

Parents' Preparedness in Facilitating Learning and Academic Performance in Grade 9 Science

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ARTICLE INFO

Article history:

Received March 02, 2023

Revised March 10, 2023

Accepted September 02, 2023

Available online September 25, 2023

Kata Kunci:

Pendidikan Sains, Kesiapsiagaan Orang Tua, Keterlibatan Orang Tua, Penelitian Korelasi Deskriptif, Filipina Tengah

Keywords:

Science Education, Parents' Preparedness, Parents' Involvement, Descriptive Correlational Research, Central Philippines



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ABSTRAK

Realitas baru dalam proses pendidikan menuntut adanya kerjasama antara pembimbing dengan orang tua atau wali dalam membimbing peserta didik agar menguasai pelajaran, memperoleh ilmu, dan menguasai kompetensi khususnya bidang IPA. Penelitian ini menggunakan desain penelitian deskriptif korelasional untuk menganalisis kesiapan orang tua sebagai fasilitator pembelajaran di kelas 9 IPA dan hubungannya dengan prestasi akademik peserta didik. Penelitian ini dilaksanakan di sekolah menengah negeri yang besar. Tingkat kesiapan orang tua ditentukan melalui kuesioner survei yang dikembangkan oleh peneliti, sedangkan kinerja akademik siswa adalah kelas kuartal pertama di Sains 9. Setelah menjawab survei, hasilnya dikenakan analisis statistik yang sesuai. Data numerik yang dikumpulkan dari instrumen dikenakan perlakuan statistik deskriptif dan inferensial tertentu. Perbedaan signifikan ditemukan pada tingkat kesiapan orang tua serta prestasi akademik siswa ketika dikelompokkan berdasarkan status sosial-ekonomi dan pencapaian pendidikan. Kesiapan orang tua dan wali berpengaruh terhadap prestasi akademik di kelas 9 IPA. Mereka kemungkinan besar akan mendukung pendidikan peserta didiknya dalam hal kesiapan fisik dan emosional karena mereka telah memperoleh hasil yang tinggi pada survei yang diberikan kepada mereka.

ABSTRACT

New reality of the education process demands for collaboration between mentors and parents or guardians in guiding the learners to master lessons, obtain knowledge, and master competencies, especially in Science. This study utilized descriptive correlational research design to analyze the preparedness of parents as facilitator of learning in Grade 9 Science and its relationship in academic performance of learners. The study was implemented in a large public secondary school. Level of preparedness of parents was determined through a researcher-developed survey questionnaire while the academic performance was the learners' first quarter grade in Science 9. After the answering of survey, results were subjected to appropriate statistical analysis. The numerical data gathered from the instruments were subjected to specific descriptive and inferential statistical treatment. Significant differences were found on the parents' level of preparedness as well as students' academic performance when grouped according to socio-economic status and educational attainment. Parents and guardians' preparedness affects academic performance in Grade 9 Science. They are most likely to be supportive on the education of their learners in terms of physical and emotional domains of readiness as they have obtained high results on the survey given to them.

1. INTRODUCTION

In this section, the authors outlined the context and rationale leading to the development of this study. First, the authors present the circumstances brought about by the pandemic. Then, the roles of the parents as facilitators of learning is highlighted. The situation in the locale of the study was emphasized leading to the establishment of the gaps. Lastly, the discussion on the research objectives and the uniqueness of the research wraps up this portion.

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School closures due to the pandemic have had a profound impact on students' lives, their families, and their teachers. To adapt to this circumstance, schools must change their learning management from in-person to remote learning (Ferri et al., 2020; Lase et al., 2021). About half a billion students were forced to become virtual-school learners as they sought sanctuary at home, with parents, siblings, and other family members acting as learning facilitators and pseudo-teachers (Agaton & Cueto, 2021; Cohen & Kupferschmidt, 2020). Many teachers, families, and students were surprised by this sudden change. It showed some of the problems and worries that come with more parents being involved in and helping their children with different levels and types of distance learning (Badajo et al., 2016; Garbe et al., 2020). In the Philippines, the situation is almost the same (Badajo et al., 2016; DeDios, 2022; Tocalo, 2022).

