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The Level of Knowledge and Readiness of Teachers and Their Relationship to The Implementation of 21st Century Learning

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Abstract

21st century learning (PAK-21) is an important requirement of today's education system to face global challenges and needs. However, there are still various obstacles to realizing these things, among which are related to teachers and infrastructure facilities. The aim of the study is to identify the level of knowledge and willingness of teachers to implement PAK-21. The study uses a quantitative design through a survey method with 155 teachers from Rompin District, Pahang. Data analysis using mean value, standard deviation, and correlation was done through SPSS 29 software. According to the study's findings, teachers are well knowledgeable and prepared to use PAK-21. Furthermore, there is a moderate correlation between the willingness of teachers to adopt PAK-21 and their level of understanding. The study's implications clarify that in order for teachers to possess excellent skills, they must be provided with comprehensive understanding of PAK-21. It is also imperative that schools have facilities that fulfil PAK-21 requirements in order to facilitate effective learning.

Keywords: Knowledge, Readiness, Relationship, Implementation, 21st Century Learning.

Introduction

The teacher's comprehension and preparedness for the subject matter is the first step towards an efficient 21st century learning process (PAK-21). Ellangovan and Jamaludin (2022) contend that this is the reason why having teachers who possess these qualities—knowledge, talent, and a positive sense of self—is crucial when creating plans aimed at raising student accomplishment. Accordingly, the Malaysian Ministry of Education (MoE) is actively disseminating the 21st century learning practice guidelines (PAK-21) in all schools across the country (MoE, 2013). Through the Malaysian Education Development Plan (PPPM) 2013-2025, MoE also focuses on the production of individuals who are capable and skilled in the needs of 21st century life, such as creativity, innovation, leadership, problem-solving skills, and the like, so that students can compete at the global level. Generally speaking, PAK-21 is a student-centred teaching and facilitation method (PdPc) that is grounded in moral principles and ethics as well as communication, teamwork, creativity, and critical thinking. The curriculum, pedagogy, and assessment components of PAK-21 are pertinent to 21st century life situations, enabling students to develop the six aspirations in line with the MoE plan.

Haug and Mork (2021) explained that teachers who implement PAK-21 can produce students who are highly knowledgeable, solve complex problems, and have the skills needed in modern society. In order to determine the level of PAK-21 implementation in schools, the problems and challenges experienced by teachers, and potential areas for development, it is crucial to do research on the subject. The Ministry of Education affirms that among the challenges faced by teachers in PAK-21 practice are difficulties related to classroom management (MoE, 2013). Furthermore, the 2022 PPPM Annual Report 2013–2025 states that efforts to raise the standard of education across the country continue to prioritise the topic of improving teacher quality during the plan's fourth shift (MoE, 2022). Therefore, quality teachers need to implement PAK-21 in their PdPc to create effective learning. According to Subramaniam and Omar (2022), the problem of classroom management and the implementation of quality learning arises when teachers face work pressure such as conflict, workload, and contradictions in roles. Furthermore, Said et al (2023) state that enhancing teacher quality through professional development and competence presents a number of difficulties, including the requirement for guidance and training, teacher preparation and attitudes, and the incorporation of the Malaysian Teacher Standard (SGM) in the process.

Research on PAK-21 has traditionally concentrated on aspects of PAK-21 such creativity, teamwork, and communication. Safri and Jamaludin (2022) point out that because prior research on PAK-21 mostly concentrated on skill development in the 21st century, there are actually still a lot of unresolved concerns in this area. In addition, many past studies related to the implementation of PAK-21 are based on cognitive theory, constructivism, behaviourism, or similar. So, this study uses Ibn Khaldun's theory in the context of superior human characteristics that are consistent with teacher quality in the four SKPMg2 standards. In addition, studies involving teachers in areas far from cities or rural areas are still under-conducted and need to be given attention in an effort to improve the effectiveness of the PdPc process and the formation of noble morals (Hasli & Zulkifli, 2023; Zainuddin & Razak, 2021). Therefore, in-depth research on PAK-21 among rural area teachers is still needed to guarantee the first shift in PPPM 2013–2025, which is to guarantee the realisation of the right to equitable access to high-quality education worldwide. In addition to offering valuable insights to the Ministry of Education regarding the evolution of the PAK-21 scenario among rural area teachers, the study is significant in enhancing their understanding of the completion of the 21st century teaching competencies.

