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The Influence of Digital Intelligence on Improving the Learning Quality of Arabic Language Courses

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Abstract: The integration of technology in Arabic language learning remains a significant challenge, requiring lecturers to possess advanced digital competencies. This study examines the influence of digital intelligence on the quality of Arabic language instruction at the Sultan Syarif Kasim State Islamic University. Employing a quantitative ex post facto design with correlational analysis, the study involved 30 lecturers from the Arabic Language Education Study Program. Data were collected using structured questionnaires, supporting interviews, and document analysis. Results indicate a statistically significant and strong positive relationship between lecturers' digital intelligence and the quality of learning, with a coefficient of determination of 74.3% ($R^2 = 0.743$). Linearity tests confirm a consistent linear relationship between the variables, and linear regression analysis reveals a correlation coefficient of $R = 0.862$, highlighting the robustness of this association. Lecturers with higher digital intelligence are better able to integrate technology into their teaching, enhance interactivity, and improve pedagogical effectiveness. These findings underscore the need for systematic and sustained initiatives to strengthen digital competencies among Arabic language lecturers. Beyond instrumental technology use, lecturers are encouraged to adopt innovative pedagogical strategies that leverage digital tools to optimize learning outcomes.

INTRODUCTION

Arabic language learning in higher education is shaped by a constellation of interrelated challenges that extend beyond linguistic complexity to include technological adaptation, lecturer competence, and socio-cultural dynamics (Jamil, N. J. et al., 2024). According to Al-Assaf (2021), A pe rsistent difficulty is the limited integration of digital tools in the learning process, often linked to varying levels of lecturer readiness and professional capacity (Al-Assaf, 2021; Al-Muslim et al., 2020), This problem is compounded by student anxiety in language acquisition (Mei et al., 2023) and by weak lecturer student communication, which undermines graduate quality (Suarman, 2015). While research demonstrates that technology-enhanced learning significantly improves Arabic language acquisition (Iswanto, 2017), other studies reveal that lecturers have not consistently adopted such practices in classroom settings (Riwanda et al., 2024). This

contrast highlights a critical research gap: evidence-based solutions are known but remain insufficiently implemented. Underpinning these pedagogical and technological issues are broader socio-cultural and ethical concerns, including shifting cultural values, questions of academic integrity, and inequalities in access to education (Supratman et al., 2020). Taken together, these dynamics suggest that the core challenge in Arabic language learning is not simply the mastery of language or technology, but navigating the intersection of pedagogical innovation, lecturer professionalism, and socio-cultural transformation within higher education.

Arabic language learning in higher education is shaped by a constellation of interrelated challenges that extend beyond linguistic complexity to include technological adaptation, lecturer competence, and socio cultural dynamics (Jamil et al., 2024). A persistent difficulty is the limited integration of digital tools in the learning process, often linked to varying levels of lecturer readiness and professional capacity (Al-Assaf, 2021; Al-Muslim et al., 2020). This problem is compounded by student anxiety in language acquisition (Mei et al., 2023) and by weak lecturer student communication, which undermines graduate quality (Suarman, 2015). While research demonstrates that technology-enhanced learning significantly improves Arabic language acquisition (Iswanto, 2017), other studies reveal that lecturers have not consistently adopted such practices in classroom settings (Riwanda et al., 2024). This contrast highlights a critical research gap: evidence-based solutions are known but remain insufficiently implemented. Underpinning these pedagogical and technological issues are broader socio-cultural and ethical concerns, including shifting cultural values, questions of academic integrity, and inequalities in access to education (Supratman et al., 2020). Taken together, these dynamics suggest that the core challenge in Arabic language learning is not simply the mastery of language or technology, but navigating the intersection of pedagogical innovation, lecturer professionalism, and socio-cultural transformation within higher education.

The improvement of educational quality is widely recognized as a cornerstone of effective learning outcomes, including in the field of Arabic language education (Roca-Campos et al., 2021; Zaki et al., 2024). Central to this improvement is the role of qualified and competent educators, as the quality of graduates is strongly associated with the professional capacity of teaching staff (Superi & Naqshbandi, 2022). Empirical studies consistently demonstrate that high-quality instruction positively contributes to student achievement and academic performance (Parveen et al., 2024; Chu et al., 2015). Beyond individual outcomes, quality education also strengthens the reputation of institutions and contributes to the prosperity of modern societies by preparing graduates who are capable of innovation and leadership (Helen B. et al., 2021; Jebli et al., 2024). Within the context of higher education, therefore, the presence of professional and competent lecturers emerges not merely as a supporting factor but as a decisive element in fostering sustainable quality learning (Aishath et al., 2021).

