

Growth Influence Mindset and Digital Literacy on Professional Teacher Work Motivation Through Resilience in High School

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Abstract: This study aims to analyze the influence of growth mindset and digital literacy on professional teacher work motivation with resilience as a mediating variable in public senior high schools in Jeneponto Regency, South Sulawesi Province. This study employed an ex-post facto quantitative approach with a sample of 104 teachers selected using a proportional sampling technique. The instrument used was a questionnaire with a Likert scale of 1–5, which consisted of indicators from four research variables: growth mindset, digital literacy, resilience, and teacher work motivation. Data analysis was conducted using descriptive and inferential analysis through validity and reliability tests, as well as hypothesis testing. The results indicate that growth mindset significantly influences work motivation (t -statistic = 2.672, p -value = 0.004) and resilience (t -statistic = 4.200, p -value = 0.000). Digital literacy also significantly influences work motivation (t -statistic = 3.118, p -value = 0.001) and resilience (t -statistic = 3.431, p -value = 0.000). Additionally, resilience plays a significant role in work motivation (t -statistic = 4.547, p -value = 0.000). Mediation tests prove that resilience mediates the effect of growth mindset (t -statistic = 3.372, p -value = 0.000) and digital literacy (t -statistic = 2.677, p -value = 0.004) on work motivation. The R-square value of 0.686 indicates that 68.6% of the variation in work motivation is explained by the research model.

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Introduction

Teachers are a key factor in improving the quality of education, making their work motivation a key issue in national education policy. The teacher certification program is expected to enhance professionalism. As a form of strengthening professionalism, the government is implementing the Teacher Professional Education (PPG) program to ensure the competence, welfare, and quality of educators. Based on data from the Center for Data and Information.

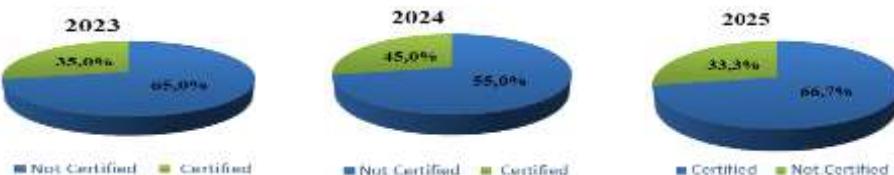


Figure 1. Percentage of Certified and Uncertified Teachers 2023-2025

Based on the data above, this situation indicates that certification has not fully impacted work motivation or learning quality. Several studies (Malik et al., 2022; Zahra et al., 2024) revealed that some teachers still do not optimally utilize technology, tend to use conventional learning methods, and lack innovation in creating interactive learning

environments. This phenomenon indicates that fulfilling administrative requirements does not always align with increased teacher work motivation. In this context, psychological factors and adaptive skills are seen as more decisive. This phenomenon highlights implementation issues, namely the mismatch between the ideal goals of the certification program and the reality of its implementation in the field. In other words, fulfilling administrative requirements does not automatically guarantee increased teacher work motivation or learning quality.

It is in this context that psychological factors and adaptive skills become more decisive. Growth mindset is an important internal factor, because teachers who believe that abilities can develop through effort and experience will be better prepared to face challenges and encourage their students to develop (Yeager, 2021; Mesler et al., 2021). In addition, digital literacy also plays a significant role in improving teacher professionalism, as the ability to master and utilize information technology supports a more innovative learning process while increasing work motivation (Ebyatiswara et al., 2023; Ratri et al., 2023). Furthermore, resilience serves as a psychological strength that enables teachers to remain resilient, consistent, and motivated despite work pressures. Teachers with high levels of resilience are able to maintain professional commitment, adapt to change, and remain focused on achieving learning objectives (Sitanggang & Yasya, 2022). Thus, resilience plays a role in bridging the influence of growth mindset and digital literacy on teacher work motivation. However, empirical studies on the relationship between these three variables in the context of public high school teachers in Jeneponto Regency are still limited.

However, empirical studies simultaneously examining the relationship between growth mindset, digital literacy, resilience, and teacher work motivation are still limited, particularly in the context of public high school teachers in Jeneponto Regency. Most previous studies have only examined a few variables separately or used a descriptive approach, thus failing to provide a comprehensive picture of the interrelationships between these variables. This situation indicates a research gap that needs to be filled to gain a more comprehensive understanding of the determinants of teacher work motivation. Based on this gap, this study aims to analyze the influence of growth mindset and digital literacy on teacher work motivation, with resilience as a mediating variable, among professional teachers in public high schools. Thus, this research is expected to provide a more comprehensive explanation of the factors influencing teacher work motivation and offer a conceptual framework that can be tested empirically.

