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Towards an Enhanced Implementation of Printed Modular Distance Learning in the Philippines: A Meta-Synthesis

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Abstract. Implementing modular distance learning (MDL) in the Philippines remains problematic. We review studies on printed MDL to create themes for its enhanced implementation. A meta-synthesis of qualitative studies was executed, and a comprehensive search in Google Scholar was conducted. A thematic synthesis was performed, revealing the four presences to enhance the implementation of printed MDL, such as: structural; community; intervention; and quality assurance. The *structural presence* underscores module designs that can capture students' interests and learning, as well as module content that can articulate curricular learning competencies and students' context, needs, and situations. The *community presence* highlights that education in the MDL is not the sole responsibility of students. Contrary to the common idea that MDL is about providing modules for students to study independently, MDL is everyone's responsibility. The family members and teachers, as well as community members and sectors, have roles to play and must work together to produce more desirable learning outcomes. The *intervention presence* emphasizes instructional and socio-emotional support to help students overcome academic and personal difficulties and foster a positive and supportive learning atmosphere. *Quality assurance presence* highlights the systematic actions in the planning, development, implementation, monitoring, and evaluation processes to ensure the MDL's quality implementation and continuous improvement. The provision of quality includes meeting stakeholders' needs and conforming to desired outcomes or standards. Hence, education officials may adopt the identified presences for the orientation and training activities to enhance the implementation of MDL.

Keywords: Meta-synthesis; Modular distance learning; Remote Learning; Self-learning module; Philippines

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1. Introduction

The COVID-19 pandemic has severely disrupted most in-person activities, forcing many to live with extreme measures like closures of schools and businesses, social isolation and distancing, and work/study-from-home schemes (Tanucan & Uytico, 2021). These measures have helped slow the proliferation of the virus, but at a hefty financial cost for many countries. Education was one of the most severely affected sectors during the pandemic (United Nations Educational, Scientific and Cultural Organization, 2020), as it forced a quick shift towards digitalization of its processes to ensure continuation of its activities, including teaching and learning (Ali, 2020; Hodges et al., 2020; Murphy, 2020; Tanucan et al., 2022a). Online learning became a prominent reality for many academic institutions and a necessary strategy for the continuity of education during the pandemic (Crawford et al., 2020; Huang et al., 2020). However, not all schools and students had the same level of access to information and communication technology (ICT) to adopt online learning (Organisation for Economic Co-operation and Development, 2020). Hence, alternative learning delivery modes, including modular distance learning, were carried out.

Modular distance learning (MDL) is a form of remote learning that uses self-learning modules for students to study independently at any place and time that they prefer (Anggraini & Sukardi, 2016). This strategy is known to be self-paced, which ensures that learning happens even without a teacher since it contains essential features that foster independent learning, such as: clearly defined behavioural objectives or learning outcomes; precise procedural instructions; coherent and systematic learning activities; and assessment methods that consider student needs and curriculum competencies (Agayon et al., 2022; Fungo-Fulo & Deri, 2022; Gueta & Janer, 2021; Khabibah et al., 2021; Nacar & Camara, 2020; Palad, 2022; Pura & Galicia, 2022; Roman, 2021). With these features, several institutions have started using MDL to facilitate learning across various academic areas (Ghozali et al., 2020; Jaenudin et al., 2017; Rochsun & Agustin, 2020).

There are two common types of MDL: electronic and print based. The latter uses non-technological platforms like books or print materials with text and images for its learning activities (Cahapay et al., 2021; Palad, 2022). The former focuses on using technical tools, films, or software to enhance interaction in learning. The advantages of each type of MDL vary. The printed MDL is more economical and readily available, especially for students who cannot afford to buy electronic devices like laptops and tablets. The electronic version can be interactive by utilizing multimedia, like providing automatic feedback after students have completed various tests or quizzes (Sugihartini et al., 2017). It has been proven in many studies that the effectiveness of MDL in both print and electronic formats improves student outcomes (e.g., Ghozali et al., 2020; Jaenudin, 2017). However, since not all countries have the resources to adopt the electronic version widely, many countries, like the Philippines, have adopted the print type of MDL. A report revealed that MDL was one of the most popular distance learning alternatives to traditional face-to-face learning, reaching up to 7.2 million Filipino students who preferred this approach (Hernando-Malipot, 2020). This data corroborates the study by Ambayon (2020), stating that MDL was more practical