Haris (2021) claims that even though PAK-21 has been widely implemented in all schools, many teachers are not familiar with it, which leads to contradicting difficulties regarding its execution because they see it as nothing more than a rebranding of PdPc. Furthermore, the teachers agreed that they still lack clear information regarding the implementation of PAK-21 (Abdullah, 2020). This point is supported by Hanapi et al (2020), who explain that the level of teacher preparation in PAK-21 is still at a medium level. The study explains that teacher preparation is measured in terms of pedagogical skills and teacher attitudes towards PAK-21. In addition, teachers were also found to face various obstacles in applying elements of PAK-21, especially in the information and communication technology (ICT) aspect (Sulaiman & Hamzah, 2019). Meanwhile, the study by Zainuddin and Razak (2021) explains that the level of preparation of rural area teachers for the implementation of PAK-21 in terms of knowledge and skills is at a moderate level. Because of this, several of the terms and methods in PAK-21 are beyond the teachers' level of expertise. As Bael et al (2021) pointed out in their study,

teachers in Sarawak's rural areas still lack a thorough understanding of PAK-21 and are ill-prepared to put it into practice, particularly when it comes to using higher order thinking skills (HOTS) aspects. It was also discovered that the teachers were still employing the conventional method and that they were having difficulties due to a lack of resources, including learning support materials and classrooms.

Furthermore, Rusdin and Ali (2019) clarified in their research that teachers encounter a number of challenges while putting PAK-21 into practice. These include concerns with resources and facilities in the PAK-21 process, knowledge and skills related to PAK-21, and time management, such as teachers engaging in activities other than teaching. As for teachers in rural regions, Henry and Mahamod (2021) report that while they have not yet reached the optimal level, their use of PAK-21, which incorporates communication, collaboration, creativity, and critical thinking, is modest. This is also agreed upon by Raman et al., (2019) through their study, which explains that there is still a significant level of inequality in the level of PAK-21 knowledge and skills of teachers based on urban and rural locations. Significant differences exist, especially in matters involving information and communication technology (ICT). As a result, it became challenging for teachers in rural areas to integrate technological and pedagogical components into the PAK-21 curriculum. Consequently, the impact on both teachers and students is significant due to the challenges faced by rural schools, including the digital divide in the classroom. Due to challenges with internet access, lack of focus, and lack of motivation, rural students now face the risk of dropping out of school. These factors, which include residence location, have further widened the digital divide between urban and rural students (Nordin et al., 2023). Thus, the purpose of this research was to determine teachers' preparation in terms of curricular content, pedagogical abilities, and acceptance of PAK-21, as well as their degree of knowledge with regard to concepts, principles, and roles. The study also seeks to determine how teacher preparation for PAK-21 implementation and knowledge relate to one another.

Literature Review

In general, PAK-21 is a term used to explain changes in the education system from a traditional approach to a more modern approach. This approach provides students with real-world knowledge and future skills to be more productive in the global economy. Therefore, students need to learn actively by applying various skills such as communication, collaboration, creativity, criticism, information technology literacy, leadership, social responsibility, and many more (Mirra & Garcia, 2020). MoE (2018) defines PAK-21 as student-centered learning based on the core of communication, collaboration, critical thinking, and creativity, as well as the application of moral values and ethics. It is necessary to apply PAK-21 by incorporating 21st-century teaching techniques into classroom instruction (Erdem, Hakki & Mehmet, 2019). Through PAK-21, the role of teachers is gradually shifting from information transfer to facilitation. In order to encourage students' active participation, teachers must employ pertinent pedagogy and strategies like inquiry-based learning, blended learning, differentiated instruction, cooperative learning, cultural response learning, flipped classrooms, technology-based learning, and similar practices (Varkey et al., 2022).