Unlike previous studies that tend to emphasize administrative factors or only highlight specific variables, this study seeks to integrate growth mindset, digital literacy, resilience, and teacher work motivation into one comprehensive research model. This integrative approach not only broadens the theoretical perspective in the study of educational psychology and educational management but also makes a practical contribution by offering a basis for formulating policies and teacher development programs that emphasize strengthening personal and professional capacity. Thus, this study presents a novelty by emphasizing the importance of synergy between psychological factors, adaptive skills, and psychological capital in explaining teacher work motivation in the era of digital-based educational transformation.

Research Method

This study used a quantitative approach with an ex-post facto method. Data were collected through research instruments, then analyzed quantitatively/statistically to test the

established hypotheses (Sugiyono, 2018). The population in the study included all professional teachers at State Senior High Schools in Jeneponto Regency as many as 392 people, with sampling determined using the proportional sampling technique. Random sampling resulted in 104 respondents. Data analysis was conducted using descriptive and inferential analysis (Hair et al., 2017) . The variables used included Growth Mindset (X1), Digital Literacy (X2), Work Motivation (Y), and Resilience (Z).

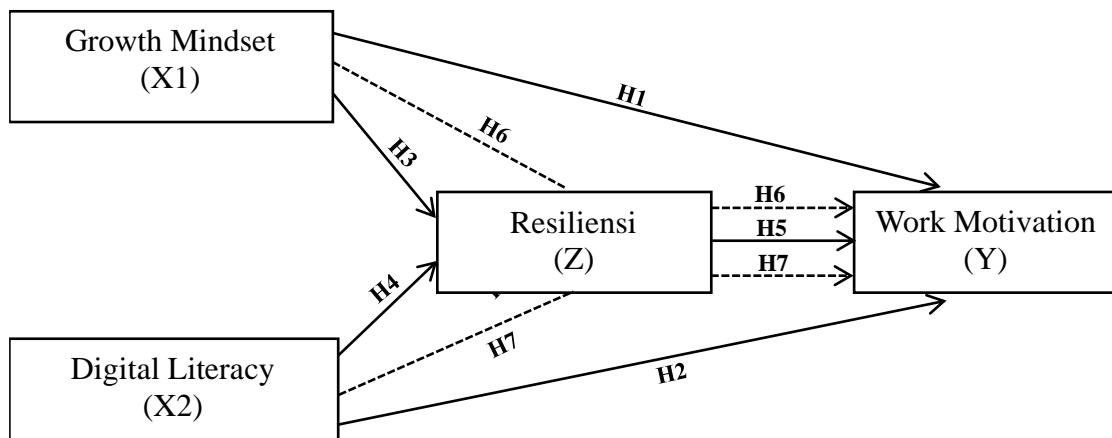


Figure 2. Research Design

Results and Discussion

Result

The measurement model was tested using convergent validity, discriminant validity, and reliability indicators. The test results are shown in Figure 3.

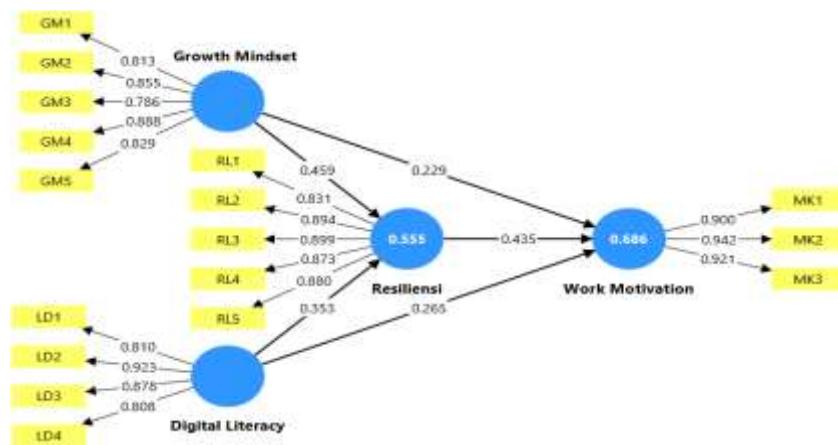


Figure 3. Measurement Model Test Output

Convergent validity testing is carried out by assessing the outer loading on each indicator to determine the average value variance extracted (AVE) from each construct. An indicator is considered valid if it has an outer value loading above 0.70, because the square of the value indicates that the construct is able to explain at least 50% of the variance of the measured indicators (Hair et al., 2017).

