

# MODULAR DISTANCE LEARNING IN RELATION TO LEARNERS' PERFORMANCE IN ENSCIMA, CALAPE DISTRICT, BOHOL

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## ABSTRACT

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This study investigates the implementation of Modular Distance Learning (MDL) and its impact on learners' performance in English, Science, and Mathematics (ENSCIMA) in public elementary schools in Calape District, Bohol, during the COVID-19 pandemic. Utilizing a descriptive-correlational research design, the study assesses the quality of Self-Learning Modules (SLMs) and the perceptions of teachers and parents regarding MDL. Data were collected through questionnaires distributed to Grade 6 teachers and parents, with statistical analyses including means, correlation coefficients, and non-

parametric tests. Findings reveal a high level of implementation of module distribution, with a composite mean of 3.4485, indicating effective access to learning materials. Teacher evaluations rated the quality of SLM content as "Very Good," yet areas for improvement were identified, particularly in developmental appropriateness and clarity. Notably, a significant correlation exists between the quality of SLMs and their usability. However, the average performance of Grade 6 learners in ENSCIMA subjects did not meet



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expectations, highlighting the need for enhanced instructional strategies. The study underscores the importance of continuous improvement in educational resources and collaborative efforts between educators and parents to optimize student learning outcomes in the context of MDL. Recommendations for future research and practice are provided to support effective educational interventions.

## INTRODUCTION

Education is widely regarded as a fundamental tool for achieving personal and professional success, motivating parents and guardians to ensure their children's enrollment in school. However, the global COVID-19 pandemic, declared a public health emergency by the World Health Organization (WHO) on January 30, 2020, abruptly disrupted education systems worldwide as face-to-face classes were suspended to protect public health. In response, education sectors worldwide adopted varied learning modalities to ensure continuity in education while prioritizing the safety of students and staff.

Theories on distance education, as discussed by Schlosser and Anderson (1994), categorize educational models into three main types, based on Keegan's foundational classifications: theories of independence and autonomy, the industrialization of teaching, and interaction and communication theories. Charles Wedemeyer's (1981) independence and autonomy theory views distance education as an independent study approach that leverages technology to foster self-directed learning. Otto Peters' (1988) theory of teaching industrialization redefines distance education as a mass education system, contrasting it with the personalized nature of face-to-face instruction (Saba, 2014). Meanwhile, Holmberg's theory of interaction and communication, highlighted by Saba (1995), emphasizes the centrality of teacher-learner communication, underscoring the role of personal interaction in effective distance education despite technological barriers.

The shift to "new normal" education posed challenges globally, including in the Philippines. To adapt, the Department of Education (DepEd) developed the Basic Education Learning Continuity Plan (BE-LCP), as outlined in DepEd Order No. 012, s.2020. This plan incorporated diverse learning modalities to address the specific needs of students and communities, while safeguarding health and safety. Among the modalities, DepEd prioritized modular distance learning (MDL) in areas where internet connectivity issues limited online learning (Llego, 2020).

In the implementation of MDL, Self-Learning Modules (SLMs) became essential as they allow learners to study independently. Panganiban and Madrigal (2021) describe SLMs as self-contained instructional units designed to guide students through learning activities with clear directions, evaluations, and instructional goals. To address learning challenges in MDL, teacher interventions play a crucial role, offering additional support to students and parents to enhance learning efficacy (Natividad, 2021). Additionally, the active

involvement of parents contributes significantly to the learning process, as they provide reinforcement, guidance, and a supportive home environment (Hoover-Dempsey & Sandler, 1995).

Assessments were also adapted to MDL, primarily through summative assessments and performance tasks based on the Essential Learning Competencies (MELCs), which are critical skills identified by DepEd to enable students' progression through the K to 12 curricula (Anzaldo, 2021).

## METHODS

This study employed a descriptive-correlational research design to examine the quality and usability of Self-Learning Modules (SLMs) and explore the perceptions of teachers and parents regarding the implementation of Modular Distance Learning (MDL) in the “new normal” educational setting. Additionally, the study sought to determine the relationships among key variables: the quality and usability of SLMs, the perceptions of teachers and parents, and the average performance of Grade 6 learners in ENSCIMA (English, Science, and Mathematics) within public elementary schools.

