THE IMPACT OF INTERACTION, CONNECTEDNESS, AND TUTORIAL PATTERNS ON STUDENT ATTENDANCE IN ONLINE TUTORIALS

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Abstract

This study examines the impact of interaction, social connectedness, and tutorial patterns on student attendance in distance learning at Universitas Terbuka. The background addresses challenges in distance education, where student retention and graduation rates are often lower compared to face-to-face learning. The study aims to explore the extent to which interaction, the sense of connectedness, and variations in tutorial patterns influence student attendance in online tutorials. A quantitative approach with a descriptive-correlational design was employed, involving 135 students selected through purposive sampling. Data were collected using questionnaires and analyzed using linear regression with SPSS 21.0 software. The results indicate that all three variables—interaction, connectedness, and tutorial patterns—have a positive and significant impact on student attendance, with social connectedness exerting the most substantial influence. The regression model explains 39.1% of the variability in student attendance. These findings underscore the importance of effective interaction, strong social connectedness, and diverse tutorial patterns in enhancing student attendance, and contribute valuable insights for developing more effective and inclusive distance learning strategies.

Keywords: Distance learning, Interaction, Student attendance, Social connectedness, Tutorial patterns

1 INTRODUCTION

Distance learning has become a primary choice for many higher education institutions, including Universitas Terbuka in Indonesia, which provides educational access to students across various regions in Indonesia. The number of Distance Education (DE) students continues to increase yearly, with nearly a quarter of domestic students opting to enroll online or through blended learning. In this context, the success of education heavily relies on students' active participation in online tutorials, which serve as a medium for interaction between tutors and students. However, it is concerning that the retention and graduation rates of DE students are at least 20% lower than those of face-to-face learning.

Interaction between tutors and students is a critical factor influencing attendance rates in online tutorials. Studies have shown that positive interactions can enhance learning motivation and student engagement in the learning process (Dabbagh & Kitsantas, 2012; Moore, 1989; Swan, 2001). Conversely, limited or ineffective interactions can decrease attendance rates and students' active participation. Therefore, understanding how to improve interactions in online tutorials is crucial for enhancing the distance learning experience.

In addition to interaction, the sense of community plays a significant role in encouraging students to attend online tutorials more frequently. Students who feel more connected to their classmates and tutors are more likely to be motivated to participate actively (Rovai, 2002; McMillan & Chavis, 1986; Dixon, 2010). However, creating a sense of community in a distance learning environment is often challenging due to the lack of face-to-face interaction. This highlights the importance of designing tutorials that can strengthen this sense of community.

The tutorial format also influences student attendance rates. Engaging and well-structured tutorials can increase student participation and encourage them to attend more frequently (Garrison, 2011; Anderson, 2008; Salmon, 2013). Conversely, less engaging or monotonous formats may reduce students' interest in attending. Therefore, this study needs to explore how variations in tutorial formats can be applied to enhance student attendance in online tutorials.

Challenges in DE, as noted by Ferri et al. (2020), indicate that a lack of interaction between lecturers/tutors and students is one of the main challenges. Understanding e-learning technology, technical issues, feelings of isolation, limited interaction with tutors and other students, and difficulties in time management have been identified as major issues for online students. Moreover, family responsibilities and other work commitments also appear to play a significant role in the low attendance rates of online students.

Previous research, such as that conducted by Roddy et al. (2017), revealed that the fast-paced nature of learning or short deadlines in routine and intensive learning environments can place additional demands on students, tutors, and various elements supporting online tutorials. However, while previous studies have examined the impact of interaction, community, and tutorial formats on student learning experiences, there remains a significant research gap in the context of distance learning at Universitas Terbuka. Most research has focused more on conventional education or online learning in institutions with different structures.

Therefore, this study is critically important in the era of educational digitalization. The rapid growth of Universitas Terbuka students, as reflected in the Semester 2023/2024.1 registration data, which reached 525,419 students, demands effective strategies to increase attendance and participation in online tutorials. Understanding how interaction, sense of community, and tutorial formats can influence student attendance will not only provide new insights for the institution but also help design a more effective and inclusive distance learning model.

Based on the above discussion, this study will test three main hypotheses focusing on factors influencing student attendance in online tutorials at Universitas Terbuka. First, it is hypothesized that interaction between tutors and students has a positive and significant effect on student attendance, assuming that better interaction leads to higher attendance rates. Second, this study also tests the hypothesis that a sense of community plays a crucial role in encouraging student attendance, where the stronger the sense of community felt, the greater the likelihood of students actively attending. Finally, it is hypothesized that an engaging and well-structured tutorial format will positively and significantly impact attendance, with more varied and interesting formats expected to increase student attendance in online tutorials. The findings of this study are expected to contribute significantly to developing more effective and inclusive distance learning strategies at Universitas Terbuka.

