

# THE ROLE OF DIGITAL MINDSET AND DIGITAL ADAPTATION SKILLS IN MEDIATING THE DIGITAL LEARNING ENVIRONMENT ON THE DIGITAL COMPETENCE OF GENERATION Z STUDENTS IN SUMENEP REGENCY

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## ABSTRACT

Generation Z is closely related to the digital world, therefore teaching methods in lectures should be more inclined towards the use of digital devices, such as the implementation of online lectures, the use of applications in solving problems so that they can form a more developed digital mindset of students. Because in the future work will be inclined to the use of technology, so that later students who have graduated can easily adapt to the world of work. The purpose of this study is to see the Role of Digital Mindset and Digital Adaptation Skills in Mediating the Digital Learning Environment on the Digital Competence of Generation Z Students in Sumenep Regency. The sample in this study is students who are still actively studying at universities in Sumenep Regency, with a total of 96 respondents. The results showed that LBD had a positive and significant effect on KAD and PPD, and both had a significant effect on KD. However, the direct influence of LBD on KD was not significant, indicating that the relationship occurred through the mediation role of KAD and PPD. An R-square value of 0.609 indicates that the model has a moderate ability to explain students' digital competence. These findings confirm that strengthening the digital learning environment will be more effective if it is balanced with increasing students' adaptability to technology and forming a positive perception of digital learning. The practical implications of this study emphasize the importance of collaboration between educational institutions, lecturers, and students in creating a digital learning ecosystem that supports the continuous improvement of digital competencies

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## INTRODUCTIONS

In today's digital age, where technological advances impact almost all fields, the development of digital capabilities has become a major concern for people entering the workforce (Bojórquez -Roque et al., 2024). This is especially related to Generation Z learners who are growing up in the digital world. Their preparation for the

future in work not only focuses on building academic capacity, but also involves building the digital skills that are so desperately needed by today's employers. (The- Sabagh, 2021). This study investigates the connection between digital-based learning and digital skills needed for the work skills of generation Z students in Sumenep Regency, emphasizing the importance of the mediating role of digital mindset and digital adaptation skills (Benítez et al., 2022).

Digital learning environments include the use of technology in education, such as online platforms, systems for managing learning (e.g., Moodle, Google Classroom), virtual collaboration tools (e.g., Zoom, Padlet), and digitally facilitated teaching for distance learning or hybrid models. This environment not only strengthens the understanding of technology, but also enhances students' ability to adapt and engage in the ever-changing context of learning. Through these connections, students develop practical skills in online communication, data management, and cooperation in a network of important expertise in the market (Imjai et al., 2024) (Martha et al., 2021) (Kopackova et al., 2024).

A key factor in this agility is a digital-based mindset, a responsive and positive method of using technology to generate value. Students with a strong digital mindset are quicker to adapt to transformation, can find solutions in innovative ways, and are typically more likely to collaborate in an ever-changing digital environment. Digital adaptability is strongly related to this, demonstrating the capacity of individuals to learn and apply new technologies in a variety of educational and professional contexts. These capabilities provide opportunities for learners to not only meet digital needs, but also to excel in them, making them an important addition to job skills in an ever-changing world. Digital competencies in the world of work include a number of important skills, such as the ability to use digital devices, solve technology-related problems, communicate effectively in cyberspace, and work together on online platforms. This improvement of competence is most successfully done through hands-on experience with technology, which acts as a link between theoretical teaching and real practice (Zamberlan et al., 2024) (Potgieter et al., 2023) (Ferreira et al., 2024) (Pan et al., 2024) (Nargis et al., 2023).

