

The Influence of Self-Efficacy and Learning Motivation on Vocational Teachers' Interest in Developing Digital Learning Media

Ahmad Reza Midfaruddin^{1✉}, Marsono²
(1,2) Universitas Negeri Malang, Malang, Indonesia

✉ Corresponding author
marsono.ft@um.ac.id

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ABSTRACT

Digital transformation in vocational education requires teachers not only to use technology but also to develop digital learning media that respond to practical and occupational learning needs. However, teachers' interest in media development may depend on psychological readiness, particularly self-efficacy and learning motivation. This study examined the individual and simultaneous effects of self-efficacy and learning motivation on vocational teachers' interest in developing digital learning media. Using a quantitative ex post facto correlational design, data were collected from 70 teachers at SMKN 10 Malang through a 45-item five-point Likert questionnaire. Data were analyzed using validity and reliability testing, normality and classical assumption tests, multiple linear regression, t-tests, F-test, and coefficient of determination. The results showed that self-efficacy and learning motivation positively and significantly predicted teachers' interest, both individually and simultaneously, with learning motivation emerging as the stronger predictor. Together, the two variables explained 66.1% of the variance in teachers' interest. These findings indicate that sustainable digital transformation in vocational education requires institutional strategies that strengthen teachers' confidence and continuous motivation to learn alongside technological provision and ongoing professional development support systematically.

Transformasi digital dalam pendidikan vokasi menuntut guru tidak hanya menggunakan teknologi, tetapi juga mengembangkan media pembelajaran digital yang sesuai dengan karakteristik pembelajaran praktis dan kebutuhan dunia kerja. Namun, minat guru untuk mengembangkan media digital berkaitan dengan kesiapan psikologis, terutama efikasi diri dan motivasi belajar. Penelitian ini menganalisis pengaruh parsial dan simultan efikasi diri dan motivasi belajar terhadap minat guru kejuruan dalam mengembangkan media pembelajaran digital. Penelitian menggunakan pendekatan kuantitatif dengan desain korelasional ex post facto yang melibatkan 70 guru SMKN 10 Malang. Data dikumpulkan menggunakan kuesioner skala Likert lima tingkat yang terdiri atas 45 pernyataan. Analisis mencakup uji validitas dan reliabilitas, normalitas, asumsi klasik, regresi linear berganda, uji t, uji F, dan koefisien determinasi. Hasil penelitian menunjukkan bahwa efikasi diri dan motivasi belajar berpengaruh positif dan signifikan terhadap minat guru, baik secara parsial maupun simultan, dengan motivasi belajar sebagai prediktor yang lebih kuat. Kedua variabel mampu menjelaskan 66,1% variasi minat guru. Temuan ini menunjukkan bahwa transformasi digital pendidikan vokasi memerlukan strategi kelembagaan yang memperkuat keyakinan diri, motivasi belajar berkelanjutan, penyediaan teknologi, dan pengembangan profesional guru secara sistematis.

Keywords: digital learning media, learning motivation, self-efficacy, vocational teachers

Introduction

The rapid advancement of digital technology has transformed the design, delivery, and evaluation of teaching and learning across educational contexts. This transformation is particularly significant in vocational education, where effective instruction requires not only the transmission of conceptual knowledge but also the visualization of work processes, simulation of procedures, demonstration of practical skills, and translation of theoretical principles into

authentic workplace applications (Bapa, 2025; Wang et al., 2023). Within this context, digital learning media have become increasingly important as pedagogical tools that can facilitate the representation of complex and abstract concepts, provide contextualized learning experiences, and enhance students' engagement with practical and industry-oriented learning activities (Cattaneo et al., 2022; Deschênes & Dionne, 2024). Consequently, teachers' capacity and willingness to develop digital learning media constitute an increasingly important dimension of instructional innovation in vocational education.

Despite the growing importance of digital technology in education, a considerable gap remains between expectations for technology-enhanced instruction and its actual implementation in teaching practice. The availability of technological infrastructure does not necessarily lead teachers to actively adopt, adapt, or develop digital learning resources. Peng et al. (2024), based on an assessment involving 680 educators, demonstrated that self-efficacy, attitudes toward technology, and technological competence are important determinants of ICT adoption. Similarly, Paetsch et al. (2023) showed that teachers' self-efficacy, technological literacy, and teaching experience influence their use of digital applications. From an organizational perspective, Othman et al. (2024) found that teacher-related and systemic barriers jointly accounted for substantial variation in institutional efforts to integrate ICT. Collectively, these studies indicate that educational digitalization cannot be understood solely as an infrastructural or technical issue; it is also shaped by psychological factors that determine whether teachers are willing and confident enough to engage with technological innovation.

