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## PROFESSIONAL COMPETENCY INSTRUMENT: DEVELOPMENT AND VALIDATION OF A FOUR-FACTOR MODEL

Noor Asmahan Abdullah<sup>1\*</sup>, Siti Noor Ismail<sup>2</sup>, Marini Kassim<sup>3</sup>

<sup>1</sup> School of Education, Universiti Utara Malaysia, Malaysia  
Email: [puan.asmahan@gmail.com](mailto:puan.asmahan@gmail.com)

<sup>2</sup> School of Education, Universiti Utara Malaysia, Malaysia  
Email: [sitinoor@uum.edu.my](mailto:sitinoor@uum.edu.my)

<sup>3</sup> School of Education, Universiti Utara Malaysia, Malaysia  
Email: [marini@uum.edu.my](mailto:marini@uum.edu.my)

\* Corresponding Author

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### Abstract:

The study is to develop and validate a professional competency instrument among lecturers in Matriculation College, Malaysia. The items measuring the lecturer's professional competencies were constructed through extensive literature discussion with the experts in the field and further discussion with the practitioners, i.e., matriculation college. The Professional Competency Instrument was then tested in the field via the survey research method. The sample of the current study consists of 132 academic lecturers in one of the matriculation colleges through a random sampling method. The exploratory factor analysis was used to test the hypothesized model with four dimensions of professional competency instruments. The study confirmed that the proposed model was fit, and data loading was significant, which leads to the construct validity of the research instrument. Finally, the study highlighted the importance of researching more on professional competency to seek its relationship with other factors, pertinent especially to address issues regarding lecturers' competency.

### Keywords:

Competency, Four Factor Model, Instrument Validation, Matriculation College, Professional Competency

## Introduction

The education system in Malaysia places a primary focus on ensuring that high-quality educational opportunities are equally accessible to all Malaysian citizens. This aims to elevate the standard of living, advance the nation, and create a workforce equipped with skills, talent, and innovative as well as creative abilities. This generation is also expected to be capable of solving problems and thinking critically to meet the future demands of the job market and face the challenges of globalization. Therefore, high-quality education is essential in achieving this mission. The aspiration of the National Education Philosophy (NEP) is to produce a well-rounded individual in terms of physical, emotional, spiritual, intellectual, and moral development. Therefore, the role of a teacher is not limited to merely imparting knowledge but also extends to shaping well-balanced individuals (Wan Ab Rahman, Hussin, & Md Saman @ Osman, 2018). Hence, a teacher must be of high quality, which is closely related to their professional competence and commitment to their professional duties (Mohamad & Ismail, 2018; Vellymalay, 2016).

Professionalism competency for teachers or educators is defined as all forms of professional development training and courses undertaken by trained teachers. The aim is to enhance their knowledge and skills, particularly in the area of teaching and learning (Kementerian Pelajaran Malaysia, 2010). In the Malaysian Teacher Standard Model (Mohamad Saad & Daud, 2018), teacher professionalism is further defined as professional competence based on professional practices, understanding, knowledge, and teaching and facilitation skills. Additionally, teachers must be capable of carrying out their responsibilities, especially in teaching and learning.

The effectiveness of this process is crucial in determining the success of student learning at both primary and higher education levels. According to the Kamus Dwibahasa Dewan (Dewan Bahasa dan Pustaka, 2005), the term “competence,” derived from the English word “competence,” refers to the ability, qualification, proficiency, and readiness to perform a task. Furthermore, in the contemporary age of globalization, educators encounter numerous challenges, including the Fourth Industrial Revolution (IR 4.0), the shift to a Digital Economy (TN50), and swift progressions in Artificial Intelligence (AI) and internet technologies.