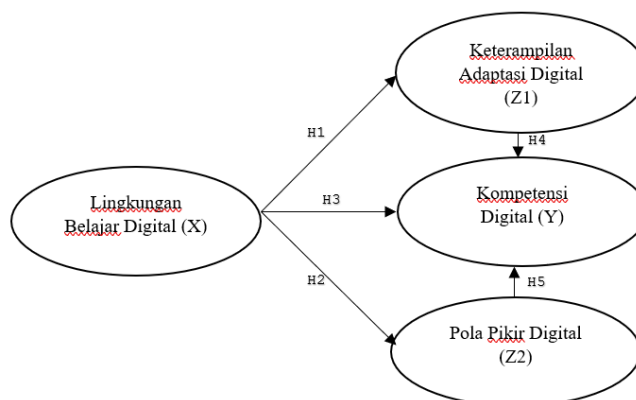
The results of the research conducted by Generation Z show that although Generation Z students are highly skilled in operating digital technology on a daily basis, they still face significant obstacles in terms of theoretical knowledge and evaluative skills. In other words, students are able to take advantage of widely used applications such as social media platforms and digital productivity tools, but their understanding of how the technology works is not deep and they have difficulty assessing the validity of information on the internet. This situation shows the difference between technical (operational) skills and critical thinking skills (evaluative) in the context of digital literacy. In the study, it was stated that digital literacy ability has a substantial positive impact on students' academic performance, both directly and indirectly through the intermediary function of learning adaptation and online independent learning arrangements. Students who have a high level of digital literacy are not only more skilled in utilizing technology for academic purposes, but also show superior abilities in adapting to the ever-changing digital learning environment. The research conducted by emphasizes that attitudes towards digital technology, digital literacy, and digital self-efficacy have a significant influence on student engagement in online learning. The results show that students who have a positive attitude towards technology (positive digital attitude) are more able to use various digital learning platforms actively, creatively, and productively. This positive attitude has been proven to increase motivation, confidence, and students' ability to manage the independent learning process in a digital environment. Research emphasizes that students' digital abilities are important skills that must be improved to face shifts in education due to the acceleration of digitalization and the consequences of the COVID-19 pandemic. The study involved 5,164 students from Gansu Agricultural University, China, with the aim of investigating students' views on their digital skills and analyzing the impact of personal factors such as gender, education level, location of residence, and previous training experience on

these skill levels. (Chen, 2025) ( Hendrawan & Susita , 2024) ( Getenet et al., 2024) (Zhao et al., 2021)

Therefore, efforts to integrate internship programs, fieldwork practices and problem-based coursework into educational programs are essential to align student competencies with the dynamic demands of the modern labor market. This research offers an in-depth exploration of how the digital learning environment shapes digital competencies in terms of employability, mediated by the digital mindset and adaptability of students in Sumenep Regency.

## RESEARCH METHODS

This study uses a quantitative method, by looking at the influence of relationships between supporting variables in solving research problems. The conceptual model of this study is as follows:



**Figure 1. Research Conceptual Model**

Hipotesis :

H1: There is a positive relationship between the Digital Learning Environment and Digital Adaptation Skills

H2: There is a positive relationship between the Digital Learning Environment and the Digital Mindset

H3: There is a positive relationship between the Digital Learning Environment and Digital Competence

H4: There is a positive relationship between Digital Adaptation Skills and Digital Competencies

H5: There is a positive relationship between Digital Mindset and Digital Competence

H6 : There is an indirect relationship between the Digital Learning Environment and Digital Competencies mediated by Digital Adaptation Skills

H7 : There is an indirect relationship between the Digital Learning Environment and Digital Competencies mediated by the Digital Mindset

This study uses a questionnaire to collect data, and the respondents are students who are still actively studying at universities in Sumenep Regency. This study uses the Cochran formula with the calculation of the number of samples as follows:

$$n = (z^2 \times p \times q) / E^2$$

$$n = (1.962 \times 0.5 \times 0.5) / 0.12$$

$$n = (3.8416 \times 0.25) / 0.01$$

$$n = 0.9604 / 0.01$$

$$n = 96.04$$

So the number of samples in this study is 96 respondents which will later be spread in various regions in Sumenep Regency. This study uses a questionnaire using a likert scale with the following conditions:

- a) Strongly disagree with (point 1)
- b) Disagree with (point 2)
- c) Familiar with (point 3)
- d) Agree with (point 4)
- e) Strongly agree with (point 5)

The data analysis from this study uses Partial Least Square Structural (PLS) with the help of smartPLS software in conducting tests from the results of the questionnaire that has been tabulated.

## RESULTS AND DISCUSSION

### Uji Outer Loading

#### Fornell-Larcker Criterion

**Tabel 1. Fornell-Larcker Criterion**

	THAT	KD	LBD	PPD
THAT	<b>0.823</b>			
KD	0.701	<b>0.795</b>		
LBD	0.455	0.275	<b>0.736</b>	
PPD	0.603	0.675	0.449	<b>0.731</b>

Based on the analysis using SmartPLS, the square root value of AVE and the correlation between constructs were obtained as follows: for Digital Adaptation Skills (KAD) there was a square root value of AVE of 0.823, which is higher than the correlation to Digital Competence (KD) which has a value of 0.701, Digital Learning Environment (LBD) with a value of 0.455, and Digital Learning Perception (PPD) which shows a value of 0.603. For Digital Competency (KD), the square root value of AVE was recorded at 0.795, also higher than the correlation for KAD of 0.701, LBD of 0.275, and PPD of 0.675. Meanwhile, for the Digital Learning Environment (LBD) construct, the square root value of AVE was recorded at 0.736, which is higher than the correlation with KAD of 0.455, KD of 0.275, and PPD of 0.449. Furthermore, Digital Learning Perception (PPD) has a square root value of AVE of 0.731, which is also higher than the correlation for KAD of 0.603, KD of 0.675, and LBD of 0.449. These findings show that all constructs in this study meet the criteria of discriminant validity, because the square root value of each construct is greater than the correlation between other constructs. These findings confirm that the measurement model (outer model) has demonstrated adequate discriminant validity and is ready to proceed to the testing stage of the structural model (inner model).

