Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

# THE EFFECT OF DIFFERENTIATED INSTRUCTION AND DIGITAL LITERACY ON THE READINESS OF PRE-SERVICE TEACHERS AT MAKASSAR STATE UNIVERSITY WITH SELF-EFFICACY AS A MEDIATING VARIABLE

**Suhartini[1a*], Rahmatullah[2b], Najamuddin[3c]**

[123]Social Science Education, Postgraduate Program, Makassar State University

*E-mail*: suhartini.s22024@student.unm.ac.id,
rahmatullah@unm.ac.id,
najamuddin@unm.ac.id

(*) Corresponding Author
suhartini.s22024@student.unm.ac.id

**ARTICLE HISTORY**
**Received :** 20-10-2025
**Revised** : 07-11-2025
**Accepted : 30-12-2025**

**KEYWORDS**
Differentiated Instruction; Digital Literacy; Pre-service Teachers; Teacher Readiness; Self-efficacy

**ABSTRACT**
The demands of teacher professionalism in 21st-century education place the readiness of prospective teachers as a crucial aspect that is determined not only by pedagogical mastery but also by the ability to adapt to the diversity of students, digital literacy, and self-confidence in carrying out professional roles. However, studies that integrate differentiated learning and digital literacy with self-efficacy as a mediating mechanism are still relatively limited. This study aims to analyse the influence of differentiated learning and digital literacy on the readiness of prospective teachers at Makassar State University with self-efficacy as a mediating variable. This study uses a quantitative approach with Partial Least Squares–Structural Equation Modelling (PLS-SEM) analysis of 280 prospective teacher students. The results show that differentiated learning and digital literacy have a positive and significant effect on the readiness of prospective teachers. These two variables are also proven to increase self-efficacy, which in turn plays a direct role in strengthening the professional readiness of prospective teachers. The mediation findings indicate that self-efficacy is a key psychological factor that bridges pedagogical and digital competence with actual readiness in learning practice. Theoretically, this study contributes to the development of a model of prospective teachers' readiness by emphasising the role of self-efficacy as a link between the pedagogical and digital dimensions.



## INTRODUCTIONS

Educational success in Indonesia is largely determinated by teacher quality, particularly their pedagogical, professional, and digital competencies (Helms-lorenz, 2023). Therefore, the teaching profession should not be undertaken by just anyone, as it requires thorough preparation through special education and training in order to produce professional teachers. However, in reality, many prospective teachers still face obstacles in achieving this professionalism, particularly in implementing innovative and adaptive learning methods in accordance with the characteristics of their students (Achmad et al., 2024). This condition reflects the gap between ideal professional competency requirements and the readiness of prospective teachers in educational practice. This issue highlights the importance of systematic efforts to strengthen the readiness of prospective teachers through more structured professional education that is responsive to field

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

requirements. This gap is the main reason for the need for pedagogical and learning technology approaches that can support professional teachers.

The government responded to these issues through various strategic policies, one of which was the implementation of the Pre-service Teacher Professional Education Program (PPG). This program was designed to produce professional teachers who not only master academic knowledge but also have the competencies and attitudes required by the teaching profession. As stated by (Sudrajat et al., 2023), Pre-service PPG is a strategic step in efforts to improve the capacity and professionalism of educators in Indonesia. However, the phenomenon in the field shows that there are still many pre-service teachers who face challenges in preparing themselves as professional educators. One of the obstacles that often arises is the difficulty in designing adaptive learning that is oriented towards the needs of students. This condition indicates that pre-service teachers require further strengthening of their pedagogical skills, digital competence, and professional confidence.

Differentiated learning enables teachers to adapt intructional materials, teaching strategies, and assessment approaches to accommodate students' needs, interest, and abilities, thereby enchaning learners' motivation and engagement throughout the learning process. (Komang Arie Suwastini, 2021). A teacher is not only capable of delivering learning materials, but also capable of nurturing and shaping students into individuals who are excellent, have character, and possess integrity. This makes differentiated learning not only a pedagogical strategy, but also a foundation for creating meaningful learning experiences. The implementation of differentiated learning is becoming increasingly important in the context of the Merdeka Curriculum, which provides space for students to learn according to their individual potential and interests. Each student has different learning characteristics, so teachers need to adjust their learning approaches to these various conditions, including students' interests, readiness levels, abilities, stages of development, and learning attitudes. (Anggoro et al., 2024);(Magableh & Abdullah, 2022). This learning model is designed based on the learning profile, interests, and motivation of students (Bahauddin Azmy & Arif Mahya Fanny, 2023). This strategy provides space for prospective educators to tailor the learning process to suit the unique conditions and needs of each student, so that they can develop optimally and have a high motivation to learn. As prospective teachers, it is very important to practice differentiated learning.

