Professional Development Practices Readiness Level among Design and Technology Subject Teachers in SJKC Primary Schools Selangor

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Abstract

This study aims to identify the Level of Teacher Readiness and Professional Development Practices of SJKC Primary Schools in Selangor towards Design & Technology. The level of preparedness studied is knowledge, skills, attitudes, interpersonal relationships, and workload. The study is a descriptive survey involving quantitative data using a questionnaire as a research instrument. The sample of respondents was 97 people taken from the entire population. The data collected from the questionnaire was analyzed using Statistical Package For Science School (SPSS) software version 26 in a descriptive manner which involved calculating frequency, percentage, and mean to identify the level of readiness for aspects of knowledge, skills attitudes, and professional development practices of teachers. The descriptive data obtained shows an overall mean value for the readiness level variable of 3.27 which is at a moderate level and the professional development practice variable of 3.43 which is also at a high level. Then, this finding was used to conduct the Kruskal-Wallis test and found that there was a difference between the level of readiness of RBT teachers towards the professional development practices of SJKC primary school teachers in Selangor. Next, these findings are used to conduct inferential statistical analysis. The researcher has used Spearman's Rank Correlation test for this purpose. Based on the test, the correlation value is as much as 0.78 which means that the two variables have a strong positive correlation. In conclusion, this finding shows that the level of readiness of SJKC primary school RBT teachers has a strong relationship with the professional development practices of teachers in their respective SJKC primary schools.

1. Introduction

The development of education in Malaysia has experienced significant changes in efforts to achieve the Shared Prosperity Vision 2030. The Malaysian Education Development Plan (PPPM) 2013-2025 is the basis for improving the quality, equity, and access to education. One of the important changes is the introduction of the Primary School Standard Curriculum (KSSR) which replaces the Primary School Integrated Curriculum (KBSR), as well as the new subject, Design and Technology (RBT). However, these changes require teachers to have high knowledge, skills, and attitudes to be able to apply these changes in the teaching and facilitation process.

According to Sulastri (2020), although changes in the education system have a positive impact, there are also challenges for teachers in adapting to the changes stated by Sulastri (2020). The difficulty and complexity of

change cause teachers to face a dilemma between common practices and new ideas (Marvati 2020). Several factors such as teachers' knowledge, skills, and attitudes can affect their readiness to implement change. Therefore, professional development and active involvement in self-development become important for teachers in improving teaching strategies and meeting the diverse needs of primary school students.

The implementation of the Continuous Development Plan (PPPB) and the Master Plan for the Development of Teacher Professionalism (PIPPK) provide a platform and support for the professional development of teachers. Through professional development, teachers can improve content knowledge, teaching confidence, and the quality of student learning. Therefore, this study aims to examine the readiness of RBT teachers towards professional development practices as a step towards the formation of quality human capital and continuous improvement in the education system in Malaysia.

1.1 Problem of Statement

Transformation in the Malaysian education system is ongoing to enhance student success and maintain quality. The Ministry of Education (KPM) introduced School Transformation 25 to improve student outcomes and educational quality (Ismail, 2020). This aligns with the Malaysian Education Development Goals (PPPM) 2013-2025 (Hussin, 2021). KPM expects teachers to develop students skilled in high-level thinking, and knowledgeable, and ethical leaders (KPM, 2016).

Achieving these educational goals requires teachers to continuously enhance their knowledge, skills, and attitudes. KPM provides programs to develop teacher competence in pedagogic aspects of RBT (Design and Technology) and practical projects. However, challenges persist. Dinham (2021) found that teachers often lack professionalism, confidence, and courage in their duties. Chai (2019) emphasized the need for teachers to master content knowledge and appropriate teaching approaches. Transitioning from the Integrated Life Skills Curriculum (KHB) to RBT also presents difficulties (Ismail, 2022).