This issue is especially relevant to vocational education because teachers are expected to continuously align instructional practices with technological developments and changing workplace requirements. However, existing evidence suggests that vocational teachers demonstrate uneven levels of digital competence and readiness. Diachuk (2024), for example, reported substantial variation in vocational teachers' digital capabilities, with 43.3% demonstrating advanced competence, 50% moderate competence, and 6.7% relatively low competence. In the Indonesian context, Rahmawati et al. (2025) identified insufficient teacher readiness as an important barrier to technology integration in vocational education amid rapid digital transformation. Deschênes and Dionne (2024) further emphasized the need for systematic institutional frameworks to strengthen digital competence among vocational educators. These findings reveal a practical tension: while vocational education increasingly requires technology-rich and digitally responsive instruction, teachers do not necessarily possess the same psychological readiness, motivation, or inclination to actively create digital learning resources.

One psychological construct that may explain this variation is self-efficacy. Bandura (1997) conceptualizes self-efficacy as an individual's belief in their ability to organize and execute the actions required to achieve particular levels of performance. Applied to digital learning media development, self-efficacy refers to teachers' confidence in their ability to design digital resources, overcome technical problems, learn unfamiliar technologies, persist when facing difficulties, and transfer technological skills across different instructional situations. Previous research has associated stronger teacher self-efficacy with greater engagement in technology-supported teaching and ICT integration (Clipa et al., 2023; Tinoca et al., 2022). However, the ability or confidence to perform a technological task does not necessarily mean that teachers will develop a sustained interest in undertaking such activities. This distinction suggests that self-efficacy should be examined not only in relation to

technology use but also in relation to teachers' willingness and interest in becoming active developers of digital learning media.

Alongside self-efficacy, learning motivation may provide another important explanation for teachers' engagement with digital innovation. Learning motivation refers to the internal and external forces that initiate, direct, and sustain learning-related behavior (Sardiman, 2011). For teachers, learning motivation can be reflected in the desire to improve professional competence, explore emerging technologies, engage in self-directed learning, participate in professional development, and continuously enhance instructional quality. Zhang et al. (2021) demonstrated that teachers' engagement in continuous professional development is shaped by interactions between personal values and workplace conditions. Bowman et al. (2022) similarly found that professional development can influence technology use by reshaping teachers' beliefs regarding the value and usefulness of instructional technologies. More recently, Harmadi et al. (2025) reported a strong relationship between teacher motivation and technological pedagogical content knowledge (TPACK), suggesting that motivation plays a substantial role in teachers' readiness to integrate technological knowledge into teaching practice. These findings support the proposition that teachers who possess stronger motivation to learn may be more inclined to explore, experiment with, and eventually develop their own digital learning media.

The present study focuses specifically on teachers' interest in developing digital learning media as the primary outcome variable. In this study, interest is broadly understood as an affective and behavioral tendency characterized by enjoyment, curiosity, focused attention, active participation, and sustained willingness to engage in digital media development. This distinction is important because using existing digital resources and actively developing new digital learning media represent different levels of technological engagement. Teachers may have access to adequate devices, applications, and digital platforms without necessarily being interested in designing their own instructional resources. Van Acker et al. (2013) demonstrated that teachers' use of digital learning materials is associated with attitudes and self-efficacy, while Kahnbach et al. (2024) showed that intentions to use digital platforms are influenced by performance expectations, perceived effort, and facilitating conditions. Although these studies provide important explanations of technology acceptance and use, they offer more limited insight into the psychological factors that encourage teachers to move from being users of technology to becoming active developers of digital learning media.

A critical examination of the existing literature therefore reveals several interconnected gaps. First, much of the previous research has concentrated on ICT adoption, digital competence, digital literacy, technology acceptance, or TPACK, whereas interest in developing digital learning media has received comparatively limited attention as a distinct psychological and behavioral outcome. Second, previous studies frequently examine whether teachers use or accept technology rather than whether they are willing to independently create and continuously improve digital instructional resources. This distinction is particularly consequential in vocational education, where customized digital materials may be required to represent specialized procedures, equipment, workflows, and workplace practices. Third, empirical studies focusing specifically on vocational teachers remain comparatively limited, particularly within the Indonesian educational context. Finally, although self-efficacy and motivation have independently been associated with technology-related behaviors, their simultaneous contribution to teachers' interest in developing digital learning media has not been sufficiently clarified.

Accordingly, this study positions teachers' interest in developing digital learning media as a psychological outcome emerging from the interaction between perceived capability and motivational drive. Self-efficacy represents teachers' confidence that they can undertake digital media development, whereas learning motivation reflects their willingness to learn, improve, and persist in acquiring the knowledge and skills required to do so. Interest in digital media development, in turn, represents the tendency to translate these psychological resources into sustained attention and engagement in media-creation activities. By integrating these constructs into a single empirical framework, the study extends previous research beyond questions of technology availability, acceptance, or general ICT use toward an examination of teachers as active creators of digital instructional resources.