The development of differentiated learning by teachers certainly requires strong digital literacy that is carried out in a focused and improvement-oriented manner. Digital literacy for teachers is a commitment to strengthening their competence in realizing differentiated learning that is able to facilitate students with various potentials and learning needs. Teachers with high digital literacy tend to show greater dedication, responsibility, and consistency in their professional duties (Sasmiranda et al., 2025). In addition, digital literacy has become a very important requirement in the era of educational transformation (Hairida et al., 2023). explains that prospective teachers still show significant disparities in digital literacy: they are stronger in technical skills, but weaker in cognitive and socio-emotional aspects. This phenomenon indicates a gap between the complex needs of digital literacy and the digital skills possessed by pre-service teachers. In line with this, (Yakovleva, 2022) states that the digital learning environment influences prospective teachers' readiness to realize themselves professionally. Although prospective teachers appreciate digital content and the value of communication, they still face challenges in empathy skills and mastering more complex digital skills. For this reason, digital literacy is an important factor that needs to be strengthened to support the professional readiness of prospective teachers.

Thus, digital literacy not only serves as technological support, but also as a cognitive and affective element that strengthens the learning process and professional readiness of prospective teachers. In line with that, (Abraham & Sickel, 2025) shows that field experience in teacher education programs has a significant effect on the readiness of prospective teachers, particularly through increased professional engagement that strengthens self-efficacy in teaching. Readiness is not only determined by internal factors, but is also influenced by the design of teacher education programs that are integrated with real-world practice.

In the field of teacher education, self-efficacy often acts as a mediating variable that strengthens the relationship between differentiated learning and digital literacy on the level of teacher readiness. Self-efficacy refers to a person's belief in their ability to control and carry out the actions necessary to deal with various situations. When prospective teachers feel supported and have strong self-confidence, they are better able to optimize differentiated learning and digital literacy, thereby significantly increasing their readiness.

## METHODS

This study employs a quantitative research design to examine the structural relationships among variables. This approach is used to examine the characteristics of a particular population or sample. In this study, data collection was

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

carried out through observation, documentation, and the distribution of questionnaires to respondents in order to test the formulated hypotheses. The collected data were analysed using SmartPLS software. The research population included PPG students at Makassar State University, while the sample consisted of 280 respondents. All participants provided informed consent prior to data collection.

## RESULTS AND DISCUSSION

### Results

### Research Instrument Testing

The instrument was tested to identify a phenomenon that would later be studied. The instrument testing in this study included validity and reliability tests.

### Validity Test

Convergent validity was tested by examining the outer loading of the indicators to determine the average extracted variance (AVE) of each construct.

**Table 1 *Convergent Validity Test Results***

| Variable | Indicator | *Outer loading* | *Cut value* | AVE | Description |
|---|---|---|---|---|---|
| Differentiated learning (X1) | PB1 | 0.897 | 0,70 | 0.795 | Valid |
| | PB2 | 0.906 | 0,70 | | |
| | PB3 | 0.879 | 0,70 | | |
| | PB4 | 0.883 | 0,70 | | |
| Digital literacy (X2) | LD1 | 0.930 | 0,70 | 0.827 | Valid |
| | LD2 | 0.912 | 0,70 | | |
| | LD3 | 0.885 | 0,70 | | |
| Teacher readiness (Y) | KG1 | 0.936 | 0,70 | 0.855 | Valid |
| | KG2 | 0.939 | 0,70 | | |
| | KG3 | 0.907 | 0,70 | | |
| | KG4 | 0.917 | 0,70 | | |
| Self efficacy (Z) | SE1 | 0.888 | 0,70 | 0.808 | Valid |
| | SE2 | 0.907 | 0,70 | | |
| | SE3 | 0.901 | 0,70 | | |

*Source: Data processing results (2025)*

Based on Table 1, the results of the assessment of outer loading and AVE show that all studies are valid because they have a loading factor value > 70 and an AVE value > 0.5, which means that all studies have met the requirements and explain that this study is convergent valid.

### Reliability Test

Reliability testing is evaluated using measurements such as Cronbach's alpha, composite reliability, and rho_a. For data to be considered reliable, several conditions must be met, such as a Cronbach's alpha value > 0.7, a composite reliability (c) value > 0.7, and a rho_a value > 0.7 (Hair et al., 2020).

**Table 2 Construct Reliability**

| **Variable** | ***Cronbach's alpha*** | ***Composite reliability (rho_a)*** | ***Composite reliability (rho_c)*** | **Description** |
|---|---|---|---|---|
| Differentiated Learning (X1) | 0.914 | 0.914 | 0.939 | All Reliable |
| Digital Literacy (X2) | 0.896 | 0.906 | 0.935 | |
| Teacher Readiness (Y) | 0.944 | 0.945 | 0.959 | |
| Self Efficacy (Z) | 0.881 | 0.881 | 0.926 | |

*Source: Smart PLS Data Processing Results, 2025.*

Based on Table 2, the Construct Reliability values of all variables are above 0.7. This indicates that all variables are reliable in this research model.

