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THE RELATIONSHIP OF TEACHER PEDAGOGIC ABILITIES WITH STUDENT LEARNING INTEREST

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Abstrak: Penelitian ini dilakukan di SMPN 1 Cileungsi, yang bertujuan untuk menganalisis kompetensi pedagogik guru matematika dengan minat belajar siswa berdasarkan indikator yang diberikan. Metode yang digunakan dalam penelitian ini adalah metode kuantitatif. Mengenai pengambilan sampel menggunakan probability sampling dengan menggunakan metode simple random sampling sehingga diperoleh 100 sampel. Berdasarkan hasil Amos plot diperoleh nilai Chi-square 765,652, nilai probabilitas 0,000, nilai GFI 0,662, nilai AGFI 0,612, nilai TLI 0,457, dan nilai RMSEA 0,095. Diperoleh p-value sebesar 0,004 yang lebih kecil dari α = 0,05 sehingga memiliki interpretasi bahwa ada pengaruh yang signifikan antara kompetensi pedagogik dengan minat belajar siswa dan antara kompetensi pedagogik dengan 1000 minat belajar. dan efek totalnya adalah 2,007.

Kata kunci : pedagogik, minat belajar siswa, *amos graphic*

Abstract: This study was conducted in SMPN 1 Cileungsi, the purpose of which was to analyze the pedagogical competence of mathematics teachers together with the learning interests of students based on predetermined indicators. The method used in this study is a quantitative method. Sampling was done using probability sampling by simple random sampling technique so that 100 samples were obtained. Based on the results of the Amos plot, the Chi-square value is 765.652, the probability value is 0.000, the GFI value is 0.662, the AGFI value is 0.612, the TLI value is 0.457, and the RMSEA value is 0.095. A p-value of 0.004 is obtained, which is less than α = 0.05, so it has the interpretation that there is a significant effect between pedagogical competence and learning interest of students and between pedagogical competence and 1000 learning interest. and the total effect is 2007.

Keywords: pedagogic, student learning interest, amos graphic

INTRODUCTION

The teaching profession holds a crucial role in Indonesia's education system (Caraka & Maryani, 2016). Professional teachers are expected to possess various competencies, including pedagogic, personality, social, and professional competencies (Mulyasa, 2005; *Undang - Undang No 14 Tahun 2005*, n.d.). Building and developing these competencies are essential in shaping teachers into

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professionals (Akbar, 2021). The development of these competencies offers multiple benefits, such as preparing teachers ethically, enhancing teacher and student teacher competencies, applying effective learning methods, contributing to learning outcomes, improving personal and academic achievements, and managing classroom learning challenges (Apriyanto, 2021; Berchini, 2017; Carter Andrews et al., 2018; Dotger, 2015; Kirchgasler, 2018; Sulaiman & Yuliansari, 2015).

Among the various competencies, pedagogic competence stands out as a key skill that professional teachers must possess (Indriani, 2016). Pedagogic competence encompasses the science and art of teaching, involving processes, practices, and principles that promote effective teaching practices, engage students in learning, and support their intellectual and personal growth (Crawford et al., 2011; Encyclopædia Britannica, n.d.). The development of pedagogical competence is influenced by factors such as years of service, age, employment status (public or private), and level of formal education (Susanto et al., 2020).

The role of a teacher's pedagogy is crucial as it significantly impacts the quality of teaching and learning outcomes (Wlodkowski & Ginsberg, 2017). Previous research indicates that pedagogical competence in Indonesia is still relatively low, despite its significant influence on the quality of teaching and student learning outcomes (Caraka & Maryani, 2016; Syahruddin et al., 2013; Utiarahman, 2020). Moreover, research suggests a correlation between the quality of teaching and learning outcomes and student learning interest (Aprijal et al., 2020; Habibi, 2018). Student interest in learning refers to their attention, liking, enthusiasm, participation, and active engagement in the learning process (Kurniasari et al., 2021). Enhancing student interest in learning has been shown to positively affect academic achievement and individual study paths (I. Lestari, 2015; K. E. Lestari & Yudhanegara, 2017; Mutiara & Sobandi, 2018).