than traditional educational methods since students learn at their own pace with limited resource requirements. Likewise, with the country's physical features--archipelagic with mountainous terrain--compounded with its weakness in technology and internet access (Tanucan et al., 2021; Tanucan et al., 2022a), the print type of MDL was the most feasible learning strategy for many students during the pandemic (Magsambol, 2020b).

A dearth of literature hampers the effective implementation of the printed MDL, which resulted in a backlash from students and teachers in the Philippines. Magsambol (2020c) reported how the country's Department of Education appealed to the public for understanding after several errors in modules for distance learning drew attention in the social media. Some reported module errors, including mathematical equations with incorrect solutions and grammar. In the same vein, Mercado (2021) also reported 155 confirmed errors found in distance learning modules after the education department's validation process. Hernando-Malipot (2021) also noted a "terrifying" error in a module, following how supernatural creatures in Filipino folklore were incorrectly defined, with some referred to as "sex-crazed" creatures. This situation, including other factors, such as the need for more technology (Magsambol, 2020a), a poor learning environment, and vague instructions (Bustillo & Aguilos, 2022), hamper the successful implementation of MDL. Thus, implementing MDL in the Philippines remains problematic. Nardo (2017) recommended researching more on MDL to achieve quality education.

Given that implementing MDL in the Philippines remains a challenge, a study that explores avenues for its improvement is instrumental. High-quality and responsive education has been the government's top priority, and studies on education, including instructional material such as the module, must be readily available to guide education officials and policymakers. To the our knowledge, there is a shortage of studies on MDL, and more studies are needed about how to support its quality implementation. Hence, we reviewed available qualitative studies on printed MDL to create themes for its enhanced implementation.

2. Methodology

This study applied the meta-synthesis research design to create a set of central themes that provide a new and integrative interpretation of the identified qualitative articles. It used the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) 2020 guidelines to achieve the study's aim described in the introduction (Page et al., 2021). We used Noblit and Hare's (1988) procedural guidelines, which included the following activities: deciding the nature and aim of the study; reading the studies repeatedly and analysing them to create themes; synthesizing the findings to make sense of the themes; and writing in sentence form the themes. Furthermore, the study's data analysis followed the thematic synthesis of Thomas and Harden (2008), which includes the following processes: 1) the building of codes; 2) the production of descriptive themes; 3) and the exposition of analytical themes.

A comprehensive literature search was undertaken using the Google scholar database on November 2022, as it allows a comprehensive search for scholarly literature. Series of search in the database were performed using the following search keywords: (Remote Modul*" OR "Distance Modul*" OR "Printed Modul*" OR "modular distance learning" OR "Module-based" OR "Learning Module" OR "modular teaching" OR "modular learning" OR "remote distance").

The studies identified in the literature search underwent a series of screening; 1) Title analysis using the EndNote online software to weed out duplicate studies; 2) abstract analysis to weed out studies that do not address the topic of interest, do not use a qualitative methodology and English language; and are not conducted in the Philippines; 3) Full-text review using the CASP (Critical Appraisal Skills Program) checklist to exclude studies with less relevance and rigor (Critical Appraisal Skills Programme (n.d.). This review process was done by utilizing the CASP's questions, which assess the quality (relevance and rigor) of a study's objectives, design, and methods, including eligibility and selection criteria, data collection and analysis, ethical aspects, and findings.

