The Influence of Teacher Digital Competence, Personal-ethical Competencies, and Personal-professional Competencies on The Pedagogical Ability of Education Students Through Micro-Learning

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Abstract
The purpose of this research was to determine whether or not there was an influence of teacher digital competence, personal-ethical competencies, and personal-professional competencies on the pedagogical abilities of educational students. This research leads to the problem of digital competence and personal competence of teachers in implementing learning on pedagogical abilities. The research employed a quantitative method with product-moment correlation. The sample used in this study were 316 7th-semester students of the Faculty of Teacher Training and Education, Universitas Muhammadiyah Surakarta. Data processing techniques using multiple linear regression analysis. The results showed that 1) teacher digital competence affects students' pedagogical abilities, 2) personal-ethical competencies do not affect students' pedagogical abilities, 3) personal-professional competencies affect students' pedagogical abilities, 4) teacher digital competence, personal-ethical competencies, and personal-professional competencies together have a significant influence on the pedagogical abilities of educational students.

Keywords: pedagogical, personal-ethical competencies, personal-professional competencies, teacher digital competence

Introduction
In the current era of globalization, education is essential in every country to improve education quality. In this case, the Teacher can implement changes due to globalization to help students adapt to new world conditions (Akkuş & Karakaya, 2020). Teachers as individuals play an essential role in improving the quality of education. Teaching and learning activities are the backbones of the educational process in which the Teacher carries out the primary function (Baharudin, 2017). There are many educational activities to achieve educational goals in the learning process. The interaction between teachers and students is an essential requirement for implementing teaching and learning activities.

As a result of globalization, the development of information technology in the education world has produced many innovations to support the learning process. This innovation can be in the form of interactive learning videos delivered in the form of audio and visual teaching materials that include concepts, principles, procedures, and theories of applying knowledge to help students understand the teaching materials taught by the Teacher (Khodijah, 2018). Advances in skills and information have led to changes in teaching paradigms related to dependence on teachers and the role of teachers in the learning process (Suryadi, 2015). The paradigm is to create student-centered learning strategies, encourage students to learn creatively and independently, and be ready for global competition (Andriani, 2016).

The development of technology and information in the education field requires teachers to create learning implementation plans that include skills in the use of technology. Teachers are required to be able to master or be skilled in the use of technology in the learning process. Teachers must
have teaching skills and knowledge in developing digital-based learning resources, combining learning methods, and combining learning that can be applied to e-learning in the learning process (Gunawan, S., & Widiati, 2019). One of the demands of a teacher's pedagogic competence is expertise in mastering the use of technology.

According to Syah (2017), prospective teachers or professional teachers must understand their personalities which are needed as an example for their students. According to Febriana (2019), teacher personality competence is the personal ability of an educator needed to become a good educator. Personality competence is a competency related to the Teacher's daily behavior, which can be an example for his students (Roqib, 2009). Meanwhile, according to Uno (2008), personal competence is good personal behavior that can be an example for others.

Good teachers can master teaching materials and teaching science (pedagogies) or have skills in managing learning during the teaching and learning process (Abi et al., 2020). Suharto (2017) also states that professional teachers must master pedagogical abilities such as curriculum development and lesson planning. Pedagogic ability is the competence of an educator in managing the teaching and learning process (Rusna & Jusriana, 2016). Pedagogic abilities are used to help and guide students (Wahyudi, 2012). With pedagogic abilities, a prospective teacher or Teacher must have several abilities (Mulyasa, 2007; Sulfemi, 2015). One of them relates to the use of technology in learning. The use of technology in learning can encourage educators to create technology-based learning.

However, not all teachers can understand using technology, especially in rural environments (Mastura & Santaria, 2020). That state can be seen in the research conducted by Abdul Syukur (2014), that the main obstacle to the application of ICT in learning is the lack of mastery of ICT. Many teachers still lack ICT skills, so the level of teacher professionalism is low.

In addition to the lack of understanding and ability to use ICT, other problems in implementing pedagogic competencies are: (1) lack of understanding of the foundation/philosophy of education; (2) lack of understanding of student characteristics; (3) curriculum changes which have implications for changing the composition/format of the lesson plans; (4) lack of understanding of models, methods, strategies, learning techniques; (5) lack of understanding of methods/types of assessment and learning media; (6) learning media is limited and not updated with existing developments; (7) lack of infrastructure, training, guidelines, time; (8) burdened with additional tasks; (9) the material does not match and lacks (Destiana & Utami, 2017).