The novelty and contribution of this study therefore lie in three aspects. First, it conceptualizes interest in developing digital learning media as a distinct outcome rather than treating technology use or digital competence as the final indicator of digital transformation. Second, it focuses specifically on vocational teachers, whose instructional responsibilities require close alignment between pedagogical practices, practical competencies, and technological developments. Third, it examines the individual and simultaneous effects of self-efficacy and learning motivation, thereby providing a more integrated explanation of the psychological conditions associated with teachers' willingness to develop digital instructional resources. Empirically, the study operationalizes self-efficacy through teachers' confidence in task execution, problem-solving, technology adoption, persistence, and skill generalization; learning motivation through competence development, technological exploration, self-directed learning, participation in training, and commitment to instructional quality; and development interest through enjoyment, curiosity, focused attention, active participation, and sustained commitment.

Based on this framework, the study aims to analyze the effects of self-efficacy and learning motivation on vocational teachers' interest in developing digital learning media. Specifically, it seeks to determine: (1) the effect of self-efficacy on vocational teachers' interest in developing digital learning media; (2) the effect of learning motivation on vocational teachers' interest in developing digital learning media; and (3) the simultaneous effect of self-efficacy and learning motivation on such interest. Accordingly, the study addresses three research questions: Does self-efficacy significantly influence vocational teachers' interest in developing digital learning media? Does learning motivation significantly influence their interest in developing digital learning media? And do self-efficacy and learning motivation simultaneously influence vocational teachers' interest in developing digital learning media? By addressing these questions, the study is expected to provide empirical evidence for understanding the psychological foundations of teacher-driven digital innovation and to inform professional development strategies aimed at strengthening vocational teachers' capacity and willingness to create contextually relevant digital learning resources.

Methods

This study employed a quantitative approach with an ex post facto correlational research design to examine the relationship between self-efficacy, learning motivation, and vocational teachers' interest in developing digital learning media. A quantitative approach is appropriate when research variables are operationalized into measurable indicators and their relationships are examined objectively through numerical data and statistical procedures (Creswell & Creswell, 2018). More specifically, the ex post facto design was selected because the

independent variables were investigated as naturally occurring characteristics without experimental manipulation or intervention by the researchers. Such a design enables researchers to examine relationships among variables after the relevant characteristics or conditions have already occurred, making it suitable when direct manipulation is neither necessary nor feasible (Cohen et al., 2018). The study was conducted at SMKN 10 Malang and involved a sample of 70 vocational teachers. These participants constituted the empirical basis for examining both the individual and simultaneous contributions of self-efficacy and learning motivation to teachers' interest in developing digital learning media within the context of vocational education.

Data were collected using a closed-ended questionnaire based on a five-point Likert scale, which was systematically constructed by translating the conceptual dimensions of the three research variables into measurable indicators and questionnaire statements. Likert-type scales are widely used to quantify respondents' attitudes, perceptions, beliefs, and psychological tendencies by allowing them to indicate their degree of agreement with a series of statements (Joshi et al., 2015). The research instrument comprised 45 items, consisting of 15 items measuring self-efficacy, 15 items measuring learning motivation, and 15 items measuring interest in developing digital learning media. Self-efficacy was operationalized through indicators related to confidence in completing digital-media-related tasks, solving technical problems, adopting unfamiliar technologies, maintaining persistence when encountering difficulties, and applying technological skills across different instructional situations. Learning motivation was measured through indicators encompassing the desire to improve professional competence, explore educational technologies, engage in self-directed learning, participate in professional training, and enhance instructional quality. Meanwhile, interest in developing digital learning media was assessed through enjoyment, curiosity, focused attention, active participation, and sustained commitment to media-development activities. Before hypothesis testing, the instrument was subjected to validity and reliability analyses to establish the adequacy of the items in representing the intended constructs and to evaluate the consistency of the measurement results. Reliability assessment is essential for determining the extent to which a set of items consistently measures the same underlying construct, with internal consistency commonly evaluated using Cronbach's alpha (Taber, 2018).