Table 1. Outer Results Loading Convergent Test Validity

Indicator	Growth Mindset	Digital Literacy	Work Motivation	Resilience	Information
GM1	0.813				All Valid
GM2	0.855				
GM3	0.786				
GM4	0.888				
GM5	0.829				
LD1		0.810			All Valid
LD2		0.923			
LD3		0.878			
LD4		0.808			
MK1			0.900		All Valid
MK2			0.942		
MK3			0.921		
RL1				0.831	All Valid
RL2				0.894	
RL3				0.899	
RL4				0.873	
RL5				0.880	

Source: SmartPLS4 Data Processing Results, 2025

Outer test Loading on Convergent Validity, it can be seen that the growth variable mindset (X1), digital literacy (X2), work motivation (Y), and resilience (Z) has an outer value loading above 0.70. Thus, all indicators in the variable can be declared valid. Furthermore, convergent validity was also tested using the Average Variance Extracted (AVE), where a construct is declared to meet the requirements if it has an AVE value greater than 0.50. The following table presents the results of the AVE value measurement.

Table 2. AVE Test Results Convergent Validity

Variables	Average variance extracted (AVE)	Information
Growth Mindset	0.697	Valid
Digital Literacy	0.733	Valid
Work motivation	0.848	Valid
Resilience	0.767	Valid

Source: SmartPLS4 Data Processing Results, 2025

Average test results Variance Extracted (AVE) shows that all research constructs, namely growth mindset (X1), digital literacy (X2), work motivation (Y), and resilience (Z) have AVE values greater than 0.50. This finding indicates that each variable has met the convergent validity criteria, as more than 50% of the indicator variance can be explained by the construct it measures. Thus, through two tests conducted, namely outer loading and AVE, it can be concluded that all variables in this study meet the requirements of convergent validity and are suitable for use in the next stage of analysis. Since convergent validity has been met, the next step is to test discriminant validity.

Discriminant validity in this study was evaluated through two approaches, namely the cross-sectional test. loading and Fornell-Larcker Criterion. In cross testing loading, an indicator that represents a construct must have a higher loading value on the original construct compared to the loading value on another construct. Cross-regression test results loading can be seen in the following table.

Table 3. Cross Results Loading Discriminant Test Validity

Indicator	Growth Mindset	Digital Literacy	Work motivation	Resilience	Information
GM1	0.813	0.568	0.616	0.533	Valid
GM2	0.855	0.513	0.539	0.495	Valid
GM3	0.786	0.528	0.510	0.558	Valid
GM4	0.888	0.635	0.694	0.685	Valid
GM5	0.829	0.579	0.593	0.620	Valid
LD1	0.554	0.810	0.487	0.484	Valid
LD2	0.585	0.923	0.615	0.622	Valid
LD3	0.547	0.878	0.591	0.540	Valid
LD4	0.631	0.808	0.704	0.608	Valid
MK1	0.64	0.670	0.900	0.678	Valid
MK2	0.643	0.662	0.942	0.730	Valid
MK3	0.686	0.629	0.921	0.720	Valid
RL1	0.578	0.511	0.635	0.831	Valid
RL2	0.648	0.589	0.695	0.894	Valid
RL3	0.689	0.573	0.763	0.899	Valid
RL4	0.541	0.580	0.647	0.873	Valid
RL5	0.591	0.658	0.624	0.880	Valid

SmartPLS4 Data Processing Results, 2025

Based on the results in the cross table loading, it can be seen that the indicators on the growth variable Mindset (X1), digital literacy (X2), work motivation (Y), and resilience (Z) have higher loading values on their original constructs compared to the loading values on other constructs, so all indicators are declared to meet the validity criteria. Next, the second stage in testing discriminant validity was carried out using Fornell-Larcker Criterion. In this test, the square root value of the AVE for each construct must be greater than the correlation value of that construct with other latent constructs, so it can be concluded that this research model meets the criteria for discriminant validity. The results of the Fornell-Larcker test Criterion for *growth* variables mindset (X1), digital literacy (X2), work motivation (Y) and resilience (Z) are shown in the following table.