Parents play a key role in helping and encouraging their children to learn about science at home, at school, and in their community. Several empirical studies have confirmed the importance of parental involvement in their children's education (Boonk et al., 2018; Humphreys & Torgerson, 2019). Along the same lines, teachers are also significant in this and can be important collaborators to parents in developing science learning confidence and skills of children. The participation of parents in their children's education is crucial to their children's interest in and ability to comprehend Science (Halim et al., 2018; Wang & Degol, 2017). Research reveals that regardless of socioeconomic status and parental level of education, when parents are involved in their children's education, the children achieve more success as learners (Tan et al., 2020). Additionally, the more involved parents are, the more self-assured and engaged the children are, and the greater the favorable effects on their academic performance (Assari, 2018, 2019; Churiyah et al., 2020). Previous study showed positive impacts of parental involvement in schooling of their children (Allen & White-Smith, 2018). Parental participation aids in providing children with attention and appreciation, allowing them to perceive that their education merits adult interest. Moreover, there is study support the positive effect of parent involvement when they proved positive links between parental participation in education and learners' school performance (Lara & Saracostti, 2019).

The transition to distance learning has not been easy for teachers to implement. Various difficulties have been encountered, including difficulties in obtaining the knowledge and skills required for delivering distance learning education classes, challenges in contacting students and parents, and difficulties in obtaining stable internet connection (Alea et al., 2020; Bordeos, 2021). In the Philippines, the most favorable mode of learning during the pandemic was through modules (Guiamalon et al., 2021; Talimodao & Madrigal, 2021). The most daunting challenge for teachers in modular distance learning is preparing and printing the modules used as primary learning materials (Cahapay & Labrador, 2021; Talimodao & Madrigal, 2021). With the new learning modalities offered to sustain education during pandemic, parents serve as the teachers of learners at home and they are considered as important partners in the successful implementation of remote science teaching (Kintanar et al., 2021; Soria & Naparan, 2022). They work hand-in-hand with the teachers to ensure that the alternative learning modalities are understood well and can be answered by the learners.

Despite this major concern, it is acknowledged by parents that modular distance learning is the only way that their children continue their education and learn the lessons during the pandemic. Parents must be fully conditioned to embrace these responsibilities for the sake of their sons and daughters. During the first weeks of implementation of distance learning in the school where this study was conducted, issues came out such as difficulties of parents to explain the lesson's content, provide examples for lessons to clearly understood, evaluate the learning outcomes, verify the finished products of learning, and provide enhancement. As these tasks are new to parents, they find these tasks very tough to handle especially those working or finding means for a living.

With the gaps mentioned, the researchers' aimed to analyze the parents' preparedness in facilitating learning in a large public school in a highly urbanized city in central Philippines and relate such readiness to learners' performance in Grade 9 Science. This study is unique in a sense that no research has been done in the light of the context in this part of the country. There is an urgency to conduct this work as the pandemic wanes and the education system gradually opens for in-person learning. The role of parents as partners in education have never been given attention as before and appropriate parental support can be developed to further support them as co-partners in teaching their children even beyond the pandemic.

2. METHOD

This paper focused on describing the characteristics of the population or problem being studied attempting to relate parents preparedness in facilitating learning with academic performance in Grade 9 Science. Thus, the descriptive-correlational research design was used for this paper. Correlational research design as a type of non-experimental research wherein two variables are being measured to assess whether a statistical relationship between them does exist (Bloomfield & Fisher, 2019). The schematic diagram

presents the relationship of the variables in the study. Socio-economic factor, educational attainment, and type of learning facilitator were obtained from the parents of Grade 9 learners. Also, level of preparedness and level of academic performance were also obtained from both the parents and learners respectively. From the collected data, it sought to gain improved readiness of parents and improved academic performance of learners. The design study is show in [Figure 1](#).