In SJKC primary schools in Selangor, several issues among RBT teachers were identified. A preliminary survey in SJKC Hulu Langat highlighted that RBT teachers struggle with mastering the KSSR RBT curriculum and lack experience in this student-centered, project-based subject. This affects teaching effectiveness. Additionally, many teachers lack practical skills in using and maintaining RBT workshop tools, impacting their ability to support students effectively.

The survey also found that the absence of specific teaching methods in RBT leads to student disengagement. Some teachers' negative attitudes further hinder learning objectives, as reliance on textbook theory alone is insufficient for deeper understanding and creative project work.

Therefore, improving RBT teachers' professional development is crucial. Teachers need to master RBT content, pedagogical skills, and maintain a positive attitude. This study aims to address the readiness of RBT teachers in terms of knowledge, skills, and attitudes, and assess professional development practices. Respondents are RBT teachers from SJKC primary schools in Hulu Langat, chosen for their urban location and exposure to KSSR RBT content courses. This study evaluates whether these teachers are prepared and continue professional development practices.

1.2 Objective of Study

This study has several objectives to achieve the goals of the study. Among them are for:

i)   Identifying the level of readiness of RBT SJKC teachers in Selangor for aspects of knowledge, skills, and attitudes toward teacher professional development practices.
ii)   Identifying the level of readiness of RBT SJKC teachers in Selangor for aspects of teacher professional development practices.
iii)   Determine the difference in the level of readiness for aspects of knowledge, skills, and attitudes of RBT SJKC teachers towards teacher professional development practices. Methodology
iv)   Determining the relationship between the level of readiness and professional development practices among SJKC RBT teachers in Selangor.

2. Methodology

Research methodology is a method or study that is carried out on a study to obtain information to achieve the objectives of the study. In addition, it is also an important aspect to determine the design, collect, and analyze information to support a study conducted. The methodology is also intended to be used as a guide for the researcher to apply the techniques of making a more detailed description of the research process developed.

2.1 Research Design

In this study, the research employs a quantitative survey approach to meet its objectives. The survey involves the use of an online questionnaire method for data collection. This method was chosen for its ability to efficiently gather accurate information from a larger number of respondents (Roflin, 2021). Descriptive and inferential statistical surveys are employed for data analysis. Descriptive statistics, such as frequencies, percentages, and minimum values, provide a basic summary of the data. Inferential statistics are used to explore relationships between different groups. In summary, the research design adopts a survey approach with an online questionnaire method, employing both descriptive and inferential statistical analyses to achieve the research goals. The experimental procedure flowchart in Figure 1 outlines the step-by-step process for obtaining and analyzing the results.
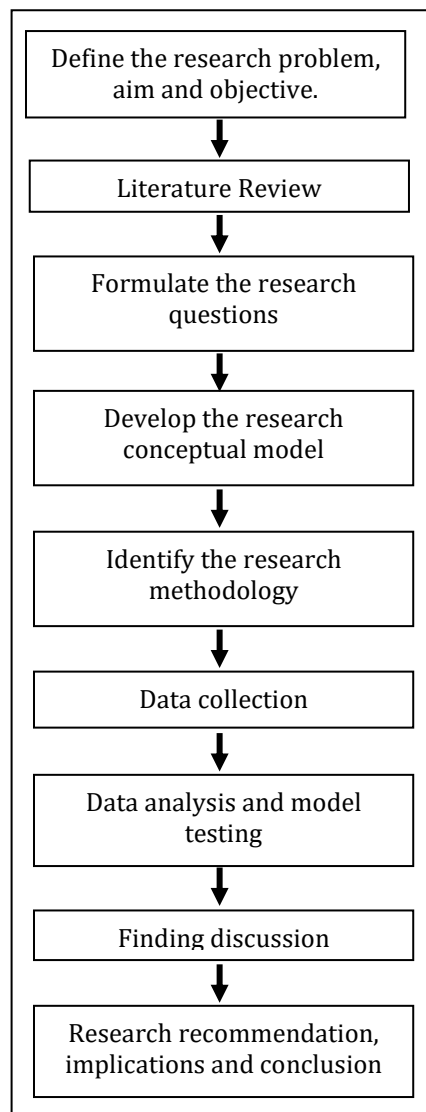