3. Results and Discussion

Figure 1 shows the literature searching and screening using the PRISMA flowchart. The database search yielded 4,680 articles. Of these, 2,305 duplicate articles were identified and removed using the EndNote online software tool, leaving 2,375 articles. The abstract analysis screened and removed 1954 articles; 984 articles deviated from the topic of interest; 487 did not use qualitative or mixed-method methodology; 98 did not use the English language, and 385 were not conducted in the Philippines. The full-text review using the CASP checklist excluded 388 articles, leaving 33 that met the inclusion criteria.

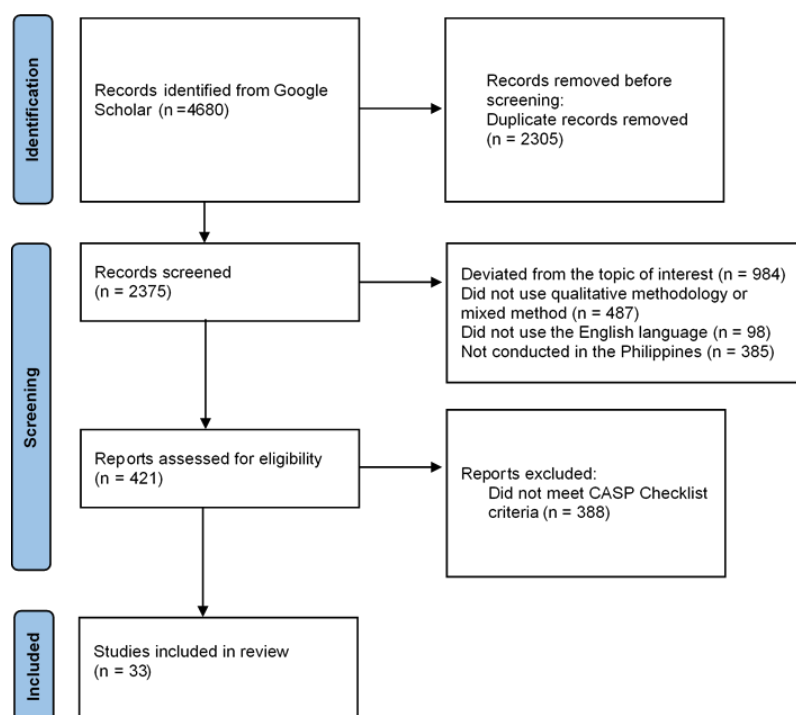


Figure 1: Literature searching and screening using the PRISMA flowchart.

The publication years of the articles identified were from 2020 to 2022. They were conducted in the Philippines and within various academic areas such as English, Science, Mathematics, Technology and Livelihood Education, Physical Education, Kindergarten subjects, and Science, Technology, Engineering, and Mathematics (STEM). A total of 390 informants from the three major islands (Luzon, Visayas, and Mindanao) of the Philippines were included in this study. They include 210 teachers, 78 students, and 102 parents. The thematic synthesis yielded four overarching themes that show how to enhance the implementation of printed MDL. These include Structural Presence, Community Presence, Interventional Presence, and Quality Assurance Presence.

Theme 1: *Structural Presence*

The sub-themes that composed the structural presence were the "design" and "content." The synthesized studies recognized that printed modules must capture students' interests and engage them in learning. This can be done by structuring a design that integrates readable or comprehensible contents or texts (Cahapay et al., 2021; Palad, 2022) with clear and, if possible, coloured graphs, tables, images, pictures, illustrations, and figures (Abbas, 2021; Gueta & Janer, 2021; Palad, 2022). Moreover, the modules' content must include learning objectives, activities, and assessments. Learning objectives, more specifically, must derive from and be consistent with the intent of the identified learning standards or competencies (Boholano et al., 2022; Fungo-Fulo & Deri, 2022; Guillermo & Manzano, 2022; Nacar & Camara, 2020; Peñas, 2022). They must also be specific, measurable, attainable, realistic, and time-bound (Boholano et al., 2022; Nacar & Camara, 2020; Peñas, 2022). On the other hand, modules' learning activities and assessment methods must target various learning objectives, be contextualized to students' environment or situations, and be easily understood using basic or simple language (Agayon et al., 2022; Fungo-Fulo & Deri, 2022; Gueta & Janer, 2021; Nacar & Camara, 2020; Palad, 2022; Pura & Galicia, 2022; Roman, 2021).