To increase the quality of education, digital transformation is a medium that Arabic language lecturers can develop to improve the quality of learning (Adel et al., 2024). According to Rahman et al. (2022), the era of revolution 4.0 is felt not only by the industrial

sector alone, but also by the world of education. Likewise, in learning arabic (Ritonga et al., 2024). The desired participant considers using technology to educate in developing the Arabic Language (Ritonga et al., 2022). It is proven that presence technology has changed the pattern of interactive and fun learning (Abdul Ghani et al., 2022). And encourage participation and education in an active way (Riwanda et al., 2024b). So, from that, digital technology is an element that lecturers at college must be developed to improve the quality of learning that is better and more dignified (Elawadi et al., 2019).

Besides that, one of the digital transformation efforts in developing quality arabic language learning at UIN Sultan Syarif Kasim Riau is using digital intelligence by lecturers. According to Usof et al. (2025), using digital intelligence (DI) has been proven capable of changing four teaching skills. Language becomes more effective than traditional methods, including acquiring vocabulary and language (El Alaoui & Cavalli-Sforza, 2025) structure. In addition, digital intelligence (DI) is assessed as facilitating understanding of complex content and optimizing planning for effective teaching (Fernández Cerero et al., 2025). Digital devices positively affect participant involvement, educate actively, and facilitate the learning process by teachers (Kurebayeva et al., 2025). Research results explain that since 2000, Arabic has become a critical language among public academics worldwide (Columbu, 2022). Therefore, that college needs digital intelligence to develop learning, especially in Arabic language learning (Alsmary, 2022). which is considered glaring due to a lack of technology usage at UIN Sultan Syarif Kasim Riau.

Based on the identified challenges of declining learning outcomes and limited technology integration in Arabic language instruction at UIN Sultan Syarif Kasim Riau, this study focuses on examining the role of lecturers' digital competence in improving student learning outcomes. Drawing on established frameworks such as DigCompEdu and TPACK, the study hypothesizes that lecturers' digital competence is positively associated with the effectiveness of Arabic language teaching, particularly in terms of student engagement and achievement. The purpose of this research is to provide empirical evidence of this relationship within the context of Arabic language education in higher education. Rather than making broad policy claims, the study seeks to contribute to scholarly understanding of how specific digital competencies shape teaching quality and to offer practical insights for lecturer professional development programs.

METHOD

This study employs a quantitative approach using ex post facto and correlational methods. This approach is appropriate because both the independent variable (lecturers' digital intelligence) and the dependent variable (the quality of Arabic language learning) already exist, and the study aims to determine the extent of the influence or relationship between them. The research design involves correlational analysis with simple linear regression, where Variable X represents the lecturers' digital intelligence, and Variable Y represents the quality of Arabic language learning. The population of this study comprises all Arabic language lecturers in the Arabic Language Education Study Program at Sutan Syarif State Islamic University, Kasim, totaling 30 individuals. Given the relatively small

population, the study employs a total sampling technique, including all lecturers as respondents.

The research instruments used include: 1) Digital intelligence questionnaire is compiled based on indicators of digital literacy, digital ethics, digital security, digital communication, and digital creativity, 2) Questionnaire of learning quality of Arabic lecturers is compiled based on indicators: learning planning, strategies/methods, material mastery, use of digital media, learning evaluation, and student satisfaction, 3) Documentation (lecturer profile data, courses, use of LMS, and digital activities in lectures). The scale used is the Likert scale (1–5) with very low to very high categories.

Table 1. Explanation of the questionnaire instrument grid

No	Variable	Indicator	Number of Items	Item Number
1	Digital Intelligences	Digital Identity	5	1-5
		Digital Use	4	6- 9
		Digital Safety	4	10- 13
		Digital Security	4	14- 17
		Digital Emotional	3	18-20
		Digital Communication	4	21-24
		Digital Literacy	8	25-32
		Digital Rights	4	33-36
2	Quality of Learning	Planning Quality	5	37-41
		Quality of Implementation	10	42-51
		Quality of Interaction	2	52-53
		Quality of Evaluation	6	54-59
Amount			59	1-59

The data collection techniques in this study include: 1) Distribution of questionnaires: to all Arabic lecturers 2) Supporting interviews: to strengthen qualitative data on the implementation of digital intelligence, 3) Documentation: checking RPS, learning tools, and digital media used. Meanwhile, the data analysis techniques in this study include: 1) Instrument validity and reliability test: Validity: item-total correlation test (Pearson Product Moment), Reliability: Cronbach Alpha. 2) Analysis prerequisite test: Normality test (Kolmogorov-Smirnov/Shapiro-Wilk), Linearity test (ANOVA table regression) 3) Simple linear regression analysis: Equation: $Y = a + bX + e$, Y = Arabic lecturer learning quality, X = Digital Intelligence, a = constant, b = regression coefficient, e = error. 4) Hypothesis test: t-test: to see the influence of variable X on Y, Coefficient of determination (R^2): to find out how much digital intelligence contributes to learning quality.Meanwhile, the Research Variables in this study include: 1) Independent Variable (X): Digital Intelligence of Arabic language lecturers. 2) Dependent variable (Y): The quality of learning of Arabic lecturers at UIN Sultan Syarif Kasim Riau.