Therefore, this study aims to analyze the relationship between a mathematics teacher's pedagogic competence and student learning interest based on predetermined indicators. While previous research has explored the relationship between teacher competency and student learning interest, this study distinguishes itself by conducting a comprehensive analysis using the Amos Graphic software to analyze student questionnaire responses.

By examining the relationship between teacher pedagogic ability and student learning interest, this research contributes to the understanding of effective teaching practices and their impact on student engagement and achievement. The findings of this study have the potential to inform teacher education programs and support the professional development of educators, ultimately leading to improved teaching practices and enhanced student learning experiences.

LITERATURE REVIEW

Teacher Pedagogic Competence

The competence that a teacher needs to have is pedagogical competence. According to Baldiņš, (2016) pedagogy, like theory and practice of student learning and training processes, is also a branch of knowledge that examines the unity of theory and practice in the field of education, especially in learning that takes place in the classroom. Then, according to Andini & Supardi (2018) states that pedagogic competence is the teacher's ability to create an atmosphere and guide students who complete a curriculum that provides varied learning experiences. Furthermore, pedagogical competence is a unique skill that is not possessed by other professions and these competencies determine learning success and learning management skills (Andini & Supardi, 2018; Destiana & Utami, 2017).

Based on the explanation above, pedagogic abilities are translated into several indicators. According to Permendikbud No.16 of 2007, the pedagogic competencies that need to be mastered by a teacher are: 1) mastering student characteristics from the physical, moral, spiritual, social, cultural, emotional, and intellectual aspects; 2) mastering learning theory and educational learning principles; 3) developing a curriculum related to the subjects taught; 4) organizing educational learning; 5) utilizing information and communication technology for the benefit of learning; 6) facilitating the development of students' potential to actualize their various potentials; 7) communicate effectively empathetically and politely with students; 8) carry out assessment and evaluation of learning processes and outcomes; 9) utilize the results of assessment and evaluation for the benefit of learning.

Then, according to Mardianto (2012:6) indicators of pedagogic abilities include understanding insights or educational foundations for understanding students, curriculum/syllabus development, learning planning, implementation of educational and dialogical learning, utilization of learning technology, evaluation of learning processes and outcomes, and development students to actualize their various potentials.

From the description above, it can be concluded that pedagogic competence is one of the competencies that needs to be possessed by a teacher starting from planning in the learning process to evaluating learning outcomes and having indicators such as understanding insights or educational foundations for understanding students, curriculum/syllabus development, learning roles, implementing educational and dialogic learning, utilizing learning technology, evaluating learning processes and outcomes, and developing students to actualize their various potentials.

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Interest to learn

There are many factors that determine the learning outcomes of a student. One of the factors that influence this is interest in learning. Interest in learning can be interpreted as attention, liking, interest in student learning, which is expressed in enthusiasm, participation and active learning (Kurniasari et al., 2021). Furthermore, according to Mutiara & Sobandi (2018) interest in learning has a positive effect on academic learning, domain knowledge and certain individual study paths.

According to Hidayat & Widjajanti (2018) interest in learning is a prerequisite for students to develop a liking for activities and arouse their own enthusiasm, which can be measured by liking, interest, attention and participation in the learning process. Meanwhile, interest in learning is defined as students' interest in learning, where students want to learn or change students (Sari & Harini, 2015).

The indicators of interest in learning include interest, feeling happy, attention, participation and desire (I. Lestari, 2015; K. E. Lestari & Yudhanegara, 2017; Mutiara & Sobandi, 2018). In line with this opinion, according to Hendriana et al., (2017) and Islamiah (2019) indicators of interest in learning include, feeling happy, having an interest in being involved in learning, being diligent in studying and doing assignments, being diligent and disciplined in learning, and having a study schedule.

From the description above, it can be concluded that interest in learning is something of concern, liking, interest in student learning which is expressed in enthusiasm and participation and active learning and has indicators such as interest, feeling happy, attention, participation and desire.

RESEARCH METHOD

The method used in this research is qualitative with a case study approach. This approach describes the results of this study only applies to this study. The purpose of this study was to obtain information and knowledge about the relationship between the pedagogic competence of mathematics teachers and students' learning interests. The characteristics of a teacher studied are teachers whose teaching duration is no more than five years and has an educational background. The population of this research is all students of SMPN 1 Cileungsi. While taking samples using probability sampling with simple random sampling in order to obtain one hundred samples in grade seven.