Table 4. Fornell Lacker Creation

Variables	Growth Mindset	Digital Literacy	Work motivation	Resilience	Information
Growth Mindset	0.835				Valid
Digital Literacy	0.68	0.856			Valid
Work motivation	0.713	0.710	0.921		Valid
Resilience	0.699	0.665	0.771	0.876	Valid

Source: SmartPLS4 Data Processing Results, 2025

Test results via Fornell-Larcker Criterion shows that the growth variable mindset (X1), digital literacy (X2), work motivation (Y), and resilience (Z) has a higher AVE square root value compared to the correlation between constructs and other latent variables. Thus, based on the two methods used, namely cross loading and Fornell-Larcker Criterion, it can be confirmed that all variables in this study have met the discriminant validity criteria.

The reliability test in this study was analyzed using several indicators, including Cronbach's Alpha, composite reliability (ρ_a), and composite reliability (ρ_c). A construct can be declared reliable if it meets the criteria, namely the Cronbach's value. $\alpha > 0.70$, composite value reliability (ρ_a) above 0.70, and the composite value reliability (ρ_c) > 0.70 . The results of construct reliability testing for the growth variable mindset

(X1), digital literacy (X2), work motivation (Y), and resilience (Z) are shown in the following table.

Table 5. Construct Reliability

Variables	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Information
Growth Mindset	0.891	0.899	0.920	Reliable
Digital Literacy	0.878	0.886	0.916	Reliable
Work motivation	0.910	0.911	0.944	Reliable
Resilience	0.924	0.927	0.943	Reliable

Source: SmartPLS4 Data Processing Results, 2025

Construct table *Reliability* can be concluded that all variables, namely *growth mindset* (X1), digital literacy (X2), work motivation (Y) and resilience (Z) have reliable constructs according to Cronbach's alpha, composite reliability (rho_a), and composite the reliability (rho_c) value is above 0.70. Thus, all variables are declared reliable in this research model.

Structural model testing was conducted to assess the suitability of the research model, specifically in examining the relationships between the latent variables involved. This testing process utilized several measurement indicators, including R-square and f-square values, which serve to evaluate the strength of the relationships and contributions between variables in the model. The results of the structural analysis of this research model can be seen in the following table. Furthermore, the results of the structural model test are shown through the R² and F² values.

Table 6. R- Square

Variables	R- square	Information
Work motivation	0.686	Medium Category
Resilience	0.555	Medium Category

Source: SmartPLS4 Data Processing Results, 2025

R- square analysis results show that the work motivation variable has a value of 0.686. This finding indicates that 68.6% of the variation in work motivation can be explained by the independent variables in the model, while the remaining 31.4% is influenced by other factors outside the research model. Thus, the relationship between the independent variables and work motivation can be categorized as moderate. Furthermore, the resilience variable obtained an R- square value of 0.555, which means 55.5% of the variation in resilience can be explained. influenced by the independent variables in the model, while the remaining 44.5% comes from other factors not analyzed in this study. Therefore, the relationship between the independent variables and resilience can also be categorized as moderate.

Table 7. F-square

Variable Relationship	f- square	Information
Growth Mindset -> Work Motivation	0.072	Little influence
Growth Mindset -> Resilience	0.254	Moderate influence
Literacy -> Work Motivation	0.105	Little influence
Literacy -> Resilience	0.150	Moderate influence
Resilience -> Work Motivation	0.268	Moderate influence

Source: SmartPLS4 Data Processing Results, 2025

f- square test results above, it can be concluded that the growth variable mindset has a small influence on work motivation (0.072), the growth variable mindset has a moderate influence on resilience (0.254), digital literacy variables have a small influence on work

motivation (0.105), digital literacy variables have a moderate influence on resilience (0.150) and resilience variables have a moderate influence on work motivation (0.268).

Next, to determine the strength of the relationship, hypothesis testing is carried out to ensure the direction and significance of the influence between variables. The basis for making decisions in hypothesis testing is that if the P- value is <0.05 and the T- statistic is >1.96 , then the hypothesis is accepted. Conversely, if the P- value is >0.05 and the T- statistic is <1.96 , then the hypothesis is rejected. The results of the hypothesis testing in this study are shown in the following figure.