RESULT AND DISCUSSION

To determine the validity of the analysis results obtained in this study, both Descriptive Data Analysis and Inferential Statistical Analysis were conducted, along with an assessment of instrument validity and reliability. Descriptive analysis was performed to provide an overall picture of the research object based on sample data drawn from the

population, while instrument testing ensured that the questionnaires accurately measured the intended constructs. The purpose of these procedures is to present a clear representation of the data without making premature conclusions (Creswell, 2014; Sekaran & Bougie, 2016). Descriptive statistics, validity tests, and reliability tests were applied to ensure the robustness of the research instruments. Descriptive analysis provides a summary of the central tendency, dispersion, and distribution of scores for the main variables, including digital intelligence and the quality of Arabic language learning. These analyses allow the researcher to identify patterns and variations within the data before performing inferential statistics (Field, 2018).

The normality testing was conducted to ensure that the data meet the assumptions required for parametric statistical analysis, including linear regression and correlation analyses. Specifically, the Kolmogorov-Smirnov and Shapiro-Wilk tests were employed to assess whether the distribution of scores significantly deviated from a normal distribution (Ghasemi & Zahediasl, 2012). Ensuring normality is crucial for validating subsequent statistical inferences and hypothesis testing regarding the influence of lecturers' digital intelligence on the quality of learning, as it guarantees the appropriateness of parametric tests and the accuracy of the resulting conclusions (Field, 2018; Hair et al., 2020). The results of the normality test in this study are clearly presented in Table 2.

Table 2. The results of the descriptive statistical analysis study

	N	Minimum	Maximum	Mean	Std. Deviation
Digital Intelligence	30	78.00	147.00	118,4667	17,59062
Quality of Learning	30	43.00	86.00	74,2667	10,56648
Valid N (listwise)	30				

The descriptive analysis of the Digital Intelligence variable revealed a minimum score of 78 and a maximum score of 147, with a mean of 118.47 and a standard deviation of 17.59. These results indicate that, overall, respondents exhibit a relatively high level of digital intelligence, as the mean score is well above the midpoint of the possible range. Nonetheless, the relatively large standard deviation suggests notable variability among respondents, indicating that while some lecturers possess very high digital competence, others demonstrate comparatively lower levels

Meanwhile, the Quality of Learning variable exhibited a minimum score of 43 and a maximum of 86, with a mean of 74.27 and a standard deviation of 10.57. The mean score indicates that the overall quality of learning delivered by respondents is in the good to high category. Compared to Digital Intelligence, the smaller standard deviation suggests that the learning quality is relatively consistent among respondents, indicating a more homogeneous distribution of teaching performance. Taken together, these descriptive statistics provide a foundational understanding of the two primary variables in this study. While digital intelligence varies more widely among lecturers, the quality of learning remains relatively high and stable, suggesting that even moderate levels of digital competence may support satisfactory teaching performance. This descriptive overview also lays the groundwork for further inferential analyses to examine the extent to which variations in digital intelligence influence learning quality (Creswell, 2014; Pallant, 2020).

When comparing the two variables, Digital Intelligence exhibits a wider range of scores than Quality of Learning. This suggests that the variability in digital competence among respondents is greater than the variability in their teaching quality. Nevertheless, the mean scores for both variables indicate a generally positive trend. Overall, it can be inferred that the lecturers in this study possess a relatively high level of digital intelligence, which is correspondingly reflected in the good to high quality of learning they deliver. This pattern highlights that while digital competence varies among individuals, even moderate to high levels of digital intelligence are associated with consistently satisfactory learning outcomes (Creswell, 2014; Pallant, 2020). The graph of research instrument validity test results can be seen in Figure 1.