In general, the structural presence underscores module designs that can capture students' interests and learning, as well as module contents that articulate curricular learning competencies and students' context, needs, and situations. In other words, MDL goes beyond compiling learning activities for students to study, which previous quantitative studies on developing modules and other instructional materials can substantiate. Galano (2021) suggested that learning activities must consider the interests and needs of students and the achievement of various learning competencies to make learning more relevant and standard-based. Gicale (2021) explained that planning and implementing learning activities and assessment strategies in modules necessitate the consideration of students' context and situations, including achieving specific learning objectives to make the learning process relevant to students. Lim (2016) also explained that crafting appropriate instructional strategies that facilitate growth and development is crucial for student performance and learning. The study of Dela Cruz (2015) also illustrated the importance of aligning instructional materials with lesson objectives. Likewise, Dela Cruz (2015) and Yazon (2018) agreed that the module's concepts and points must have grammatically correct sentences and paragraphs, and they must target various curricular learning competencies. Yazon (2018) also

highlighted the importance of using behavioural objectives that follow the SMART principle – specific, measurable, achievable, realistic, and timely.

Furthermore, previous studies also corroborate this study's findings on module structure, particularly the incorporation of visuals, such as coloured graphs, tables, images, pictures, illustrations, and figures, to enhance learning. The study by Acobo and Ong (2022) explained how picture-filled modules, like comic-based modules, improved students' reading comprehension. The study by Rae (2018) also noted an increase in student engagement and comprehension using picture cues in visual schedules, picture prompts, and other visual tasks. Teaching approaches that highlight visual materials are essential for developing students' motivation and ability to solve problems (Güler & Çiltaş, 2011), which, if not appropriately considered, can impact comprehension in instruction and other learning activities (Abbas, 2021). Cohen and Demchak (2018) and Meadan et al. (2011) also explained that the various visuals in modules are necessary to yield positive learning outcomes, primarily when implemented in natural environments such as schools and homes. Meadan et al. (2011) illustrated that such visuals could include pictures of real objects, photographs, line drawings, clip art, and other images.

Theme 2: *Community Presence*

The sub-themes that composed the community presence were "family support," "teacher support," "school support," and "community support." This finding shows how the cooperation and collaboration of community members could enhance MDL implementation. The synthesized studies identified that learning MDL has many challenges, and teachers need help in the implementation process. As simple as it may sound, the theme points out that it takes a community to educate a child.

For teacher and family support: The constant communication, assistance, monitoring, and encouragement of teachers and family members are crucial for students' academic success in MDL (Ariza & Ariza, 2021; Aguilar et al., 2022; Besonia & Magnate, 2022; Boholano et al., 2022; Butial et al., 2022; Espina & Monte, 2022; Friaies et al., 2022; Gueta & Janer, 2021; Kitongan & Gutierrez, 2022; Llames, 2021; Paco et al., 2021; Palad, 2022; Pura & Galicia, 2022; Roman, 2021; Tan et al., 2022). Similarly, as implied in various studies, family members, particularly the parents, must ensure that students focus on completing their modules' tasks by eliminating learning distractors such as doing household chores (Ariza & Ariza, 2021; Aguilar et al., 2022; Besonia & Magnate, 2022; Espina & Monte, 2022; Friaies et al., 2022; Kitongan & Gutierrez, 2022; Llames, 2021; Meniano & Tan, 2022), video gaming and social media (Gueta & Janer, 2021; Meniano & Tan, 2022) and the incommodious background noises (Gueta & Janer, 2021; Kitongan & Gutierrez, 2022; Locion et al., 2022; Meniano & Tan, 2022). Moreover, providing a conducive learning space for students was also suggested (Espina & Monte, 2022; Kitongan & Gutierrez, 2022; Meniano & Tan, 2022).