To gather data on the Grade 6 learners' average performance, the researcher obtained summative tests along with a Table of Specifications (TOS) from Master Teachers in the Calape District. These tests were reproduced and distributed to Grade 6 teachers along with the questionnaires for teacher and parent respondents. Following COVID-19 health protocols, including the use of face masks, face shields, and physical distancing, Grade 6 teachers were responsible for the distribution and collection of the questionnaires during the module distribution and retrieval process.

Data analysis involved tabulating, classifying, and interpreting the collected information using various statistical tools, including Weighted Mean, Mean Standard Deviation, Simple Percentage, Spearman Rho, Paired T-Test, Mann-Whitney Test (Wilcoxon Signed-Rank Test), Friedman Test, and Chi-Square. These methods enabled a comprehensive examination of the relationships among the variables and provided insight into the effectiveness of MDL implementation in the Calape District.

## RESULTS AND DISCUSSIONS

The implementation level of Modular Distance Learning (MDL) in terms of module distribution was found to be high, with a composite mean of 3.4485, indicating that this aspect is fully implemented across public elementary schools in the Calape District, Bohol. The “Distribution of Modules” represents a core MDL strategy, essential for ensuring learners' access to Self-Learning Modules (SLMs) in the absence of face-to-face instruction.

All items related to module distribution were rated as “Fully Implemented.” Notably, the item “The teacher provided the parents with a schedule on when children will answer and when parents will submit the modules” received

the highest rating, with a mean of 3.5720, suggesting that teachers' efforts to coordinate module completion and submission schedules with parents were well-received and effectively supported the MDL process. In contrast, the item "The schedule of Learning module distribution suited your available time" had the lowest mean score of 3.3295, highlighting a potential area for improvement in aligning distribution times with parents' availability.

Overall, the high implementation level of module distribution in Calape District contrasts with Nazario's (2020) assertion that the untimely provision of SLMs has hindered students' access to education, thereby impacting learning quality. This discrepancy may reflect localized efforts within the Calape District to address logistical challenges and ensure timely access to learning materials, suggesting that effective communication and scheduling can significantly mitigate potential delays in module distribution.

The "Retrieval of Modules" represents a key strategy in Modular Distance Learning (MDL), focused on collecting Self-Learning Modules (SLMs) from learners without the need for in-person interaction. The data indicate that the retrieval process is highly effective, with a composite mean of 3.5568, signifying a "Fully Implemented" status across public elementary schools in the Calape District, Bohol.

Each item related to module retrieval was rated as fully implemented. The highest-rated item, "In cases where parents cannot submit modules at the scheduled time, they can submit them at the school office, leaving them with the clerk or designated office personnel if the teacher is unavailable due to a skeletal workforce schedule," received a mean of 3.6174. This high rating suggests that provisions for flexible module submission have been effective, addressing logistical challenges and ensuring continuity. Conversely, the item "The schedule for retrieval is suited to the availability of the parents" had the lowest mean of 3.4356, indicating that while retrieval scheduling is generally effective, there remains room for improvement in aligning retrieval times with parents' availability.

Overall, the fully implemented status for module retrieval in Calape District contrasts with findings by Castroverde and Acala (2021), who reported that delayed submissions from parents and learners were common challenges in MDL. This difference highlights the Calape District's successful efforts in setting up an organized and flexible retrieval system, ensuring timely collection of learning modules to support the educational process.

"Time Allotment" in Modular Distance Learning (MDL) refers to the period allocated for learners to complete activities and assessments in the Self-Learning Modules (SLMs). Among the items in this dimension, only the item stating, "The teacher provided us with techniques on how to use time wisely so that learners can answer the modules on time," received a "Fully Implemented" rating, with the highest mean score of 3.5114. This suggests that teacher guidance on time management strategies was effectively applied and beneficial for learners.

Other items, however, were rated as “Moderately Implemented,” indicating areas where time management remains challenging. The second-highest rated item, “The child has a lot of time to read and answer the tasks,” achieved a mean of 2.6932, while “The child can cope with the subjects within the time given” followed closely with a mean of 2.6591. Items on the adequacy and flexibility of time allocation—“The time allotment to accomplish the learning modules for each subject is adequate” (2.6212) and “The time to accomplish the modules is flexible” (2.6023)—ranked lowest.