Students of the Faculty of Teacher Training and Education (FKIP) Universitas Muhammadiyah Surakarta who are prospective teachers are required to master and have a teacher's competence. With the micro-teaching or micro-learning courses held by FKIP Universitas Muhammadiyah Surakarta, it becomes a forum or means to encourage and support the development of prospective teachers with competencies that include professional, personality, pedagogic, and understanding of what must be prepared as a teacher.

Microlearning is a teaching practice carried out to train, shape, and develop skills in teaching for a prospective teacher, which is carried out (Sunaengsih & Sunarya, 2018). Microlearning is learning about teaching situations with a limited time and number of students (Hamalik, 2002). In addition, micro-learning is an alternative learning activity to test new theories and concepts so that from these activities, new concepts, theories, and knowledge will be born related to learning in particular and education in general. According to Roestiyah (2012), the general purpose of micro-learning is to prepare educational students as teacher candidates to face the work of a teacher fully.

Research conducted by Rahmah et al. (2020) states that (1) there is no influence of personality competence on pedagogic and professional competence as indicated by \( t_{\text{table}} = 0.26 \) and \( t_{\text{count}} = 1.48 \); (2) there is an effect of social competence on pedagogic and professional competence as indicated by \( t_{\text{table}} = 0.36 \) and \( t_{\text{count}} = 2.11 \); (3) there is an influence between the ability to compose learning tools on pedagogic and professional competencies as shown by \( t_{\text{table}} = 0.67 \) and \( t_{\text{count}} = 4.94 \). In addition, according to Suryo (2021), the results of his research explained that teachers' digital competencies, namely information literacy, media literacy, and digital literacy, significantly influence pedagogic abilities.

Based on some of the research results above, what this research has in common is that teachers' digital competence significantly influences pedagogic abilities. In contrast, the novelty in this study with other research is the existence of research on personality competencies which are divided into two, personal-professional competencies and personal-ethical competencies. Personal-ethical competencies are the ability to manage security and personal well-being. Meanwhile, personal-professional competencies are commitments to continuous professional learning. This is a new
teacher's willingness to follow his profession to commit to a continuous professional learning program (Amirault, 2015). Rahma et al. (2020) showed that personality competencies did not affect pedagogic abilities, but this study showed that personal-professional competencies affected pedagogic abilities.

**Method**

This research was conducted using quantitative methods with multiple linear regression analysis using the prerequisite product-moment correlation test. So the form of this research paradigm is presented in Figure 1.

![Figure 1. Research Paradigm](image)

Description:
- \( X_1 \) = Teacher digital competence
- \( X_2 \) = Personal-ethical competencies
- \( X_3 \) = Personal-professional competencies
- \( Y \) = Pedagogic abilities

The population used in this study were 7th-semester students of FKIP Universitas Muhammadiyah Surakarta. The number of samples using the Slovin formula (Sugiyono, 2018). After obtaining a sample of students as a whole, the next step is determining the sample of students in each study program. In this study, the sampling was done proportionally. From 1508 students, 316 students will be taken as samples in this study from Accounting Education, PPKn Education, Indonesian Language Education, English Education, Mathematics Education, Biology Education, Elementary School Teacher Education, PAUD Teacher Education, Education Geography, Informatics Engineering Education, and Sports Education by using a combined sampling technique, namely quota purposive proportional random sampling. The questionnaire used in this study used a Likert scale. The questionnaire instrument that has been made is then tested for validity and reliability. Based on the validity test results, all items are declared valid, namely as many as 45 items. The results of the reliability test are as follows.

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.947</td>
<td>45</td>
</tr>
</tbody>
</table>

The data were analyzed by using SPSS 23.0 software for windows. Then, the classical assumption test used is the normality test, multicollinearity test, and heteroscedasticity test. Then, the normality test using the Kolmogorov-Smirnov test. Based on the One-Sample Kolmogorov-Smirnov Test with the Monte Carlo, all variables have a value of more than 0.05, meaning the data is normally distributed.

The multicollinearity test is based on the tolerance and variance inflation factor (VIF) values. Based on the coefficients column of SPSS's output, the Collinearity Statistics value Tolerance is more than 0.10, and the Variance Inflation Factor (VIF) value is below 10. Thus, it can be concluded that there is no multicollinearity between variables in the regression model.

The results of the heteroscedasticity test were obtained using Park-test on the variable Teacher digital competence \( (X_1) \) of 0.090, personal-ethical competencies \( (X_2) \) of 0.362, and personal-professional competencies \( (X_3) \) of 0.225. Thus, all independent variables in this study have a significance of more than 0.05, indicating no heteroscedasticity.