#### Reliability

**Table 2. Reliability Test**

	Composite reliability (rho_c)	Information
THAT	0.893	Reliabel
KD	0.872	Reliabel
LBD	0.779	Acceptable
PPD	0.820	Reliabel

The criteria applied in this study are the Composite Reliability value which must be  $\geq 0.70$  to indicate good reliability, while values ranging from 0.60–0.70 are still acceptable in the research development phase (acceptable reliability). The results of data analysis using SmartPLS showed the following Composite Reliability values: Digital Adaptation Skills (KAD) showed a value of 0.893, Digital Competency (KD) had a value of 0.872, Digital Learning Environment (LBD) reached 0.779, and Digital Learning Perception (PPD) showed a value of 0.820. These numbers indicate that the three key constructs, namely KAD, KD, and PPD, have a high level of reliability because their CR values are more than 0.80. On the other hand, the LBD construct gets a value of 0.779, which although slightly below 0.80, is still in the category of acceptable reliability, so it remains statistically relevant.



### Path Coefficients (Direct Effect)

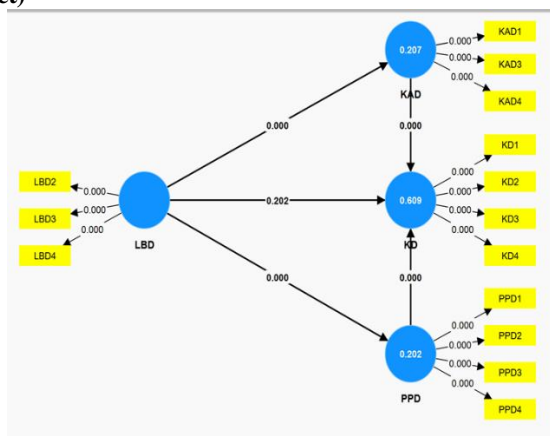


Figure 2. Output Results of Research Conceptual Model

Tabel 3. Path Coefficients (direct Effect)

Jalur	Hipotesis	Original sample (O)/beta/path coeff	T statistics (t tabel 1.96)	P values	Significance
WHEN -> KD	H4	0.506	4,693	0.000	itself
LBD -> KAD	H1	0.455	4,276	0.000	itself
LBD -> KD	H3	-0.153	1,276	0.202	not sig
LBD -> PPD	H2	0.449	4,164	0.000	itself
PPD -> KD	H5	0.439	3,969	0.000	itself

Based on the test criteria according to Hair et al. (2021), a relationship is declared significant if the T-values are  $> 1.96$  and the P-values are  $< 0.05$  at a significance level of 5%. The results of the pathway test in this study can be interpreted as follows:

The Impact of Digital Learning Environment (LBD) on Digital Adaptation Skills (KAD) showed a path coefficient of 0.455, with T-statistics = 4.276 ( $> 1.96$ ) and P-values = 0.000 ( $< 0.05$ ). These findings indicate that LBD has a positive and significant influence on KAD, so the H1 hypothesis is accepted. This means that the quality of the digital learning environment experienced by students is closely related to the improvement of their digital adaptation skills.

The impact of the Digital Learning Environment (LBD) on Digital Learning Perception (PPD) obtained a path coefficient of 0.449, with T-statistics = 4.164 ( $> 1.96$ ) and P-values = 0.000 ( $< 0.05$ ). This suggests that LBD has a positive and significant impact on PPD, hence the H2 hypothesis is accepted. These results underline that a good digital learning environment can strengthen students' positive perceptions of the digital learning process.

The impact of the Digital Learning Environment (LBD) on Digital Competency (KD) resulted in a negative coefficient of -0.153, with T-statistics = 1.276 ( $< 1.96$ ) and P-values = 0.202 ( $> 0.05$ ). These findings suggest that LBD has no significant influence on KD, so the H3 hypothesis is rejected. Thus, although the digital learning environment

is important, its influence on improving students' digital competencies is not strong enough without the mediation of other factors such as digital adaptation skills or digital learning perception.

The impact of Digital Adaptation Skills (KAD) on Digital Competency (KD) showed a coefficient value of 0.506, with T-statistics = 4.693 ( $>1.96$ ) and P-values = 0.000 ( $<0.05$ ). These results show a positive and significant influence, so the H4 hypothesis is accepted. This means that the higher the digital adaptation skills that students have, the greater the digital competence they achieve.