With a composite mean of 2.8174, interpreted as “Moderately Implemented,” these findings suggest that teachers and parents perceive the allotted time as insufficient for students to fully address all activities within the SLMs. This aligns with Lerra’s (2015) research, which found that respondents often viewed the time allocated for module content as inadequate, underscoring the need for a more flexible and realistic time structure to accommodate learners’ varying paces.

“Learning Activities/Assessment,” a key dimension of Modular Distance Learning (MDL), encompasses the variety of educational tasks presented in the Self-Learning Modules (SLMs). This aspect received a composite mean of 3.3250, interpreted as “Fully Implemented,” reflecting that learning activities in the modules are generally effective and well-integrated. The item, “The learning activities are realistic,” achieved the highest mean of 3.4773, indicating that the activities are perceived as relevant and applicable to real-life situations.

In contrast, the item, “The activities are child-friendly or are suited to the children,” received the lowest mean of 3.2083, rated as “Moderately Implemented.” This suggests that while the modules are largely well-designed, there is a need to adjust certain activities to better align with young learners’ developmental stages and abilities. These findings point to a generally successful implementation of learning activities, though they highlight the importance of refining child-oriented content to improve accessibility and engagement.

The results of this study diverge from Olivo’s (2021) findings, which reported that some parents struggled with understanding certain module topics, limiting their ability to support their children. This contrast underscores the success of current efforts to design realistic learning activities but also suggests areas for further improvement in crafting child-friendly and easily understandable tasks.

**Safety and Health Protocols.** Safety and health protocols, the fifth dimension of Modular Distance Learning (MDL), ensure adherence to IATF-issued health standards for COVID-19 prevention. Results indicate that these protocols were “Fully Implemented” across all items, with a composite mean of 3.5576. Among the items, the highest mean of 3.6705 was for the protocol, “Teachers and parents wear a face mask while inside the school premises,” underscoring the commitment to mask-wearing as a key preventive measure. The lowest-rated item, “Teachers are strictly maintaining a minimum number

of parents in the school or classroom during distribution and retrieval of modules,” scored 3.4621, though still within the “Fully Implemented” range. These findings suggest that the public elementary schools in Calape District, Bohol, are effectively enforcing safety protocols, fostering confidence in the community’s COVID-19 containment efforts. This aligns with Hernandez (2021), who emphasized the role of modular learning in supporting health and safety during the pandemic by following IATF and DOH guidelines.

**Evaluation of Self-Learning Modules (SLM) - Quality of Content.** The quality of content within the Self-Learning Modules (SLMs) was assessed based on teacher feedback, resulting in a composite mean of 3.4412, interpreted as “Very Good.” The item with the highest score, 3.8462, was “It enables the learner to acquire the skills and competencies in the MELC,” highlighting the modules’ alignment with critical learning objectives. However, four items fell into the “Good” category, suggesting areas for improvement: “It is suitable for the student’s level of development” (mean of 3.2308), “It contributes to the achievement of specific objectives of the subject area and grade/year level for which it is intended” (mean of 3.1923), “Its content has no spelling errors” (mean of 3.1538), and “It is detailed enough for a student to progress through the instruction without an instructor or teacher” (mean of 3.0000).

These results imply the need to enhance the content’s developmental appropriateness and clarity, particularly in complex subjects like English, Science, and Math. A thorough review to address these minor deficiencies could further improve the instructional value of the SLMs. This supports Zabidi et al. (2017), who underscored the importance of accuracy and up-to-date information in learning materials, noting that such qualities are essential for the effectiveness and credibility of educational resources.

**Usability of Self-Learning Modules (SLMs).** In assessing the usability of Self-Learning Modules (SLMs), the composite mean of 3.0846 indicated a “Moderately Usable” rating. The highest-rated item, “Contents can be supplemented by available reference books,” received a mean of 3.3846, rated as “Highly Usable.” Conversely, items including “Can be accomplished in a given time,” “Are designed to the capacity or level of the learners,” and “Are written in the language comprehensible to the grade level” achieved a rating of “Moderately Usable.” The lowest-scoring item, “Does not require instructional support from the parent or teacher for the learners to be able to accomplish it,” had a mean of 2.3462, rated as “Less Usable.”