2 METHODOLOGY

This study employs a quantitative approach with a descriptive-correlational design to analyze the influence of Interaction (IN), Connectedness (KH), and Tutorial Patterns (PT) on student Attendance (KD) in online tutorials. The research was conducted at Universitas Terbuka, involving 135 students from various academic years, majors, and genders as respondents.

2.1 Sampling Technique

The sampling technique utilized in this study is purposive sampling, guided by the principle that the minimum sample size should be five times the total number of items in the questionnaire or measurement instrument, a rule commonly applied in statistical analysis. According to this principle, the recommended minimum sample size is five times the number of total questionnaire items. The selected respondents were students who were actively participating in online tutorials during the study period and had experience using Open Educational Resources (OER) provided by Universitas Terbuka.

2.2 Data Collection Tools and Procedure

Data were collected using a questionnaire. The Interaction (IN) variable was adopted from the Interaction Equivalency Theorem (EQuiv) by Miyazoe & Anderson (2011), which includes two indicators: Learner-Content Interaction and Learner-Instructor Interaction, each consisting of five items. The Connectedness (KH) variable was based on Social Presence by Rourke, Anderson, Garrison, & Archer (2001), comprising three indicators: Affective Expression, Open Communication, and Group Cohesion, each with three items. The Tutorial Patterns (PT) variable measured the intensity of students accessing various Open Educational Resources, encompassing seven indicators. The Attendance (KD) variable was measured based on the number of attendances recorded in online tutorials out of a total of 16 sessions. Respondents completed the questionnaire via Google Form between August 10 and August 19, 2024, on a voluntary basis.

2.3 Data Analysis

The collected data were analyzed using SPSS software version 21.0. The analysis began with descriptive statistics to outline the characteristics of the respondents and the data distribution. Subsequently, assumption tests were conducted to ensure that the data met the criteria for linear regression analysis. Following this, linear regression analysis was performed to examine the impact of the Interaction, Connectedness, and Tutorial Patterns variables on Attendance. Hypothesis testing was conducted using T-tests to determine the significance of the influence of the independent variables on the dependent variable. The resulting regression model is represented in equation 1, where KD represents the Attendance variable, IN represents the Interaction variable, KH represents the Connectedness variable, and PT represents the Tutorial Patterns variable.

- **Pola Tutorial (PT)**: Gabungkan koefisien dari PT1 hing

2. **Tuliskan persamaan regresi dengan total kontribusi:** (1)

3 FINDINGS AND DISCUSSION

3.1 Descriptive Analysis

Based on Table 1, Interaction (IN), Connectedness (KH), and Tutorial Patterns (PT) each have a mean score ranging from approximately 4.23 to 4.24. This suggests that the majority of

respondents tend to provide positive responses, with most ratings falling within the "agree" to "strongly agree" range. The Attendance (KD) variable has the highest mean score of 4.43, indicating a very high level of attendance among respondents in online tutorials. This implies that students feel well-connected and supported by the materials, instructors, and tutorial patterns provided.

Table 1. Descriptive Analysis Result

Variable	Mean	Stdev	Min	Max
Interaction (IN)	4.23	.78	1	5
Connectedness (KH)	4.23	.79	1	5
Tutorial Patterns (PT)	4.24	.78	1	5
Attendance (KD)	4.43	.52	3	5

Source: Author, 2024

The relatively small standard deviation (stdev) for all variables, ranging from 0.52 to 0.79, indicates a high level of consistency in the respondents' answers. This minimal variation suggests that most respondents had similar experiences in online learning, with few responses deviating significantly from the mean. This consistency is important as it reflects a uniform perception among students regarding the elements of interaction, connectedness, and tutorial patterns, thereby reinforcing the validity of the study's findings.

The minimum and maximum values for the Interaction, Connectedness, and Tutorial Patterns variables range from 1 to 5, while the Attendance variable ranges from 3 to 5. This range of values indicates that, although the majority of respondents gave high ratings, there are still a few who provided lower scores, particularly for the Attendance variable, which suggests that some students may have been absent more than once. However, the maximum value of 5 across all variables indicates that there were also respondents who were highly satisfied and fully engaged in the online learning experience.

3.2 Assumption Testing

Based on the normality test of residuals, as depicted by the Q-Q plot, it is observed that the residuals generally follow a straight line in the middle, with slight deviations at the ends. This

indicates that the residuals approximate a normal distribution, although there are minor deviations. While not perfect, this near-normal distribution of residuals suggests that the linear regression model used is still acceptable.

