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Modular Distance Learning and Academic Performance: Prospect for Enhanced Implementation and Optimization

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***Abstract*—** *Prior to pandemic, modular distance learning (MDL) served as an established instructional strategy; however, its utilization significantly surged when pandemic began. This surge continued as MDL remained in use to ensure a seamless learning experience for students even after the resumption of face-to-face classes. This ongoing investigation into the topic through dynamic research studies has yielded changing results over time, underscoring the need for a thorough understanding. Consequently, the researchers aimed to correlate students' perceived advantages and disadvantages of MDL with their academic performance. Employing a descriptive-correlational research design, the study included 43 ICT students enrolled in MDL during the 2021–2022 academic year. An established questionnaire served as the primary data collection tool. Subsequently, collected data underwent statistical analysis, including weighted mean and Spearman's rho. The findings of this study yielded the same result concerning this subject which indicates there was no relationship between the students' perceived perceptions about MDL and their academic performance. This suggests that students' perceived perceptions do not correlate directly with their academic performance, emphasizing the importance of considering additional variables and factors when analyzing this relationship. The results have been shared in several research studies. It also highlights the necessity of enhancing the implementation of MDL, considering its continued relevance in public schools as the primary alternative mode of learning when in-person classes are suspended.*

***Keywords*—** *Perceived perceptions, modular distance learning, academic performance, enhanced implementation, descriptive-correlational.*

I. INTRODUCTION

Modular distance learning or MDL is a learning modality that centers on the use of modular materials as the primary means of instruction, encompassing tailored training through a variety of resources such as textbooks, activity sheets, study guides, and Self-Learning Modules (SLMs) in both printed and digital forms. These SLMs function as comprehensive tools, offering instructions, processes, and crucial information to facilitate the learning process under the guidance of responsible adults and with continuous teacher monitoring and assistance.

With a proactive approach, The Department of Education (DepEd) embraced MDL, particularly during the pandemic's peak as it aligns with the directives of DepEd Order No. 18, s. 2020. This policy establishes standards and specifications for flexible learning materials, alternative delivery methods, and learning resources (DepEd, 2020). Hence, MDL as one of the essential alternative learning methods, strategically caters to the diverse needs and circumstances of students. Through its implementation, DepEd effectively fulfills its legislative commitment to provide an inclusive and high-quality education for all students, with a special emphasis on ensuring continuity during times of crisis.

Even in the aftermath of the pandemic, the relevance of MDL remains steadfast, with its continued implementation in public schools underscoring its ongoing purpose and adaptability. One of the primary objectives of MDL, in accordance with DepEd Order No. 37, s. 2022, is to guarantee uninterrupted education even in the event of canceled or suspended classes due to in formidable circumstances (DepEd, 2022). Recognizing its reliability and flexibility, DepEd has wholeheartedly embraced MDL as an adaptable and dependable educational tool. This strategic integration has rendered MDL a pivotal component of DepEd's contingency plans, demonstrating its efficacy in effectively addressing diverse situations.

MDL has emerged as a crucial educational approach in the current global scenario, yet its effectiveness in enhancing academic performance remains subject to ongoing investigation. Factors influencing academic achievements, particularly in the context of MDL, are multifaceted. Wu et al. (2010) emphasize that MDL's strength lies in providing students with enriched flexibility in terms of engagement pace and timing. Thayamathy et al. (2018) stress the pivotal role of students' independent learning capabilities in influencing academic outcomes. Chou and Chen (2020) underline MDL's capacity to promote independent learning.

While MDL offers adaptability and convenience, it also presents challenges that can impact academic performance (Basar et al., 2021). Cañete and Potane (2022) found that transitioning to MDL significantly affected senior high school students' academic performance. The initial semester of the 2020–2021 academic year witnessed decreased performance, attributed to the difficulties of adapting to a new learning mode and inadequate support from teachers and schools. The absence of face-to-face interactions hindered students from seeking help, affecting academic achievement (Al-Maskari et al., 2021) Additionally, Kirschner and Karpinski (2010) point out that various distractions, such as noise or interruptions, can impede effective learning and retention in distance learning environments. MDL serves as a vital instrument for schools to employ, especially during the COVID-19 pandemic. Gaining insights into students' perceptions of MDL is crucial to assess its potential impact on enhancing academic performance. Its