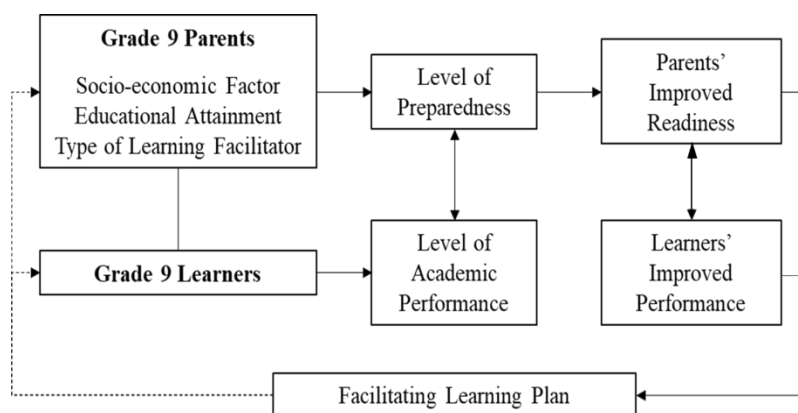


Figure1. Design Study

The respondents of the study were the 230 parents or guardians of Grade 9 learners enrolled for the academic year 2021 – 2022. They were taken from a population of 532 learners using the Yamani’s formula. This study was conducted at one large public secondary school in a highly urbanized city in Central Philippines. There is an average of 10 sections per grade level. The school offers junior high school and senior high school in the basic education curriculum. The school is located near establishments such as the markets, convenience stores, restaurants, police station, fire station and village hall. A large area of the village is still allocated for the plantation of sugarcane.

This study utilized a valid ($r = 4.90$) and reliable ($r = 0.95$) researcher-made Likert-scale type survey questionnaire. The survey questionnaire consists of 29 statements and intended to measure the level of preparedness of parents in facilitating learning in science. The questionnaire was categorized into four domains namely physical readiness (six statements), emotional readiness (six statements), experiential readiness (eight statements), and knowledge readiness (nine statements). The researchers wrote a letter addressed to the Schools Division Superintendent requesting permission after which, the oriented parents regarding the survey. During the scheduled module distribution, the parents answered the survey. Health and safety protocols were observed. Some parents who were not able to come during the scheduled modules were noted and let them answer the survey a week after the distribution. First quarter Science grades were also obtained as bases for academic performance.

After the answering of survey, results were subjected to appropriate statistical analysis. The numerical data gathered from the instruments were subjected to specific descriptive and inferential statistical treatment. Deviations in normality of data were found out thus, non-parametric tools were used to establish significant differences (Mann-Whitney U) and relationships (Spearman’s rho). All tests were set at $\alpha = 0.05$.

3. RESULT AND DISCUSSION

Result

Level of preparedness of parents in facilitating learning as a whole and when grouped according to socio-economic status and educational attainment is show in [Table 1](#).

Table 1. Level of Prepapredness of Parents in Facilitating Learning

Variable	x	SD	Interpretation
Socio-Economic Status			
Low (n=135)	2.90	0.95	Moderately Prepared
Middle (n=95)	4.16	0.38	Highly Prepared
Educational Attainment			
Elementary Graduate (n= 33)	2.13	1.06	Slightly Prepared
High School Graduate (n =140)	3.48	0.83	Moderately Prepared

Variable	x	SD	Interpretation
Vocational Graduate (n=18)	3.57	0.72	Highly Prepared
Collage Graduate (n=39)	4.23	0.27	Highly Prepared

The data presented in Table 1 revealed that parents classified under middle socio-economic status (SES) has a mean of 4.16 which is interpreted as “highly prepared.” In the same table, it is also presented that parents classified under low socio-economic status (SES) obtained a mean of 2.90 which is interpreted as “moderately prepared.” The results found in the table imply a higher degree of preparedness to parents who were on the middle status as well as upper level of education. Level of academic performance is show in Table 2.

Table 2. Level of Acedemic Performance of Grade 9 Learners

Variable	x	SD	Interpretation
Socio-economic status			
Low (n=135)	81.77	2.25	Moderately Prepared
Middle (n=95)	88.46	3.35	Highly Prepared
Educational attainment			
Elementary Graduate (n= 33)	81.61	3.12	Slightly Prepared
High School Graduate (n =140)	83.61	3.56	Moderately Prepared
Vocational Graduate (n=18)	84.50	3.99	Highly Prepared
Collage Graduate (n=39)	90.33	2.18	Highly Prepared

As shown in Table 2, learners belonging to low SES tend to obtain a “satisfactory” academic performance while learners classified to middle SES tend to take a “very satisfactory” mark. It is justified with their mean with 81.77 and 88.46, respectively.” The results found in the table imply a higher academic performance to learners whom their parents belong from middle status as well as upper level of education. There is a huge trail of gap of academic performance on learners with parents who graduated in college having an interpretation of “outstanding.” Learners’ scores whose parents finished elementary, high school, and vocational course obtained similar “satisfactory” interpretation. Table 3 presents the significant difference in the level of preparedness of the parents/guardian in facilitating learning.