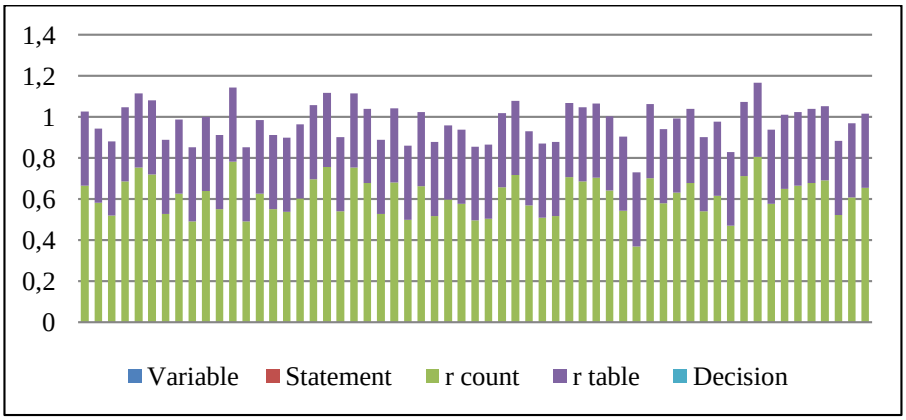

Figure 1. Research Instrument Validity Test Results

Figure 1 clearly shows the results of the validity tests carried out on research instruments for digital intelligence variables and learning quality in a clear and detailed manner, all items were found to be valid. This is indicated by the fact that the r-count values for all statements exceed the r-table value (r count ≥ r table). The highest r-count was observed in item P15 of the Quality of Learning questionnaire, while the lowest r-count was in item P6 of the same instrument; however, both values still exceeded the critical r-table value, confirming their validity. The r-table value was calculated using the formula N – 2 = 28, corresponding to a critical value of 0.361 (df = 28). These results demonstrate that all items in the instrument have a significant correlation with the total score, indicating that the measuring instruments are valid and capable of accurately capturing the intended constructs (Cohen, Manion, & Morrison, 2018; Creswell, 2014).

Furthermore, the results of the validity test show that the majority of questionnaire items have r-count values exceeding the critical r-table value, indicating that almost all items are statistically valid. This demonstrates that the items are capable of accurately measuring the constructs they were intended to assess, ensuring that the instrument effectively captures the dimensions of Digital Intelligence and Quality of Learning. The highest r-count value was observed in item P15 of the Quality of Learning variable, while the lowest was in item P6; however, both exceeded the r-table threshold of 0.361 (df = 28), confirming their validity. These findings suggest that the research instruments were carefully developed in alignment with the relevant indicators of the studied variables,

providing a solid foundation for data collection and subsequent statistical analysis. Overall, the validity results indicate that the instrument is suitable for accurately reflecting respondents' characteristics and behaviors, thereby supporting the reliability and credibility of the research outcomes (Cohen, Manion, & Morrison, 2018; Creswell, 2014; Fraenkel, Wallen, & Hyun, 2019).

In addition, the validity test graph demonstrates the consistency and coherence among the statement items, with the majority of item-total correlation values (r count) exceeding the critical r-table threshold. This pattern confirms that the instrument possesses adequate psychometric quality and is capable of reliably measuring the intended constructs. Consequently, the responses provided by the study participants can be considered a valid representation of the actual conditions under investigation. Moreover, the high proportion of statistically valid items indicates that minimal item elimination is necessary, reinforcing the robustness of the instrument. The implication of these findings is that the research instrument can serve as a valid and dependable tool for data collection, providing a strong foundation for subsequent analyses, including reliability testing and inferential statistical procedures, and ensuring the credibility of the study's outcomes (Cohen, Manion, & Morrison, 2018; Creswell, 2014; Fraenkel, Wallen, & Hyun, 2019). The results of the research instrument reliability test analysis can be seen in Figure 2.