For school and community support: The informants identified that schools and their stakeholders, such as local government units, businesses, parent-teacher

association officers, and community neighbourhoods, are crucial for the procurement of the needed resources in the printing, packaging, distribution, and retrieval of modules (Agayon et al., 2022; Ariza & Ariza, 2021; Cahapay et al., 2021; Chan et al., 2021; Caslib & Decano, 2021; Guillermo & Manzano, 2022; Nacar & Camara, 2021; Paco et al., 2021; Palad, 2022; Tan et al., 2022). They were also identified to assist in the conduct of orientation and training for teachers and parents about MDL (Agayon et al., 2022; Bauyon et al., 2022; Chan et al., 2021; Hidalgo, 2022; Taguinod, 2021; Tan et al., 2022), as well as, in ensuring safe and efficient distribution and retrieval of modules from and to the homes of students (Agayon et al., 2022; Castroverde & Acala, 2021; Chan et al., 2021).

The findings above corroborate previous quantitative studies on the role of the school and its stakeholders in MDL. According to Olivo (2021), school stakeholders, such as local government officials, are crucial in retrieving students' modules and returning them to teachers for checking, especially when logistical difficulties are present. Manuel and Vargas (2022) also explained that school-community partnerships involving the shared cooperation of community members, organizations, and businesses are a necessary element to advance student learning in MDL. Manuel and Vargas further emphasized the importance of sectoral partnerships in facilitating the safe and smooth distribution and retrieval of modules. Likewise, Villegas (2021) highlighted how the Philippines is slowly adapting to the MDL and how school stakeholders' involvement serves as a driving force for its successful implementation. In particular, Villegas pointed out that stakeholders, like the parents and community, are essential in assisting in the printing, packaging, distribution, and retrieval of modules. Further, Gernandizo and Janer (2021) discussed how parents and teachers become frontliners in the education of students with the MDL approach. The study explained further that the partnership of parents and teachers is necessary for guiding, monitoring, and supporting students in MDL.

In general, the community presence highlights that education in the MDL is not the sole responsibility of students. Contrary to the common idea that MDL is about providing modules for students to study on their own (Anggraini & Sukardi, 2016; Oranggaga, 2022), MDL is everyone's responsibility. The family members and teachers, as well as community members and sectors, have roles to play in MDL and must work together to produce more desirable learning outcomes. School-community partnerships provide social services, support student learning, improve the school's academic mission, and assist families (Díez et al., 2011; Valli et al., 2014). Building mutually beneficial relationships with stakeholders is a strategy that has become popular in delivering high-quality education locally and abroad (Malatji et al., 2018; Myende, 2019; Miller et al., 2017; Zuckerman, 2019). When different stakeholders, organizations, and like-minded social partners work together, it creates opportunities for cooperation, coordination, and collaboration to support educational outcomes (Myende, 2019; Tanucan et al., 2021) and solve issues in various learning approaches such as the MDL approach (De Leon, 2021; Villegas, 2021).

Theme 3: *Intervention Presence*

The sub-themes that composed the intervention presence were "instructional intervention" and "socio-emotional intervention." MDL has been an essential modality of learning that makes the continuation of many students' education possible despite the pandemic's mayhem. However, like any other learning modality, MDL faces many challenges, such as difficulty managing time, an unsuitable learning space, low comprehension, and low motivation among students. Hence, it should be partnered with various interventions to improve students' motivation and learning, including developing their social and emotional health.