### Structural Model Testing (Inner Model)

Structural model testing using various measurements such as R-square and F-Square to assess the suitability of each variable.

### R-Square Test

**Table 3 R-Square Test**

| Variable | *R-square* |
|---|---|

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

| | |
|---|---|
| Teacher Readiness (Y) | 0.600 |
| Self Efficacy (Z) | 0.418 |

*Source: Smart PLS Data Processing Results, 2025*

Based on the table above, it can be seen that the R-Square value for teacher readiness (Y) of 0.600 indicates that approximately 60% of the teacher readiness variable is influenced by the variables studied, while 40% is influenced by other factors.

The R-Square value for the self-efficacy variable (Z) is 0.418, which is moderate, meaning that self-efficacy can strengthen or weaken the relationship between other variables.

**F-Square Test**

The F-square test is used to measure the magnitude of the effect of changes in independent variables on dependent variables in research. Through this test, the strength of the contribution of each variable can be determined. The following is the F-Square test table.

**Table 4 F-Square Test**

| Variable relationships | *F-square* | Description |
|---|---|---|
| X1 → Y | 0.329 | Moderate influence |
| X2 → Y | 0.131 | Minor influence |
| Z →Y | 0.161 | Moderate Influence |
| X2 → Z | 0.202 | Moderate Influence |
| X1 → Z | 0.494 | Significant Influence |

*Source: Smart PLS Data Processing Results, 2025*

Based on the table above, the following conclusions can be drawn:

1. The differentiated learning variable has a moderate effect on the teacher readiness variable (F2 = 0.329).
2. The digital literacy variable has a small effect on teacher readiness (F2 = 0.131).
3. The self-efficacy variable has a moderate effect on teacher readiness (F2 = 0.161).
4. The digital literacy variable has a moderate effect on self-efficacy (F2 = 0.202)
5. The differentiated learning variable has a large effect on self-efficacy (F2 = 0.494)

**Hypothesis Testing**

Hypothesis testing in this study is to explain the relationships in the research. The researcher conducted tests related to hypothesis testing using measurements such as direct effect analysis (path coefficient) and indirect effect analysis.

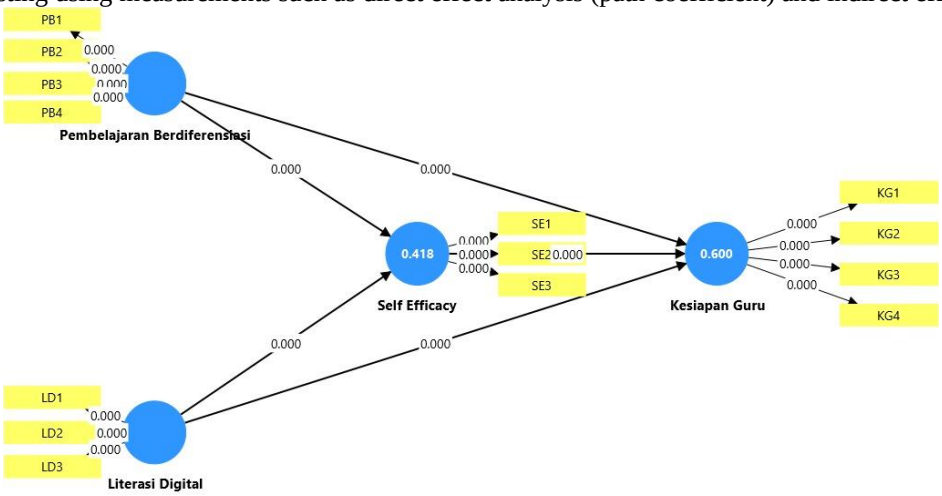


**Figure 1. Hypothesis test results**

**Direct Effect Analysis**

This test is conducted to observe the direct effect of an independent variable on a dependent variable involving several independent variables. The following table shows the direct effect analysis test.

**Table 5 Direct Effect Analysis Test**

| Hypothesis | Standard deviation | T statistic | P Values | Note |
|---|---|---|---|---|
| **X2 ke Y** | **0.045** | **5.616** | **0.000** | **Sig** |
| **X2 ke Z** | **0.047** | **7.371** | **0.000** | **Sig** |

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

| | | | | |
|---|---|---|---|---|
| **X1 KE Y** | **0.042** | **10.555** | **0.000** | **Sig** |
| **X1 KE Z** | **0.044** | **12.101** | **0.000** | **Sig** |
| **Z KE Y** | **0.053** | **6.237** | **0.000** | **Sig** |

*Source: Smart PLS Data Processing Results, 2025*

The following conclusions can be drawn from the table above:

The results show that the first hypothesis (H1), which states that pre-service teacher readiness is influenced by differentiated learning, is proven. The t-statistic value of 10.555 indicates this, as this number exceeds 1.96. In line with this, the p-value (0.000) < α (0.05). This shows that teacher readiness is positively influenced by differentiated learning. Therefore, it can be said that the first hypothesis (H1) is accepted.