The collected data were processed and analyzed using IBM SPSS Statistics through a sequential statistical procedure. The analysis began with validity and reliability testing, followed by normality testing and examination of the relevant classical assumptions required for multiple linear regression. Assumption testing is important because violations of regression assumptions can affect the accuracy of parameter estimates, statistical significance tests, and interpretation of the resulting model (Hair et al., 2019). Subsequently, multiple linear regression analysis was performed to estimate the contribution of self-efficacy and learning motivation to vocational teachers' interest in developing digital learning media. The individual contribution of each predictor was evaluated using t-tests, whereas their simultaneous contribution to the dependent variable was examined through the F-test. In addition, the coefficient of determination (R^2) was calculated to determine the proportion of variance in teachers' interest in developing digital learning media explained collectively by self-efficacy and learning motivation. Multiple regression is particularly appropriate for estimating the predictive contribution of multiple independent variables to a continuous dependent variable while assessing the unique contribution of each predictor within the same statistical model (Hair et al., 2019). All inferential decisions were evaluated at a 5% significance level ($\alpha = 0.05$). Through

these procedures, the analysis was designed to provide empirical evidence regarding both the partial and simultaneous effects of self-efficacy and learning motivation on vocational teachers' interest in developing digital learning media.

Result

1. Descriptive Analysis Results

The compiled data reflected relatively favorable baseline scores across all metrics. Self-efficacy exhibited an average score of 48.86 with a standard deviation of 15.60, learning motivation recorded an average of 48.86 alongside a standard deviation of 15.65, and interest in developing digital learning media yielded a mean of 48.86 with a standard deviation of 15.62. All three variables shared an identical score spread, ranging from a minimum of 15 to a maximum of 75. This distribution indicates diversified respondent feedback, providing sufficient statistical variance to capture differences in teachers' self-belief, educational drive, and professional interest, as shown in Table 1.

Table 1. Descriptive statistics of research variables.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Self-Efficacy (X1)	70	15	75	48.86	15.60
Learning Motivation (X2)	70	15	75	48.86	15.65
Digital Media Interest (Y)	70	15	75	48.86	15.62

Substantively, these descriptive insights reveal that vocational teachers at the target institution are not entirely homogeneous. While some possess strong self-efficacy, high motivation, and a deep interest in media development, others score in the moderate or low tiers. This supports the argument that digital transformation in vocational setups depends heavily on psychological readiness alongside physical infrastructure. These dynamics match the observations of Peng et al. regarding the roles of self-efficacy and digital competence in technology adoption (Peng et al., 2024), and Rahmawati et al. concerning ongoing digital challenges in Indonesian vocational schools (Rahmawati et al., 2025).

2. Instrument Quality Result

Prior to inferential processing, the instruments underwent validity and reliability validation. The validity evaluation demonstrated that all questionnaire items were valid. For self-efficacy, r calculated scores ranged from 0.719 to 0.856; learning motivation ranged from 0.745 to 0.846; and interest in digital media development ranged from 0.722 to 0.878. All items surpassed the r -table threshold of 0.235, confirming statistical validity, as shown in Table 2.

Table 2. Summary of instrument validity testing.

Variable	Total Items	r Calculated Range	r table	Status
Self-Efficacy (X1)	15	0.719–0.856	0.235	All items valid
Learning Motivation (X2)	15	0.745–0.846	0.235	All items valid
Digital Media Interest (Y)	15	0.722–0.878	0.235	All items valid

These results establish that every item effectively represents its underlying construct. This alignment is critical because the selected indicators are grounded in established theoretical frameworks. Bandura observed that self-efficacy must be evaluated relative to specific task domains (Bandura, 1997), Sardiman positioned motivation as the core driver directing learning behavior (Sardiman, 2011), and Slameto defined interest as an affective inclination prompting active participation (Slameto, 2015). Thus, the instrument's validity verifies that the operational

constructs align with conceptual expectations. The tools also demonstrated high reliability. Cronbach's Alpha coefficients reached 0.965 for self-efficacy, 0.966 for learning motivation, and 0.965 for media development interest. Because these values significantly exceed the standard 0.70 threshold, the instruments display excellent internal consistency, as shown in Table 3.

Table 3. Instrument reliability testing result

Variable	Cronbach's Alpha	Criteria	Description
Self-Efficacy (X1)	0.965	> 0.70	Highly reliable
Learning Motivation (X2)	0.966	> 0.70	Highly reliable
Digital Media Interest (Y)	0.965	> 0.70	Highly reliable

These high reliability values show that the items within each variable work together consistently to measure the same construct, providing a stable foundation for hypothesis testing.

3. Statistical Assumptions Result

Shapiro–Wilk normality tests showed that data for all variables and regression residuals were normally distributed. Significance values were 0.063 for self-efficacy, 0.086 for learning motivation, 0.060 for digital media interest, and 0.392 for regression residuals. Since all values exceed 0.05, the normality assumption is satisfied, as shown in Table 4.