Table 3. Significant Difference in Level of Parents

Variable (SES)	x	SD	p-value*	Sig at = 0.05	Decision
Low (n=135)	2.90	0.95	0.00	Significant	Reject H0
Middle (n= 95)	4.16	0.38			

Table 3 shows that there is a significant difference in the level of preparedness of the parents/guardian in facilitating learning when grouped according to socio-economic status. It implied that socio-economic factor is really a huge factor when it comes to the preparedness of parents/guardians in facilitating learning. Significant difference in level of preparedness and post-hoc test differences is show in Table 4, and Table 5.

Table 4. Significant Difference Level of Preparedness

Factor	Statistic	df	p*
Educational Attainment	62.227	3	<0.001

Table 5. Post-Hoc Difference In Level of Preparedness

Comparison	z	Wi	Wi	p*
Collage Graduate – Elementary Graduate	7.877	170.795	46.879	<0.001
Collage Graduate – High School Graduate	4.591	170.795	115.500	<0.001
Collage Graduate – Vocational Graduate	2.601	170.795	121.500	0.005
Elementary Graduate – High School Graduate	-5.332	46.879	115.500	<0.001
Elementary Graduate – Vicational Graduate	-3.829	46.879	121.500	<0.001
High School Graduate – Vocational Graduate	-0.560	115.500	121.500	0.359

As shown in Table 4, and Table 5, there is a significant difference in the level of preparedness of the parents/guardian in facilitating learning when grouped according to educational attainment. Significant differences can be found in the level of preparedness of parents who are college graduate and elementary graduate, college graduate and high school graduate, college graduate and vocational graduate, elementary graduate and high school graduate, and elementary graduate and vocational graduate. Significant in the level of academic performance is show in Table 6.

Table 6. Significant Difference in the Level of Academic Performance

Variable (SES)	x	SD	p-value*	Sig at = 0.05	Decision
Low (n=135)	2.90	0.95	0.00	Significant	Reject H0
Middle (n= 95)	4.16	0.38			

As presented in Table 6, there is a significant difference in the level of academic performance of Grade 9 learners when grouped according to socio-economic status. Significant difference in the level of academic and post-hoc test is show in Table 7, and Table 8.

Table 7. Significant Difference in the Level of Academic

Factor	Statistic	df	p*
Educational Attainment	84.677	3	<0.001

Table 8. Post-Hoc Test for Significant Difference in level of Academic Performance

Comparison	z	Wi	Wi	p*
Collage Graduate – Elementary Graduate	8.683	196.590	61.182	<0.001
Collage Graduate – High School Graduate	7.636	196.590	105.425	<0.001
Collage Graduate – Vocational Graduate	4.196	196.590	117.750	<0.001
Elementary Graduate – High School Graduate	-3.468	61.182	105.425	<0.001
Elementary Graduate – Vicational Graduate	-2.928	61.182	117.750	0.002
High School Graduate – Vocational Graduate	-0.747	105.425	117.750	0.228

Table 7, and Table 8 show a significant difference in the level of academic performance of Grade 9 learners when grouped according to educational attainment. Significant differences can be found in the level of academic performance of Grade 9 leaners whose parents are college graduate and elementary graduate, college graduate and high school graduate, college graduate and vocational graduate, elementary graduate and high school graduate, and elementary graduate and vocational graduate. In the result, it implied that parents’ educational attainment is really a factor that somehow determines the academic performance of the learner. Significant relationship is show in Table 9.

Table 9. Significant Relationship Between Level of Preparedness and Academic Performance

Variable	Academic Performance
Preparedness	Spearman’s Rho
	P-Value

As shown in Table 9, there is a very strong ($\rho=0.716$) and significant ($p < 0.001$) correlation between level of preparedness of the parents/guardian in facilitating learning and academic performance in Grade 9 Science.