The data collection method used in this study is by filling out a questionnaire that has been validated by experts and observations.. The instrument used was a questionnaire that totaled 15 questions about the pedagogical competence of mathematics teachers which included indicators: students' understanding, ability to process learning, learning design and learning evaluation as well as 15 question items about interest in learning which included indicators: feeling happy, interest in learning, demonstrating concern for learning, and involvement in learning. The data that has been collected is then analyzed using Amos Graphic software.

RESULTS AND DISCUSSION

This study uses the Amos Graphic software to analyze and interpret findings in the field regarding the relationship between the pedagogic competence of mathematics teachers and students' learning interests. Amos is one of the methods in Structural Equation Modeling (SEM). The Amos method is a development of path analysis and multiple regression which are both forms of multivariate analysis models. The results of the analysis using the SEM method are superior because they can analyze data more comprehensively (Haryono & Wardoyo, 2012:1).

From the output of the Amos graphic, a Chi-square value of 765.652 means it is not fit because this value is greater than the cut-off value of 70.227, a probability value of 0.000 means it is not fit because it is smaller than the cut-off value of 0.005, a GFI value of 0.662 means not fit because it is smaller than the cut-off value of 0.90, an AGFI value of 0.612 means it is not fit because it is smaller than the cut-off value of 0.90, a TLI value of 0.457 and an RMSEA value of 0.095 means it is not fit because it is smaller of the cut-off value of 0.08. In a clearer way to see the criteria for Goodness of-Fit, see the following Table 1:

Table 1. Goodness of Fit Criteria

Goodness of fit Index	Cut-off Value	Result	Conclusion
x^2 Chi-square (df = 405 , p = 0,000)	$< 70{,}227$	765,22	Unwell
Sign. Probability	$\geq 0{,}05$	0,000	Unwell
Df	> 0	405	Fit
CMIN/DF	$< 2{,}00$	1,890	Medium Fit
GFI	$\geq 0{,}90$	0,662	Unwell
AGFI	$\geq 0{,}90$	0,612	Unwell
CFI	$\geq 0{,}90$	0,494	Unwell
NFI	$\geq 0{,}90$	0,333	Unwell
IFI	$\leq 0{,}90$	0,515	Fit
RMSEA	$\leq 0{,}08$	0,095	Unwell
RMR	$\leq 0{,}05$	0,057	Unwell

Furthermore, the structural model for testing the hypothesis is presented in Figure 1 below.

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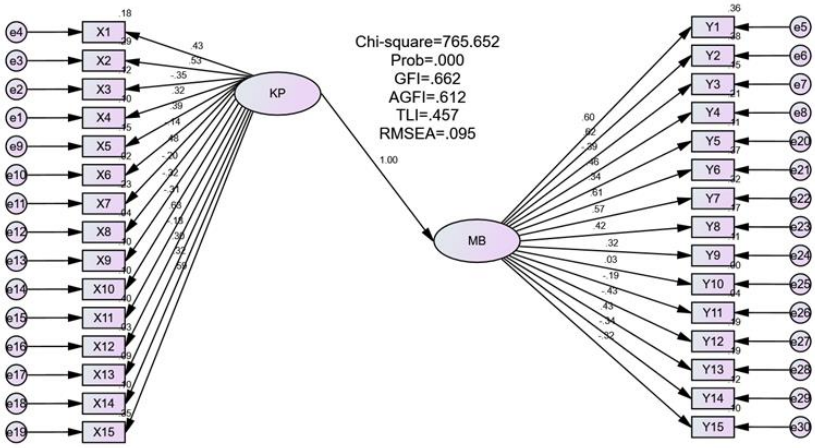

Figure 2. Structural Model of Hypothesis Testing

Then, to see the effect that the pedagogic ability variable of mathematics has on students' learning interest, you can see the output in Table 2 below.