These findings suggest that teachers and parents perceive the SLMs as only moderately suitable for independent use by students. They note challenges in completing tasks within a set timeframe and question whether the materials are aligned with students’ comprehension levels. The data reflect a need for additional instructional support and a simplification of language to improve usability, aligning with Columbano (2019), who highlighted that self-instructional materials should be straightforward, engaging, and easy to understand.

**Performance Level of Grade 6 Learners.** An examination of Grade 6 learners' performance in English reveals that 90.76% of students fell into the "Did Not Meet Expectations" category, with an average score of 53.4084. Only a small percentage (1.68%) achieved an "Outstanding" rating. These results underscore a gap between the students' performance and expected proficiency levels, suggesting that SLMs may not be effectively supporting English learning. This outcome is consistent with Panganiban and Madrigal (2021), who found that the English language used in modules often posed challenges for students, particularly given its role as the primary medium of instruction.

In Science, 87.39% of Grade 6 students did not meet the expected competency levels, with only 2.10% rated as "Very Satisfactory." This suggests that the SLMs may not align with students' understanding and capacity, leading to suboptimal performance. These findings resonate with those of Funa and Talaue (2021), who reported that learners face challenges in modular distance learning due to inadequate home resources and materials needed for Science learning activities.

Similar patterns emerged in Mathematics, with 88.66% of students failing to meet expectations and only 1.68% achieving an "Outstanding" rating. This low performance calls into question the suitability of SLMs for Math instruction, as they may not be aligned with learners' comprehension levels. This contrasts with the findings of Hasibuan (2021) in Indonesia, where the use of printed self-learning modules was associated with improved math performance. The discrepancy highlights the need for modules tailored to the learners' specific needs and contexts to facilitate a more effective learning experience.

These findings across subjects indicate that a thorough review and potential adjustment of SLM content, language, and instructional supports may be essential to ensure alignment with students' abilities and foster improved academic performance.

#### **Correlation Between Level of Implementation and Quality of Content.**

The results of the correlation analysis between the level of implementation of Modular Distance Learning (MDL) and the quality of content revealed a statistically significant relationship. With a correlation coefficient of 0.518 and a p-value of 0.007, which is below the 0.05 level of significance, these findings indicate a moderate positive correlation between these two variables. This result suggests that as the quality of content in Self-Learning Modules (SLMs) improves, the level of effective implementation also increases, highlighting the mutual influence between content quality and implementation.

**Level of Implementation and Quality of Content.** Table 1 presents the statistical result on the correlation between the level of implementation and the quality of content.

**Table 1.** *Correlation Between Level of Implementation and Quality of Content*

Correlation			
		IMDL	QUALITY OF CONTENT
Spearman's rho	Correlation Coefficient	1.000	.518 <sup>**</sup>
	Sig. (2-tailed)		0.007
	N	264	26
<i>p-value = 0.007</i>		<i>Result: Significant</i>	<i>Ho: Rejected</i>

The significant correlation implies that high-quality content may facilitate a more effective delivery and utilization of MDL. Conversely, a well-implemented MDL system may enhance the perceived quality and effectiveness of the learning content for both teachers and students. This outcome supports the findings of Yazon, as cited by Natividad (2021), who emphasized that module quality significantly impacts learners' comprehension of instructional materials. In the context of this study, the strong association underscores the importance of ensuring that SLM content aligns closely with students' learning needs and abilities, which could improve engagement and comprehension in modular learning settings. The rejection of the null hypothesis reinforces the critical role that quality content plays in the successful implementation of MDL, warranting ongoing attention to the design and development of modules.

**Correlation Between Level of Implementation and Usability**

**Level of Implementation and Usability.** The correlation analysis between the level of implementation of Modular Distance Learning (MDL) and the usability of Self-Learning Modules (SLMs) reveals a significant relationship. With a correlation coefficient of 0.484 and a p-value of 0.012, which is below the 0.05 significance level, this finding indicates a moderate positive association between the two variables. This means that as the usability of SLMs increases, the effectiveness of MDL implementation also tends to improve, and vice versa. Given this result, the null hypothesis is rejected, confirming that usability plays a substantial role in the successful execution of MDL.