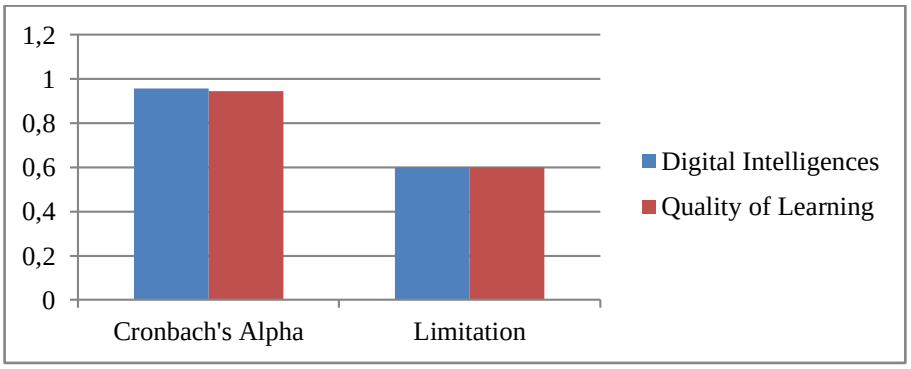

Figure 2. Research Instrument Reliability Test Results

The results of the reliability test indicated that the Cronbach's Alpha values for both variables, Digital Intelligence and Quality of Learning, were exceptionally high, approaching 1.00. This finding signifies a strong internal consistency within the research instrument, demonstrating that the individual items are highly correlated and effectively measure the intended constructs. Consequently, the instrument can be considered reliable, ensuring that it produces stable and consistent results across repeated applications. Such high reliability not only strengthens the credibility of the collected data but also provides a solid foundation for further statistical analyses, including correlation and regression testing, thereby supporting the overall robustness and validity of the research findings (Gliem & Gliem, 2003; Tavakol & Dennick, 2011; Field, 2018). In addition, the reliability graph indicates that some values for both variables fall within the medium range, around 0.6. This suggests that, although the instrument demonstrates overall reliability, certain limitations exist in its application. Such limitations may arise from the relatively small

sample size, limited diversity among respondents, or potential measurement biases. Consequently, while the current instrument is suitable for the present study, its reliability could be further enhanced by testing it on a larger and more heterogeneous sample, which would provide more generalizable (Tavakol & Dennick, 2011; Field, 2018).

Overall, these results demonstrate that the research instruments used to measure Digital Intelligence and Quality of Learning exhibit high reliability and can be considered trustworthy. The high Cronbach's Alpha values indicate strong internal consistency, confirming that the instruments consistently measure the intended constructs. Nevertheless, researchers should acknowledge the existing limitations, such as the relatively small sample size and limited respondent diversity, as important considerations for future studies. Addressing these limitations will enhance the robustness, generalizability, and accuracy of the instruments when applied in broader contexts (Tavakol & Dennick, 2011; Field, 2018).

The Influence of Digital Intelligence in Improving the Learning Quality of Arabic Language Lecturers

The findings of this study indicate that there is variation in scores among respondents; however, the overall pattern shows that the Digital Intelligence variable (X1) tends to be higher than the Quality of Learning variable (Y2). This variation suggests that, although most respondents exhibit strong digital intelligence, it does not always translate proportionally into higher learning quality. This implies that additional factors beyond digital intelligence may influence the quality of learning outcomes. Nonetheless, the results support the hypothesis that digital intelligence contributes positively to learning quality, even if the relationship is not perfectly linear. The observed differences in score distributions between X1 and Y2 provide a rationale for conducting further statistical analyses, including correlation and regression, to determine the extent to which lecturers' digital intelligence impacts the quality of Arabic language learning. These results are visually presented in Figure 3.

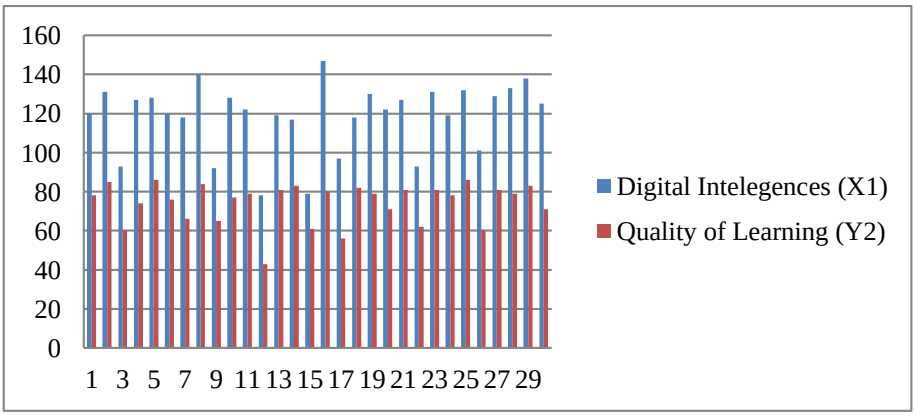

Figure 3. Research Instrument Result Data

The data presented in the table indicate a consistent pattern in the variables of Digital Intelligence (X1) and Quality of Learning (Y2). The graphical representation further

reveals that, in nearly all respondents, scores for Digital Intelligence (X1) surpass those for Quality of Learning (Y2), with X1 ranging from 90 to 150 and Y2 from 50 to 90. These results suggest that the respondents demonstrate a relatively high level of digital intelligence, while their learning quality remains at a moderate level. This disparity underscores the potential for targeted interventions aimed at enhancing learning outcomes, leveraging the respondents' digital competencies as a foundation for more effective educational strategies.