Table 2. Regression Weight

	Estimate	**S.E**	**C.R**	**P**
MB <--- KP	2.007	.706	2.844	.004

Based on the output in Table 2, a p-value of 0.004 is obtained which is smaller than $\alpha = 0.05$. Thus, it can be concluded from the output that pedagogical competence has a significant effect on students' learning interest. The results of this study are in line with the research of Meli et al., (2019) which states that there is a positive influence between the teacher's pedagogical ability and interest in learning. The total effect of the mathematics teacher's pedagogical competence on students' learning interest is 2.007.

Then, to see the direct effect of each variable and indicator in detail in Table 3 below:

Table 3. Standardized Direct Effect

	KP	**MB**
MB	1.000	.000
Y15	.000	-.323
Y14	.000	-.343
Y13	.000	.434

	KP	**MB**
Y12	.000	-.433
Y11	.000	-.193
Y10	.000	.034
Y9	.000	.325
Y8	.000	.417
Y7	.000	.568
Y6	.000	.611
Y5	.000	.335
X15	.589	.000
X14	.324	.000
X13	.299	.000
X12	-.175	.000
X11	.632	.000
X10	-.310	.000
X9	-.317	.000
X8	-.197	.000
X7	.478	.000
X6	-.139	.000
X5	.387	.000
Y4	.000	.462
Y3	.000	-.387
Y2	.000	.617
Y1	.000	.604

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	KP	MB
X1	.430	.000
X2	.534	.000
X3	-.349	.000
X4	.318	.000

The direct effect between the variables of mathematics pedagogic competence and students' learning interest is 1,000. Furthermore, structural equations and measurements can be seen in Table 4 below.

Table 4. Standardized Regression Weights

			Estimate
MB	<---	KP	1.000
X4	<---	KP	.318
X3	<---	KP	-.349
X2	<---	KP	.534
X1	<---	KP	.430
Y1	<---	MB	.604
Y2	<---	MB	.617
Y3	<---	MB	-.387
Y4	<---	MB	.462
X5	<---	KP	.387
X6	<---	KP	-.139
X7	<---	KP	.478
X8	<---	KP	-.197
X9	<---	KP	-.317
X10	<---	KP	-.310

			Estimate
X11	<---	KP	.632
X12	<---	KP	-.175
X13	<---	KP	.299
X14	<---	KP	.324
X15	<---	KP	.589
Y5	<---	MB	.335
Y6	<---	MB	.611
Y7	<---	MB	.568
Y8	<---	MB	.417
Y9	<---	MB	.325
Y10	<---	MB	.034
Y11	<---	MB	-.193
Y12	<---	MB	-.433
Y13	<---	MB	.434
Y14	<---	MB	-.343
Y15	<---	MB	-.323

Based on Table 4 above, the structural equation formed is MB = 1,000KP + ε. Based on the estimated values above, it can be seen that the estimated values of each variable are adapted to the estimated values that are less than 0.50, namely X1, X3, X4, X5, X6, X7, X8, X9, X10, X12, X13 and X14 on KP and Y3, Y4, Y5, Y8, Y9, Y10, Y11, Y12, Y13, Y14, and Y15 in MB so that these indicators are omitted and not included in the analysis in the measurement model. As for clearly, the measurement model is:

$X1 = 0{,}430KP + \varepsilon$ $\qquad$ $Y1 = 0{,}604MB + \varepsilon$

$X2 = 0{,}534KP + \varepsilon$ $\qquad$ $Y2 = 0{,}617MB + \varepsilon$

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X3 = -0,349KP + ε	Y3 = -0,387MB + ε
X4 = 0,318KP + ε	Y4 = 0,462MB + ε
X5 = 0,387KP + ε	Y5 = 0,335MB + ε
X6 = -0,139KP + ε	Y6 = 0,611MB + ε
X7 = 0,478KP + ε	Y7 = 0,568MB + ε
X8 = -0,197KP + ε	Y8 = 0,417MB + ε
X9 = -0,137KP + ε	Y9 = 0,325MB + ε
X10 = -0,310KP + ε	Y10 = 0,034MB + ε
X11 = 0,632KP + ε	Y11 = -0,193MB + ε
X12 = -0,175KP + ε	Y12 = -0,433MB + ε
X13 = 0,299KP + ε	Y13 = 0,434MB + ε
X14 = 0,324KP + ε	Y14 = -0,343MB + ε
X15 = 0,589KP + ε	Y15 = -0,323MB + ε

CONCLUSIONS AND SUGGESTIONS

Based on the description of the results of the discussion relating to the analysis of a teacher's pedagogical ability and student learning interest, it can be concluded that there is a significant influence between pedagogic competence on student learning interest. The direct effect of a teacher's pedagogical ability on student learning interest is 1,000.