Therefore, teachers' knowledge and readiness about PAK-21 are important in ensuring effective implementation. Ibn Khaldun (1993), in his book al-Muqadimah, explains the stages of human thinking and the ability to carry out the thinking process to form knowledge. The

capacity to develop knowledge based on concepts, principles, and the teacher's role in helping students apply skills is the foundation for how knowledge is perceived. Subsequently, a teacher must be equipped with the qualities of exceptional human capital through the use of the Malakah concept. A teacher must possess pedagogical abilities, subject matter expertise, a positive attitude, and a commitment to their work in order to be considered effective (Haris, 2021). In addition, according to the National Council for Accreditation of Teacher Education (2008), the conceptual framework about the standards that professional teachers need to have been aimed at providing teachers who can create effective learning through six main basic standards. Among them is the foundation of knowledge in vision, mission, philosophy, and educational theory that guarantees work efficiency through knowledge of the concepts and principles of a policy, skills, and expected professional tendencies. Furthermore, knowledge is the capacity to apply one's comprehension of a topic, according to (Rashid, 2016). In fact, in accordance with Abdul Mutalib (2017), MoE has listed a number of qualities for teachers who are prepared for PAK-21 should possess. These qualities include having a solid grasp of the curriculum or subject, being adept and efficient in pedagogy, possessing the latest technology skills with a flexible attitude, counselling abilities, and knowledge of psychology student learning and development.

Prior research has indicated that while teachers had a strong understanding of PAK-21, their abilities and dispositions indicate a mediocre degree of proficiency. Teachers are also aware of the PAK-21 learning activities, daily lesson plan components, student needs, and standards. This explains why teachers are prepared to further their knowledge of PAK-21 through workshops and seminars and have a solid degree of comprehension of the subject matter and pedagogy (Mailis, 2021; Hanapi et al., 2020). However, the study findings differ from those of Yahaya et al., (2019), who found some teachers were still unclear as to whether they understood PAK-21 or not. Most teachers are not sure if they are able to do teaching activities that meet the requirements of PAK-21. Meanwhile, from the aspect of teachers' readiness to implement PAK-21, teachers were found to have sufficient preparation. This is the case; teachers have in-depth knowledge about PAK-21, and there are infrastructure facilities that support its implementation in schools (Kamary & Hamzah, 2019). This matter is supported by Hamzah and Razak (2022), who also found that teachers' willingness to implement PAK-21 was at a high level. The teachers are emotionally, behaviorally, and cognitively prepared. Nonetheless, a research by Batahong and Botohong (2021) indicates that teachers are still only moderately prepared to implement PAK-21. In agreement, Geruka et al (2021) noted that teacher preparation is still at a reasonable level, particularly when it comes to attitude and abilities.

Research Methodology

Study Design

A survey method was used in a quantitative study to gather information on teachers' comprehension of and readiness for the implementation of PAK-21. Because of this, the method can be applied to characterise the beliefs, attitudes, actions, and traits of a cohort of participants. It can also be utilised to give information about the problems and objectives of the study as well as an explanation of the respondents' most current status. In fact, this methodology is most commonly used in the social scientific community to gather perspectives and offer an explanation for a phenomenon (Mat et al., 2021; Creswell & Clark, 2017; Yahaya et al., 2007).

Population and Sampling

Chua (2021) defines the population as the entire group under investigation, while the sample is one of the population's constituent pieces. Thus, the research population consists of all 269 teachers who work in the Rompin District, Pahang's North Coast zone. Mat et al., (2021) state that choosing a study site with the appropriate sample characteristics is crucial. A random selection of 155 teachers was made from the whole population to serve as the study sample. The sample size determination table by Krejcie & Morgan (1970) is the basis for determining the number of samples. In addition, random sampling is easy to use because, according to Creswell (2009), this method saves time and costs and does not require specific procedures in sample selection.

Research Instrument

A set of web-based surveys served as the study tool. The questionnaire was created by modifying the research conducted by (Haris, 2021; Musa et al., 2021). Due to its speedy data collection method and low cost, this approach saves time by enabling the collection of data from a large number of respondents in a wide area (Valerie & Lois, 2012; Hussin et al., 2014). The three primary sections of the questionnaire are about the respondents' demographics, knowledge, and readiness levels. A Likert scale is used to determine the level because, according to Yahaya et al (2007), this method is simpler, based on empirical data, and improves validity and reliability.