In addition, to assess the linearity of the data a critical assumption for conducting further statistical analyses this study employed SPSS. The linearity test ensures that the relationship between the independent and dependent variables is appropriately modeled, thereby validating the use of parametric tests (Muijs, 2011). The findings of this study indicate that the development of students' Digital Intelligence has a positive and statistically significant impact on enhancing the quality of learning. This suggests that fostering digital competencies among students not only improves their technical skills but also contributes to more effective and engaging learning experiences (Wang et al., 2024). Consequently, these results can serve as a valuable reference for the design and implementation of teaching strategies and curriculum development that are grounded in digital technology. By aligning educational practices with students' digital capabilities, educators can optimize learning outcomes and better prepare students for the demands of the digital age (Lee et al., 2025). As detailed in Table 3, these findings underscore the importance of integrating digital intelligence into educational frameworks to enhance the overall quality of learning.

Table 3. The results of the data linearity test carried out.

			Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Learning Quality Digital Intelligences	Between Groups	(Combined)	2996,367	21	142,684	4,727	,015
		Linearity	2404,701	1	2404,701	79,659	,000
		Deviation from Linearity	591,666	20	29,583	,980	,547
	Within Groups		241,500	8	30,188		
	Total		3237,867	29			

Based on the results of the ANOVA analysis presented in Table 3, there is evidence of a significant relationship between learning quality and digital intelligence. This is indicated by an F-value of 4.727 and a significance level (Sig.) of 0.015, which is below the conventional threshold of 0.05 (Muijs, 2011). These results suggest that variations in students' digital intelligence have a meaningful impact on their learning quality. In other words, differences in digital competence among respondents are reflected in measurable differences in learning outcomes (Wang, Fan, & Zhang, 2024). These findings underscore the critical role of digital skills in enhancing learning effectiveness, particularly in today's technology-driven educational environment. Prior research has shown that integrating digital technologies in teaching not only improves learning quality but also increases

student engagement (Lee et al., 2025). Consequently, these results highlight the need for educational strategies and curricula to incorporate digital competencies in order to optimize student performance and support more effective learning processes.

Furthermore, the results of the linearity test indicate that the relationship between Digital Intelligence and Learning Quality is linear. Specifically, an F-value of 79.659 with a significance level of 0.000 ($p < 0.05$) demonstrates the presence of a consistent linear association between the two variables. This implies that increases in an individual's digital intelligence are systematically accompanied by improvements in the quality of their learning. Moreover, this linear relationship suggests that the influence of Digital Intelligence on Learning Quality is not sporadic or fluctuating but occurs in a directed and consistent manner, reinforcing the notion that digital competencies play a pivotal role in shaping effective learning outcomes (Muijs, 2011; Wang, Fan, & Zhang, 2024).

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Furthermore, the results of the linearity test indicate that the relationship between Digital Intelligence and Learning Quality is linear. An F-value of 79.659 with a significance level of 0.000 ($p < 0.05$) demonstrates a consistent linear association between these two variables. This suggests that increases in an individual's digital intelligence are systematically accompanied by improvements in the quality of their learning. Moreover, this linear relationship indicates that the influence of Digital Intelligence on Learning Quality is not sporadic or fluctuating but occurs in a directed and consistent manner, reinforcing the critical role of digital competencies in supporting effective learning outcomes (Muijs, 2011; Wang, Fan, & Zhang, 2024). Following the linearity analysis, the multicollinearity test was conducted to examine potential intercorrelations among the predictor variables. The scatterplot results, presented in Figure 5, provide a visual representation of the data distribution, supporting the suitability of the regression model and confirming that the assumptions for further parametric analyses are met. This initial analysis ensures that the subsequent interpretation of the relationship between Digital Intelligence and Quality of Learning is statistically valid and reliable, so that it can play a good role in the learning process, especially in Arabic language learning, so that it can become the focus of research in the present and also the future in forming quality learning, and become a breakthrough in education, especially in Indonesia and a world reference in learning. The Heteroscedasticity Test Results (Scatterplot) can be seen in Figure 1.