These changes demand the adoption of modern teaching methods that align with current trends (Kementerian Pendidikan Malaysia, 2009). In this context, effective teaching outcomes can be achieved through competent teachers (Darling-Hammond, Hyler, & Gardner, 2017; Ilias & Ladin, 2018). Therefore, the critical role of teachers as the foundation for a nation's success cannot be denied (Keller-Schneider, Zhong, & Yeung, 2020). Despite national policies like the Malaysian Education Blueprint (2013–2025), the actual implementation of professional competency frameworks is often inconsistent, due to bureaucratic constraints, training gaps, and unclear indicators, (Ramli, A. F., Rasul, M. S., & Omar, M., 2024). This gap between policies and practice in professional competency implementation give a little bit problem for teachers and administrators. Moreover, many teachers are not fully prepared to meet the pedagogical demands brought by IR 4.0, AI technologies, and the digital economy, especially in integrating these into teaching effectively. This is the lack of professional competency should be fulfilled to teachers and educators now (Zulnaidia, K., & Majidb, M., 2020).

In Malaysia, the focus on teacher professional competency is manifested in national blueprints and frameworks, including the Malaysia Education Blueprint (2013–2025) and the Malaysian Teacher Standards (SGM). These frameworks involve the ongoing improvement of educators'

knowledge, pedagogical competencies, and professional dispositions via organized Continuous Professional Development Programs (CPD). Nonetheless, despite the presence of these initiatives, apprehensions have persistently emerged regarding the tangible impact and applicability of these CPD models to teachers' daily classroom practices. Numerous CPD activities are characterized as excessively theoretical, isolated workshops, devoid of adequate follow-up support, mentoring, or classroom-based coaching that facilitate genuine, practice-oriented learning. Often, Continuing Professional Development (CPD) is driven by regulatory compliance rather than personal motivation or necessity (Ithnain & Saidin, 2021). Additionally, educators have noted that some training modules are too generic and fail to meet specific subject needs or school contexts. urban versus rural, resource-abundant versus resource-limited environments). The "one-size-fits-all" methodology limits the development of specialized teaching skills necessary for effective instruction. There is a lack of integration of reflective practice, collaborative learning, and action research—elements widely recognized as important in professional development. In the absence of these elements, CPD becomes passive, lacking in stimulating teachers' critical thinking or promoting alterations in instructional practices.

Conversely, global best practices indicate that effective Continuing Professional Development (CPD) should be enduring, collaborative, contextually relevant, and aligned with objectives for school enhancement (Darling-Hammond et al., 2017). School-based professional learning communities (PLCs), instructional coaching, and inquiry cycles have shown potential for professional development, but these models are not widely institutionalized in many Malaysian schools. These deficiencies indicate a significant disparity between the objectives of CPD policies and the genuine professional learning experiences of educators, potentially jeopardizing the aim of developing a highly proficient teaching workforce.

Furthermore, previous research has shown that the quality of an education system and student performance is strongly influenced by the quality of teaching (Kementerian Pendidikan Malaysia, 2013; OECD, 2019). Prominent researchers like Darling-Hammond et al. (2017), the Teaching and Learning International Survey (OECD, 2019) and Shafee (2019) also recommend that the best way to improve student performance is by enhancing the competence and professionalism of teachers. In Malaysia, the Competency Level Assessment (PTK), introduced in November 2002 with a primary focus on teacher competencies, was discontinued in 2010 due to the test's reliance on multiple-choice questions, which predominantly assessed the cognitive aspects of education officers (Jabatan Perkhidmatan Awam, 2011). Additionally, the Malaysian Teacher Standards (SGM) stipulate that graduates from Teacher Education Institutes (IPG) and Public Higher Education Institutions (IPTA) must meet the required competencies in professional teaching practices, understanding, knowledge, and instructional skills to enhance the quality of schools (Kementerian Pendidikan Malaysia, 2009).

On the other hand, Integrated Assessment for Educational Service Officers (PBPPP), introduced in 2016, emphasizes the application of subject knowledge, resources, teaching methods, questioning techniques, assessment, and follow-up steps to improve the quality of teaching. The focus on teacher competency and performance is highlighted in the fourth shift of the Malaysian Education Blueprint (2013-2025), which stresses that teacher professional competency and the quality of education are the core elements of the teaching profession. This research centers on the creation and validation of a tool to assess the professional competency of the lecturers in matriculation college in Malaysia, organized according to a four-factor model

utilizing a sample of lecturers from diverse disciplines and varying levels of teaching experience.