Fig. 1 *Research Procedure Flowchart*

2.1.1 Research Instrument

The questionnaire used by the researcher had three separate sections, each with a distinct function. To put the participant's characteristics in context, Part A focuses on obtaining demographic data such as gender, area of specialization, and teaching experience. The study's main section, covered in Part B, assesses teachers' preparedness to use KSSR RBT in three areas: knowledge, skills, and attitudes. Respondents indicate the extent to which they have characteristics that are essential for successful implementation using a Likert scale.

Part C also evaluates professional development strategies for RBT teachers in primary schools. The purpose of this section is to learn more about teachers' perceptions of the efficacy of current professional development initiatives. Respondents can give complex answers when a Likert scale is used. Respondents can easily express their opinions because the questionnaire is self-administered. This strategy is in line with Huwaida (2019) emphasis on the possibility of higher reliability with a larger participant pool and Roflin (2021)

claim regarding the simplicity of data collection via a questionnaire method. In conclusion, the questionnaire is an invaluable resource for getting a thorough grasp of RBT teachers' perceptions and level of readiness about KSSR implementation and professional development strategies.

Table 1 *Distribution of Questionnaire Items*

Section	Aspect	Scale Item	Total Item
A	Demographic Information of Respondents	Likert Scale	3
B	Level of readiness of RBT teachers in the implementation of the latest RBT curriculum in schools (2017 Review)	Likert Scale	
	i) Knowledge Aspect		10
	ii) Skills Aspect		10
	iii) Attitudes Aspect		10
C	Level of professional development practices of RBT teachers for learning the latest RBT curriculum (2017 Review)	Likert Scale	10
Number of Question Items			43

2.1.2 Data Analysis Method

In this study, the researcher used descriptive and inferential statistical analysis methods to analyze data obtained from questionnaires filled out by teachers who teach Design and Technology (RBT) in primary schools in Hulu Langat, Selangor (Huwaida,2019). Descriptive statistics were used to summarize the characteristics of the variables involved in this study, such as the level of knowledge, skills, and teachers' attitudes toward professional development practices. The researcher applied the method of calculating the total frequency, percentage, and means to analyze the questionnaire data obtained from the respondents (Hamid,2019). This analysis provides a brief overview of the level of readiness of RBT teachers in terms of knowledge, skills, and attitudes toward professional development practices in Hulu Langat district, Selangor. The use of this descriptive statistical method allows the researcher to recognize the frequency of occurrence of the studied phenomenon and determine the mean value of the data collected. In addition, the mean value is also a stable starting point if the sample size is large. Therefore, this method of analysis is suitable for use in evaluation studies using purposefully selected samples.

3. Results and Discussion

The results of the data analysis were obtained from the outcome of a pilot study and an actual study. The results of the studies were presented based on the order of the various research questions. The first step is to present the sample's demographic characteristics and the questionnaire was analysed. Subsequently, the results of the analyses revolve around the level of readiness of Design & Technology teachers in Selangor towards professional development practices.

3.1 Demographic analysis

Based on the Table 2，the items are related to the respondent's gender, age, specialization, and teaching experience. The results of the findings show that the gender of teachers is unbalanced, namely, female teachers are more than male teachers. Next, the teachers who have the RBT option are very less compared to the teachers who have the RBT option. Finally, experienced teachers are only in the range of 6-10. So many shortcomings and challenges can be illustrated through sample demographics.