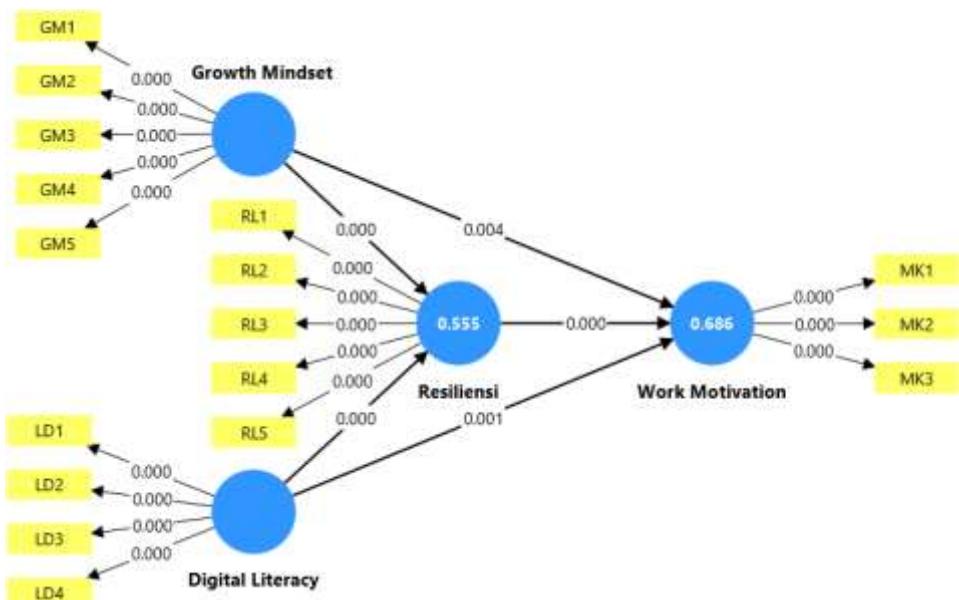


Figure 4. Output Hypothesis Testing

Table 8. Direct Test Results Effect Analysis

Path Coefficient	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Information	Hypothesis Decision
Growth Mindset -> Work Motivation	0.086	2,672	0.004	Sig.	Accepted
Growth Mindset -> Resilience	0.109	4,200	0.000	Sig.	Accepted
Literacy -> Work Motivation	0.085	3.118	0.001	Sig.	Accepted
Literacy -> Resilience	0.103	3,431	0.000	Sig.	Accepted
Resilience -> Work Motivation	0.096	4,547	0.000	Sig.	Accepted

Source: SmartPLS4 Data Processing Results, 2025

The results in Table 8 show that all hypotheses H1 to H5 are accepted. Growth mindset has a significant effect on work motivation ($t = 2.672$; $p = 0.004$) and resilience ($t = 4.200$; $p = 0.000$). Digital literacy has a significant effect on work motivation ($t = 3.118$; $p =$

0.001) and resilience ($t = 3.431$; $p = 0.000$). In addition, resilience has a significant effect on work motivation ($t = 4.547$; $p = 0.000$). The next test is a test on the mediation effect.

Table 9. Indirect Results Effect

Path Coefficient	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Note	Hypothesis Decision
Growth Mindset -> Resilience -> Work Motivation	0.059	3,372	0.000	Sig.	Accepted
Literacy -> Resilience -> Work Motivation	0.057	2,677	0.004	Sig.	Accepted

Source: SmartPLS Data Processing Results, 2025

The results in Table 9 show that resilience is proven to act as a mediating variable. Growth mindset significantly influences work motivation through resilience ($t = 3.372$; $p = 0.000$), while digital literacy significantly influences work motivation through resilience ($t = 2.677$; $p = 0.004$). Thus, hypotheses H6 and H7 are accepted.

Discussion

The research results show that a growth mindset significantly influences teacher work motivation and resilience. This finding is consistent with research (Ma, 2023; He et al., 2023) which emphasizes that a growth mindset encourages individuals to be more adaptable in facing professional challenges. In the context of high schools in Jeneponto, teachers with a growth mindset were shown to be better able to adapt to curriculum changes and administrative demands, thus maintaining work motivation despite limited resources. Furthermore, digital literacy has been shown to play a crucial role in enhancing both work motivation and resilience. Research (Stumbriene et al., 2024; Temirkhanova et al., 2024) confirms that teachers' ability to utilize technology can strengthen both professionalism and psychological resilience. These results indicate that digital literacy not only supports learning innovation but also increases teachers' confidence in navigating the dynamics of the education system. This finding is particularly relevant in areas with limited educational infrastructure, such as Jeneponto.