### Literature Review

Recently, numerous studies have been conducted on teacher professionalism competency. A study by Azwardi (2020) in Indonesia found that collaboration and individual monitoring of teachers enhanced their professional competency in lesson planning. As a result, teachers were able to prepare their lesson plans more effectively. Meanwhile, research by Estose and Futalan (2021) in the Philippines revealed that teachers' proficiency in English, Science, and Mathematics subjects was at a moderate level. Nevertheless, teachers' proficiency in written English expressions was determined to be inadequate. Nonetheless, the teachers' overall professional competency was assessed as exceptional.

In contrast, Hanifah, Mohmad Isa, Yazid, Nasir and Saiyidatina Balkhis (2019) examined the level of professionalism among Form 6 Geography teachers across Malaysia. He analyzed six variables of professional and pedagogical competence, encompassing teachers' comprehension of their subjects, professional knowledge, subject matter expertise, pedagogical content knowledge, technological pedagogical knowledge, and professional values. The research indicated that all professional and pedagogical competencies were at an elevated level. The correlation analysis indicated a moderately significant relationship between teachers' professional knowledge and their comprehension of Form 6 geography. For subject content knowledge, pedagogical content knowledge, and technological pedagogical knowledge, the results showed a strong significant relationship.

Furthermore, a comparative study on teacher competency levels between China and the Philippines by Bagapuro and Delos Santos (2021) concluded that teachers in the Philippines receive lower salaries, with significant differences in overtime pay, bonuses, allowances, leave privileges, and medical benefits. The Philippines also offers more professional development opportunities compared to China. In all ten teaching competency dimensions, teachers in the Philippines scored higher. However, in China, the dimension of creating a conducive learning environment had the highest mean score, while the dimension of identifying student needs and communication had the highest mean in the Philippines.

Additionally, there was a strong correlation between educational attainment and monthly income (salary) with teaching efficiency in China. The same pattern was observed in the Philippines, where educational attainment was also highly significant. In conclusion, the study found that respondents in the Philippines demonstrated higher teaching efficiency, particularly in terms of using diverse teaching strategies, collaboration, and commitment to their profession. Moreover, a study on the relationship between 21st-century skills and professional competency found a strong positive correlation between the two factors. This research, conducted in schools involved in the School Transformation Program (TS25) in the state of Kedah, showed that the competency dimensions of teachers help to further develop their potential in line with the 21st-century learning concept (Sulaiman & Ismail, 2020). Meanwhile, Zaki, Ahmad and Othman (2021) found that teachers were highly capable of integrating Higher-Order Thinking Skills (HOTS) in teaching history. Furthermore, the study indicated no significant difference between history and non-history option teachers in their implementation of HOTS, suggesting that teachers were proficient in applying HOTS during history lessons. The study from Riza Syahrul et.al, (2024) state that numerous challenges exist in improving lecturer competence, including

swift technological advancements, student diversity, and the need to balance teaching, research, and administrative responsibilities. Nonetheless, numerous initiatives have been undertaken to tackle these challenges. The higher education institution in Indonesia has initiated competency development programs that include training, academic mentoring, curriculum development, and industry collaboration. Enhancing lecturer competence will advantage both students and the institution, facilitate the advancement of higher education institutions, and contribute to the attainment of national development objectives. Below are the matrix table that summarizes some of the literature review involving professional competency among the educators in higher education level.