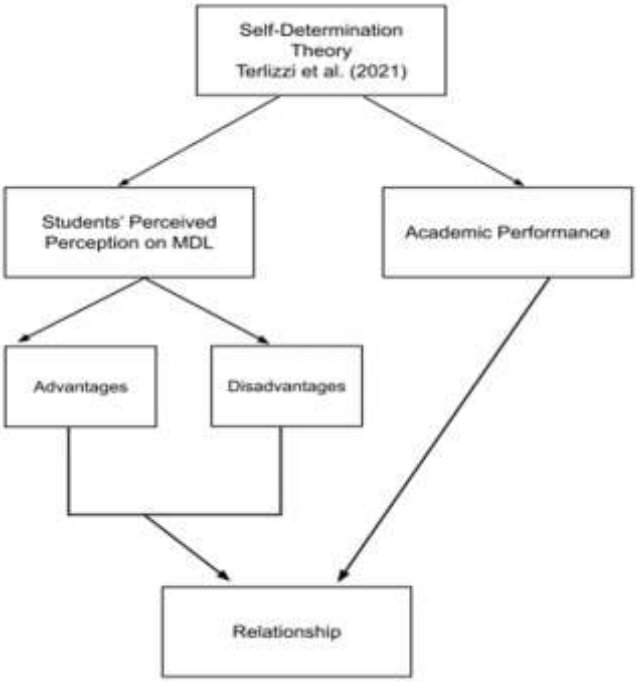
nature allows it to be affiliated with both advantages and disadvantages.

According to Marjerison et al. (2020), students held a positive attitude toward MDL due to its flexibility in terms of studying time and speed. Similarly, Abude (2022) found that senior high school students generally displayed positive attitudes towards MDL, particularly due to the flexibility and convenience it offers. Students participating in MDL perceive higher flexibility Anzaldo (2021). As Mehrotra et al. (2001) note, distance learning's benefits encompass learning at one's own pace and convenience, regardless of location, and enhanced flexibility in scheduling and coursework completion. MDL proves suitable for students with varied obligations, granting autonomy in managing learning, particularly concerning timing and pace (Wu et al., 2010).

However, challenges arose as well. Several challenges faced by students, including a lack of motivation, home distractions, and limited access to technology and internet connectivity (Bustillo & Aguilos 2022). These factors significantly impacted their overall learning experience. Reduced interaction with teachers and classmates became apparent in distance learning programs, leading to a lack of motivation and engagement among students (Al-Mawee et al., 2021). Diminished teacher interaction posed challenges for students in grasping intricate concepts and obtaining immediate clarification (Dargo & Dimas, 2021). Although MDL encourages independent learning, it can lead to limited engagement with teachers and peers, potentially impeding academic achievements (A Bayucca, 2021). In another study by Lapidez et al. (2021), senior high school students expressed mixed feelings towards modular remote learning (as cited in "Students' Perception on Modular", n.d.). While some students appreciated the flexibility and convenience of MDL, others raised concerns about the absence of personal connection with professors and classmates, as well as the difficulties associated with studying without face-to-face guidance and support.

II. Framework

This study draws upon Niemiec and Ryan (2009) Self-Determination Theory, which posits that fulfilling three psychological needs – autonomy, competence, and relatedness – is crucial for students to excel academically. MDL, a flexible learning approach, enables students to take control of their education and tailor it to their preferences, as noted by Liaw and Huang (2013). This aspect of MDL addresses the need for autonomy, leading to heightened motivation and engagement in the learning process. The flexibility to choose the pace, timing, and location of learning provides students with greater autonomy, control, and adaptability, fostering a sense of empowerment and inspiration (Anzaldo, 2021). Research demonstrates that this aspect of MDL improves learning outcomes by promoting self-directed learning and enhancing engagement, academic achievement, and a sense of ownership (Candy et al., 1994). In MDL, students take greater ownership of their learning and time management, fostering a sense of competence and skill mastery through independent acquisition of knowledge. Yet, the remote nature of modular learning might induce isolation and reduced social connectedness. To counter this, integrating social and collaborative online activities can nurture a sense of community and belonging among students. Ultimately, fulfilling autonomy, competence, and relatedness prerequisites is vital for academic success in MDL.