Validity and Reliability

Shaari (2022) asserts that evaluating an instrument's validity is crucial to ascertaining its accuracy in measuring the research issue. With this in mind, an expert panel examines, critiques, and confirms the instrument adaption process. The panel is well-versed in PAK-21 and possesses the deep expertise necessary to guarantee that the instrument is correct and appropriate for the research. In addition, a pilot study with thirty respondents was conducted. Based on the data analysis, it was discovered that every instrument construct had a high degree of reliability. Table 1 presents an interpretation of Cronbach's alpha score based on Bond and Fox's (2015) work, while Table 2 provides an explanation of the instrument's reliability value.

Table 1
Interpretation of Cronbach's Alpha Score

Cronbach's Alpha Score	Reliability Interpretation
0.9 - 1.0	Very good and effective
0.7 - 0.8	Good and acceptable
0.6 - 0.7	Acceptable
< 0.6	Items need to be fixed
< 0.5	Items should be dropped

Table 2
Construct reliability value of the instrument

Instrument Construct	Cronbach's Alpha Score	Reliability Interpretation
PAK-21 Concept	0.96	Very good and effective
PAK-21 Principles	0.93	Very good and effective
The role of PAK-21 teachers	0.95	Very good and effective
PAK-21 Curriculum Content	0.82	Good and acceptable
PAK-21 Pedagogical skills	0.95	Very good and effective
Teacher acceptance attitude	0.97	Very good and effective

Based on Table 2, all item constructs recorded a high reliability value, which is above 0.8. This explains that the items have good consistency to be used in the study.

Data Analysis

Data analysis was carried out using the Statistical Package for The Social Science (SPSS) version 29 software, both for descriptive and inferential purposes. Standard deviations, correlations, and mean values provide the foundation of analysis. Table 3 illustrates how the adaptation from Pallant (2020) is used to interpret the mean value. Table 4 illustrates how the adaption of Jackson (2015) is used in the correlation coefficient interpretation to describe the relationship between the variables.

Table 3
Mean Value Interpretation

Mean Value	Interpretation of The Level of Knowledge and Readiness
3.34 – 5.00	High
1.67 – 1.33	Medium
1.00 – 1.66	Low

Table 4
Correlation Coefficient Interpretation

Correlation Coefficient	**Interpretation of relationship**
+/- 0.70 - +/- 1.00	Strong
+/- 0.30 - +/- 0.69	Moderate
+/- 0.01 - +/- 0.29	Null to weak

Based on Table 3, a mean value that exceeds 3.33 represents a high level, while a value that is less than 1.67 is understood as a low level. Meanwhile, Table 4 describes correlation values above 0.69 as having a strong relationship and values less than 0.30 as having a weak relationship.

Findings

Respondent Demographics

51 (32.9%) of the respondents were male teachers, and 104 (67.1%) of the respondents were female teachers. Subsequently, 63 respondents (40.6%) had more than 15 years of experience, making up the majority of the sample; 13 respondents (8.4%) had fewer than 5 years of experience. By comparison, 125 individuals (80.6%) held a bachelor's degree, whilst

only 2 individuals (1.3%) held a diploma. Moreover, the bulk of the sample, 101 respondents (65.1%), have a bachelor's degree in education; only 1 respondent (0.7%) has a PhD in educational philosophy. Table 5 outlines the study respondents' overall demographic characteristics. An explanation of the information obtained from the respondent's profile is given in Table 5.

Table 5
Respondent's Demographic Profile

Demographic Factor	Category	Frequency	Percentage (%)
Gender	Male	51	32.9
	Female	104	67.1
Teaching experience	Less than 5 years	13	8.4
	5 – 10 years	24	15.5
	11 – 15 years	55	35.5
	More than 15 years	63	40.6
Academic Qualification	SPM	10	6.5
	Diploma holder	2	1.3
	Bachelor Degree	125	80.6
	Masters	18	11.6
Professional Qualification	Teaching certificate	12	7.7
	Diploma / DPLI	34	22.0
	Bachelor's Degree in Education	101	65.1
	Master's Degree in Education	7	4.5
	PhD and equivalent	1	0.7
Total		**155**	**100**