Table 2 *Demographic of Sample*

Demographic Factors		Frequency (n)	Percentage (%)
Sex	Male	19	19.6
	Female	79	80.4
RBT Teaching Experience	1 – 5 Years	23	23.7
	6 -10 Years	51	52.6
	11 -15 Years	12	12.4
	16 -20 Years	11	11.3
Opsyen	RBT	26	26.8
	Non RBT	71	73.2

3.2 Analysis Design & Technology teachers perceive their readiness

Descriptive analysis shows that the level of readiness of Design & Technology subject teachers in SJKC primary schools in Selangor towards professional development practices is at a moderate level overall. The four observed constructs show the minimum overall value, with the professional development practice assessment aspect having the highest value (3.43), followed by the attitude aspect (3.35), the content knowledge aspect (3.24), and the skill aspect (3.21) having the lowest value. Overall, the level of teacher readiness for the aspects of knowledge, skills, and attitude has a minimum value of 3.26, showing a moderate level based on the interpretation in Yek's study (2017).

Table 3 *Formulation of the overall mean value and interpretation for each construct*

Construct	Overall Mean Value	Interpretation
Content Knowledge Aspects	3.24	Medium
Aspects of Content Skills	3.21	Medium
Aspects of Attitude	3.35	Medium
Aspects of Professional Development Practice Assessment	3.43	High

3.3 Analysis of differences in the level of readiness of RBT SJKC teachers toward teacher professional development practices

Based on the Table 4 results of the Kruskal-Wallis test analysis, significant differences were found in the level of readiness of teachers of the Design & Technology (RBT) subject at SJKC primary schools in Selangor towards the practice of developing teacher professionalism in terms of knowledge, skills, and attitudes. The obtained asymp.sig value is P= 0.00 (p<0.05), which shows that the null hypothesis (H0) is rejected. This shows that there are significant differences in the readiness of SJKC RBT teachers in terms of knowledge, skills, and attitudes towards teacher professionalism development practices. This result supports the alternative hypothesis which states that there is a difference in the level of readiness of RBT SJKC teachers towards the practice of teacher professionalism development. Therefore, educational institutions and curriculum developers need to consider these differences when planning professional development programs for SJKC RBT teachers.

Table 4 *Analysis of significance values based on the Kruskal-Wallis test*

	Knowledge	Skills	Attitude
Kruskal-Wallis	59.82	42.14	52.59
df	3	3	3
Asymp. Sig	0.00	0.00	0.00

a.Kruskal-Wallis Test:

b. Grouping variable: Professional Development Practices of Teachers

3.4 Analysis of the relationship between the level of readiness of RBT SJKC teachers in Selangor and professional development practices

The relationship between the professional development practice and the knowledge, skills, and attitudes of RBT teachers at SJKC in Selangor. Averaging the minimum values derived from teachers' professional development practices, the researcher used SPSS software to determine the minimum or mean scores for the knowledge, skills, and attitudes variables. With SPSS, the knowledge variable had the lowest values at 3.24, the skills variable at 3.22, and the attitudes variable at 3.35. The overall minimum value for readiness was 3.27. The researcher used the minimum value of 3.43, to calculate the mean or minimum value for the professional development practice variable. The Spearman's Rank Correlation test was used to assess the degree of association or correlation between the readiness variables and the professional development strategies used at individual primary schools. The significance values of the two variables under investigation are used to calculate the correlation results. Both variables have a relationship or correlation if the significance value is less than 0.05, or <0.05. On the other hand, both variables lack a relationship or correlation if the significance value is greater than 0.05, or >0.05 (Sumargo, 2020). The readiness variable and the transformation variable, which were the subjects of the analysis, have a relationship or correlation, as indicated by the significance value of 0.00 for both variables.

The researcher determined the correlation level between the two variables. The correlation level determination is based on the established correlation value, as shown in Table 7. The analysis revealed a correlation value of 0.78 from the Spearman's Rank Correlation test. This value indicates a positive relationship between the readiness variable and the professional development practices variable, reaching a strong level or having a very strong positive correlation. Therefore, it can be concluded that the study hypothesis, H0 1, is rejected.