**Table 1 : Matrix Table about Literature Review in Professional Competency among Educators in Higher Education**

Author(s) & Year	Country/Context	Focus of Study	Findings
Azwardi (2020)	Indonesia	Collaboration and individual monitoring in lesson planning	Collaboration and monitoring improved teachers' lesson planning competency
Estose & Futralan (2021)	Philippines	Teachers' proficiency in English, Science, and Mathematics	Moderate proficiency in subjects, low in English writing, but overall excellent competency
Hanifah et al. (2019)	Malaysia	Professional and pedagogical competencies among Form 6 Geography teachers	High levels of professional and pedagogical competencies with strong correlations for content knowledge
Bagapuro & Delos Santos (2021)	China & Philippines	Comparative teacher competency and benefits between China and the Philippines	Philippine teachers had higher competency scores; Chinese teachers excelled in learning environment creation
Sulaiman & Ismail (2020)	Malaysia (Kedah, TS25 schools)	Relationship between 21st-century skills and professional competency	Strong correlation between 21st-century skills and professional competency in TS25 schools
Zaki, Ahmad & Othman (2021)	Malaysia	Integration of Higher-Order Thinking Skills (HOTS) in teaching history	Teachers were proficient in applying HOTS, with no significant difference between history and non-history teachers
Syahrul Riza, Muhammad Syarif, Fuadi Mardatillah, Abdul Jalil Salam,	Indonesia	Improving Lecturer Competence to Encourage Innovation and Creativity in Learning	The findings revealed several challenges in enhancing lecturer competence, such as rapid technological changes,



Wahyu Khafidah, M. Yusuf (2024)			student diversity, and balancing teaching, research, and administrative duties. However, various efforts have been made to address these challenges.
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## Methodology

### *Sample*

The sample of the current study consisted of 130 academic lecturers in one of Matriculation College in eastern Peninsular Malaysia. They were selected by random sampling procedure. The data for this study were collected through a survey questionnaire administered to the academic lecturers in one of Matriculation College in eastern Peninsular Malaysia. A total number of 160 of the questionnaires were distributed to the respondents. However, only 160 were successfully retrieved and valid used for the analyses.

### *Instrument*

The study commissioned a survey research method to collect cross-sectional data. A questionnaire was distributed to one of the Matriculation College in Malaysia. The returned questionnaires with usable data for further analysis were identified and proceeded to analysis using SPSS. The study tested the instrument, particularly the measurement of professional competency among the lecturers. However, the instrument is useful to test the level of professional competency. The Malaysian Teacher Standards (Kementerian Pendidikan Malaysia, 2009) were used as the basis for the instrument to assess the professional competence of lecturers, with minor modifications. This instrument consists of 59 items with 4 factors which are pedagogical and knowledge, professionalism, planning and evaluation of the subject and management and development of students. This instrument has been tested to 130 lecturers at Matriculation College in eastern of Peninsular Malaysia.

### *Data Analysis*

The research instrument must possess appropriate validity for the specific purpose and target group. Instrument validity indicates its ability to accurately measure the intended constructs, thereby allowing for justifiable conclusions. Furthermore, it enables valid interpretation of scores related to the aspects under investigation (Idris, 2013). The most common test of inter-item consistency reliability is Cronbach's alpha. Henceforth, the Cronbach's alpha was employed in this study to measure the internal consistency of the instrument. Whereas construct validity was checked using exploratory factor analysis (EFA) with principal axis factoring and noblemen direct noblemen rotation. Cronbach's Alpha value for this instrument is 0.77 and shows that the validity test is high.

Instrument validity refers to the extent to which the instrument is measuring what it is supposed to measure. In this research, the content validity was addressed by consulting a small number of panels of expert (Chua, 2012). These experts made judgement as to whether or not the items chosen are suitable for the measurement of the selected dimensions in the construct of professional competency among the lecturers in College Matriculation. The raw instrument includes 160 questionnaires related to 8 factors derived from Standard Guru Malaysia (SGM), which were distributed to 130 academic lecturers at a matriculation college in Peninsular

Malaysia. The data is analyzed using SPSS version 26.0 through Exploratory Factor Analysis (EFA). Following the analysis, only 59 items correspond with the research context. Out of the eight factors, only four were accepted for this research. Previous studies indicate that, in addition to content validity, researchers must also establish construct validity.