Despite numerous studies on MDL, the findings show significant disparities, underscoring the need for further investigation to deeply understand the correlation between MDL and academic performance. Gaining insights into students' perceptions of MDL is crucial to assess its potential impact on enhancing academic performance. Therefore, various aspects of MDL require careful attention and thoughtful implementation.

III. Objectives

The purpose of this study was to identify the relationship between students' perceptions of MDL and academic achievement. Specifically, this sought to answer the following questions:

1. What are the students' perceived perceptions on modular distance learning in terms of:

1.1 advantages

- 1.1.1 flexibility;
- 1.1.2 ability to stay at home;
- 1.1.3 learning is independent;
- 1.1.4 comfortability of learning at home;

1.2 disadvantages:

- 1.2.1 Reduced interaction with teacher;
- 1.2.2 Lack of interaction with classmates;
- 1.2.3 Poor learning conditions at home; and
- 1.2.4 Lack of self-discipline?

2. What is the level of students' academic performance while enrolling in modular distance learning for the academic year 2021-2022?

3. Is there a significant relationship between the students' perceived perceptions regarding modular distance learning and their academic performance?

IV. METHODOLOGY

4.1 Research Design

The study employed a descriptive-correlational design to find the relationship between the perceived advantages and disadvantages of students on MDL and their academic performance. Descriptive-correlational involves the collection and analysis of data pertaining to two or more variables to determine whether a connection exists between them (Bhat, 2023).

4.2 Research Environment

The research object of this study was one of the schools in the South District-Mandaue district. The school used and still uses MDL in accordance with the DepEd memorandum. Students from a variety of cultural, socioeconomic, and educational backgrounds make up the school's student body. It has implemented the modular learning modality since the start of the pandemic, providing a unique and relevant context for this study.

4.3 Research Respondents

The research respondents in this study were Grade 12 Senior High students under TVL-ICT strand. All of the students were enrolled in MDL during the SY 2021-2022. The sample size consisted of 43 senior students and were informed about the study's purpose, procedures, and confidentiality before giving their informed consent to participate. Each respondent was selected randomly to increase the validity of the study.

4.4 Instrumentation

This study employed a questionnaire adopted from the study of Michael Bordeos, titled "Learning Goes On: Students' Attitudes and Perceptions in the Implementation of the Modular Distance Learning During Covid-19 Pandemic" (Bordeos, 2021). This standardized questionnaire measures the level of students' perceived perceptions of MDL. The survey was distributed through an online platform. The collected data was then analyzed using statistical methods and presented through tables and data interpretation to draw meaningful conclusions for the study.

4.5. Ethical Consideration

Throughout this research, strict ethical guidelines were followed. Respondents received both consent and child assent forms with comprehensive study information, enabling informed participation decisions. Utmost care was taken to protect respondent privacy by anonymizing or removing identifying details.

4.6 Data Analysis

The data analysis for this research involved utilizing frequency and percentage distributions to examine and correlate the collected data from the respondents. Frequency distribution was employed to illustrate the distribution of senior high school students' responses regarding their academic performance during MDL. Meanwhile, percentage distribution was used to show the proportions of students falling into categories such as Outstanding, Very Satisfactory, Satisfactory, Fairly Satisfactory, Failed, or Did Not Meet Expectations. Additionally, Spearman's rho correlation was applied to explore the relationship between students' perceived advantages and disadvantages and their academic performance.

V. RESULTS AND DISCUSSIONS

5.1 Advantages of Modular Distance Learning

Tables 1 to 4 present the perceived advantages of MDL (Mobile Distance Learning) among students. The perceived advantages were as follows: flexibility, the ability to stay at home, independent learning, and the comfort of learning at home.