Table 4. Shapiro–Wilk normality test results

Variable	Sig.	Criteria	Status
Self-Efficacy (X1)	0.063	> 0.05	Normal
Learning Motivation (X2)	0.086	> 0.05	Normal
Digital Media Interest (Y)	0.060	> 0.05	Normal
Regression Residual	0.392	> 0.05	Normal

Multicollinearity assessments yielded a tolerance value of 0.732 and a VIF value of 1.367 for both self-efficacy and learning motivation. A tolerance above 0.10 coupled with a VIF under 10 confirms the absence of multicollinearity issues, as shown in Table 5.

Table 5. Multicollinearity test result

Independent Variable	Tolerance	VIF	Status
Self-Efficacy (X1)	0.732	1.367	No multicollinearity
Learning Motivation (X2)	0.732	1.367	No multicollinearity

For heteroscedasticity, the Breusch–Pagan test yielded a significance value of 0.608. Because this exceeds 0.05, the model is free from heteroscedasticity. Additionally, the Durbin–Watson statistic reached 1.864, falling safely within the acceptable 1.50 to 2.50 range, indicating no autocorrelation concerns, as shown in Table 6.

Table 6. Heteroscedasticity and autocorrelation test result

Test	Value	Criteria	Status
Breusch–Pagan	0.608	> 0.05	No heteroscedasticity
Durbin–Watson	1.864	1.50–2.50	No autocorrelation

Meeting these statistical assumptions confirms that the multiple linear regression model is valid for evaluating how self-efficacy and learning motivation influence teachers' interest in developing digital media.

4. Hypothesis Testing Results

Multiple linear regression analysis generated the following equation: $Y = 3.510 + 0.381X_1 + 0.547X_2$. This formula reveals that both self-efficacy and learning motivation positively influence interest in developing digital learning media. The self-efficacy coefficient of 0.381 implies that for each unit increase in self-efficacy, interest rises by 0.381 units, assuming learning motivation remains constant. Similarly, the learning motivation coefficient of 0.547 implies that a one-unit increase in motivation triggers a 0.547 unit rise in interest, holding self-efficacy constant, as shown in Table 7.

Table 7. Multiple linear regression analysis results

Variable	B	t	Sig.	Status
Constant	3.510	–	–	–
Self-Efficacy (X1)	0.381	4.63	0.00002	Significant
Learning Motivation (X2)	0.547	6.27	0.00000	Significant

5. The Effect of Self-Efficacy on Digital Learning Media Development Interest

The t-test confirmed that self-efficacy significantly and positively influences interest in developing digital learning media ($p = 0.00002 < 0.05$), supporting our first hypothesis. This shows that when vocational teachers feel more confident in their ability to adopt new technologies, resolve technical challenges, and execute design tasks, their interest in creating digital media increases.

This finding aligns with Bandura's theory, which states that self-efficacy shapes task persistence, behavioral choices, and resilience when facing challenges (Bandura, 1997). Teachers with strong self-efficacy are more likely to embrace digital design projects rather than avoid them. This also supports findings by Tinoca et al., who identified technology integration self-efficacy as a major factor in teacher technology readiness (Tinoca et al., 2022), Clipa, who linked high self-efficacy to positive attitudes toward classroom IT usage (Clipa et al., 2023), and Mlambo, who observed that ICT self-efficacy influences pedagogical technology application (Mlambo et al., 2020). This study expands on past research by demonstrating that for vocational instructors, self-efficacy directly drives the active desire to create digital resources, rather than just use them.

6. The Effect of Learning Motivation on Digital Learning Media Development Interest

The t-test also showed that learning motivation has a significant, positive effect on development interest ($p = 0.00000 < 0.05$), supporting our second hypothesis. This confirms that stronger internal and external drives to upgrade professional skills, master new tools, and improve classroom quality directly increase a teacher's interest in developing digital learning media. This matches Sardiman's view of motivation as an engine that directs and sustains learning behavior. Motivated teachers actively seek out professional training and view digital media development as an essential step toward improving instructional quality (Sardiman, 2011). This is supported by Zhang et al., who noted that motivation drives continuous professional development (Zhang et al., 2021), Bowman et al., who found that training shapes instructional technology use by modifying core beliefs (Bowman et al., 2022), and Shah et al., who identified motivation as a central factor in ICT integration (Shah et al., 2024). Given Harmadi et al.'s finding that motivation correlates strongly with TPACK frameworks (Harmadi et al., 2025), our results confirm that learning motivation is crucial for inspiring vocational teachers to innovate with digital media. Notably, learning motivation displayed a larger

regression coefficient than self-efficacy (0.547 vs. 0.381), making it the stronger predictor in our model. While self-belief is necessary, the inner drive to learn and grow serves as the primary catalyst for inspiring technological innovation among these educators.