In this study, the establishment of construct validity involved an exploratory factor analysis using principal axis factoring method analysis, combined with direct oblimin rotation. Factor analysis is seen as a set of technologies for studying the interrelationship among variables, and it is used to verify items loading on the correct factors as identified by previous researchers (Mohamed Berawi, 2017). These exploratory analyses were carried out via Statistical Packages for Social Sciences (SPSS) version 26.0 software. The Diagram 1 below shows the flowcharts of the process.

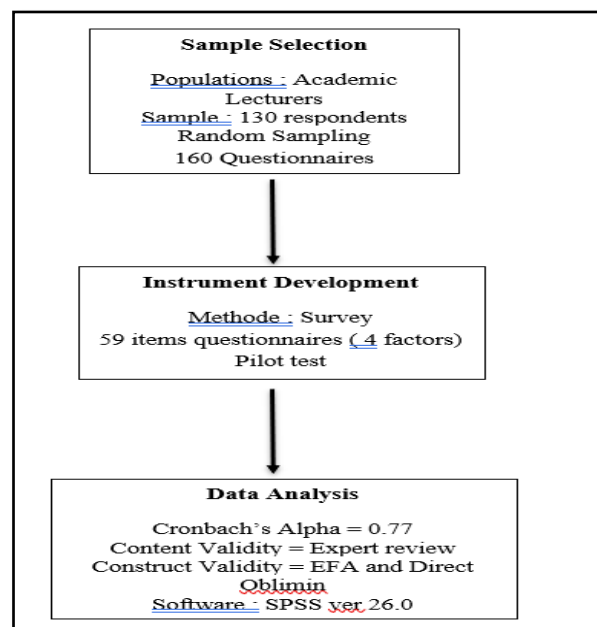


Figure 1: Flowchart of the Process in Methodology Research

## Findings

### *Instrument Reliability*

The means, standard deviations, and reliability value of the professional competency of lecturer in Matriculation College are shown in Table 2. Cronbach  $\alpha$  were .968 for pedagogical and knowledge, .955 for professionalism, .857 for planning and evaluation of the subject and .749 for management and development of student. Observing the alpha values for each item, if deleted, did not reveal any significant improvement in reliability by removing any items. Additionally, an analysis of the items loaded within each construct showed that the corrected item-total correlations met the cut-off threshold of .60 (Chua, 2012) for all items in all the dimensions indicating preliminary evidence of convergent validity of the four dimensions.

**Table 2: Mean, Standard Deviation, and Cronbach Alpha Values**

	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>	<b>Factor 4</b>
	<b>Pedagogical and knowledge 29 items</b>	<b>Professionalism 16 items</b>	<b>Planning and evaluation of the subject 5 items</b>	<b>Management and development of student 5 items</b>
Mean	6.29	6.423	6.240	5.816
Standard deviation	.418	.424	.524	.681
Alpha values	.968	.955	.857	.749

***Exploratory Factor Analysis***

The items were analysed using Exploratory Factor Analysis (EFA) with the Principal Axis Factoring (PAF) extraction method and direct oblimin rotation. Items loaded onto four factors with absolute loading values of .30 or higher, indicating significant contributions to each professional competency construct. Table 3 shows that 55 out of 69 items loaded onto their designated factors with loading values between .826 and .410.

**Table 3. Factor Extraction Based on Principal Axis Factoring Method and Direct Oblimin Rotation**

<b>Items</b>	<b>Factor 1 29 items</b>	<b>Factor 2 16 items</b>	<b>Factor 3 5 items</b>	<b>Factor 4 5 items</b>
PC1 : I able to adapt with any changes in my office	.45			
PC2 : I know the purpose of education	.45			
PC3 : I know what that meant in the behaviour of my students in the class	.65			
PC4 : I always use the latest resources to improve my lessons	.41			
PC5 : I able to relate my lesson with our daily life situation	.49			
PC 6 : I use new technology in my teaching aid	.46			
PC 7 : I plan my lesson according to the level of my students	.42			
PC 8 : I check their exercises and evaluate my students in the class	.65			
PC 9 : I teach my students in different style to help them to understand very well	.75			
PC 9 : I give homework, assignments and relevant exercises	.65			
PC 10 : I add moral values in my lesson	.59			
PC 11: I prepare daily lesson plan along semester	.65			