The limitation in this study is that the number of teachers who were used as the subject was only one teacher so that the results of this study cannot be generalized in general. So the researchers suggest adding teachers so that the discussion in this study can be generalized. Furthermore, there are also other factors that might affect interest in learning so that for further research these other factors should be minimized.

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REFERENCES

Akbar, A. (2021). Pentingnya Kompetensi Pedagogik Guru. *JPG: Jurnal Pendidikan Guru*, *2*(1), 23. https://doi.org/10.32832/jpg.v2i1.4099

Andini, D. M., & Supardi, E. (2018). Kompetensi Pedagogik Guru Terhadap Efektivitas Pembelajaran Dengan Variabel Kontrol Latar Belakang Pendidikan Guru. *Jurnal Pendidikan Manajemen Perkantoran*, *3*(1), 1–7. https://doi.org/10.17509/jpm.v3i1.9450

Aprijal, Alfian, & Syarifudin. (2020). *Pengaruh Minat Belajar Siswa Terhadap Hasil Belajar Siswa di Madrasah Ibtidaiyah Darussalam Sungai Salak Kecamatan Tempuling*. *6*(1), 76–91.

Apriyanto, F. (2021). *Menemukenali Konsep Etnomatematika dalam Budaya Masyarakat Jember: Sebuah Kajian Matematika dalam Perspektif Budaya*. digilib.uinkhas.ac.id. http://digilib.uinkhas.ac.id/1493/1/13. Fikri Apriyono.pdf

Baldiņš, A. (2016). Insights into e-pedagogy Concept Development. *Procedia - Social and Behavioral Sciences*, *231*(May), 251–255. https://doi.org/10.1016/j.sbspro.2016.09.099

Berchini, C. N. (2017). Critiquing Un/Critical Pedagogies to Move Toward a Pedagogy of Responsibility in Teacher Education. *Journal of Teacher Education*, *68*(5), 463–475. https://doi.org/10.1177/0022487117702572

Caraka, P. B., & Maryani, I. (2016). Strategi LPTK Dalam Pengembangan Kompetensi Pedagogik Calon Guru. *Jurnal Pendidikan*, *01*(02), 96–106.

Carter Andrews, D. J., Richmond, G., & Floden, R. (2018). Teacher Education for Critical Democracy: Understanding Our Commitments as Design Challenges and Opportunities. *Journal of Teacher Education*, *69*(2), 114–117. https://doi.org/10.1177/0022487117752363

Crawford, M., Kydd, L., & McConkey, K. M. (2011). *Becoming a teacher: Knowledge, skills and issues*. Oxford University Press.

Destiana, B., & Utami, P. (2017). Urgensi Kompetensi Pedagogik Guru Vokasional Pada Pembelajaran Abad 21. *Elinvo (Electronics, Informatics, and Vocational Education)*, *2*(2), 211–222. https://doi.org/10.21831/elinvo.v2i2.17368

Dotger, B. H. (2015). Core Pedagogy: Individual Uncertainty, Shared Practice, Formative Ethos. *Journal of Teacher Education*, *66*(3), 215–226. https://doi.org/10.1177/0022487115570093

Encyclopædia Britannica. (n.d.). *Pedagogy*. Encyclopædia Britannica

Habibi, A. M. (2018). Pengaruh Minat Belajar Siswa Pada Sejarah Islam Terhadap Prestasi Belajar Sejarah Kebudayaan Islam Di Mi Miftahul Ulum Sumuran Ajung Jember. *Jurnal Pendidikan Dan Pembelajaran Dasar*, *3*(2), 82–104.

Haryono, S., & Wardoyo, P. (2012). *Structure Equation Modeling : Untuk Penelitian Manajemen Menggunakan Amos 18.00*. PT. Intermedia Personalia Utama.

Hendriana, H., Rohaeti, E. E., & Sumarno, U. (2017). *Hard Skills dan Soft Skills Matematik Siswa*. PT Refika Aditama.