The effect of Digital Learning Perception (PPD) on Digital Competency (KD) showed a coefficient value of 0.439, with T-values = 3.969 which is more than 1.96 and P-values = 0.000 which is less than 0.05. These findings indicate a significant positive impact, so the H5 hypothesis is recognized. Therefore, a positive view of digital learning directly contributes to improving students' digital skills.

#### Path Coefficients (Indirect Effect)

**Tabel 4. Path Coefficients (Indirect Effect)**

Jalur	Hipotesis	Original sample (O)	T statistics ( O/STDEV )	P values	Significance
LBD -> KAD -> KD	H6	0.231	2,792	0.005	itself
LBD -> PPD -> KD	H7	0.197	2,797	0.005	itself

The mediation test was conducted to evaluate whether the impact of the Digital Learning Environment (LBD) on Digital Competency (KD) can be understood through mediation variables, namely Digital Adaptation Skills (KAD) and Digital Learning Perception (PPD). This evaluation is seen from the value of the path coefficient (Original Sample), T-statistics, and P-values. The criteria for significance are established if the T-values are greater than 1.96 and the P-values are less than 0.05 (Hair et al., 2021). From the test results, the following are the findings obtained:

The indirect impact of the Digital Learning Environment (LBD) on Digital Competency (KD) through Digital Adaptation Skills (KAD) showed a coefficient value of 0.231, with a T-statistic = 2.792 ( $>1.96$ ) and a P value = 0.005 ( $<0.05$ ). These findings indicate that the indirect impact is significant, so the H6 hypothesis is accepted. This means that LBD has the potential to increase student KD indirectly by increasing KAD. In other words, the better the LBD provided, the more students' adaptability to digital technology will develop, which in the long run will improve their digital competence.

The indirect impact of the Digital Learning Environment (LBD) on Digital Competency (KD) through Digital Learning Perception (PPD) showed a coefficient value of 0.197, with a T-statistic = 2.797 ( $>1.96$ ) and a P value = 0.005 ( $<0.05$ ). These findings also showed a significant impact, so the H7 hypothesis was accepted. This means that LBD can affect KD indirectly through students' positive perception of digital learning. The better their experience in LBD, the more positive their impression of learning systems that leverage technology, which then shapes the improvement of digital capabilities.

#### R<sup>2</sup> (Coefficient of Determination)

**Tabel 5. R<sup>2</sup> (Coefficient of Determination)**

	R-square	R-square adjusted	Category
KD	0.609	0.589	Moderate

The analysis carried out using SmartPLS showed that R-square had a value of 0.609 and R-square adjusted of 0.589 for the Digital Competency (KD) construct. This shows that 60.9% of the variation in the Digital Competency construct can be explained by external variables in the model, such as Digital Adaptation Skills, Digital Learning Environment, and Digital Learning Perception. Meanwhile, the remaining 39.1% were influenced by other factors that were outside the structure of this study. The analysis carried out using SmartPLS showed that R-square had a value of 0.609 and R-square adjusted of 0.589 for the Digital Competency (KD) construct. This shows that 60.9% of the variation in the Digital Competency construct can be explained by external variables in the model, such as Digital Adaptation Skills, Digital Learning Environment, and Digital Learning Perception. Meanwhile, the remaining 39.1% were influenced by other factors that were outside the structure of this study.

## CONCLUSIONS

Based on the analysis of the structural model using SmartPLS, the following conclusions can be drawn:

The Digital Learning Environment (LBD) has a positive and significant impact on Digital Adaptation Skills (KAD) and Digital Learning Perception (PPD). This indicates that the quality of a good digital learning environment from educational institutions will improve students' ability to adapt to technology and create a better view of the digital learning process. Digital Adaptation Skills (KAD) have a positive and significant influence on Digital Competence (KD). This means that students who have a high adaptability to technological advances will be better able to master various aspects of digital competencies needed in the modern learning era. Digital Learning Perception (PPD) has also been proven to have a positive and significant influence on Digital Competency (KD). This shows that a positive attitude towards digital-based learning systems can strengthen students' motivation and ability to develop their digital competencies.

Indirectly, the Digital Learning Environment (LBD) has a significant influence on Digital Competency (KD) through two mediation channels, namely Digital Adaptation Skills (KAD) and Digital Learning Perception (PPD). These two mediation variables successfully explain the relationship between LBD and KD effectively. Thus, the influence of LBD on KD is partial mediation, where the digital learning environment will be more influential if accompanied by an improvement in digital adaptation skills and a positive view of digital learning. Overall, this study indicates that improving the digital learning environment needs to be accompanied by the development of digital adaptation skills and the formation of a positive view of learning technology, in order to optimally encourage the improvement of digital competence of generation Z students.

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