**Result and Discussion**

![Table 2 Results of Multiple Regression Analysis](image)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>9.875</td>
</tr>
<tr>
<td></td>
<td>TDC</td>
<td>.103</td>
</tr>
<tr>
<td></td>
<td>Personal-ethical</td>
<td>.090</td>
</tr>
<tr>
<td></td>
<td>Personal-professional</td>
<td>.776</td>
</tr>
</tbody>
</table>

Based on the results of multiple regression analysis in the table above, the regression equation model \( Y = 9.875 + 0.103 X_1 + 0.090 X_2 + 0.776 X_3 \). Thus, the constant value \( (Y) \) shows a value of 9.875. The regression coefficient of Teacher digital competence \( (X_1) \) based on multiple linear calculations, the coefficient value \( (b_1) \) of 0.103. It means that every time there is an increase in Teacher digital competence \( (X_1) \), the pedagogic ability \( (Y) \) will increase. The regression coefficient of personal-ethical competencies \( (X_2) \) from multiple linear calculations obtained a value of \( (b_2) \) of 0.090. If there...
is an increase in personal-ethical competencies \((X_2)\), the pedagogic ability \((Y)\) will increase. The regression coefficient for personal-professional competencies \((X_3)\) from multiple linear calculations obtained a coefficient value \((b_3)\) of 0.776. This means that every time there is an increase in personal-professional competencies \((X_3)\), the pedagogic ability \((Y)\) will increase by one unit.

### t-Test

Table 3 Results of the t-Test

<table>
<thead>
<tr>
<th>Model</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>5.608</td>
<td>.000</td>
</tr>
<tr>
<td>Teacher Digital Competence</td>
<td>2.445</td>
<td>.015</td>
</tr>
<tr>
<td>Personal-ethical competencies</td>
<td>1.288</td>
<td>.199</td>
</tr>
<tr>
<td>Personal-professional competencies</td>
<td>10.732</td>
<td>.000</td>
</tr>
</tbody>
</table>

Based on the table of the results of the t-test analysis above, it can be seen as follows.

a. The influence of Teacher digital competence on pedagogic abilities.

\(t_{\text{count}} 2.445 > t_{\text{table}} 1.967\) then \(H_0\) rejected. It can be concluded that there is a significant influence between teacher digital competence on pedagogic abilities.

b. The influence of personal-ethical competencies on pedagogic abilities.

\(t_{\text{count}} 1.288 < t_{\text{table}} 1.967\) then \(H_0\) accepted. This shows that there is no influence between personal-ethical competencies on pedagogic abilities.

c. The influence of personal-professional competencies on pedagogic abilities.

\(t_{\text{count}} 10.732 > t_{\text{table}} 1.967\) then \(H_0\) rejected. There was a significant influence between personal-professional competencies on pedagogic abilities.

### Simultaneous Hypothesis Testing (F-Test)

The results of simultaneous hypothesis testing between independent variables and the dependent variable, in this case, Teacher digital competence \((X_1)\), personal-ethical competencies \((X_2)\), and personal-professional competencies \((X_3)\) on the ability pedagogic \((Y)\), are as follows.

Table 4 Result of the F-test

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regeression</td>
<td>3147.806</td>
<td>3</td>
<td>1049.269</td>
<td>142.358</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>2299.637</td>
<td>312</td>
<td>7.371</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Kemampuan Pedagogik
b. Predictors: (Constant). Personal-professional competencies, Personal-ethical competencies, Teacher Digital Competence

Based on the results of calculations using SPSS 23.0 software for windows obtained a \(F_{\text{count}}\) of 142.358 and a \(F_{\text{table}}\) of 2.64. With these results, it can be seen that \(F_{\text{count}} (142.358) > F_{\text{table}} (2,64)\), then \(H_0\) rejected. So it can be concluded that digital teacher competencies, personal-ethical competencies, and personal-professional competencies positively influence pedagogic abilities. It can also be seen from the probability result of 0.000, which means it is still above = 0.05. So teacher digital competence, personal-ethical competencies, and personal-professional competencies jointly affect pedagogic abilities.

Personal or personality competencies are the personality abilities of an educator who has noble, wise, wise, and classic character and can be an example for students. In Government Regulation Number 19 of 2005 concerning National Education Standards, it is explained that personality competencies include: (1) having a strong and stable personality who acts according to norms; (2) having a mature personality that has independence and a high work ethic; (3) have a wise personality and promote openness in thinking and acting; (4) have an authoritarian personality; and (5) have a noble character that can be a role model for students. In contrast, the indicators of personality competence are humble, honest, empathetic, forgiving, careful, tenacious, disciplined, creative, fair, sincere, open, brave, persistent, patient, polite, authoritative, humorous, compassionate, and so on.