Level of Knowledge in the Implementation of PAK-21

Table 6 provides an explanation of the teachers' level of understanding on the use of PAK-21 from the standpoint of its concept. With a standard deviation (SD) of 0.61 and an overall mean value of 4.07, teachers often possess a high level of expertise. The greatest mean value of 4.10 and the standard deviation of 0.62 were reported by items B3, "I understand the meaning of collaborative in PAK-21," and B4, "I understand the meaning of creativity in PAK-21." The item with the lowest mean score, item B6, "I understand the meaning of values and ethics in PAK-21," has a standard deviation of 0.61 and a mean of 4.03. Table 6 provides more information on this concept.

Table 6
The Teachers' Level of Understanding of PAK-21 Concept

Construct	Item	Mean Value	SD Value	Mean Value Interpretation
PAK-21 Concept	B1	4.09	0.59	High
	B2	4.08	0.62	High
	B3	4.10	0.62	High
	B4	4.10	0.62	High
	B5	4.05	0.65	High
	B6	4.03	0.61	High
Overall Mean		4.07	0.61	High level of understanding

Table 7 describes the level of teachers' knowledge of the implementation of PAK-21 from the perspective of the principles of PAK-21. In general, teachers have high knowledge, with an overall mean value of 4.10 and a standard deviation of 0.62. Item B9, which is "I understand the meaning of active student involvement in class" recorded the highest mean value with a mean value of 4.19 and a standard deviation of 0.62. While item B7, which is "I understand the characteristics of 21st century learning" obtained the lowest mean value with a mean value of 3.97 and a standard deviation of 0.66.

Table 7
The Teachers' Level of Knowledge of PAK-21 Principles

Construct	Item	Mean Value	SD Value	Mean Value Interpretation
PAK-21 Principles	B7	3.97	0.66	High
	B8	4.16	0.65	High
	B9	4.19	0.62	High
	B10	4.15	0.61	High
	B11	4.09	0.63	High
	B12	4.05	0.59	High
Overall Mean		4.10	0.62	High level of understanding

Table 8 discusses the level of teacher knowledge regarding the implementation of PAK-21 from the perspective of the teacher's role. It was found that the level of teacher knowledge was at a high level, with an overall mean value of 3.98 and a standard deviation of 0.67. From the analysis conducted, it was found that item B15, which is "I understand the need to give students space to give ideas and views" recorded the highest mean value of 4.10 and a standard deviation of 0.68. Meanwhile, item B16, which is "I prepare students who are prepared for the technological challenges of the 21st century" shows the lowest mean value with a mean value of 3.88 and a standard deviation of 0.68.

Table 8
The Teachers' Level of Knowledge of PAK-21 From the Perspective of the Teacher's Role

Construct	Item	Mean Value	SD Value	Mean Value Interpretation
PAK-21 Teacher's Role	B13	4.01	0.66	High
	B14	3.99	0.69	High
	B15	4.10	0.68	High
	B16	3.88	0.68	High
	B17	4.02	0.62	High
	B18	3.96	0.68	High
	B19	3.90	0.73	High
Overall Mean		3.98	0.67	High level of knowledge

Level of Readiness for the Implementation of PAK-21

With an overall mean score of 3.95 and a standard deviation of 0.78, the degree of teacher readiness with regard to curriculum material is high. There are five items in the curricular content construct. The item with the greatest mean value, 4.02, and standard deviation, 0.81, is item C5, which is "I determine the teaching content according to the student's ability level." The item with the lowest mean value, 3.87, and standard deviation, 0.74, is item C3, "I master the content found in DSKP." From the perspective of curricular content, teachers are highly prepared to apply PAK-21, according to the data analysis's result.

Table 9
Teacher Readiness with Regard to Curriculum

Construct	Item	Mean Value	SD Value	Mean Value Interpretation
Curriculum Content	C1	3.92	0.81	High
	C2	3.96	0.78	High
	C3	3.87	0.74	High
	C4	3.99	0.78	High
	C5	4.02	0.81	High
Overall Mean		3.95	0.78	High level of Readiness

Table 10 explains the construction of pedagogical skills. The results of data analysis found that teachers have high preparation, with an overall mean value of 3.91 and a standard deviation of 0.84. Item C9, which is "I am ready to find a teaching strategy that is suitable with PAK-21" shows the highest mean value of 4.02 and a standard deviation of 0.81. Meanwhile, item C12, which is "I am ready to innovate in PdPc PAK-21," shows the lowest mean value with a mean value of 3.73 and a standard deviation of 0.90.