Discussion

As to the level of preparedness of the parents/guardians in facilitating learning, the results implied a higher degree of preparedness to parents who were on the middle socio-economic status as well as upper level of education. This is supported by studies in this line of inquiry which have found out that parents from low SES backgrounds fail to be as involved as parents from more advantaged SES (Tan et al., 2020). Parents categorized in middle to high SES participate due to their sufficient view on distance education technologies. The level of preparedness of parents on physical and emotional level may be strong but the curve lowers down once parents are prompted with concepts and technicalities pertaining to topics in science. This is supported by the study that highlighting that parents’ need to understand more the nature of pedagogical activities carried out at home making them fall short to the expected requirement of all domains (Churiyah et al., 2020). It is acknowledged that parents act as monitoring parties while doing

distance learning from home. The study of other study also revealed that there were evidence of the lack of a comprehensive view of distance education technologies on the side of parents (Fedina et al., 2017). This situation can be deduced that parents, as monitoring parties, need to be trained to improve their level of preparedness in facilitating learners in science. It is crucial that parents understand the nature of distance learning to monitor their children at home when they are engaged in distance learning. Pertaining to educational attainment, the table shows that parents who finished their degree in college and who took vocational courses tend to be "highly prepared" than those parents who graduated in elementary and high school. Higher levels of educational attainment allows parents to earn more and support their learners (Alea et al., 2020; Tan et al., 2020). Also, the level of educational exposure on the part of parents belonging to vocational and college graduate are high which allowed them to contribute more to the learning of the child in science concepts. Previous study discovered that in secondary schools, learners whose parents have low educational attainment tend to have significantly lower scores than those learners whose parents have a bachelor's degree (Odeleye & Santiago, 2019).

As to the level of academic performance of Grade 9 learners, the results denoted a higher academic performance of learners whose parents belong from middle economic status as well as upper level of education. This is supported by study who emphasized that socioeconomic status is a major predictor and have strong relationship with learner's academic performance (Kweon et al., 2017). Moreover, other study agreed saying that children from higher socio-economic background have advantages in terms of academics over the children from lesser status (Oginni, 2018). It is hard to tell the difference between genetic and environmental factors, especially when epigenetic effects are involved. Epigenetic effects are heritable genetic changes that are not caused by changes in the DNA sequence but by environmental factors (Dietrichson et al., 2017; Van Lancker & Parolin, 2020). Science, math, and reading skills often get worse for people from lower socioeconomic backgrounds compared to those from higher socioeconomic backgrounds. The results of this study also goes along with the study which revealed the scientific, mathematical and literacy skills gap between learners whose parents came from varied degrees of educational attainment (Van Lancker & Parolin, 2020). The results obtained also agree to the study which states that higher parental educational attainment (PEA) was associated with higher academic performance (Assari, 2019). He added that educational attainment of parents delivered a boosting effect to learners.

There is a significant difference in the level of preparedness of the parents/guardian in facilitating learning when grouped according to their parents' socio-economic status and educational attainment. It implied that these are huge factors when it comes to the preparedness of parents/guardians in facilitating learning. Factors such as socio-economic status and educational attainment limits parents' involvement in their child especially in guiding them in their academics (Badajo et al., 2016; Banerjee, 2016; Bozkurt et al., 2020). This is supported by previous study when they found out gaps pertaining to learners with different socio-economic status highlighting parents' lack of grasp of the nature of teaching and learning activities giving all the academic responsibility and understanding to the child (Churiyah et al., 2020). Moreover, other study also stated parents experienced limitations in guiding their children (Nendi et al., 2021). It is understood that educational attainment of parents or guardians shares in the factor of the level of their preparedness in enabling learning on their child. Researchers have said that developmental outcomes of learners have focused on distant variables as the main measures of home experience (Oginni, 2018). One of these variables is the level of education of the parents. The higher the educational attainment of parents, the greater is the parents and guardians' confidence and inputs they can provide to the learners and the more they are persistent to participate in educational activities of their children. Children coming from highly educated homes are often involved in prescribed academic activities such as worksheets, school endorsed online resources, and other educational materials during pandemic (Lase et al., 2021; Lau et al., 2011). The result of this study resonates the study which mentioned that parents experienced limitations in guiding their children (Nendi et al., 2021). Factors such as socio-economic status and educational attainment limits their involvement in their child especially in guiding them in their academics.