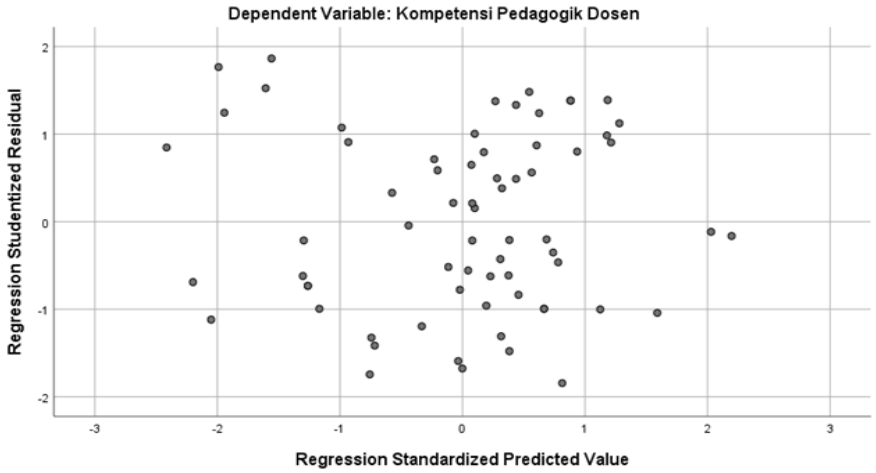

Figure 1. Heteroscedasticity Test Results (Scatterplot)

Based on the scatterplot presented above, the distribution of points between the Regression Standardized Predicted Values and the Studentized Residuals was examined. The distribution pattern appears to be randomly scattered above and below the zero axis, without forming any discernible pattern, such as a cone or funnel shape. This observation indicates that the regression model does not exhibit signs of heteroscedasticity. Consequently, it can be concluded that the variance of the residuals remains constant across all levels of predicted values, demonstrating homoskedasticity. This finding confirms that the regression model satisfies the assumption of constant variance, making it suitable and reliable for further parametric analyses and interpretation of the relationship digital intelligence and learning quality (Hair, Black, Babin, & Anderson, 2019; Field, 2018).

These findings further reinforce the results of the previous multicollinearity analysis, which revealed that the Digital Intelligence variables exhibited Tolerance and VIF values of 1.000 each. These values indicate the absence of multicollinearity, confirming that the independent variables are not linearly related (Hair, Black, Babin, & Anderson, 2019). When considered together with the results of the heteroscedasticity test, it is evident that the regression model in this study satisfies two critical assumptions: the absence of multicollinearity and the presence of homoskedasticity. The fulfillment of these assumptions ensures that the regression analysis is both valid and reliable, allowing for accurate estimation of the influence of Digital Intelligence on the learning quality of Arabic lecturers. Consequently, the results of this regression analysis can be interpreted with confidence, providing robust evidence regarding the role of digital competencies in shaping teaching effectiveness and educational outcomes (Field, 2018; Muijs, 2011).

Substantively, these results strengthen the conclusion that the digital intelligence possessed by Arabic lecturers at UIN Sultan Syarif Kasim Riau influences improving their quality and pedagogic competence. This regression model that is free from violation of classical assumptions shows that the relationship between the variables of Digital Intelligence and Learning Quality (as well as pedagogical competence) is valid and can be used as a basis for formulating strategies to improve the quality of digital-based learning within the Sultan Syarif Kasim State Islamic University in Riau. In addition, following the

research findings of Joseph et al. (2024), Explaining that digital intelligence has a significant influence on the success of lecturers in higher education in developing innovative learning. In addition, the results of this test are in line with the results of previous research tests which also support a positive and significant relationship between digital intelligence and learning quality, both directly and indirectly because it was found that digital technology helps the e-Learning learning process, From today's perspective, digital technology is a field that is already very broad and internally different, but very closely related. It was also found in the results of the digital linear regression analysis of intelligence and learning quality of Arabic lecturers at the Sultan Syarif Kasim State Islamic University in Table 4.

Table 4. Results of Digital Linear Regression Analysis of Intelligence and Learning Quality

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,862 [a]	,743	,733	5.45490	2,113
a. Predictors: (Constant), Digital Intelligence					
b. Dependent Variable: Learning Quality					

ased on the results of the linear regression analysis presented in the table above, a correlation coefficient (R) of 0.862 was obtained, indicating a very strong and positive relationship between Digital Intelligence and the Learning Quality of Arabic lecturers at UIN Sultan Syarif Kasim Riau. This suggests that as lecturers' digital intelligence increases, the quality of learning correspondingly improves. The coefficient of determination (R^2) of 0.743 further indicates that approximately 74.3% of the variance in learning quality can be accounted for by differences in Digital Intelligence, while the remaining 25.7% is influenced by other factors not examined in this study, such as pedagogical strategies, student motivation, institutional support, availability of technological infrastructure, and the overall academic environment (Field, 2018; Hair, Black, Babin, & Anderson, 2019). These findings not only confirm the critical role of digital intelligence in shaping teaching effectiveness and learning outcomes but also highlight its importance in fostering interactive, adaptive, and contextually relevant learning environments. Moreover, the results imply that targeted development of lecturers' digital competencies, including the integration of innovative technological tools into pedagogical practices, can substantially enhance student engagement, learning efficiency, and overall educational quality, providing empirical support for policy and institutional efforts to prioritize digital capacity building in higher education.