3.5 Discussion

The study's demographic findings highlight several challenges that need addressing to enhance RBT teaching in SJKC primary schools in Selangor. There is a significant gender imbalance, with more female than male teachers. This imbalance is supported by findings from Abd Kadir (2020), who also noted the gender disparity in teaching professions. To bring diverse perspectives to RBT teaching, efforts should be made to encourage more male teachers to join and remain in the profession. Besides that, few teachers have specific RBT specialization, which affects the quality of instruction. Increasing training opportunities for teachers to gain specialized knowledge and skills in RBT is essential to ensure they are well-prepared to deliver the curriculum effectively. Experienced teachers mostly fall within the 6-10-year range, indicating a need for tailored support programs. Newer teachers can benefit from mentorship and targeted training, while experienced teachers need advanced professional development to refine their skills.

The first objective is to evaluate RBT teachers' knowledge, abilities, and attitudes in Selangor's Chinese primary schools regarding the implementation of RBT. The results, compiled from O'Reilly (2019), Saidin (2021), and Jemima (2021), show how important background knowledge is, especially when using RBT software. Remarkably, the knowledge category's highest score relates to a basic understanding of RBT programmers like Micro-bit and Scratch. The literature review highlights how difficult it is to integrate technology into the classroom constantly.

Skill development is essential for effective teaching. The results reveal a moderate level of skill preparation among RBT teachers, emphasizing their capacity to integrate RBT components and use computers for demonstrations. However, challenges persist, especially in teaching 21st-century skills within the KSSR framework (Rahman, 2019). Focused efforts are necessary to enhance RBT teachers' attitudes, knowledge, and abilities. Recommendations include cultivating proactive attitudes, and commitment, customized training programs, and increased access to knowledge resources. In conclusion, this study provides valuable insights into RBT teachers' readiness in Selangor's Chinese primary schools, offering strategic recommendations for continuous improvement in their dynamic professional landscape.

The second objective shows that RBT teachers have a moderate attitude; they are generally self-assured, engaged, and open to change. For teachers to provide effective instruction, Rahman (2019) contends that positivity and self-assurance are essential components of teaching. Learning psychology comprehension, pedagogical expertise, and content knowledge are some of the things that can strengthen this confidence. The study reveals a moderate level of attitudes towards RBT among trained teachers. The results show that to increase their knowledge, teachers regularly have conversations with mentors and share ideas with colleagues. They also have a positive outlook since they think that RBT instruction can help students develop innovative and creative mindsets. The study does note, however, that instructors' attitudes toward attempting new RBT teaching techniques in the classroom received a low score. This result is at odds with Aleas's (2021) assertion that inadequate theory and practice mastery causes teachers to lose confidence in their ability to teach.

Rahman (2019) states that the development of knowledgeable teachers occurs because of reading, research, meaningful contributions to discussions, and an open-minded mindset. In summary, the attitude component of the RBT KSSR SEMAKAN 2017 implementation is where teachers are most prepared, which is in line with other research that also found that teachers are somewhat prepared for this component. This finding contradicts the assertion made by Yahaya (2020) that qualified instructors lack confidence in their ability to teach when they are not proficient in the theoretical and practical aspects of their subject matter. The overall minimum score indicates that teachers' preparedness for the attitude component of the RBT KSSR SEMAKAN 2017 implementation is moderate, at 3.43. Prior research by O'Reilly (2019), Saidin (2021), Jemima (2021), and Hanapi (2020) also points to a moderate readiness level in the attitude aspect, which validates this.

The third objective examines the differences in RBT teachers' preparedness levels for professional development practices in Chinese primary schools in Selangor. Using the Kruskal-Wallis test, significant differences in knowledge, skills, and attitudes are found. The results show significant differences in perceptions, knowledge, and abilities among SJKC RBT teachers regarding their readiness for professional development activities. Differences in knowledge preparedness imply that some teachers might comprehend concepts more deeply because of earlier instruction or more extensive experience. On the other hand, some people might need to expand their knowledge regarding professional development.

Variations in mastery suggest that some RBT instructors are better at putting professional development strategies into practice, demonstrating abilities in programmed design, efficient self-management, and constructive relationship-building. On the other hand, some people might need to improve in these areas.