The results show that the second hypothesis (H2), which states that self-efficacy is influenced by differentiated learning, is proven. The t-statistic value of 12.101 indicates this, as this number exceeds 1.96. In line with this, p (0.000) < α (0.05). This shows that self-efficacy is positively influenced by differentiated learning. Therefore, it can be said that the second hypothesis (H2) is accepted.

The results show that the third hypothesis (H3), which states that teacher readiness is influenced by digital literacy, is proven. The t-statistic value of 5.616 indicates this, as this number exceeds 1.96. In line with this, the p-value (0.000) < α (0.05). This shows that teacher readiness is positively influenced by digital literacy. Therefore, it can be said that the third hypothesis (H3) is accepted.

Hypothesis four (H4), which states that digital literacy is thought to influence self-efficacy, has been proven. This can be seen from the t-statistic value of 7.371, which is greater than 1.96. Similarly, the p-value (0.000) is less than α (0.05). This means that digital literacy has a positive effect on self-efficacy. Thus, it can be concluded that hypothesis (H4) is accepted.

Hypothesis five (H5), which states that self-efficacy is thought to influence teacher readiness, has been proven. This can be seen from the t-statistic value of 6.237, which is greater than 1.96. Similarly, the p-value (0.000) is less than α (0.05). This means that self-efficacy has a positive effect on teacher readiness. Thus, it can be concluded that hypothesis (H5) is accepted.

**Indirect Effect Analysis Test**

Hypothesis testing refers to the results of indirect effect analysis. If the P-value is less than 0.05, this indicates significance and shows the presence of a moderating effect. The following table shows the output for the hypothesis test.

**Table 6 Indirect Effect Results**

| Hypothesis | Standard deviation | T statistics | P Values | Ket |
|---|---|---|---|---|
| **X1 → Z → Y** | **0.033** | **5.390** | **0.000** | **Sig** |
| **X2 → Z → Y** | **0.025** | **4.533** | **0.000** | **Sig** |

*Source: Smart PLS Data Processing Results, 2025*

From the table above, the following conclusions can be drawn:

The results show that the sixth hypothesis (H6), which states that self-efficacy moderates the effect of differentiated learning on pre-service teachers' readiness, is proven. The t-statistic value of 5.390 indicates this, as this figure exceeds 1.96. In line with this, the p-value (0.000) < α (0.05). This shows that self-efficacy moderates the effect of differentiated learning on teacher readiness. Therefore, it can be said that the sixth hypothesis (H6) is accepted.

The results show that the seventh hypothesis (H7), which states that self-efficacy moderates the effect of differentiated learning on teacher readiness, is proven. The t-statistic value of 4.533 indicates this, as this figure exceeds 1.96. In line with this, the p-value (0.000) < α (0.05). This shows that self-efficacy moderates the effect of differentiated learning on teacher readiness. Therefore, it can be said that the seventh hypothesis (H7) is accepted.

## DISCUSSION

**The effect of differentiated learning on the readiness of pre-service PPG teachers**

These findings indicate that differentiated instruction plays a pivotal role in strengthening pre-service teacher readiness. The results of the hypothesis test show a positive relationship between differentiated learning and the readiness of pre-service PPG teachers. This means that differentiated learning has a positive effect on the readiness of prospective teachers. The results of this study are in line with research (Toto & Sulistyorini, 2024) dan (Obrovská et al., 2024) which states that pre-service PPG students experienced a significant increase in teaching preparation after receiving differentiated learning. Furthermore, the t-statistic value shows that the variable of differentiated learning on teacher

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

readiness is significant. This confirms that the application of learning tailored to the individual needs of students plays an important role in improving the readiness of prospective teachers.

The results of the study are also supported by (Kara & Tekindur, 2025) The implementation of differentiated learning has been proven to significantly improve learning outcomes and student engagement. The effectiveness of this approach stems from the fact that the learning process is tailored to each student's level of readiness, interests, and learning characteristics, resulting in a more relevant and in-depth learning experience. The study confirms that appropriate differentiation in content, process, and product can improve teachers' ability to design learning that is more responsive to students' needs.

From the above explanation, it can be concluded that differentiated learning has a positive and significant effect on the readiness of pre-service teachers. The application of differentiated learning helps prospective teachers in designing adaptive learning, strengthening self-efficacy, and preparing them to deal with the diversity of students.

**The influence of digital literacy on the readiness of pre-service PPG teachers**

In the ever-evolving world of education, the use of technology is becoming increasingly important to support the teaching and learning process. Rapid technological developments require future teachers to have strong digital skills in order to facilitate learning that is relevant, effective, and in line with the needs of 21st-century students. The results of the hypothesis test show that there is a positive and significant influence between digital literacy and the readiness of pre-service PPG teachers. This means that digital literacy can make a real contribution to improving the readiness of prospective teachers before they enter the professional world.