Furthermore, resilience was shown to have a direct influence on work motivation and mediate the relationship between growth mindset and digital literacy with work motivation. This is in line with the study (Shi et al., 2025) found that psychological factors play a significant role in maintaining teachers' professional commitment. Thus, work motivation is not solely determined by administrative factors, such as certification or benefits, but also relies heavily on internal, adaptive factors (Ibrahim et al., 2023). These findings confirm that improving teacher work motivation requires a more holistic approach, focusing not only on the administrative aspects of certification but also on strengthening psychological factors and adaptive skills. The contribution of this research lies in integrating three key variables into a single empirical model, thereby broadening the understanding of the determinants of teacher work motivation in the Indonesian educational context, particularly in resource-constrained areas such as Jeneponto Regency.

Conclusion

This study confirms that growth mindset and digital literacy have a significant influence on increasing teacher work motivation, with resilience acting as a crucial mediating

factor. These findings demonstrate that work motivation is not only influenced by administrative factors such as certification, but is also determined by psychological and adaptive factors that strengthen teachers' professional resilience in facing challenges. Overall, this study shows that both growth mindset and digital literacy can strengthen teacher work motivation, while resilience serves as a bridge that strengthens the effects of both. This emphasizes the importance of psychological and adaptive skills as a complement to formal certification and technical training received by teachers. The results of this study provide an important contribution to the development of teacher capacity building programs. These findings can serve as a basis for schools and policymakers to design training programs that focus not only on technical aspects, such as digital literacy workshops, but also on developing psychological factors through fostering a growth mindset and resilience-boosting strategies. Thus, improving teacher work motivation can be achieved in a more holistic, sustainable, and relevant manner to meet the demands of education in the digital era.

Recommendation

For school leaders, the results of this study demonstrate the need for policies that emphasize not only administrative aspects but also encourage strengthening teacher capacity through digital literacy training and resilience-building activities. Support in the form of providing technological infrastructure and reflection forums at the school level can help create a more conducive and collaborative work environment. For teachers, work motivation can be continuously improved by developing a growth mindset that encourages openness to new challenges and a commitment to continuous learning. Teachers are also advised to take advantage of digital literacy training opportunities and integrate technology into learning, while simultaneously developing adaptability and resilience skills to remain consistent in the face of a dynamic workload. For future researchers, these findings open the way for broader exploration by expanding the scope of schools or adding other contextual variables, such as school leadership, organizational culture, and policy support. Thus, future research is expected to provide a more comprehensive understanding and offer more targeted, practical strategies for improving teacher work motivation.

References

Amoako, I., & Anane, E. (2025). Digital teaching competence and resilience across tutors of different age and gender in Ghana. *Discover Education*, 4(1), 1–15. <https://doi.org/10.1007/s44217-025-00484-9>

Bardach, L., Bostwick, K. C. P., Fütterer, T., Kopatz, M., Hobbi, D. M., Klassen, R. M., & Pietschnig, J. (2024). A Meta-Analysis on Teachers' Growth Mindset. In *Educational Psychology Review* (Vol. 36, Issue 3). Springer US. <https://doi.org/10.1007/s10648-024-09925-7>

Cook, H., Apps, T., Beckman, K., & Bennett, S. (2023). Digital competence for emergency remote teaching in higher education: understanding the present and anticipating the future. *Educational Technology Research and Development*, 71(1), 7–32. <https://doi.org/10.1007/s11423-023-10194-4>

Ebyatiswara Putra, A., Taufiqur Rohman, M., Linawati, L., & Hidayat, N. (2023). Pengaruh Literasi Digital terhadap Kompetensi Pedagogik Guru. *Murhum : Jurnal Pendidikan Anak Usia Dini*, 4(1), 201–211. <https://doi.org/10.37985/murhum.v4i1.185>

Hair, J. F., Hult, G. T., Ringle, C., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). In *Sage*. Sage Publications.

He, J., Iskhar, S., Yang, Y., & Aisuluu, M. (2023). Exploring the relationship between teacher growth mindset, grit, mindfulness, and EFL teachers' well-being. *Frontiers in Psychology*, 14(9), 1–13.