Hidayat, P. W., & Widjajanti, D. B. (2018). Analisis kemampuan berpikir kreatif dan minat belajar siswa dalam mengerjakan soal open ended dengan pendekatan CTL. *Pythagoras: Jurnal Pendidikan Matematika*, *13*(1), 63–75. https://doi.org/10.21831/pg.v13i1.21167

Indriani, F. (2016). Kompetensi Pedagogik Mahasiswa Dalam Mengelola Pembelajaran Tematik Integratif Kurikulum 2013 Pada Pengajaran Micro di PGSD UAD Yogyakarta. *Elementary School*

(Jurnal Pendidikan Dan Pembelajaran Ke-SD-An), *147*(March), 11–40.

Islamiah, I. D. (2019). Pengaruh Minat Belajar Siswa terhadap Prestasi Belajar Matematika di SMKN 1 Cihampelas. *Juornal On Education*, *01*(02), 451–457.

Kirchgasler, C. (2018). True Grit? Making a Scientific Object and Pedagogical Tool. *American Educational Research Journal*, *55*(4), 693–720. https://doi.org/10.3102/0002831217752244

Kurniasari, W., Murtono, & Setiawan, D. (2021). Meningkatkan Minat Belajar Siswa Menggunakan Model Blended Learning Berbasis Pada Google Classroom. *Jurnal Educatio FKIP UNMA*, *7*(1), 141–148. https://doi.org/10.31949/educatio.v7i1.891

Lestari, I. (2015). Pengaruh Waktu Belajar dan Minat Belajar terhadap Hasil Belajar Matematika. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *3*(2), 115–125. https://doi.org/10.30998/formatif.v3i2.118

Lestari, K. E., & Yudhanegara, M. R. (2017). *Peneltian Pendidikan Matematika*. Refika Aditama.

Mardianto. (2012). *Psikologi Pendidikan*. Perdana Publishing.

Meli, D., Mobonggi, A. H., & Erwinsyah, A. (2019). Pengaruh Kompetensi Pedagogik Terhadap Minat Belajar Siswa. *Tadbir: Jurnal Manajemen Pendidikan Islam*, *7*(1), 71–85. https://doi.org/10.31004/basicedu.v4i4.522

Mulyasa, E. (2005). *Menjadi guru profesional. Bandung*. PT Remaja Rosdakarya.

Mutiara, N. U., & Sobandi, A. (2018). Iklim Sekolah Sebagai Determinan Minat Belajar Siswa. *Jurnal Pendidikan Manajemen Perkantoran*, *3*(1), 218. https://doi.org/10.17509/jpm.v3i1.9458

Sulaiman, & Yuliansari, I. (2015). Hubungan Kompetensi Pedagogik Guru Dengan Kinerja Guru Sekolah Dasarnegeri Di Kecamatan Banjarmasin Utara. *Jurnal Paradigma*, *10*(1), 25–28.

Susanto, R., Agustina, N., & Rozali, Y. A. (2020). Analysis of the Application of the Pedagogical Competency Model Case study of Public and Private Primary Schools in West Jakarta Municipality, DKI Jakarta Province). *Elementary Education Online*, *19*(3), 167–182. https://doi.org/10.17051/ilkonline.2020.03.114

Syahruddin, Ernawati, A., Ede, M. N., Rahman, M. A. B. A., Sihes, A. J. B., & Daud, K. (2013). Teachers' Pedagogical Competence in School-Based Management: A Case Study in a Public Secondary School at Pare-Pare, Indonesia. *Journal of Education and Learning (EduLearn)*, *7*(4), 213–218. https://doi.org/10.11591/edulearn.v7i4.18491

Undang - Undang No 14 Tahun 2005. (n.d.).

Utiarahman, T. B. (2020). Meningkatkan Kompetensi Pedagogik Guru Melalui Pelatihan Berjenjang. *Aksara: Jurnal Ilmu Pendidikan Nonformal*, *5*(3), 215. https://doi.org/10.37905/aksara.5.3.215-222.2019

Wlodkowski, R. J., & Ginsberg, M. B. (2017). *Enhancing adult motivation to learn: A comprehensive guide for teaching all adults*.