaps, ideally filling all 5 sessions.	6.061
4	The online exam venue was easily accessible, which facilitated student participation. However, the face-to-face exam venue was difficult to	6.061

	reach, especially for students outside the designated locations.	
5	Both online and face-to-face exam venues were not easily accessible. I hope that exam venues can be made more reachable.	21.212
6	Online exam questions should align with the material delivered by tutors and take into account the difficulties experienced by students.	6.061
7	During the online exam, the assigned computer sometimes could not be used, forcing us to switch to another computer, which disrupted concentration.	3.030
8	During the online exam, I experienced unstable internet connections and technical problems such as lagging and disconnection.	3.030
9	Face-to-face exams are preferable because they are free from network issues, fairer, and better controlled. Questions are given directly and are easier to understand. Direct supervision minimizes cheating and allows greater focus. Face-to-face exams also provide a stronger sense of what an exam should be. Personally, I felt more motivated to study when preparing for face-to-face exams. However, distant exam locations may cause delays.	15.152
10	The first session of the face-to-face exam should not start at 07:00 but at 08:00, as the exam venue is quite far from my home.	9.091
11	In my opinion, online exams offer flexibility, while face-to-face exams remain relevant in certain situations. I hope both exam formats will continue to be implemented in the future.	6.061
12	I hope that for online essay exams, additional time will be provided; otherwise, the number of questions should be reduced, as the time allocated is not proportional to the number of questions.	6.061
13	Based on my experience, both face-to-face and online exams have positive and negative aspects. In face-to-face exams, there are fewer students in each room, which allows better concentration compared to online exams.	3.030
14	To improve the effectiveness of UT Medan examinations, particularly online exams, I suggest that internet connectivity be enhanced.	3.030
15	From my experience, online exams are easier in terms of answering, since responses are selected by clicking. In contrast, face-to-face exams require shading answer sheets. I recommend that exams be conducted online in the future, as students can also see their scores immediately.	6.061
Total		**100.001**

The findings presented in Table 9 indicate that the most frequently cited concerns among respondents were related to examination venues. Specifically, 21.212% of respondents emphasized the limited accessibility of both online and face-to-face exam locations, expressing the expectation that future venues should be more easily reachable. In addition, 15.152% of respondents highlighted the perceived advantages of face-to-face examinations, describing them as calmer, unaffected by network disruptions, fairer, and more effectively supervised. Face-to-face exams were also regarded as providing clearer question delivery and

greater focus due to direct invigilation, thereby minimizing opportunities for academic dishonesty. Moreover, several students reported feeling more motivated to study when preparing for face-to-face assessments, despite acknowledging that distant exam venues often posed logistical challenges.

Overall, these findings suggest that examination logistics remain a primary issue for students. Although a small proportion of respondents (6.061%) acknowledged the convenience of online exams—particularly the ease of selecting answers—many others reported technical and logistical challenges. A greater share of respondents demonstrated a preference for face-to-face examinations (15.152%).

These results diverge from the findings of Riyan Moch Hidayat (2022) and Ng Loo Ee et al. (2021). Riyan (2022) found that approximately half of the students at the Faculty of Cultural Sciences, Universitas Brawijaya (academic year 2018), expressed positive perceptions of online examinations, noting their practicality and reliability as substitutes for paper-based assessments. Students in that study also reported experiencing reduced stress when taking online exams, although concerns about exam security remained. Similarly, Ng et al. (2021) reported that students viewed online examinations as encouraging independent learning, easier to grade, and generally producing better outcomes. The majority of respondents in their study described online exams as more relaxed, more confidence-building, enjoyable to complete, and more satisfying in terms of results, thereby favoring online assessments.

Concerns about academic integrity in online examinations, however, were echoed both in this study and in the findings of Jantos et al. (2024). Their research revealed that cheating behaviors were more prevalent in online assessments, as students perceived them to be easier compared to face-to-face formats. Furthermore, all dimensions of deterrence theory were rated higher in face-to-face exams, suggesting that students perceived a greater risk of detection, as well as stricter and swifter sanctions. According to Jantos, digitalization of assessments may increase opportunities for academic dishonesty.

Prior research comparing online and paper-based (face-to-face) examinations has yielded mixed outcomes. Patel et al. (2014) reported that paper-based exams produced more consistent results than computer-based online exams. The proportion of students achieving “A” grades decreased sharply from 29% in paper-based tests to 19% in online tests, while failure rates rose from 3% in paper-based exams to 26% in online formats. Moreover, the average completion time for online computer-based exams (46 minutes) was significantly

longer than for paper-and-pencil assessments (36 minutes). These findings are consistent with the present study.

By contrast, Oduntan et al. (2015) reported different outcomes, showing that students generally preferred modern computer-based assessment methods. Their study found that students performed better in online tests compared to traditional paper-based exams, suggesting that digital assessments can, under certain conditions, enhance performance outcomes

4 CONCLUSION

The regression analysis revealed a strong relationship between the independent variables which are online and face-to-face examination scores, and the dependent variable, Semester Grade Point Average (GPA). Both variables significantly influenced GPA, with face-to-face examination scores emerging as the dominant predictor contributing positively to academic achievement. In contrast, online examination scores demonstrated a significant negative effect on GPA. The analysis of student perceptions corroborated these statistical findings. Consistent with previous studies, the results indicate that although online examinations offer flexibility, students generally regard face-to-face examinations as more conducive to academic success due to their calmer atmosphere, absence of network disruptions, perceived fairness, stronger supervision, and reduced opportunities for cheating.

Nonetheless, several areas for improvement were identified. Universitas Terbuka should reconsider the accessibility of exam venues, both online and face-to-face, as well as the early scheduling of the first session of face-to-face examinations, which many students perceived as problematic. For online examinations, UT should ensure reliable internet connectivity and sufficient computer facilities at exam sites.

Given the relatively limited sample size (80 students), further research is recommended to validate these findings. In addition, future studies should include item analysis of online examinations, focusing on difficulty levels, discriminatory power, the balance between the number of items and allotted time, and the alignment of test items with course modules. Such efforts would enable online examination scores to contribute more positively to GPA outcomes.

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