**Table 2.** *Level of Implementation and Usability*

Correlation				
			IMDL	USABILITY
Spearman's rho	IMDL	Correlation Coefficient	1.000	.484 <sup>*</sup>
		Sig. (2-tailed)		0.012
		N	264	26
<i>p-value = 0.012</i>		<i>Result: Significant</i>	<i>Ho: Rejected</i>	



This significant relationship suggests that modules designed with high usability standards—making them accessible, comprehensible, and manageable for students—may enhance the overall effectiveness of the MDL approach. It also points to the potential reciprocal effect: an MDL system that is well implemented may positively influence how usable the modules are perceived to be by both students and educators. This finding aligns with Nardo (2017), who highlighted that modular instruction as an alternative instructional design is most effective when materials are specifically tailored to meet learners' needs. The implication is that continued emphasis on usability in the design and deployment of SLMs could further strengthen MDL outcomes, ensuring that learning materials meet students' needs and enhance their independent learning experiences.

**Correlation Between the Quality of the Content and Usability of the SLM.** The analysis of the correlation between the quality of content and the usability of SLMs reveals a strong and significant relationship. The correlation coefficient is 0.855, accompanied by a p-value of 0.000, which is well below the 0.05 significance threshold. This indicates that both variables are significantly correlated, leading to the rejection of the null hypothesis.

**Table 3.** *Quality of the Content and Usability of the SLM*

Correlation		QUALITY OF CONTENT	USABILITY OF SLM
Spearman's rho	Correlation Coefficient	1.000	.855**
	Sig. (2-tailed)		0.000
	N	26	26
<i>p value = 0.000</i>		<i>Result: Significant</i>	
		<i>Ho: Rejected</i>	

This finding suggests that the quality of the content within the SLMs significantly influences their usability. In other words, when the content is well-organized, relevant, and effectively presented, the usability of the modules improves correspondingly. The strong correlation implies that enhancements in content quality could lead to greater usability, facilitating a more effective learning experience for students. This observation aligns with the research of Ramos et al. (2021), which underscores the importance of various factors—such as design, layout, and organization—on the overall quality of educational materials.

These findings highlight the necessity for continuous improvement in the development of SLMs, ensuring that content is not only educationally sound but also user-friendly. By prioritizing both content quality and usability, educational institutions can better support learners in achieving their academic goals, ultimately enhancing the effectiveness of modular distance learning approaches.

**Degree of Difference Between Teachers’ and Parents’ Perceptions of the Level of Implementation.** The analysis of teachers’ and parents’ perceptions regarding the level of implementation of Modular Distance Learning (MDL) reveals a significant difference between the two groups. The Mann-Whitney Test results indicate that teachers reported a higher mean rank of 164.96 compared to parents, who had a mean rank of 128.95. The resulting p-value of 0.022, which is lower than the 0.05 significance level, indicates a statistically significant difference in perceptions, leading to the rejection of the null hypothesis.

**Table 4.** *Teachers’ and Parents’ Perceptions on the Level of Implementation*

Mann-Whitney Test			
Respondents	N	Mean Rank	Sum of Ranks
Teachers	26	164.96	4289.00
Parents	238	128.95 <sup>a</sup>	30691.00
Total	264		
Test Statistics			
		IMDL	
Mann-Whitney U		2250.000	
Wilcoxon W		30691.000	
Z		-2.285	
Asymp. Sig. (2-tailed)		0.022	
<i>p-value = 0.022</i>		<i>Result: Significant</i>	<i>Ho: Rejected</i>

This discrepancy suggests that teachers possess a more comprehensive understanding of the MDL implementation process, likely due to their direct involvement in delivering the curriculum and facilitating learning. Their insights are crucial in guiding and supporting parents, enhancing the overall effectiveness of MDL at home. This finding is consistent with the study by Olivo (2021), which highlighted that parents felt the time allocated for learning activities was insufficient, citing the overwhelming number of tasks as a challenge.

The results underscore the importance of communication and collaboration between educators and parents in the MDL framework. As teachers are more familiar with the implementation nuances, fostering an environment where they can effectively communicate their insights and guidance to parents will be essential in optimizing the learning experience for students. Such partnerships can help address parental concerns and ensure that the educational support provided at home aligns with the instructional strategies employed in the classroom.