The results of this study are in line with (Paetsch et al., 2023) Digital literacy contributes significantly to teachers' readiness to integrate technology into learning. This is also in line with research. (Andreasen et al., 2022) shows that digital training in early teacher education programs has a positive impact in the form of increased professional digital competence, self-efficacy in the use of ICT, and perceptions of the benefits of technology for learning. These findings confirm that systematic teacher education support can strengthen prospective teachers' readiness to integrate technology into their teaching practices. Strong digital literacy integration, in line with Tam's assumption, provides a foundation that enables teachers to optimally utilize technology to improve the quality of learning and prepare students for future needs.

Digital literacy in this case includes the ability to filter, evaluate, and use information critically, especially amid the rapid flow of digital information. Prospective teachers who have mastered digital literacy can guide students to become smart and ethical information users, as well as help them distinguish between credible and untrustworthy sources. Thus, digital literacy plays an important role in combating the spread of false information while strengthening students' information literacy skills.

Thus, it can be understood that digital literacy has a positive and significant influence on the readiness of pre-service PPG teachers. The higher the level of digital literacy of prospective teachers, the greater their readiness in facing the dynamics of technology-based learning. Digital literacy not only supports pedagogical abilities but also shapes the professional character of teachers to be adaptive, reflective, and able to respond effectively to learning challenges in the digital age.

**The Effect of Self-Efficacy on the Readiness of Pre-service PPG Teachers**

Based on the results of the hypothesis test, there is a positive and significant effect between self-efficacy and the readiness of pre-service teachers. This means that self-efficacy can have a positive effect on the readiness of pre-service teachers because prospective teachers who have strong self-confidence tend to believe more in their ability to plan, manage, and implement learning.

The results of this study are in line with research (Sonsupap et al., 2025) which states that an increase in self-efficacy significantly affects pre-service teachers' readiness to carry out teaching practices, including the ability to plan learning and manage classrooms effectively. At the early stages of their careers, this belief is very important because it will affect their readiness to carry out learning practices, manage classrooms, and adapt to the diverse needs of students. In addition, the results of the study (Taufik et al., 2025) shows that strong self-efficacy among prospective teachers during professional education contributes directly to their readiness to face real learning situations, especially in terms of pedagogical confidence and adaptive abilities. In social cognitive career theory (SCCT), self-efficacy is seen as a major factor shaping an individual's readiness to enter the workforce, as belief in one's abilities will influence behavior, motivation, and professional goals. This is in line with the context of pre-service PPG teacher candidates who are building their professional confidence.

Thus, it can be understood that self-efficacy has a positive and significant effect on the readiness of pre-service PPG teachers. Prospective teachers' self-confidence has been proven to increase their readiness in planning lessons,

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

managing classrooms, and facing teaching practices, thereby becoming an important factor in shaping their professional readiness.

**The effect of differentiated learning on self-efficacy in pre-service teacher training**

Based on the results of hypothesis testing, there is a positive and significant effect between differentiated learning and pre-service teacher training self-efficacy. This shows that through differentiated learning, prospective teachers are able to positively improve their self-efficacy. this is in line (Ramli & Nurahimah, 2020) which shows that self-efficacy is in the excellent category. In addition, this study reinforces the evidence of a significant positive relationship between self-efficacy and differentiated learning practices applied in the classroom. Differentiated learning is a learning technique to facilitate the various needs of students in various forms of teaching approaches and strategies (Klepsch & Seufert, 2020). This approach is understood as a process of ensuring that what students learn, how they learn it, and how they demonstrate their learning is tailored to their level of readiness, interests, and learning styles. Self-confidence is an individual's assessment of their own worth. Self-confidence plays an important role in human life and is a driving force for a person to behave according to their desires.

On the other hand, self-efficacy is an important indicator in predicting individual behavior, because it reflects a person's belief in his or her ability to successfully complete tasks or fulfill responsibilities in a particular area (Yilmaz et al., 2022). In the context of differentiated learning, prospective teachers manage their time more flexibly, adapt various instructional approaches to suit students' needs, and build collaborative relationships with students as partners in the learning process. This approach gives students the opportunity to express their understanding according to their individual needs, thereby supporting the achievement of optimal learning outcomes (Dalila et al., 2022).

The findings of this study confirm that differentiated learning has a positive and significant effect on the self-efficacy of pre-service PPG teacher candidates. Based on the social cognitive career theory (SCCT) perspective, the development of a person's interests, choices, and performance is influenced by three main components, namely self-efficacy, outcome expectations, and environmental support and barriers. This emphasizes that an individual's belief in their abilities (self-efficacy) is formed through learning experiences, social support, and perceptions of the environment.