Table 10
Teacher Readiness with Regard to Pedagogical Skills

Construct	Item	Mean Value	SD Value	Mean Value Interpretation
PAK-21 Pedagogical Skills	C6	3.95	0.83	High
	C7	3.98	0.81	High
	C8	4.00	0.85	High
	C9	4.02	0.81	High
	C10	3.89	0.81	High
	C11	3.83	0.91	High
	C12	3.73	0.90	High
Overall Mean		3.91	0.84	High level of Readiness

The level of teacher preparation from the point of view of receptive attitude is explained in Table 11. In general, it was found that teacher preparation through the construct of receptive attitude is at a high level based on the overall mean value of 3.92 and a standard deviation of 0.87. Based on the data analysis carried out on seven items in the acceptance attitude construct, it was found that item C13, which is "I am ready to make continuous changes based on PAK-21" and item C19, which is "I accept the implementation of PAK-21 is an improvement in education" show the highest mean value with a mean value of 3.95 and a standard deviation of 0.88 and 0.85. Meanwhile, item C17, which is "I am interested in implementing PAK-21 in the classroom" shows the lowest mean value with a value of 3.91 and a standard deviation of 0.87. In short, teachers have a high level of preparation from the point of view of accepting PAK-21.

Table 11
Teacher Readiness with Regard to Receptive Attitude

Construct	Item	Mean Value	SD Value	Mean Value Interpretation
Receptive Attitude	C13	3.95	0.88	High
	C14	3.94	0.87	High
	C15	3.92	0.89	High
	C16	3.94	0.89	High
	C17	3.91	0.87	High
	C18	3.92	0.90	High
	C19	3.95	0.85	High
Overall Mean		3.92	0.87	High level of Receptive Attitude

The Relationship between Levels of Knowledge and Teacher Readiness in the Implementation of PAK-21

In order to determine the strength of the relationship between the variables in the study, the Pearson correlation test was conducted on the data that had been collected. Based on Table 12, it was found that the value of the correlation coefficient r is 0.669 and the p value is 0.000, which is smaller than 0.05 ($r = 0.669$, $p<0.05$). Therefore, the null hypothesis of the study is rejected, and the alternative hypothesis is accepted. In other words, the study found that there is a moderate relationship between knowledge and teacher readiness in the implementation of PAK-21 in rural schools in Rompin District, Pahang.

Table 12
The Relationship Between level of Knowledge and Teachers' Readiness

		Teachers' Readiness
Teachers' Knowledge	Pearson Correlation Sig. (2-tailed) N	0.669 0.000 155

Discussion

The study discovered that teachers using PAK-21 have a high degree of expertise. This clarifies that teachers possess a profound understanding of the concepts, principles, and roles involved in implementing PAK-21. This is due to the teacher's extensive knowledge and application of the PAK-21 foundational concepts of values and ethics (4K1N), collaboration, communication, creativity, and criticism. This point is supported by Said et al (2020), who explained that teachers have a high understanding of these elements and even apply them in lesson plans to increase students' confidence and mastery. In addition, the teacher always implements student-centered teaching by acting as a facilitator. This proves that the teacher understands the basic principles of PAK-21. This statement is supported by Jusoh and Hamzah (2020), who found that teachers are highly skilled in planning, implementing, and reflecting on student-centered teaching. The findings of this study are supported by Majani and Tahar (2021), who explain that teachers in the Padawan district also have a high level of knowledge about the implementation of PAK-21. This result is consistent with that of Mailis (2021), who discovered that teachers in the urban area of Sepang likewise possess a high degree of expertise about the application of PAK-21. Concepts, fundamental standards, student skills, components of the daily lesson plan (RPH), and learning activities in PAK-21 are the five areas of study that exhibit a high mean value. On the other hand, Majid and Abdul Majid's (2022) study reveals that teachers in Johor Bahru's urban areas possess a moderate degree of expertise regarding the implementation of PAK-21. According to Saleh and Rosli (2018), it is important to be implemented by teachers because it is the first phase and the basis for strengthening competence in producing quality human capital to become successors in national and global industry.