Furthermore, the Adjusted R^2 value of 0.733 confirms the robustness of the model after accounting for the sample size, demonstrating that the predictive accuracy remains high. In addition, the Durbin-Watson value of 2.113 indicates the absence of autocorrelation, as values close to 2 are considered ideal for linear regression models (Muijs, 2011). Taken together, these results show that the data satisfy all classical assumptions of linear regression, including the absence of multicollinearity, heteroscedasticity, and autocorrelation. This confirms the suitability of the regression model for reliably assessing the influence of Digital Intelligence on the Learning Quality of Arabic lecturers.These results are in line with previous findings on the multicollinearity

test which showed Tolerance and VIF values of 1,000 each, indicating the absence of a linear relationship between free variables. In addition, the scatterplot test results also show a random dot distribution, which means that the model is free of symptoms of heteroscedasticity. With the fulfillment of all these classic assumptions, the regression model is declared suitable for use (fit model) and can provide accurate estimation results in assessing the influence of Digital Intelligence on the learning quality of Arabic lecturers.

Based on these results, it can be concluded that Digital Intelligence exerts a significant and positive influence on enhancing the learning quality of Arabic lecturers at UIN Sultan Syarif Kasim Riau. Lecturers with higher levels of digital intelligence are more capable of integrating technology into the learning process, fostering interactive and engaging learning experiences, and enhancing their pedagogical competence (Wang, Fan, & Zhang, 2024; Lee et al., 2025). This, in turn, has important implications for improving teaching effectiveness and the overall academic quality within the Arabic faculty. Moreover, the Model Summary analysis reinforces the conclusion that Digital Intelligence serves as a primary determinant of learning quality. The research model has been demonstrated to be both statistically and methodologically valid, fulfilling all classical regression assumptions, including linearity, absence of multicollinearity, homoskedasticity, and no autocorrelation (Muijs, 2011; Hair, Black, Babin, & Anderson, 2019). Therefore, the findings provide a strong empirical basis for developing strategies aimed at enhancing the professionalism of lecturers through the integration of digital competencies in their teaching practices.

According to Zhang et al. (2024), lecturers in the Industrial Era 4.0 are required to possess four fundamental competencies. First, they must have the ability to understand and effectively apply digital technologies in teaching and learning processes. Second, they need leadership competencies that enable them to guide students in developing technological understanding and digital literacy. Third, they should possess the capacity to anticipate changes and disruptions accurately, along with the strategic foresight to respond to such challenges effectively. Fourth, lecturers must demonstrate self-regulation skills to navigate the turbulence of change while simultaneously generating innovative ideas, fostering creativity, and implementing practical solutions. These competencies collectively ensure that lecturers are capable of adapting to the dynamic demands of contemporary education while maintaining high-quality learning outcomes.

In line with these findings, Rufaidah et al. (2021) emphasized that the integration of technology in education plays a crucial role in equipping students with essential life skills. Furthermore, improving the quality of learning requires attention to multiple indicators, including government support, effective school leadership, teacher performance, a relevant curriculum, qualified graduates, an effective organizational culture and climate, as well as support from the community and parents. The application of systematic educational management to coordinate and optimize these quality indicators represents a practical approach to enhancing overall educational quality (Kanjee, 2014). Collectively, these studies highlight that digital intelligence and effective management are crucial for achieving high-quality learning, supporting this study's finding that Digital Intelligence significantly enhances the learning quality of Arabic lecturers.

CONCLUSION

This study provides empirical evidence that lecturers' digital intelligence has a significant and positive effect on the quality of learning in the Department of Arabic Language Education at UIN Sultan Syarif Kasim Riau. The analysis revealed a t-value of 8.990 ($p = 0.000$), confirming that the research hypothesis is supported. The coefficient of determination ($R^2 = 0.743$) indicates that 74.3% of the variation in learning quality can be explained by lecturers' digital intelligence, while the remaining 25.7% is attributable to other factors such as pedagogical strategies, student motivation, infrastructure availability, and broader academic conditions. These findings underscore the pivotal role of digital intelligence in enhancing teaching effectiveness, fostering student engagement, and improving learning outcomes. The results highlight the necessity of systematically and sustainably developing lecturers' digital competencies, not only to operate technological tools effectively but also to integrate them into innovative and contextualized pedagogical strategies. Consequently, mastery of digital intelligence emerges as a critical prerequisite for establishing a learning ecosystem that is adaptive, interactive, and aligned with the demands of the contemporary educational landscape.

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