7. The Simultaneous Effect of Self-Efficacy and Learning Motivation on Digital Learning Media Development Interest

The F-test confirmed that the overall regression model is statistically significant ($p = 0.00000 < 0.05$). The R^2 value of 0.661 indicates that self-efficacy and learning motivation combined account for 66.1% of the variance in teachers' interest in developing digital materials, while the remaining 33.9% is explained by external factors outside this model, as shown in Table 8.

Table 8. Simultaneous and coefficient of determination results.

Statistic	Value	Status
F Calculated	65.29	Significant model
Sig. F	0.00000	H0 rejected
R Square	0.661	Simultaneous contribution 66.1%
Adjusted R Square	0.651	Robust fit

This high coefficient of determination confirms the strength of our model. It shows that vocational teachers' interest in developing digital media is largely rooted in internal psychological factors: self-belief and a desire to learn. This matches findings by Peng et al., who used self-efficacy and digital literacy as predictors for ICT integration (Peng et al., 2024), and Van Acker et al., who highlighted the role of self-efficacy and attitude in digital material adoption (Van Acker et al., 2013). It also aligns with Kahnbach, who connected digital platform adoption with performance and effort expectancies concepts tied to self-belief and individual motivation (Kahnbach et al., 2024). Thus, combining self-efficacy with learning motivation creates a strong foundation for innovative teaching practices.

Discussion

The findings demonstrate that self-efficacy and learning motivation play important roles in shaping vocational teachers' interest in developing digital learning media. This relationship suggests that teachers' engagement in digital media development cannot be explained solely by the availability of technology within the school environment. Computers, internet connectivity, software, learning platforms, and digital resources create conditions in which instructional innovation can occur, but their presence does not necessarily transform teachers into active developers of digital content. Such engagement also requires psychological readiness that enables teachers to perceive technological challenges as manageable and to remain willing to acquire competencies that they have not yet mastered. Within this relationship, self-efficacy provides confidence in one's capacity to perform a particular task, whereas learning motivation generates the willingness to acquire, extend, and sustain the competencies required to complete it. Interest in digital learning media development can therefore be understood as a tendency that becomes stronger when teachers perceive technology not merely as something available for use but as a domain in which they are both capable and willing to create meaningful instructional resources.

The significant contribution of self-efficacy to teachers' interest in developing digital learning media indicates that perceived personal capability constitutes an important component of teachers' engagement with technological innovation. Developing digital media is

considerably more demanding than simply operating a device or using an existing application. Teachers must determine which forms of media are appropriate for particular learning content, organize information, transform concepts into visual or interactive representations, learn technological functions, resolve technical difficulties, and ensure that the resulting products serve meaningful pedagogical purposes. Each stage may involve uncertainty, particularly when teachers are working with unfamiliar technologies. Under such conditions, self-efficacy influences how difficulties are interpreted. Teachers with stronger self-efficacy are more likely to perceive technical problems as challenges that can be understood and resolved, whereas limited confidence may cause relatively manageable difficulties to be interpreted as evidence of personal incapacity. This interpretation is consistent with Bandura's (1997) conceptualization of self-efficacy as a belief in one's capacity to organize and execute the actions necessary to achieve a particular level of performance.

The relevance of self-efficacy to teachers' technological engagement is also evident in recent scholarship. Cattaneo et al. (2025) demonstrated that vocational teachers' technology use is associated with perceived digital competence and perceived usefulness, while contemporary models of technology integration continue to recognize ability and self-efficacy beliefs as important elements underlying teachers' technological behavior. This distinction is important because objectively possessing technological knowledge and perceiving oneself as capable of applying that knowledge are related but not identical conditions. Teachers may understand the basic functions of a technology without feeling sufficiently confident to employ it in more demanding instructional situations. This distinction becomes particularly consequential in the present study because the outcome extends beyond technology use to an interest in developing digital learning media. Development requires teachers to move beyond the role of technology users toward becoming designers, adapters, and creators of instructional resources. Self-efficacy may therefore operate as a psychological mechanism through which existing competence is translated into a willingness to experiment, solve problems, and produce digital learning materials.

Learning motivation provides a different but complementary explanation. Its significant effect indicates that interest in digital media development also depends on teachers' willingness to continually renew their knowledge and skills. Sardiman (2011) conceptualizes motivation as a driving force that directs and sustains learning activity. This perspective is particularly relevant to digital media development because educational technology is inherently dynamic. Software is continually updated, new platforms emerge, forms of digital interaction change, and students' learning needs evolve. Competence that is adequate at one point may become insufficient as the technological environment changes. Teachers with stronger learning motivation are consequently more likely to respond through information seeking, self-directed learning, professional training, collegial discussion, experimentation with unfamiliar applications, and critical evaluation of the media they have produced. Learning motivation therefore serves not only as an initial stimulus for engaging with technology but also as a source of persistence that enables professional competence to evolve over time.