**The effect of digital literacy on self-efficacy in pre-service teacher training**

The findings indicate that digital literacy has a positive and significant effect on pre-service teachers' self-efficacy. This suggests that enhanced digital literacy strengthens prospective teachers' confidence in their professional capabilities. These results are consistent with prior studies (Sutarni et al., 2025) which reported that digital literacy and digital training significantly improve teachers' self-efficacy. Digital literacy is the ability to find, analyze, and generate knowledge through digital technology. This study shows that digital literacy can improve academic achievement and engagement. Language acquisition also becomes more effective when students utilize internet resources, collaborative learning, and independent learning, especially for those who have digital awareness (Reddy et al., 2020). With the development of information and communication technology, updating digital competencies has become very important for successful participation in various 21st-century activities (Cosby et al., 2023)(K., 2023). Good digital literacy improves prospective teachers' perceptions of the ease and benefits of using technology in learning, which in turn strengthens their self-efficacy in carrying out technology-based tasks.

Based on the results of this study, digital literacy has been proven to have a significant effect on the self-efficacy of teacher education students. The higher the digital literacy of prospective teachers, the greater their confidence in implementing technology-based learning, which ultimately supports their professional readiness as educators in the digital age.

**The effect of differentiated learning on the readiness of pre-service PPG teachers with self-efficacy as a mediating variable**

The results of hypothesis testing revealed that self-efficacy contributes as a mediating mechanism can have a positive and significant influence in bridging the relationship between differentiated learning and the readiness of prospective PPG teachers.(Kalinowski et al., 2024). The results of this study are in line with (Zhao et al., 2021 which states that self-efficacy plays an important role in increasing motivation, learning satisfaction, and competency mastery of prospective teachers when participating in a learning model that adapts to students' learning needs, so that flexible and learner-centered learning has a significant impact on improving the professional readiness of prospective teachers. Thus, prospective teachers with high self-efficacy tend to be more adaptive to various learning strategies, able to manage the learning process independently, and demonstrate greater readiness to meet the competency requirements as professional educators. Thus, self-efficacy is a key psychological aspect that supports the effectiveness of differentiated learning in shaping the readiness of future teachers.

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

Based on the results of the study, self-efficacy significantly mediates the effect of differentiated learning on the readiness of pre-service PPG teachers. Prospective teachers' self-confidence strengthens the effectiveness of differentiated learning so that they are better prepared to face the demands of learning and their professional role as teachers.

**The effect of digital literacy on the readiness of pre-service PPG teachers with self-efficacy as a mediating variable**

The results of hypothesis testing show that self-efficacy functions as a mediating variable that has a positive and significant effect in strengthening the relationship between digital literacy and the readiness of prospective PPG teachers. This study indicates that the better the digital literacy of a prospective teacher, the higher their confidence in carrying out their professional duties, which ultimately increases their readiness to become teachers. In other words, self-efficacy acts as a mediator that strengthens the relationship between digital literacy and teacher readiness. The results of this study are in line with the results of previous studies. (Brilliants & Kurniawan, 2025) which states that digital literacy not only has a significant effect on teacher readiness, but also has a significant indirect effect through self-efficacy. In this study, self-efficacy was found to be a mediator that strengthens the relationship between digital literacy and teacher readiness. Digital technology and digital literacy are key factors in the transformation of digital-based education and learning services. (Okoye et al., 2023). Teachers with high self-efficacy who skillfully integrate digital tools into their teaching are more likely to experiment with new approaches, enabling them to adapt to developments in educational technology.

Good digital literacy requires the ability to find, understand, and use digital information in the context of learning, so educators need to adopt pedagogical strategies that integrate digital devices to update traditional learning methods (Yu & Wang, 2025). In addition, digital literacy is a key competency in modern society, not only important for empowering digital citizenship, but also as a fundamental foundation in the professional development of educators (Audrin & Audrin, 2022). Overall, the results of this study reinforce the argument that self-efficacy plays an important role in improving the readiness of pre-service teachers through the influence of differentiated learning and digital literacy. Increased self-confidence among prospective teachers makes them better able to utilize adaptive learning strategies and master digital literacy, which ultimately contributes to their professional readiness.

## CONCLUSION

The results of the study indicate that differentiated learning and digital literacy have a significant effect on the readiness of pre-service teachers at Makassar State University, with self-efficacy as a mediating variable. Differentiated learning improves the readiness of prospective teachers by strengthening pedagogical skills that are responsive to the needs of students, while digital literacy supports professional readiness through the use of technology in the 21st century learning process. Self-efficacy acts as a psychological factor that enables prospective teachers to optimise their pedagogical and digital competencies with greater confidence in their teaching practice. Mediation analysis confirms that self-efficacy significantly strengthens the influence of differentiated learning and digital literacy on pre-service teacher readiness. These findings contribute theoretically by enriching the study of teacher readiness through the integration of pedagogical, technological, and psychological dimensions in a single empirical model, as well as confirming the role of self-efficacy as a connecting mechanism between variables. Practically, the results of this study imply that teacher education programmes need to simultaneously develop differentiated learning, digital literacy, and self-efficacy strengthening in order to optimally improve the professional readiness of prospective teachers.