The study's conclusions indicated that teachers in rural areas are highly prepared to apply PAK-21. This is demonstrated by the fact that proficient DSKP teachers are able to deconstruct curriculum information, create objectives, and deliver content in an efficient manner. Ilhavenil et al (2021) discovered that teachers' high level of comprehension of DSKP was a result of their enough exposure, which lends validity to this conclusion. High proficiency in PAK-21 implementation, including pedagogical skills, assessment procedures, application of extra aspects, and use of useful teaching aids, also influences teachers' readiness. This is based on the findings of Mailis (2021), who found that teachers have high skills in pedagogy such as differentiated, modular, problem-based approaches and PdPc implementation such as the application of elements, activities, and student skills. This finding is consistent with the study of Abdullah et al (2022), who explained that the level of readiness of teachers in urban areas in PAK-21 is high. In a similar direction, teachers have begun taking professional development and PAK-21 lessons since 2019 and plan to continue with advanced courses. Musa et al (2021) state that teachers are only somewhat prepared in terms of their attitudes and skill sets. It was determined that the teachers lacked the necessary preparation to oversee the curriculum's content and the choice of PAK-21 strategies and tactics.

Furthermore, the trainee teachers had less confidence in PAK-21's ability to raise student achievement.

The study's conclusions also provide an explanation for the existence of a straightforward link between teachers' readiness and knowledge. A positive correlation indicates that the two variables have a meaningful link. This finding is consistent with prior research showing that teacher readiness and knowledge are positively correlated, particularly when it comes to the ability to execute PAK-21. These skills refer to pedagogical skills, collaboration, psychological skills, and counselling skills (Haris, 2021; Majid & Abdul Majid, 2022). This point explains that the level of PAK-21 knowledge of teachers has an impact on teachers' willingness to implement PAK-21. On the other hand, this finding contradicts the study of Tajudin and Abdullah (2018), which explains that there is no significant relationship between knowledge and teacher readiness in terms of skills, attitude, and interest in PAK-21. The research by Kamary and Hamzah (2019), which demonstrates that there is no correlation between knowledge and teachers' readiness level in the context of PAK-21 implementation, lends credence to this claim. This is due to the fact that PAK-21 lessons are still not supported by the school's infrastructure.

Conclusion

It may be inferred from the research that was done that the teachers in the North Coast zone, Rompin, are highly competent and ready to use PAK-21. There exists a favourable correlation between the level of teacher readiness and the level of teacher knowledge. Teachers now feel confident enough to execute PAK-21 thanks to ongoing exposure to, coaching on, and training from PPD, JPN, and MoE. But other areas of PAK-21, like infrastructure and student readiness, also require focus. Teaching that works for the diverse group of students in the classroom is also necessary. Furthermore, in order to guarantee that the digitization of education can be applied not just in large cities but also in rural regions, infrastructure facilities are crucial. This will allow rural children to have access to high-quality education.

This study also supports Ibn Khaldun's theory of Malakah, which holds that teachers' capacity to implement PAK-21 can be enhanced by their internal and external preparation, including knowledge of the most recent educational science, curriculum content, skills, roles, and positive attitudes. Given this, these issues have a significant impact on the formation of successful teaching traits and the preparedness for implementing PAK-21. As a result, teachers in rural areas in particular must always broaden their horizons and be open to modifications in the educational framework. Furthermore, the study is significant because it shows that, despite the different obstacles faced by teachers in rural areas, these problems may be solved by them using initiative and ingenuity. Therefore, in their attempts to implement PAK-21, every teacher should take inspiration from the finest practices of rural teachers, who integrate components of contemporary pedagogy, the use of pertinent technology, and positive attitude development. Furthermore, the study offers input to the Moe regarding the necessity of guaranteeing the professional growth of rural area teachers in line with 21st-century demands while simultaneously bridging the divide between urban and rural learners and educational institutions.

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