TABLE 1. Flexibility

Statements	Weighted Mean	Verbal Description
Learning at my own pace	3.98	Agree
Flexible schedule and time	3.81	Agree
A lot of time to answer the activity	3.77	Agree
I can freely manage my time	3.91	Agree
Average	**3.81**	**Agree**

Note. n=43 ***Legend:** *4.21-5.00 - Strongly Agree, 3.41-4.20 - Agree, 2.61-3.40 - Neutral, 1.81-2.60 - Disagree, 1.00-1.80 - Strongly Disagree*

Table 1 outlined the flexibility advantages of MDL (Modern Distance Learning). A mean score of 3.98 indicated that students appreciated the self-paced learning aspect of MDL. This mode allowed students to complete coursework at home, freeing them from rigid schedules compared to in-person classes. A study by Anzaldo (2021) supported this, showing that MDL participants perceived greater flexibility.

Despite a slightly lower mean of 3.77, the opportunity for ample activity completion time was still positively received. This aligned with MDL's time-saving nature, affording students more freedom to manage their tasks. As a consequence, students can proceed with their activities at their own speed. Effective time management, according to Gonzales (2019), aids in the sensible administration of numerous educational tasks.

Overall, respondents agreed that MDL's strength lay in its flexibility. This adaptability facilitated individualized learning, enhancing engagement and motivation. Wu et al. (2018) found that MDL's flexible time and pace options led to heightened satisfaction, motivation, and academic performance compared to traditional methods.

TABLE 2. Ability to Stay at Home

Statements	Weighted Mean	Verbal Description
To avoid the virus	3.92	Agree
I don't have to go to school or outside to learn	3.35	Neutral
Safety learning till COVID-19 end	3.91	Agree
To learn in the middle of the pandemic	3.74	Agree
Average	**3.73**	**Agree**

Note. n=43 ***Legend:** *4.21-5.00 - Strongly Agree, 3.41-4.20 - Agree, 2.61-3.40 - Neutral, 1.81-2.60 - Disagree, 1.00-1.80 - Strongly Disagree*

Table 2 highlighted MDL's key benefits, particularly its role in enabling students to learn comfortably and safely from home. The survey indicated a strong preference for MDL with a weighted mean of 3.92 due to its virus-avoidance aspect, aligning with the need for secure learning during the pandemic. Bordeos (2021) supported this, revealing that MDL students generally felt safe learning during the COVID-19 pandemic.

Conversely, the idea of not attending physical classes received a neutral response with a mean of 3.35, indicating a moderate openness to non-traditional learning. Respondents were comfortable with diverse learning approaches and remote settings, diverging from Salamuddin's findings that favored traditional classroom experiences (2021).

In summary, students agreed that MDL's primary strength was its advantage in home-based learning. Safety took precedence, allowing for studying while minimizing pandemic risks. Marjerison et al. (2020) echoed this sentiment, highlighting positive student attitudes toward distance education and the value of home-based study opportunities.

TABLE 3. Learning is Independent

Statements	Weighted Mean	Verbal Description
I can learn by myself	3.72	Agree
It improves students' capacity for learning	3.74	Agree
I can learn, discover by myself	3.86	Agree
Average	**3.78**	**Agree**

Note. n=43 ***Legend:** *4.21-5.00 - Strongly Agree, 3.41-4.20 - Agree, 2.61-3.40 -Neutral, 1.81-2.60 - Disagree, 1.00-1.80 - Strongly Disagree*

Table 3 displayed strong student agreement regarding the value of independent learning and self-guided education in MDL. This underscored a key MDL advantage: allowing students to shape their learning journey. Jou et al. (2022) supported this, suggesting MDL encourages vital independent learning skills for academic success.

Despite a relatively lower mean in Table 4, the statement "I can learn by myself" still reflected positive views on MDL's capacity for independent learning. This highlighted MDL's potential to foster self-directed learning, equipping students for autonomous education. Barcenas and Bibon (2021) reinforced this, demonstrating distance learning's efficacy in promoting self-directed learning. However, the autonomy tied to self-directed learning might require additional guidance for optimal outcomes.

In essence, students agreed that MDL excelled in independent learning. Self-management empowered them and built accountability (Barcenas & Bibon, 2021). Yet, teachers must provide clear instructions, regular feedback, and personalized support to maximize the benefits of independent learning (Dargo & Dimas, 2021). Acknowledging teachers' role in optimizing independent learning was pivotal, despite students' evident capability and appreciation.