In personality abilities, there are personal-ethical competencies and personal-professional competencies. Personal-ethical competencies include managing, security, and well-being (Falloon, 2020). Personal ethical abilities are also a person's ethical principles when making decisions and behaving well.
This ability can help develop a work ethic, goals, and values. Meanwhile, personal-professional competencies are the willingness of new teachers to join their profession to commit to a continuous professional learning program. Dispositionally, this competency describes positive thinking patterns (Amirault, 2015).

Regarding personality competence there are several research results related to personality competence. Based on the research results, Rahmah et al. (2020) stated that there was no influence of personality competence on pedagogic and professional abilities as indicated by $t_{\text{count}} 0.26 < t_{\text{table}} 1.48$. The results of this study state that there is no influence between personal-ethical competencies on pedagogic abilities as indicated by $t_{\text{count}} 1.288 < t_{\text{table}} 1.967$. However, the results of Sopandi's research (2019) stated that personality competence has a positive and significant effect on teacher performance with a $t_{\text{count}}$ of $13.008 > t_{\text{table}} 1.665$.

Meanwhile, the influence of personal-professional competencies was also proven by Sopandi (2019) based on the results of his research, which stated that professional competence had a positive and significant effect on teacher performance with a $t_{\text{count}} 13.255 > t_{\text{table}} 1.665$. The results of this study state that personal-professional competencies influence pedagogic abilities. The existence of this relationship or influence is because personal-professional competencies are the ability to master the subject matter and develop the subject matter. This ability is one indicator of pedagogic ability.

Teacher digital competence relates to educators' skills in using information and communication technology based on pedagogical rules by realizing their implications for educational methodologies (Prayogi & Estetika, 2019). Blyznyuk (2018) divides teachers' digital competence into several forms, including (1) Information, which is expected that educators have data literacy skills in the form of the ability to search, select, evaluate, or manage appropriate information for learning. (2) Communication, namely the skills of teachers to interact, engage, and cooperate through digital technology. (3) Educational content creation, namely educators' ability to create digital-based learning content. (4) Security, namely the ability of educators to ensure protection against the impact of technological products on their students in the learning process. (5) Educational problem solving is educators' ability to solve and overcome technical problems and identify responses and technological needs needed in learning.

Based on the results of research by Suryo (2021) regarding teacher digital competence, it is stated that (1) Information Literacy partially has a significant positive effect on the pedagogic competence of PAI SMA teachers in Blitar Regency, (2) Media Literacy partially has a significant positive effect on competence PAI teachers' pedagogics in high schools throughout Blitar Regency, (3) Digital literacy partially has no significant effect on the pedagogic competence of PAI teachers in high schools throughout Blitar Regency, (4) Information literacy, media literacy, and digital literacy have a significant positive effect simultaneously to the pedagogic competence of PAI SMA teachers throughout Blitar Regency.

If you look at the results of the research conducted by Suryo (2021), digital literacy does not affect pedagogic abilities. However, in the results of this study, teacher digital competence has a positive and significant effect on pedagogic abilities. The value of $t_{\text{count}} 2.445$ can indicate it $t_{\text{table}} 1.967$. Thus, the data collected proved the relationship between Teacher digital competence and pedagogic abilities. This relationship or influence exists because teacher digital competence is the ability of teachers to master skills in the use of technology. Teacher digital competence is closely related to the ability of educators to use information and communication technology based on pedagogical principles by realizing their implications for educational methodologies.

Thus, pedagogic abilities will increase if digital teacher competencies and personal-professional competencies support them. A teacher with good pedagogical abilities will make the learning process, teaching, and learning interactions with students run well and smoothly. It caused the ability of teachers to master technology in learning and teaching skills in mastering and to develop learning materials are factors that support pedagogic abilities.

**Conclusion**

We found that there were four findings in this study. First, teacher digital competence affects the pedagogic ability of educational students through microlearning. Then, personal-ethical competencies do not affect the pedagogic abilities of educational students through microlearning. After that, personal-professional competencies affect the pedagogic abilities of educational students through microlearning. Finally, teacher digital competence, personal-ethical competencies, and personal-professional competencies have a significant and positive effect on the pedagogic abilities of educational students through microlearning.
References


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