Divergent perspectives on professional development practices among RBT teachers are highlighted by differences in attitude. According to Abd Kadir et al. (2020), having a positive attitude has a big impact on motivation and involvement in career development. To promote positive views on professional development, it is crucial to identify the factors that influence attitudes and develop strategies to address these differences.

The fourth objective investigates the correlation between the readiness levels of RBT teachers and their professional development practices in Chinese primary schools (SJKC) located in Selangor. A strong and significant correlation ($r = 0.78$, $p = 0.00$) has been found by the Spearman Rank Correlation analysis between teachers' engagement in professional development practices and their level of knowledge, skills, and attitudes. The results highlight the significance of emphasizing and improving readiness factors, such as attitudes, knowledge, and abilities, to encourage RBT teachers to actively participate in professional development. The study makes clear how important it is to provide adequate support and training specific to these areas to raise the level of professionalism and instruction in RBT Chinese primary schools.

While these results provide valuable insights, it's essential to acknowledge the study's geographical scope in Selangor and its specific focus on RBT teachers in that region. The findings may not be universally applicable to RBT teachers in other areas or the entire country. Therefore, future research with a more extensive and diverse sample would contribute to a more comprehensive understanding of the relationship between teacher readiness and professional development practices on a broader scale.

4. Conclusion

Based on the research done by the researcher and previous studies, there are several levels of readiness in aspects that play a role in professional development practices in SJKC Selangor primary schools. One of the most important levels of preparedness is knowledge. Knowledge influences the willingness and desire of trained teachers to continue learning and strive to educate students by achieving excellence. This has been supported by studies and theories that have been tested by previous researchers. In addition, the level of readiness in terms of skills and attitudes also plays an important role in helping trained teachers remain motivated and accept changes in the RBT curriculum in primary schools. The purpose is to achieve a holistic and excellent achievement for the students. Therefore, it can be concluded that readiness in terms of knowledge, skills, and attitudes is an important factor that supports the professional development of teachers in SJKC Selangor primary schools.

Conflict of Interest

The author declares that there is no conflict of interest regarding the paper's publication.

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References

Abd Kadir, R. B., Aziz, M. A. B. A., Hassan, M. K. B., Rahman, N. B. A., & Sidek, M. A. B. (2020). Tahap Pengetahuan dan Tahap Kesediaan Guru Pelatih Institut Pendidikan Guru Kampus Pendidikan Teknik (IPGKPT) Terhadap Revolusi Industri 4.0 (Ir 4.0). *Jurnal Penyelidikan Teknokrat Ii, (JILID XXI)*.

Aleas, M., & Salleh, N. M. (2021). Tahap Pengetahuan, Kemahiran dan Sikap Guru Terhadap Pengajaran Modular Di Sekolah Rendah Daerah Hulu Langat, Selangor: [Special Education Teacher's Level of Knowledge, Skills, And Attitude On Modular Teaching In Primary Schools In Hulu Langat District, Selangor]. *International Journal of Advanced Research in Islamic Studies and Education*, 1(3), 92-106.

Chai, C. S., Hwee Ling Koh, J., & Teo, Y. H. (2019). Enhancing and modeling teachers' design beliefs and efficacy of technological pedagogical content knowledge for 21st century quality learning. *Journal of Educational Computing Research*, *57*(2), 360-384.

Dinham, J., Choy, S. C., Williams, P., & Yim, J. S. C. (2021). Effective teaching and the role of reflective practices in the Malaysian and Australian education systems: A scoping review. *Asia-Pacific Journal of Teacher Education*, *49*(4), 435-449.

Hanapi, Z. B., Mohamed, S., Rui, T. J., Rus, R. C., Ma'arof, N. N. M. I., & Shariff, S. (2020). Developing instruments for employability skills measurement for trainee teachers in the Technical and Vocational Education field. *Journal of Technical Education and Training*, *12*(1).