TABLE 4. Comfortability Of Learning At Home

Statements	Weighted Mean	Verbal Description
It's more comfortable and is easier since you'll just learn at home	3.77	Agree
Average	**3.77**	**Agree**

Note. n=43 ***Legend:** *4.21-5.00 - Strongly Agree, 3.41-4.20 - Agree, 2.61-3.40 - Neutral, 1.81-2.60 - Disagree, 1.00-1.80 - Strongly Disagree*

MDL's specific advantage of comfortable and convenient home-based learning was emphasized in Table 4. Respondents largely agreed that learning from home was both easier and more comfortable, showcasing MDL's convenience. This aligned with existing research highlighting distance learning's flexibility, location-independence, and convenience (Mehrotra et al., 2001).

The preference for cozy home settings further highlighted MDL's positive impact on student engagement (Mehrotra et al., 2001). To enhance MDL's effectiveness, students should establish dedicated study areas and routines to minimize distractions and boost focus (Barcenas & Bibon, 2021).

Students collectively recognized MDL's advantage in the comfort of home learning. This setting fostered focused learning by reducing external distractions. Brachtl et al. (2023) also demonstrated

that the home learning environment motivated students, promoting focused studies. This showcases students' preference for familiar surroundings during MDL.

5.2. Disadvantages of Modular Distance Learning

Tables 5 to 8 outlined the perceived drawbacks of MDL reported by students, including reduced interaction with the teacher, lack of interaction with classmates, poor learning conditions at home, and lack of self-discipline. These results were crucial for evaluating students' perceived disadvantages.

TABLE 5. Reduced Interaction with The Teacher

Statements	Weighted Mean	Verbal Description
Difficulty staying motivated	3.74	Agree
Difficulty staying in contact with the teachers	3.67	Agree
It is difficult for a student to study on his own because no one teaches or explains to us properly	3.88	Agree
It's difficult to answer some tasks without the guidance of the teacher and it's a little hard to understand some topic because it's all new to me	3.81	Agree
Not all the students understand the lessons quickly so the teacher needs more instruction	3.95	Agree
It's harder for me to understand the lessons especially since my mother didn't finish high school and she has no time to guide me in answering these modules because of her work and the activities given are two times more than the activities are given on traditional learning style	3.56	Agree
I didn't learn much	3.02	Neutral
Average	**3.66**	**Agree**

Note. n=43 ***Legend:** *4.21-5.00 - Strongly Agree, 3.41-4.20 - Agree, 2.61-3.40 - Neutral, 1.81-2.60 - Disagree, 1.00-1.80 - Strongly Disagree*

Table 5 addressed reduced teacher interaction as an MDL drawback. Respondents mostly agreed (3.95 mean) that they struggled with lessons and needed more guidance. Limited instruction suggested online platforms could aid clarification. Dargo and Dimas (2021) highlighted challenges from reduced

teacher engagement, hindering the understanding of complex concepts. Inadequate teacher interaction and feedback harmed learning and academics. Addressing this was vital as limited interaction isolated and hampered clarification. Teachers could use online resources for support.

Conversely, respondents were neutral (lowest mean: 3.02) about MDL's learning effectiveness. Despite reduced teacher interaction, Barcenas and Bibon (2021) found MDL students motivated and engaged.

Reduced teacher interaction was seen as a significant MDL drawback, exacerbated by technical issues. This could hinder learning. MDL promoted self-directed learning, but less interaction might reduce motivation and engagement (Al-Mawee et al., 2021). Addressing these issues was vital, using strategies like support, peer collaboration, and technology to enhance teacher-student communication.