The relationship becomes more meaningful when interest is understood as something that develops through experience rather than as a fixed personal characteristic. When teachers are motivated to learn a particular technology, gradually understand how it functions, and eventually produce a resource that can be used successfully in teaching, this experience of accomplishment may generate satisfaction and encourage further exploration. A mutually reinforcing process can consequently develop among learning, successful performance,

perceived capability, and growing interest. Murwaningsih's (2025) study of Indonesian vocational high school teachers provides a relevant perspective by demonstrating relationships between teacher professional development, internet self-efficacy, and ICT competence. Such evidence suggests that professional development should not be understood merely as a mechanism for transferring technical skills; it may also interact with the psychological conditions through which teachers approach technology. This is particularly important for sustainable digital transformation, which requires teachers who remain willing to learn throughout their professional careers rather than teachers whose technological preparation depends on isolated training experiences.

The simultaneous contribution of self-efficacy and learning motivation further demonstrates that the two constructs perform distinct but complementary psychological functions. Self-efficacy concerns the perception that one is capable of performing an activity, whereas learning motivation concerns the willingness to learn, invest effort, and persist in that activity. A teacher may feel competent in using existing technologies but have little motivation to explore new applications or develop original instructional materials. Conversely, another teacher may possess a strong desire to learn but remain hesitant because of uncertainty about handling the technical complexity of media development. When self-efficacy and learning motivation are present simultaneously, teachers possess a more complete psychological foundation: confidence to begin, willingness to learn, persistence when difficulties arise, and motivation to improve the resulting product. The simultaneous effect identified in this study therefore suggests that interest in digital media development is more adequately understood through the combination of perceived capability and a continuing learning orientation than through either construct in isolation.

This relationship is especially consequential in vocational education because technology occupies a distinctive position in learning that is strongly connected with practical and occupational competence. Vocational teachers must establish connections between theoretical knowledge and work procedures, equipment operation, safety standards, technical problem-solving, production processes, and competencies required in professional settings. Digital media in such environments can therefore serve purposes beyond presenting information. It can visualize processes that are difficult to observe directly, allow procedures to be revisited repeatedly, simulate particular conditions, demonstrate equipment operation, and provide preliminary experiences before students engage in direct practical activities. Cattaneo et al. (2025) emphasize that vocational teachers' technology use needs to be understood in relation to teaching profiles, perceived digital competence, and the perceived usefulness of technological tools. Setuju et al. (2025) similarly identify websites, mobile technologies, video conferencing, digital content, and other forms of digital media as relevant components in strengthening vocational educators' digital competence. These developments suggest that vocational teachers increasingly need to move beyond being consumers of technological products toward becoming professionals capable of selecting, adapting, and creating digital representations that correspond to the competencies they teach.

Evidence from Indonesian vocational education further reinforces the significance of these findings. The systematic review conducted by Widaningsih et al. (2024) indicates that the digital competence of Indonesian TVET educators has received growing scholarly attention, although the foundations of digital competence and their integration into educator qualification policies require further development. More recent evidence concerning Indonesian vocational teachers also indicates that digital competence challenges are not attributable solely to

hardware and internet access. Time constraints, professional training, supportive communities, beliefs about conventional teaching approaches, and acceptance of technological usefulness may also influence teachers' digital engagement. These findings provide an important context for interpreting the present results because they demonstrate that psychological readiness does not develop in isolation. Self-efficacy and learning motivation interact with teachers' professional experiences and the institutional conditions in which their work takes place. Strengthening internal psychological resources must therefore be accompanied by an environment that enables teachers to translate confidence and motivation into actual media-development practices.

The coefficient of determination ($R^2 = 0.661$) provides further empirical support for this interpretation. Self-efficacy and learning motivation collectively explain 66.1% of the variance in vocational teachers' interest in developing digital learning media, leaving 33.9% of the variance outside the explanatory capacity of the present model. This unexplained proportion should not be treated merely as statistical residual variance; it provides theoretical space for considering additional determinants of teachers' interest. School leadership, organizational culture, digital infrastructure, access to appropriate software, workload, time available for experimentation, previous training experiences, collegial support, perceived usefulness, and connections with changing industry requirements may contribute to the remaining variation. Noordin (2024), for instance, identifies limited resources, insufficient time, and staff reluctance among the challenges associated with developing the digital competence of TVET educators. The systematic review by Purnama et al. (2026) similarly demonstrates that vocational teachers' digital competence remains uneven and that training and systematic competence development continue to be important concerns. The present findings should therefore position self-efficacy and learning motivation not as exclusive explanations, but as powerful internal determinants operating within a broader institutional and technological ecosystem.