## REFERENCES

Abraham, J., & Sickel, A. J. (2025). Testing the Associations Among Pre-Service Teachers ' Sense of Preparation , Readiness to Engage in the Profession , and Self-Efficacy for Teaching : Validation of a Causal Framework. *Education Sciences*, *1*, *1–17*. https://doi.org/https://doi.org/10.3390/educsci15091215

Achmad, W. K. S., Rachman, S. A., Aras, L., & Amran, M. (2024). Differentiated instruction in reading in elementary schools: a systematic review. *International Journal of Evaluation and Research in Education , 13(3)*, 1997–2005. https://doi.org/10.11591/ijere.v13i3.27134

Andreasen, J. K., Tomte, catherine E., Bergen, I., & Kovac, V. bobo. (2022). Professional digital competence in initial teacher education: An examination of differences in two cohorts of pre-service teachers. *Journal of Digital Literacy*, *17*. https://doi.org/https://doi.org/10.18261/njdl.17.1.5

Anggoro, S., Fitriati, A., Thoe, N. K., Talib, C. A., & Mareza, L. (2024). Differentiated instruction based on multiple intelligences as promising joyful and meaningful learning. *International Journal of Evaluation and Research in Education , 13(2)*, 1194–1204. https://doi.org/10.11591/ijere.v13i2.24791

Audrin, C., & Audrin, B. (2022). Key factors in digital literacy in learning and education: a systematic literature review

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

using text mining. *Education and Information Technologies*, *27(6)*, 7395–7419. https://doi.org/10.1007/s10639-021-10832-5

Bahauddin Azmy, & Arif Mahya Fanny. (2023). Literature Review: Pembelajaran Berdiferensiasi Dalam Kurikulum Merdeka Belajar Di Sekolah Dasar. *Inventa*, *7(2), 217–223.* https://doi.org/10.36456/inventa.7.2.a8739

Brilliants, C. A., & Kurniawan, R. Y. (2025). Influence of Economic Literacy and Digital Literacy on Economic Teacher Readiness: Mediating Role of Self-Efficacy. *Dinamika Pendidikan*, *20(1)*, 32–49. https://doi.org/10.15294/dp.v20i1.20767

Cosby, A., Fogarty, E. S., & Manning, J. (2023). Digital Literacy and Digital Self-Efficacy of Australian Technology Teachers. *Education Sciences*, *13(5)*. https://doi.org/10.3390/educsci13050530

Dalila, A. A., Rahmah, S., Liliawati, W., & Kaniawati, I. (2022). Effect of Differentiated Learning in Problem Based Learning on Cognitive Learning Outcomes of High School Students. *Jurnal Penelitian Pendidikan IPA*, *8(4)*, 2116–2122. https://doi.org/10.29303/jppipa.v8i4.1839

Hairida, H., Beno, C., Soeharto, S., Charalambos, C., Rasmawan, R., Martono, M., Arifiyanti, F., Winarti, A., & Enawaty, E. (2023). Evaluating Digital Literacy of Pre-service Chemistry Teachers: Multidimensional Rasch Analysis. *Journal of Science Education and Technology*, *32*, 643–654. https://doi.org/https://doi.org/10.1007/s10956-023-10070-z

Helms-lorenz, M. (2023). Effective Teaching Around the World. In *Effective Teaching Around the World*. https://doi.org/10.1007/978-3-031-31678-4

K., M. (2023). A Study on Impact of Artificial Intelligence (AI) on Library Services. *International Journal of Research in Library Science*, *9(4)*, 189–199. https://doi.org/10.26761/ijrls.9.4.2023.1696

Kalinowski, E., Westphal, A., Jurczok, A., & Vock, M. (2024). The essential role of teacher self-efficacy and enthusiasm for differentiated instruction. *Teaching and Teacher Education*, *148*(May), 104663. https://doi.org/10.1016/j.tate.2024.104663

Kara, S., & Tekindur, A. (2025). The Effect of Differentiated Instruction on the Academic Achievement and Opinions of 3rd-Grade Students in Science Education: A Mixed-Methods Study. *Journal of Intelligence*, *13*(10), 126. https://doi.org/10.3390/jintelligence13100126

Klepsch, M., & Seufert, T. (2020). Understanding instructional design effects by differentiated measurement of intrinsic, extraneous, and germane cognitive load. In *Instructional Science (Vol. 48, Issue 1)*. Springer Netherlands. https://doi.org/10.1007/s11251-020-09502-9