TABLE 6. Lack of Interaction with Classmates

Statements	Weighted Mean	Verbal Description
We're not all capable of learning with ourselves without collaborations with our classmates for us to get better.	3.84	Agree
Lack of social interaction	3.86	Agree
Average	**3.85**	**Agree**

Note. n=43 ***Legend:** *4.21-5.00 - Strongly Agree, 3.41-4.20 - Agree, 2.61-3.40 - Neutral, 1.81-2.60 - Disagree, 1.00-1.80 - Strongly Disagree*

Table 6 highlighted the drawback of limited interaction with classmates in MDL. Respondents acknowledged the adverse impact of reduced social interaction on their learning. Insufficient opportunities to engage with peers were a common concern in distance learning. Integrating social interaction and collaboration could enhance connectivity and motivation (Aksan, 2021). Collaborative learning activities enhanced understanding, critical thinking, and engagement (Roschelle et al., 2000).

On the flip side, students relied on peers for support in MDL (mean: 3.84). Collaboration increased critical thinking and positive learning attitudes (Roschelle et al., 2000). Teachers should embed collaborative tasks and foster peer learning for enriched opportunities (Jou et al., 2022). Acknowledging the downsides of limited peer interaction, teachers could use tech tools for effective collaboration and socializing (Boling et al., 2012; Wang & Chen, 2019). By promoting a supportive environment, teachers enhanced the learning journey and student achievement.

TABLE 7. Poor Learning Conditions at Home

Statements	Weighted Mean	Verbal Description
The chances of getting distracted and losing track of deadlines are high.	3.70	Agree
Other students may be more distracted using their phones instead of finishing the task assigned on what to do.	3.86	Agree
We cannot properly divide the time to accomplish the modules and the household chores because there are a lot of parental commands than answering the activities.	3.77	Agree
Average	**3.78**	**Agree**

Note. n=43 ***Legend:** *4.21-5.00 - Strongly Agree, 3.41-4.20 - Agree, 2.61-3.40 - Neither Agree or Disagree, 1.81-2.60 - Disagree, 1.00-1.80 - Strongly Disagree*

As observed in table 7, respondents emphasized the drawback of poor learning conditions at home in MDL, particularly focusing on distractions caused by phones. They acknowledged that phone use led to task diversion, with an average score of 3.86. Activities like texting and browsing can delay tasks and harm academics. Distractions, encompassing noise and interruptions, affect learning and information retention (Gueta & Janer, 2023). Inadequate home conditions negatively impact MDL engagement and learning (Magsambol, 2020).

Respondents agreed on the norms of distractions and struggles with deadlines in MDL, with an average score of 3.70. These issues stemmed from the absence of structured classrooms and teacher reminders. Digital diversions like social media hampered focus and time management ultimately leading to lower academic performance (Kolhar et al., 2021). MDL demanded self-regulation, including motivation, discipline, and time skills (Barcenas & Bibon, 2021). Sespene et al. (2021) stressed the need for a supportive MDL environment for sustained engagement. To tackle this, teachers must aid students in developing self-discipline and providing a conducive setting.

TABLE 8. Lack of Self-Discipline

Statements	Weighted Mean	Verbal Description
Can't focus that much	3.72	Agree
A lot of distraction like playing mobile legend and browsing Facebook with my cellphone	3.74	Agree
I learn how to cheat	3.51	Agree
Average	**3.66**	**Agree**

Note. n=43 ***Legend:** *4.21-5.00 - Strongly Agree, 3.41-4.20 - Agree, 2.61-3.40 - Neither Agree or Disagree, 1.81-2.60 - Disagree, 1.00-1.80 - Strongly Disagree*

Self-discipline poses a significant challenge in MDL, as students navigate time and pace independently. Table 8 revealed common distractions like mobile games and social media, with an average score of 3.74. Excessive social media use has been linked to lower GPAs, engagement, and satisfaction (Kolhar et al., 2021), and contributes to sleep issues and emotional struggles in adolescents (Levenson et al., 2016). Delos Santos and Cornillez (2020) connected excessive mobile gaming to poor college performance and procrastination.

Most respondents admitted to learning to cheat in MDL, with an average score of 3.51. Despite MDL, cheating persisted, influenced by existing abilities and values. Cheating correlated with lower moral reasoning and identity (Edmondson, 2013). Peer influence, even in a virtual context, fostered the normalization of cheating (Watson & Sottile, 2010). This necessitated the promotion of ethical behavior and positive peer impact.