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PC 12: I always seek for the latest resources to make my students excited during my lesson	.54
PC 13 : I help my students use ICT in the class	.75
PC 14 : I always practice students centred during my lesson	.60
PC 15 : I able to guide my student extract any information during the lesson	.64
PC 16 : I guide my students to communicate active in the class	.86
PC 17 : I guide my students to collaborate among them	.65
PC 18 : I guide my students to appreciate all the contribution in workgroup	.83
PC 19: I guide my students to use many technique to create and deliver their opinion	.67
PC 20: I understand the responsibilities that given to me	.75
PC 21 : I always support any effort to improve the service to lecturers, stafs, parents and students.	.64
PC 22 : I can achieve the target on me	.46
PC 23 : I can improve teamwork among the lecturers and stafs	.63
PC 24 : I can manage my time very well in order to improve profesionalism as a lecturer	.50
PC 25 : I can complete my work very well	.50
PC 26 : I can evaluate honestly to observe the quality as a lecturer	.60
PC 27 : I create positive interpersonal relationship	.42
PC 28 : I manage my students' record very well	.56
PC 29 : I can manage my resources in education very well	.56
PC 30: I have good personal image	.50
PC 31 : I can complete my work with full responsilities and dedicated	.63
PC 32 : I alert with any problems from my students	.66
PC 33 : I always practice good relationship with my students	.67
PC 34 : I can evaluate my students understanding during the class	.55
PC 35 : I master my content in my subject area	.69

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PC 36 : I arrange my lessons from the concrete to the abstract ( from the easier to difficult).	.73	
PC 37 : I can create reliable formative, summative dan diagnostic test questions.	.66	
PC 38 : I know the mission and objective of my subject	.79	
PC 39: I can arrange the sequence of the content along the semester	.81	
PC 40 : I use all the resources to achieve the objective of my lessons.	.75	
PC 41 : I evaluate in continous assessment	.70	
PC 42 : I use all the information from the evaluation to enrichment and Rehabilitation program	.57	
PC 43 : I obey all the ethics in teaching profession	.65	
PC 44 : I have full commitment in my career	.55	
PC 45 : I involve actively in the improvement programme organized by the administration	.55	
PC 46 : I can relate my subject with other subjects		.55
PC 47 :I often advise students on how to study effectively and succeed in exams.		.66
PC 48 : I am able to relate the subjects being taught to the students' real-life environment (daily life)		.83
PC 49 : I can discipline students well.	.79	
PC 50 : I help students find useful information through the internet	.62	
PC 51: I help improve college academic performance		.44
PC 52 : I contribute ideas, effort, and financial support to enhance the excellence of the college.		.69
PC 53 : I actively engage in the improvement of the college		.68
PC 54 : I am actively involved in the decision-making process during meetings at my department/college level		.68
PC 55 : I assist new lecturers in various aspects of teaching and college management.		.50
Total Eigenvalues	6.559	
Percentage of Variance Explained	27.330	
KMO	.830	
Bartlett's Test of Sphericity	271.516	
df	28	
Total Variance	57.682	

Note: PC : Professional Competency

## Discussion

This study shows that the instrument reliable access the factor of the instrument which are pedagogical knowledge, professionalism, planning and evaluation of subject and management and development of student with strong internal consistency (Cronbach's Alpha = 0.77). The instrument align closely with the competency framework by Ministry of Education (2017), capturing the multi-dimensional aspects of professional competency. Compared to other competency instrument, this study integrates a broader focus on ethical consideration. A competency often overlooked over the previous model. These enhancements reflect in resent trend in professional standard. This instrument demonstrates robust psychometric properties, reliance on self-assessment may introduce bias, particularly in measuring interpersonal competencies.