Magableh, I. S., & Abdullah, A. (2022). Differentiated instruction effectiveness on the secondary stage students' reading comprehension proficiency level in Jordan. *International Journal of Evaluation and Research in Education*, *11(1)*, 459–466. https://doi.org/10.11591/ijere.v11i1.21971

Obrovská, J., Svojanovský, P., Kratochvílová, J., Lojdová, K., Tůma, F., & Vlčková, K. (2024). Promises and challenges of differentiated instruction as pre-service teachers learn to address pupil diversity. *Journal of Education for Teaching*, *50(3)*, 403–420. https://doi.org/10.1080/02607476.2023.2247356

Okoye, K., Hussein, H., Arrona-Palacios, A., Quintero, H. N., Ortega, L. O. P., Sanchez, A. L., Ortiz, E. A., Escamilla, J., & Hosseini, S. (2023). Impact of digital technologies upon teaching and learning in higher education in Latin America: an outlook on the reach, barriers, and bottlenecks. In *Education and Information Technologies (Vol. 28, Issue 2)*. Springer US. https://doi.org/10.1007/s10639-022-11214-1

Paetsch, J., Franz, S., & Wolter, I. (2023). Changes in early career teachers' technology use for teaching: The roles of teacher self-efficacy, ICT literacy, and experience during COVID-19 school closure. *Teaching and Teacher Education*, *135(June)*, 104318. https://doi.org/10.1016/j.tate.2023.104318

Ramli, R., & Nurahimah, M. Y. (2020). Self-efficacy and differentiated instruction: A study among Malaysian school teachers. *Universal Journal of Educational Research*, *8(4)*, 1252–1260. https://doi.org/10.13189/ujer.2020.080416

Reddy, P., Sharma, B., & Chaudhary, K. (2020). Digital literacy: A review of literature. *International Journal of Technoethics*, *11*(2), 65–94. https://doi.org/10.4018/IJT.20200701.oa1

Sasmiranda, N., Ramli, A., & Hasan, M. (2025). The Influence of Digital Literacy , Self-Efficacy , and Teaching Commitment on Instructional Innovation of Junior High School Teachers. *International Journal Of Education And Humanities*, *4(2)*, 160–176. https://doi.org/https://doi.org/10.56314/ijoleh.v4i2.418

Sonsupap, K., Cojorn, K., Choompunuch, B., Intakanok, C., & Seesom, C. (2025). Exploring Pre-Service Teachers' Self-Efficacy: The Impact of Community of Practice and Lesson Study. *Education Sciences*, *15(10)*, 1–18. https://doi.org/10.3390/educsci15101357

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 14 No. 4. December 2025 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

Sudrajat, D. R., Dahlan, D., & Budiwati, N. (2023). Refleksi Mata Kuliah Pendidikan Profesi Guru Prajabatan Model Baru Bidang Studi Ekonomi LPTK Universitas Pendidikan Indonesia Tahun 2022. *Seminar Nasional Pariwisata Dan Kewirausahaan (SNPK)*, *2*. https://doi.org/https://doi.org/10.36441/snpk.*vol2.2023*.187

Sutarni, N., Supardi, E., & Kurniawati, S. (2025). *Evaluation of Digital Literacy and Training in Shaping Self-Efficacy towards Teachers ' Digital Competence in High Schools*. *6*(4). https://doi.org/10.37251/jee.v6i4.1983

Taufik, O. A., Soeharto, S., Ahmad, A. K., Suprapto, Sumarni, An-Nahidl, N. A., Pamungkas, O. Y., Mariah, S., Andini, D. W., & Cahyandaru, P. (2025). The path to teaching Excellence: Examining self-efficacy of pre-service teachers during school internship programs in Indonesia. *Social Sciences and Humanities Open*, *11*(November 2024), 101619. https://doi.org/10.1016/j.ssaho.2025.101619

Toto, B. D. H., & Sulistyorini, D. (2024). Pengaruh pembelajaran berdiferensi terhadap persiapan mengajar mahasiswa PPG prajabatan bidang studi bahasa indonesia. *Jolla Journal of Language Literature and Arts*, *4(9)*, 950–956. https://doi.org/10.17977/um064v4i92024p950-956

Yakovleva, O. (2022). Digital Learning Environment Values of Pre-Service Teachers as a Basis for Successful Professional Self-Realisation: A Case Study. *Education Sciences*, *12(2)*. https://doi.org/10.3390/educsci12020120

Yilmaz, R., Bal, A. P., & Atas, V. (2022). Development of self-efficacy scale of differentiated instruction for teachers. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, *7(2)*, 93–104. https://doi.org/10.23917/jramathedu.v7i2.16204

Yu, B., & Wang, W. (2025). Using digital storytelling to promote language learning, digital skills and digital collaboration among English pre-service teachers. *System*, *129*(January 2024), 103577. https://doi.org/10.1016/j.system.2024.103577