In summary, respondents pinpointed self-discipline as a key MDL shortcoming, hampering focus without the traditional classroom structure. Research consistently linked self-discipline to online academic success (Wang et al., 2013; Wong

et al., 2019), with deficiencies affecting distance learning performance (Richardson, 2021). Flourishing in MDL necessitated nurturing self-discipline and time-management abilities.

5.3. Level of Academic Performance

TABLE 9. Academic Performance

Category Academic Performance	Frequency	Percentage
75 Below (Did Not Meet Expectations)	0	0%
75 - 79 (Fairly Satisfactory)	5	11.63%
80 - 84 (Satisfactory)	24	55.81%
85 - 89 (Very Satisfactory)	13	30.23%
90 - 100 (Outstanding)	1	2.33%
TOTAL	**43**	**100%**
Level of Academic Performance	**Category**	
82.76	**Satisfactory**	

Table 9 presented the study's respondent count as 43. Among these, 28 (65.12%) were male, and 15 (34.88%) were female. All respondents were currently enrolled in a specific public school in Mandaue City. The table also showed how the respondents were divided according to their academic success. The majority of students received grades ranging between 80 and 84, with an overall average of 82.76, falling under the category of satisfactory. This range signifies strong achievement. Therefore, students within this range typically performed well academically.

5.4 Relationship Between Perceived Perceptions of MDL and Academic Performance

TABLE 10. Relationship Between Students' Perception and Academic Performance

Variables	Spearman's rho	P-value	Strength of Correlation	Relationship
Perceived Advantages of MDL and Academic Performance	0.024	0.439	Weak Positive Correlation	No significant relationship
Perceived Disadvantages of MDL and Academic Performance	0.025	0.436	Weak Positive Correlation	No significant relationship

Note: level of significance: 0.05

Table 10 displayed the correlation between students' perceptions and academic performance. The results suggested that there was no significant relationship between students' perceived advantages and disadvantages towards MDL and their academic performance. This finding underscored the necessity to explore other factors that influence academic achievement in MDL. It also suggested that relying solely on students' perceptions of MDL might not be sufficient for predicting or enhancing their academic success. In the study by DeVito (2016), various factors were found to impact students' academic performance, such as the availability and quality of learning resources, student engagement level, and support from teachers, peers, and parents. Moreover, the consistent result indicating no significant relationship, which is in line with prior research (Wong et al., 2019; Aksan, 2021), underscores the importance of refining the implementation of MDL to enhance its overall effectiveness. This becomes especially pertinent in public schools, where MDL continues to serve as a crucial alternative mode of learning when in-person classes are suspended.

VI. Conclusion

In conclusion, this study reveals no significant correlation between students' perceived advantages and their academic performance within the MDL context. This underscores the necessity to enhance MDL's effectiveness based on Self-Determination Theory (SDT) principles. Chiu (2022), found autonomy and competence support positively impacted distant learning students' satisfaction of fundamental needs. These results emphasize the need to explore MDL factors influencing motivation and academics. Aligning MDL practices with SDT, nurturing autonomy, competence, and relatedness, can optimize MDL implementation, benefiting academic achievement.

To ensure effective implementation of MDL in the future, it is crucial for educational policymakers and practitioners to consider the principles of SDT and design interventions that promote students' autonomy and competence. This approach can help maximize the benefits of MDL and create an engaging and supportive learning environment, even in challenging circumstances such as calamities or disruptions to traditional learning settings.

Driven from the insights of this study, the following recommendations were put forth:

1. Educational institutions should establish well-defined contingency plans for seamlessly integrating MDL during emergencies. These plans should encompass communication strategies, alternative learning methods like MDL, and the assurance of accessible resources
2. Teachers should proactively engage students through direct interactions, providing timely feedback, and designing collaborative learning activities.
3. Future research endeavors should delve into the advantages and disadvantages of MDL across various grade levels, institutions, and larger participant samples. These studies should also extend their durations to yield more robust insights.
4. To further elevate the effectiveness of MDL, educational institutions must formulate comprehensive action plans. These plans should prioritize specialized training for teachers in proficient online teaching methodologies while concurrently creating a supportive digital learning environment.

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