Ismail, S. N., Abdullah, Z., Komariah, A., Kurniatun, T. C., Kurniady, D. A., Sunaengsih, C., & Sanjaya, A. J. (2020). Influence of the Professional Learning Community of Malay Language teachers at the transformation school in Selangor. *International Journal of Innovation, Creativity and Change*, 12(6), 236-254.

Ismail, M., Kob, C. G. C., Yusuff, N. N., & Pratama, H. (2022). Modul Sequin of Fashion Design Topics, Design and Technology (RBT) Form One Subject: Multimedia Elements from the Teachers' Perspective. *Asian Journal of Vocational Education and Humanities*, *3*(1), 24-32.

Jemima, S., & Sumathy, P. (2021). Effectiveness of structured teaching versus child-to-child teaching program on knowledge regarding worm infestation to middle school children in Puducherry. *Medical Journal of Dr. DY Patil University*, 14(6), 646-651.

Hamid, M., Sufi, I., Konadi, W., & Akmal, Y. (2019). Analisis Jalur Dan Aplikasi Spss Versi 25.

Hussin, H. B. M., Ghani, K. A., Hashim, S. N. A., Haron, A. S., Hassan, M. H., Suhaili, A., … & Nordin, M. N. (2021). *Meta-Analysis Of Teacher Teaching Practices In Malaysia*. Review Of International Geographical Education.

Huwaida, H. (2019). Statistika deskriptif. Poliban Press

Ibrahim, N., Adzra'ai, A., Sueb, R., & Dalim, S. F. (2019). Trainee teachers' readiness towards 21st-century teaching practices. *Asian Journal of University Education*, 15(1), 1-12.

Kalaiselvi, K., & Vetrivel, M. (2019). A Study on Attitude of Female Teachers Towards Inclusive Education Special Reference to Schools in Chennai District. *Indian Journal of Public Health Research & Development*, *10*(11).

Kementerian Pendidikan Malaysia, (2016). Panduan Pelaksanaan Kurikulum Pendidikan Asas Vokasional. Putrajaya; Bahagian Pembangunan Kurikulum.

Mawati, A. T., Permadi, Y. A., Rasinus, R., Simarmata, J., Chamidah, D., Saputro, A. N. C., … & Prasetya, A. B. (2020). Inovasi Pendidikan: Konsep, Proses dan Strategi. Yayasan Kita Menulis.

Mat, N. H. N., Salleh, H. S., Yusof, Y., Mohamed, W. N., & Noor, N. A. M. (2021). *Panduan Penyelidikan Ilmiah: Kaedah dan Penulisan (UUM Press)*. UUM Press.

O'Reilly, T., Wang, Z., & Sabatini, J. (2019). How much knowledge is too little? When a lack of knowledge becomes a barrier to comprehension. Psychological science, 30(9), 1344-1351.

Rahman, N. A., Yusop, N. A. M., & Yassin, S. M. (2019). Kemahiran Proses Sains Dalam kalangan Kanak-Kanak Prasekolah Menerusi Pendekatan Projek. *Sains Humanika*, *11*(1).

Roflin, E., & Liberty, I.A. (2021). Populasi, Sampel, Variabel dalam penelitian kedokteran. Penerbit NEM.

Saidin, N. D., & Husnin, H. (2021). Google Classrrom Sebagai Pelantar M- Pembelajaran: Tahap Pengetahuan Dan Tahap Kesediaan Guru-Guru Sekolah Menengah Luar Bandar.*Jurnal Dunia Pendidikan*, 3(2), 278–292.

Sulastri, S., Fitria, H., & Martha, A. (2020). Kompetensi profesional guru dalam meningkatkan mutu pendidikan. Journal of Education Research, 1(3), 258-264.

Sumargo, B. (2020). Teknik sampling. Unj press.

Yahaya, N., Rasul, M. S., Yasin, R. M., Sulaiman, M., & Abd Majid, S. (2020). Authentic teaching and learning in the Malaysian National Dual Training System (NDTS) apprenticeship program. *Journal of Technical Education and Training*, 12(1).