Furthermore, this instrument also offers a practical tool for organizations to evaluate professional readiness, particularly in industries which need multi face skills such as in healthcare and education. For the future studies, it is suggested to enhance the instrument's cultural sensitivity, ensuring its applicability in higher level education and cross discipline field. In summary, this instrument marks as a significant step in systematically evaluating professional competencies among the matriculation college, providing a foundation for both academic research and practical application.

## Conclusions and Future Research

This study shows that's professional competency instruments is used as critical tools in assessing and enhancing the skills, knowledge, and attitudes required for effective performance among the academic lecturers in Matriculation College. These instruments are typically structured around core competencies, such as technical expertise, communication, teamwork, and ethical practices, which are deemed essential for professional success. By providing a standardized framework for evaluation, they not only support individual growth but also ensure alignment with organizational and industry standards. This study has established the validity of using professional competency among the academic lecturers in Matriculation College and how the factor structure depicts the factor aspects of professional competency in this research. An essential next step is to find the confirmatory factor analyse in this study. Besides, studies should also investigate the relationships between professional competency and other variables, such as leadership, quality in teaching, teacher professional development and other relevant factors.

As of the practical implications, the findings suggest that professional competency is complex. Thus, it requires special attention for it to be grasped, especially for new lecturers who have just entered the profession, but with little preparation on how it is really like to be teaching in the college. The relatively short experience during teaching practicum is definitely not the true portrayal of the profession, which actually loaded with a lot of expectations and pressure coming from the stakeholders.

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## References

- Azwardi, A. (2020). Efforts to improve teacher competency in developing learning materials through collaborative academic supervision. *Indonesian Educational Administration and Leadership Journal (IDEAL)*, 2(1), 1–12. <https://doi.org/10.22437/ideal.v2i1.9009>
- Bagapuro, A., & Delos Santos, M. R. H. (2021). Professional characteristics and teaching competencies of Filipino teachers in China and Philippines: A comparative study. *International Journal of Research Studies in Education*, 10(6), 63–76. <https://doi.org/10.5861/ijrse.2021.4>
- Chua, Y. P. (2012). *Mastering research methods*. Kuala Lumpur: McGraw-Hill Education.
- Darling-Hammond, L., Hylar, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute.
- Dewan Bahasa dan Pustaka. (2005). *Kamus dewan* (4th ed.). Kuala Lumpur.
- Estose, A. T., & Futral, M. C. Z. (2021). Teachers' professional competencies and their proficiency in the core subjects. *UBT International Conference*, 487. <https://doi.org/10.33107/ubt-ic.2021.465>
- Hanifah, M., Mohmadisa, H., Yazid, S., Nasir, N., & Saiyidatina Balkhis, N. (2019). Professional and pedagogical competencies of geography teachers in Malaysia. *Review of International Geographical Education Online*, 9(2), 304–318. <https://doi.org/10.33403/rigeo.509836>
- Idris, N. (2013). *Penyelidikan dalam pendidikan* (2nd ed.). Kuala Lumpur: Mc Graw Hill (Malaysia) Sdn. Bhd.
- Ilias, K., & Ladin, C. A. (2018). Pengetahuan dan kesediaan revolusi industri 4.0 dalam kalangan pelajar Institut Pendidikan Guru Kampus Ipoh. *O-JIE: Online Journal of Islamic Education*, 6(2), 18–26.
- Jabatan Perkhidmatan Awam. (2011). *Surat pekeliling perkhidmatan bilangan 4, 2011. Program bersepadu potensi dan kompetensi*. Putrajaya: Bahagian Perkhidmatan Cawangan Pengurusan Kompetensi.
- Keller-Schneider, M., Zhong, H. F., & Yeung, A. S. (2020). Competence and challenge in professional development: Teacher perceptions at different stages of career. *Journal of Education for Teaching*, 46(1), 36–54. <https://doi.org/10.1080/02607476.2019.1708626>
- Kementerian Pelajaran Malaysia. (2010). *Standard Kualiti Pendidikan Malaysia*. Putrajaya: Jemaah Nazir dan Jaminan Kualiti.
- Kementerian Pendidikan Malaysia. (2009). *SGM: Standard guru Malaysia*. Putrajaya: Bahagian Profesionalisme Guru, Kementerian Pendidikan Malaysia.
- Kementerian Pendidikan Malaysia. (2013). *Pelan pembangunan pendidikan Malaysia 2013-2025: Pendidikan prasekolah hingga lepas menengah*. Putrajaya: Unit Pelaksanaan dan Prestasi Pendidikan (PADU).
- Kementerian Pendidikan Malaysia. (2017). *Laporan tahunan 2016. Pelan pembangunan pendidikan Malaysia (2013-2025)*. Putrajaya: Unit Pelaksanaan dan Prestasi Pendidikan (PADU).
- Mohamad, F., & Ismail, S. N. (2018). Kepimpinan strategik dan hubungannya dengan kualiti pengajaran guru. *JuPiDi: Jurnal Kepimpinan Pendidikan*, 5(2), 14–25.