<https://doi.org/10.3389/fpsyg.2023.1241335>

Ibrahim, N., Jumadi, J., & Kamaruddin, S. (2023). The Study of Social Interaction in Education and Its Influence on Sociology Learning Achievement in Students. *Journal of Educational Science and Technology (EST)*, 9(2), 194–202. <https://doi.org/10.26858/est.v9i1.24519>

Ma, Y. (2023). Boosting teacher work engagement: the mediating role of psychological capital through emotion regulation. *Frontiers in Psychology*, 14(8), 1–14. <https://doi.org/10.3389/fpsyg.2023.1240943>

Malik, N., Fatmawati, E., Purba, R., Tukiyoh, T., & Silalahi, M. (2022). Analysis of Human Resource Management in Improving Teachers' Competence in Early Childhood Teaching at Schools. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 6(6), 5714–5721. <https://doi.org/10.31004/obsesi.v6i6.3264>

Mesler, R. M. D., Corbin, C. M., & Martin, B. H. (2021). Teacher mindset is associated with development of students' growth mindset. *Journal of Applied Developmental Psychology*, 76(7), 1–10. <https://doi.org/10.1016/j.appdev.2021.101299>

Qu, J., Wang, M., & Xin, Y. (2025). The role of resilience and perseverance of effort among Chinese EFL teachers' work engagement. *Porta Linguarum*, 1(43), 11–28. <https://doi.org/10.30827/portalini.vi43.28309>

Ratri, D. K., Timan, A., & Sobri, A. Y. (2023). Pengaruh Literasi Digital , Kompetensi TIK dan Motivasi Kerja terhadap Performa Mengajar Guru SMP di Kabupaten Banyuwangi. *Jurnal Pendidikan Humaniora*, 10(2), 44–61. <https://doi.org/10.17977/um011v10i22023p44-61>

Sahabuddin, R., & Haeruddin, I. M. (2025). Investigating the relationship between motivation , competence , and commitment: A mediation model of self-efficacy on employee performance in the hospitality industry. *Edelweiss Applied Science and Technology*, 9(8), 1270–1284. <https://doi.org/10.55214/2576-8484.v9i8.9594>

Shi, Q., Xu, X., Zhang, Y., & Hu, B. (2025). Research on Psychological Resilience, Digital Competence, and Self-Efficacy in Online TCFL Teachers. *Behavioral Sciences*, 15(3), 1–24. <https://doi.org/10.3390/bs15030366>

Sitanggang, A. O., & Yasya, W. (2022). Resiliensi Guru dalam Pembelajaran Literasi Berbasis Digital di Jakarta. *Buletin Poltanesa*, 23(2), 600–607. <https://doi.org/10.51967/tanesa.v23i2.2080>

Stumbrienė, D., Jevsikova, T., & Kontvainė, V. (2024). Key factors influencing teachers' motivation to transfer technology-enabled educational innovation. *Education and Information Technologies*, 29(2), 1697–1731. <https://doi.org/10.1007/s10639-023-11891-6>

Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif, dan Research & Development (R&D)*. Bandung: Alfabeta. <https://digilib.stekom.ac.id/ebook/view/METODE-PENELITIAN-KUANTITATIF-KUALITATIF-DAN-RND?>

Temirkhanova, M., Abildinova, G., & Karaca, C. (2024). Enhancing digital literacy skills among teachers for effective integration of computer science and design education: a case study at Astana International School, Kazakhstan. *Frontiers in Education*, 9(10), 1–16. <https://doi.org/10.3389/feduc.2024.1408512>

Yeager, D. S. (2021). *Beliefs , Affordances , and Adolescent Development: Lessons from a Decade of Growth Mindset Interventions*. 1(9), 1–42. <https://doi.org/10.1016/bs.acdb.2021.04.004>

Zahra, N., Sariwulan, T., & Mukhtar, S. (2024). Pengaruh Literasi Digital dan Motivasi Kerja Terhadap Kinerja Guru dengan Mediasi Kompetensi Guru Pada SMA Negeri di Jakarta Timur. *Cendikia Jurnal Pendidikan Dan Pengajaran*, 2(2), 144–157. <https://doi.org/10.572349/cendikia.v2i1.777>

Zakir, S., Hoque, M. E., Susanto, P., Nisaa, V., Alam, M. K., Khatimah, H., & Mulyani, E. (2025). Digital literacy and academic performance: the mediating roles of digital informal learning, self-efficacy, and students' digital competence. *Frontiers in Education*, 10(1), 1–13. <https://doi.org/10.3389/feduc.2025.1590274>