For *instructional intervention*, it refers to the supplemental materials and educational services provided to students in MDL to overcome learning difficulties and achieve learning outcomes. Studies indicated that the MDL approach is difficult for students due to several constraints, such as the lack of social interaction and communication in learning. This situation necessitates the provision of various supplemental materials, such as books, audio-visual kits, and other multimedia resources or instructional materials, to meet students' learning needs and improve their motivation (Besonia & Magnate, 2022; Butial et al., 2022; Caslib & Decano, 2021; Castroverde & Acala, 2021; Espina & Monte, 2022; Palad, 2022; Roman, 2021; Tan et al., 2022). Furthermore, flexibility in extending time or deadlines and adapting a variety of learning activities, methods, and assessments to consider students' needs and situations were suggested (Bauyon et al., 2022; Boholano et al., 2022; Caslib & Decano, 2021; Castroverde & Acala, 2021; Pura & Galicia, 2022). Other studies emphasized the importance of providing remediation, consultation, enrichment, and reinforcement activities, especially for students with poor performance (Fungo-Fulo & Deri, 2022; Palad, 2022; Roman, 2021; Tan et al., 2022; Tingson & Aquino, 2021).

For *socio-emotional intervention*, it highlights the facilitation of collaboration, negotiation, and communication within students' networks to develop students' ability to regulate or control their emotions, leading to a positive and supportive learning atmosphere. In this case, employing various ways to stabilize or enhance students' socio-emotional health is essential. Some ways include "*kumustahan*" or sessions that check students' current conditions or situations. This kind of session is done through home visitations, where teachers visit their students in their respective homes to check their learning situation, resolve concerns if there are any, and help them express their thoughts and feelings (Besonia & Magnate, 2022; Butial et al., 2022; Fungo-Fulo & Deri, 2022; Kitongan & Gutierrez, 2022; Palad, 2022; Roman, 2021).

The findings above substantiate previous quantitative studies on the importance of interventions in the performance and general well-being of students in MDL. Uncad (2022) expounded on the importance of utilizing an interactive and self-paced application like Kotobee as an intervention for students who have difficulty learning mathematics using the MDL. Specifically, Uncad's study has proven that the Kotobee intervention helped students perform well on topics related to geometric sequence, factoring polynomials, and polynomial equations. Capinding (2022) also suggested additional interventions since students

experience various events that make them anxious and stressed during the pandemic and while using the MDL. The study also added that teachers and school stakeholders should continue to provide supplementary learning materials for students to achieve favorable outcomes in MDL. Likewise, Sespeña et al. (2021) have found several factors contributing to students' difficulties in English language learning using the MDL, including a lack of motivation to learn. With such findings, Sespeña recommended giving students constant social interaction to improve their socio-emotional health.

In general, the interventions emphasizes instructional and socio-emotional support to help students overcome academic and personal difficulties to foster a positive and supportive learning atmosphere. The presence of interventions also ensures that students are provided with a sense of connection and network to foster collaboration and social interaction, allowing them to express their feelings and emotions and feel motivated and engaged in learning. The shift to MDL has proven difficult and frustrating for many students (Ariza & Ariza, 2021; Meriano & Tan, 2022). Many were confused, stressed, and unsure of their learning from a distance (Espina & Monte, 2022; Geroso & Aloba, 2021, Tanucan et al., 2022b), which was often caused by less support from parents and teachers, along with other external factors like poor learning environment (Aksan, 2021; Butial et al., 2022). This situation has led to poor learning outcomes (Ariza & Ariza, 2021) and could impact the socio-emotional regulation of students due to prolonged independent learning. Studies have shown the positive impacts of various interventions on students and their learning. They provide solutions that help students develop metacognitive skills (Linton et al., 2014) and improve students' learning behaviors, self-efficacy, motivation, attitudes, and academic performance (Zhang et al., 2020).