There is a significant difference in the level of academic performance of Grade 9 learners when grouped according to their parents' socio-economic status and educational attainment. Studies have repeatedly found that socio-economic status affects students' academic outcomes and that students who have a low socio-economic status earn lower test scores. Learners from higher-socioeconomic status backgrounds show a persistent advantage in academic outcomes over lower- socioeconomic status learners. The children's environment seems to be one of the things that holds them back from reaching their full academic potential (Destin et al., 2019; Dietrichson et al., 2017). Children from rich and poor families have different family environments in other ways that are thought to affect how well they do in school from a young age on. Families with a high socioeconomic status are more likely to offer a rich environment for language and literacy. People with low socioeconomic status are also more likely to live in neighborhoods that make it harder to do well in school, such as by having fewer role models and less peer support. Also,

the skills you need to get around in a poor neighborhood may be very different from the skills you need to do well in school. Students with low socioeconomic status may have trouble figuring out how to act in school settings because of this. In the results, it implied that parents' educational attainment is really a factor that somehow determines the academic performance of the learner. In previous study mentioned that developmental outcomes of learners have focused on different variables as the major measures of home experience, one of which is parents' educational level (Oginni, 2018). Compared to job prestige or income, parental education is the best predictor of how well a child will do in school (Assari, 2019; Tan et al., 2020). It is acknowledged that higher educational attainment of parents is also the higher chance for them to participate in educational activities their child is facing. Along the same lines, it has also been shown that when parents are involved, their children do better in school. Their emotional health and development, as well as their desire to learn and attitude toward school in general, help them act better and have a better view of school leading them to an increased academic performance (Anastasiou & Papagianni, 2020; Birhan et al., 2021). However previous study had highlighted positive standpoints pertaining to how parents' educational attainment is regarded as one of the crucial aspects to improve the academic learning of children (Kapur, 2018). When parents are educated, they give their children a good education and give them everything they need to learn.

There is a very strong and significant correlation between level of preparedness of the parents/guardian in facilitating learning and academic performance in Grade 9 Science. This is supported by previous study when they show that a child's academic success is linked to how prepared and involved their parents are (Anastasiou & Papagianni, 2020). Their enhanced drive for studying, attitude toward school in general, as well as emotional well-being and development, promotes improved classroom behavior. This latest trend in the education process appears to necessitate the collaboration of instructors and parents/guardians, particularly in guiding children to learn (Nendi et al., 2021; Wildová & Kropáčková, 2015). With this situation, it is deemed that parents' preparedness is very vital in academic endeavor of the learners. The dimensions of parental readiness are expected to correspond with the fundamental mechanisms of intervention impacts, including as cognitive development, family support, motivational support, improved expectations, and enhanced pedagogical assistance (Dietrichson et al., 2017; Lau et al., 2011). Indeed, the level of preparedness of both the parents and guardians must be taken into consideration since academic performance of Science in Grade 9 level is very much correlated with this factor.

This research can provide a better understanding of the extent to which the role of parents can affect students' academic achievement in science subjects in grade 9. This implication can be used by schools and the government in developing programs that support the role of parents in education. The results of this research can be used to develop special training or support programs for parents to be better prepared to assist their children in learning science. This could include online resources, seminars or workshops for parents. However, this research has limitations, the results of this study may only apply to certain contexts, such as certain geographical areas or cultures. Therefore, it is difficult to generalize these findings to the wider population. In addition there are many factors that can affect academic achievement, and this study may not be able to consider all relevant variables. Factors such as the home environment, student motivation, or the quality of teaching can also play an important role.

4. CONCLUSION

Parents and guardians' preparedness affects academic performance in Grade 9 Science. The results in this study demonstrated a consistent statement that socio-economic status and parents' educational attainment are factors which affect the academic performance of learners. The data obtained in parents and guardians' socio-economic status and educational attainment justifies their involvement to the academics of their learners. They are most likely to be supportive on the education of their learners in terms of physical and emotional domains of readiness as they have obtained high results on the survey given to them. However, parents experienced limitations in guiding their children since they acknowledge that they lack understanding on the nature of teaching and learning activities carried out at home making them fall short to the expected requirement of all domains. This new reality of the education development demands for collaboration of teachers and parents or guardians and other stakeholders, especially in accompanying and guiding the learners to learn lessons, obtain knowledge, and master competencies, especially in Science.

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