- Mohamad Saad, N., & Daud, Y. (2018). The level of role conflict among secondary school leaders in Kelantan (Tahap konflik peranan pemimpin sekolah menengah di negeri Kelantan). *Educational Leader*, 6, 125–139.
- Mohamed Berawi, F. (2017). *Metodologi penyelidikan: Panduan menulis tesis*. Sintok: Universiti Utara Malaysia Press.
- Ithnain, I., & Saidin, K. (2021). The effectiveness of professional development model in enhancing teachers' competencies. *MOJEM: Malaysian Online Journal of Educational Management*, 9(4), 32-52.
- OECD. (2019). *PISA 2018 assessment and analytical framework*. Paris: OECD Publishing. <https://doi.org/10.1787/b25efab8-en>
- Ramli, A. F., Rasul, M. S., & Omar, M. (2024). Issues and challenges in the implementation of professional development programs for design and technology teachers. *International Journal of Learning, Teaching and Educational Research*, 23(7), 64-83.
- Riza, S., Syarif, M., Mardatillah, F., Salam, A., Khafidah, W., & Yusuf, M. (2024). Improving Lecturer Competence to Encourage Innovation and Creativity in Learning. *Jurnal Ilmiah Peuradeun*. <https://doi.org/10.26811/peuradeun.v12i1.1078>.
- Shafee, S. (2019). *Coaching for instructional improvement in Selangor and Sabah* (Doctoral thesis, University of Malaya). ProQuest Dissertations & Theses.
- Sulaiman, J., & Ismail, S. N. (2020). Teacher competence and 21st century skills in transformation schools 2025 (TS25). *Universal Journal of Educational Research*, 8(8), 3536–3544. <https://doi.org/10.13189/ujer.2020.080829>
- Vellymalay, S. K. N. (2016). Keberkesanan hubungan guru kelas-murid dalam merangsang kesedaran terhadap integrasi etnik dalam kalangan murid di bilik darjah. *Jurnal Ilmi*, 6, 69–88.
- Wan Ab Rahman, W. N., Hussin, Z., & Md Saman @ Osman, A. (2018). Peranan guru dalam menerapkan konsep ekologi spiritual untuk meningkatkan domain spiritual murid pendidikan khas. *O-JIE: Online Journal of Islamic Education*, 6(2), 1–8.
- Zaki, F., Ahmad, A., & Othman, N. (2021). Kompetensi guru dalam penerapan kemahiran berfikir aras tinggi dalam pengajaran pendidikan sejarah. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 6(1), 194–205. <https://doi.org/10.47405/mjssh.v6i1.632>
- Zulnaidia, K., & Majidb, M. (2020). Readiness and Understanding of Technical Vocational Education and Training (TVET) Lecturers in the Integration of Industrial Revolution 4.0. .