Theme 4: *Quality Assurance Presence*

The Quality assurance presence highlights the systematic actions in the planning, development, implementation, monitoring, and evaluation processes to ensure the MDL's quality implementation and continuous improvement. The provision of quality includes meeting stakeholders' needs and conforming to desired outcomes or standards. More specifically, studies mentioned that MDL and the processes for its implementation should be regularly checked to prevent or minimize errors, meet stakeholders' needs, and conform to desired outcomes or standards (Boholano et al., 2022; Butial et al., 2022; Cabardo et al., 2022; De Pedro & Derasin, 2022; Fungo-Fulo & Deri, 2022; Nanquil, 2021; Tan et al., 2022). This finding coheres with previous quantitative studies on the importance of quality assurance mechanisms in module and other learning materials development (e.g., Nurhayati & Uno, 2019; Pulukadang et al., 2020; Sirisuthi & Chantarasombat, 2021; Talimodao & Madrigal, 2021).

Quality assurance is the mechanism for ensuring the quality of education. Its primary purpose is to prevent project or service errors by comparing them to a standard (Vlachopoulos, 2016). Repairs are immediately carried out if an error occurs to avoid a more significant loss or negative impact (Arifin et al., 2022). Establishing a quality assurance system in education is advantageous since it allows students to improve schools' teaching and other supporting services

(Nguyen & Ta, 2018; Vincenzi et al., 2018). It also allows schools to improve and amend their strategic planning (Liu & Liu, 2018; Vincenzi et al., 2018), leading to more enhanced services, equipment, infrastructure, and performance quality (Lyytinen et al., 2017; Nguyen & Ta, 2018; Sandmaung & Khang, 2013).

MDL's development and implementation in the Philippines have been challenging due to several factors, which include the need for quality assurance mechanisms to check module errors. Magsambol (2020c) reported how the country's Department of Education appealed to the public for understanding after several errors in modules for distance learning drew attention in the social media. Some reported module errors, including mathematical equations with incorrect solutions and grammar. In the same vein, Mercado (2021) also reported 155 confirmed errors found in distance learning modules after the Education Department's validation process. Hernando-Malipot (2021) also noted a "terrifying" error in a module, following how supernatural creatures in Filipino folklore were incorrectly defined, with some referred to as "sex-crazed" creatures. With the series of infamous blunders in modules, the education sector has intensified its validation processes. Altogether, the study's findings and literature highlight that the presence of quality assurance mechanisms emphasizes the continued improvement of modules and the printed MDL approach so that education remains relevant and meaningful to students.

4. Conclusion and Recommendation

Implementing MDL in the Philippines remains problematic. The meta-synthesis of studies finds that an enhanced implementation of printed MDL requires structural presence, community presence, intervention presence, and quality assurance presence.

The *structural presence* underscores module designs that can capture students' interests and learning, as well as module contents that articulate curricular learning competencies and students' context, needs, and situations. The *community presence* highlights that education in the MDL is not the sole responsibility of students. Contrary to the common idea that MDL is about providing modules for students to study independently, MDL is everyone's responsibility. The family members and teachers, as well as community members and sectors, have roles to play and must work together to produce more desirable learning outcomes. The *intervention presence* emphasizes instructional and socio-emotional support to help students overcome academic and personal difficulties and foster a positive and supportive learning atmosphere. *Quality assurance presence* highlights the systematic actions in the planning, development, implementation, monitoring, and evaluation processes to ensure the MDL's quality implementation and continuous improvement. The provision of quality includes meeting stakeholders' needs and conforming to desired outcomes or standards. Hence, education officials may adopt the identified presences for the orientation and training activities to enhance the implementation of MDL.

5. Implications

The study suggests that sound MDL implementation can be done with the cooperation, assistance, and support of government agencies and non-

governmental organizations in the community. More people and institutions working together in education can leverage resources and knowledge sharing, which ultimately produces better learning outcomes. Hence, school leaders need to harness their network and collaborate more with government and private institutions to ensure an enhanced implementation of MDL.

6. Limitations

Despite the rigor of the study's literature search, some conceptually rich studies might have been missed since the search strategy was limited to studies conducted in the Philippines, where English is the communication medium. Despite this limitation, the study explored the MDL implementation across academic disciplines, producing a synthesis of data that applies to various academic subjects in primary education.

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