These results have practical implications for professional development at SMKN 10 Malang. Strategies for strengthening teachers' digital media development should extend beyond the provision of equipment or training that concentrates exclusively on technical operations. Professional development can instead be organized progressively so that teachers experience achievable forms of success while gradually moving toward more demanding digital projects. Initial activities might involve relatively simple resources closely related to teachers' areas of expertise before progressing toward interactive materials, procedural videos, simulations, or more sophisticated digital learning environments. Mentoring, peer collaboration, opportunities to observe successful practices, and constructive feedback can provide teachers with experiences that strengthen confidence in their own technological capabilities. At the same time, learning motivation can be sustained by providing opportunities for experimentation, connecting professional development to authentic instructional problems, recognizing innovative teacher practices, and ensuring that training remains relevant to students' learning needs and developments in the occupational sectors for which vocational education prepares them.

Institutional support is particularly important because digital innovation is unlikely to become sustainable when media development is treated solely as an additional individual responsibility. Schools can establish collaborative development teams, provide opportunities for teachers to exchange resources, create repositories for locally developed digital materials, recognize successful innovations, and facilitate partnerships through which teachers remain informed about technological changes in relevant industries. Such practices can transform

digital media development from an isolated activity undertaken by individual teachers into a shared dimension of professional practice. Recent TVET scholarship increasingly points toward systematic and continuing approaches to digital competence development rather than one-off technological interventions. From this perspective, strengthening self-efficacy and learning motivation should form part of a broader professional ecosystem in which teachers have access to resources, learning opportunities, collegial support, and institutional recognition.

The findings ultimately extend the understanding of digital transformation in vocational education from the question of possessing and using technology toward the more demanding question of teachers' readiness and willingness to create learning through technology. Self-efficacy provides the confidence required to confront the complexity of digital media development, while learning motivation sustains teachers' willingness to renew their competencies as technologies and professional requirements evolve. The significant individual and simultaneous contributions of both variables demonstrate that interest in developing digital learning media emerges from the connection between perceived capability and a continuing orientation toward professional learning. This relationship has strategic significance for vocational education because teachers must continually maintain the relevance of school-based learning to technological development and changing workplace practices. Strengthening self-efficacy and learning motivation should therefore be regarded not only as an effort to improve individual teacher readiness, but also as part of a broader strategy for establishing a sustainable culture of teacher-driven digital innovation in vocational education.

Conclusion

This study demonstrates that self-efficacy and learning motivation constitute important psychological foundations for vocational teachers' interest in developing digital learning media at SMKN 10 Malang. Both variables exert significant individual effects, while their simultaneous contribution confirms that teachers' willingness to engage in digital media development emerges from the combination of perceived capability and a sustained orientation toward learning. Self-efficacy enables teachers to approach media-design activities with greater confidence, particularly when they encounter unfamiliar applications, technical difficulties, or complex development processes. Learning motivation, which emerged as the stronger predictor in the present model, provides the continuing drive to acquire new competencies, explore technological possibilities, and improve the quality of instructional practices. Taken together, these findings reinforce the argument that digital transformation in vocational education cannot be achieved through technological infrastructure alone. Its sustainability also depends on teachers who believe that they are capable of engaging with technological change and who remain motivated to continuously develop their professional competencies. The findings therefore extend the understanding of digital readiness beyond access and technical proficiency by emphasizing the psychological conditions that encourage vocational teachers to move from being users of digital technology toward becoming active developers of contextually relevant digital learning resources.

In practical terms, vocational schools should integrate the development of self-efficacy and learning motivation into their broader digital transformation and teacher professional development strategies. Training should provide teachers with progressive opportunities to design authentic digital learning resources, experience achievable success, receive constructive feedback, collaborate with colleagues, and connect newly acquired technological skills with the practical and occupational characteristics of their respective vocational disciplines. Institutional

recognition, mentoring, continuous professional learning, and opportunities for digital experimentation may further strengthen teachers' confidence and willingness to sustain innovation. Nevertheless, because self-efficacy and learning motivation do not account for all variation in teachers' interest, future studies should incorporate additional organizational, technological, and professional factors, including digital leadership, institutional support, infrastructure quality, workload, professional development experiences, collaborative culture, perceived usefulness of technology, and engagement with industry. Future research may also involve larger and more diverse samples across vocational schools and regions and employ longitudinal or mixed-method designs to examine how psychological and institutional conditions interact over time. Such research would contribute to a more comprehensive framework for understanding and strengthening sustainable, teacher-driven digital innovation in vocational education.

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