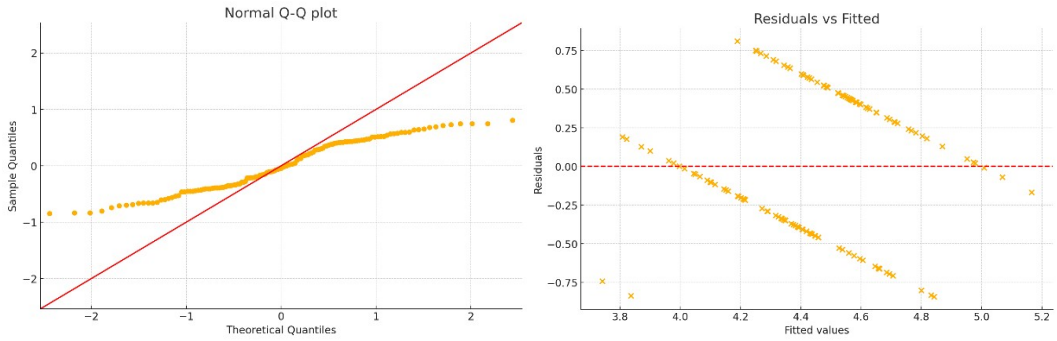

Figure 1. Results of the Q-Q Plot and Residuals vs. Fitted Plot from Assumption Testing

Source: Author, 2024

Furthermore, the homoscedasticity test, illustrated by the Residuals vs. Fitted plot, shows that the residuals are randomly dispersed around the horizontal zero line. This lack of a discernible pattern indicates that the assumption of homoscedasticity is met. Additionally, the multicollinearity test reveals that the Variance Inflation Factor (VIF) values for all independent variables are below 2, suggesting no significant multicollinearity issues among the variables. This confirms that the independent variables in the model are not significantly correlated with each other, ensuring the reliability of the regression model.

3.3 Regression Analysis

The results of the calculations using SPSS 21.0 yielded coefficient scores, p-values, and r-square values as presented in Table 2. The correlation model for the variables Interaction, Connectedness, and Tutorial Patterns with Attendance can be formulated as shown in Equation 2.

Table 2. Regression Analysis Result

Variable	*Coeff.*	*p-value*	*r-square*
Constanta	(.8941)	.4567	-
Interaction (IN)	.3877	.0043	.391
Connectedness (KH)	.5603	.0043	
Tutorial Patterns (PT)	.03071	.0162	

Source: Author, 2024

$$KD1=-0.8941+0.3877\cdot IN+0.5603\cdot KH+0.3071\cdot PT+\epsilon\ldots \quad (2)$$

Equation 2 indicates that a one-unit increase in the Interaction (IN) score is expected to raise the Attendance (KD) score by 0.3877, assuming all other variables remain constant. This means that the higher the level of interaction perceived by students, whether with content or instructors, the greater the likelihood of better attendance in online tutorials.

Furthermore, the Connectedness (KH) variable has a more substantial influence compared to the other variables, with a coefficient of 0.5603. This shows that a one-unit increase in the Connectedness score will increase the Attendance (KD1) score by 0.5603, assuming other variables remain constant. This suggests that a strong sense of connectedness and social bonding within the online learning environment significantly enhances student attendance.

Lastly, the Tutorial Patterns (PT) variable also demonstrates a significant impact, albeit smaller than Interaction and Connectedness, with a coefficient of 0.3071. This implies that a one-unit increase in the Tutorial Patterns score is estimated to raise the Attendance (KD) score by 0.3071, assuming other variables remain constant. Therefore, the frequency and variety of tutorial patterns accessed by students also play a crucial role in influencing their attendance levels in online tutorials.

The constant in the regression equation, here at -0.8941, is known as the intercept or constant term ($\beta 0$). This intercept represents the predicted value for the dependent variable, Attendance (KD1), when all independent variables (IN, KH, and PT) are zero. In other words, if the cumulative scores for Interaction (IN), Connectedness (KH), and Tutorial Patterns (PT) were zero, the expected value for Attendance (KD) would be -0.8941. However, in this context, the

literal interpretation of a negative intercept might not be practically relevant, as in reality, the cumulative scores for IN, KH, and PT are unlikely to be zero in a typical learning situation. The intercept serves more as an adjustment component in the regression model to ensure more accurate predictions when the independent variables have positive values. While the intercept is mathematically significant, practical interpretation focuses more on the coefficients of the independent variables, which demonstrate the actual impact of Interaction, Connectedness, and Tutorial Patterns on Attendance.

This regression analysis also calculates an R-squared value of 0.391, indicating that the regression model explains approximately 39.1% of the variability in attendance levels (KD1). This means that nearly 40% of the changes or variations in student attendance can be explained by the independent variables included in the model: Interaction (IN), Connectedness (KH), and Tutorial Patterns (PT). However, there remains about 60.9% of the variability in attendance that is influenced by other factors not covered in this model, suggesting further investigation may be needed to identify these factors.