**Degree of Variance on the Level of Implementation on the Different Dimensions of Modular Distance Learning.** The analysis of the level of

implementation across various dimensions of Modular Distance Learning (MDL) reveals significant variances, as demonstrated in Table 18. The Friedman Test results indicate a Chi-Square value of 279.762 with a corresponding p-value of 0.000, which is well below the 0.05 significance threshold. This substantial statistical evidence allows us to reject the null hypothesis, confirming that there are notable differences in the levels of implementation among the various dimensions of MDL.

**Table 5.** *Level of Implementation on the Different Dimensions of Modular Distance Learning.*

Friedman Test	
	Mean Rank
Distribution of Modules	3.22
Retrieval of Modules	3.63
Time Allotment	1.82
Learning Activities/ Assessment	2.78
Safety and Health Protocols	3.55 a
Test Statistics	
N	264
Chi-Square	279.762
Df	4
Asymp. Sig.	0.000
<i>p-value = 0.000</i>	
<i>Result: Significant</i>	
<i>Ho: Rejected</i>	

As shown in the data, the dimension with the highest mean rank is the Retrieval of Modules (mean rank = 3.63), followed closely by Safety and Health Protocols (mean rank = 3.55). The Distribution of Modules ranks third (mean rank = 3.22), while Learning Activities/Assessment is fourth (mean rank = 2.78). Notably, Time Allotment has the lowest mean rank at 1.82, indicating a critical area requiring immediate attention and improvement.

These findings highlight the discrepancies in how different dimensions of MDL are being implemented in public elementary schools within the Calape district of Bohol during the school year 2021-2022. The low rank for Time Allotment suggests potential scheduling challenges that may impact the overall effectiveness of the modular learning approach. Addressing these challenges is essential to enhancing the educational experience for students and ensuring the successful implementation of MDL strategies.

Moreover, this study's results align with the findings of Olivo (2021), which indicated parental agreement on the strategies employed for distributing and retrieving modules, as well as the allocation of time for learning activities. These shared insights emphasize the need for collaborative efforts among educators, parents, and stakeholders to address implementation challenges, particularly

in areas identified as needing improvement. By focusing on enhancing Time Allotment and ensuring that it meets the educational demands of students, schools can foster a more effective learning environment conducive to student success.

## CONCLUSION

The study on Modular Distance Learning (MDL) in the Calape District, Bohol, reveals significant insights into the implementation and effectiveness of Self-Learning Modules (SLMs) during the COVID-19 pandemic. The findings indicate a high level of implementation of module distribution, with teachers and parents demonstrating varying perceptions of the MDL process. Notably, the quality of content in SLMs is strongly correlated with their usability, suggesting that well-structured and relevant educational materials enhance the learning experience for students. Furthermore, the statistical analyses highlight the necessity for continuous improvement in both content quality and the collaborative efforts between educators and parents to optimize student learning outcomes.

## RECOMMENDATIONS

Based on the findings of this study, here are the recommendations:

**Enhance Content Quality.** Educational institutions should prioritize the continuous review and improvement of SLMs to ensure that the content is developmentally appropriate, clear, and free of errors. Engaging teachers in the content development process can help align materials with the specific needs of students in subjects like English, Science, and Mathematics.

**Strengthen Communication Channels.** Establishing robust communication strategies between teachers and parents is essential. Regular workshops or informational sessions can help parents better understand the MDL process, enabling them to provide more effective support for their children's learning at home.

**Tailor Module Distribution.** To address the identified challenges regarding the timing of module distribution, schools should consider flexible scheduling that accommodates parents' availability. Gathering feedback from parents on preferred distribution times can enhance participation and engagement.

**Professional Development for Teachers.** Ongoing training and professional development opportunities for teachers should be provided to equip them with the skills necessary to effectively implement MDL strategies. This training can include best practices for engaging parents and utilizing technology to enhance learning.

**Regular Assessment and Feedback.** Implementing a system for regular assessment of both student performance and the effectiveness of SLMs can

provide valuable insights. Feedback from students, parents, and teachers should be systematically collected and analyzed to inform future improvements in the MDL framework.

**Research and Collaboration.** Future research should explore the long-term impacts of MDL on student learning outcomes and identify best practices from successful implementations. Collaboration with educational researchers and institutions can facilitate the sharing of effective strategies and resources.

**By addressing these recommendations,** educational stakeholders can enhance the effectiveness of Modular Distance Learning, ultimately supporting students in achieving their academic goals despite the challenges posed by the pandemic.

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