3.4 Hypothesis Testing

The significance of the influence of Interaction (IN), Connectedness (KH), and Tutorial Patterns (PT) on Attendance (KD) is assessed using the p-values of the regression coefficients obtained from the statistical analysis. These p-values for each coefficient in the linear regression model are derived from the T-test. The T-test serves to examine the null hypothesis that the regression coefficient for a specific independent variable equals zero. According to the p-values presented in Table 2, it is evident that all independent variables (IN, KH, and PT) have a significant effect on Attendance (KD) within the regression model, as the p-values for each variable are below 0.05. This finding leads to the rejection of the null hypothesis, affirming that the variables Interaction (IN), Connectedness (KH), and Tutorial Patterns (PT) significantly influence Attendance (KD).

3.5 Discussion

The regression analysis results indicate that all independent variables—Interaction (IN), Connectedness (KH), and Tutorial Patterns (PT)—have a significant positive impact on the dependent variable, Attendance (KD). For Hypothesis 1, it was found that the Interaction variable has a coefficient of 0.3877 with a p-value of 0.0043, suggesting that increased interaction, whether between students and content or with instructors, can enhance student

attendance in online tutorials. This finding aligns with the Interaction Equivalency Theorem (EQuiv) by Miyazoe and Anderson (2011), which highlights the importance of interaction in distance learning experiences. These results are also consistent with prior research by Moore (1989), who found that effective interaction between students and learning elements can boost their participation and engagement in online learning.

For Hypothesis 2, the Connectedness variable was shown to have the most significant effect on student attendance, with a coefficient of 0.5603 and a p-value of 0.0043. This indicates that the social connectedness experienced by students, including affective expression, open communication, and group cohesion, plays a critical role in ensuring better attendance in online tutorials. This finding supports the Social Presence theory proposed by Rourke, Anderson, Garrison, and Archer (2001), which emphasizes the importance of self-projection in a distance learning community. Similar findings were reported by Shea et al. (2010), who found that students who felt a stronger sense of social connectedness demonstrated higher attendance and engagement levels in their online courses.

Hypothesis 3, which posits that varied tutorial patterns improve student attendance, is also supported by the regression analysis results, with a coefficient of 0.3071 and a p-value of 0.0162. This suggests that diversity in tutorial patterns, including access to various open educational resources, helps to enhance student attendance. The variation in tutorial patterns provides students with the flexibility to choose learning methods that suit their learning styles, thereby increasing their motivation and engagement in learning. This finding is consistent with the study by Koper (2005), which found that flexibility in accessing open educational resources can boost student participation and attendance in online learning environments.

Overall, these statistical analysis results reinforce the importance of interaction, social connectedness, and varied tutorial patterns in influencing student attendance in distance learning. These findings align with much of the existing literature while also strengthening the argument that these three variables are not only individually relevant but collectively contribute to the success of online learning. It is important to note that while each independent variable has a positive effect, social connectedness (KH) makes the largest contribution to student attendance, underscoring the need for educational institutions to continue developing strategies that foster a sense of connectedness among students in distance learning environments.

3.6 Implication

The findings of this study indicate that interaction, social connectedness, and variation in tutorial patterns are key factors that significantly impact student attendance in distance learning. Therefore, distance education institutions should consider developing strategies that strengthen these three elements in their program design. Institutions need to ensure that interactions between students and both content and instructors are effective, which can be achieved by providing relevant and easily accessible materials and enhancing the responsiveness and quality of feedback from instructors. Additionally, institutions should focus on creating a social environment that fosters connectedness among students, for example, by facilitating group discussions, student collaborations, and activities that promote open communication and group cohesion.

Moreover, diversity in tutorial patterns should be prioritized to meet the diverse learning needs of students. Distance learning institutions can improve accessibility and diversify open educational resources (OER) to provide students with a broader range of choices. By offering various tutorial formats, such as videos, audio, and interactive modules, and ensuring these resources are easily accessible at any time, institutions can help enhance student motivation and engagement. Ultimately, implementing these strategies will not only improve attendance rates but also contribute to students' academic success and the overall quality of distance learning programs.

4 CONCLUSION

This study provides valuable insights into the factors influencing student attendance in distance learning, with results that are consistent with several previous studies. However, there is also room for further exploration, particularly concerning other factors that may affect student attendance, given that this regression model only accounts for about 39.1% of the variability in attendance rates. Future research could examine additional aspects such as intrinsic motivation, technical support, and the quality of learning materials, which may also have a significant impact on student attendance in online learning environments.

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