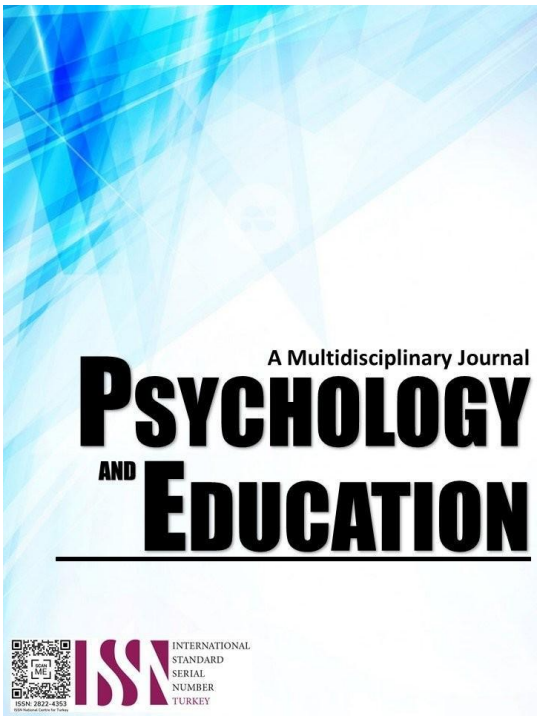
ASSESSING THE EFFECTIVENESS OF SELF-LEARNING MODULES TO ENSURE EDUCATIONAL CONTINUITY DURING CALAMITIES



PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Volume: 42
Issue 8
Pages: 1152-1163
Document ID: 2025PEMJ4112
DOI: 10.70838/pemj.420806
Manuscript Accepted: 05-19-2025

Psych Educ, 2025, **42**(8): 1152-1163, Document ID:2025PEMJ4112, doi:10.70838/pemj.420806, ISSN 2822-4353

Research Article

Assessing the Effectiveness of Self-Learning Modules to Ensure Educational Continuity During Calamities

May Ann S. Alicabo,* Angelina A. Cacharo
For affiliations and correspondence, see the last page.

Abstract

This study aimed to assess the effectiveness of Self-Learning Modules (SLMs) in maintaining educational continuity during calamities, focusing on the demographic profiles of learners and their evaluations of the modules. Using random sampling, the research employed a descriptive correlation design involving 200 Key Stage 2 learners (Grades 4 to 6) from the Don Carlos I District in Bukidnon. Data was collected through a survey instrument that examined several key aspects: access and availability of SLMs, content clarity and quality, facilitation of self-learning and independence, learning continuity, and the challenges learners face. Recognizing the disruption caused by natural disasters such as the COVID-19 pandemic, earthquakes, typhoons, and other emergencies, the study investigates the effectiveness of SLMs in terms of their clarity and quality of content, access, and availability, self-learning and independence, learning continuity, and challenges faced by learners. A correlation analysis was conducted to determine whether significant relationships existed between the effectiveness of SLMs and the demographic profiles of learners. The results indicated no significant relationship between grade level, location, and calamities experienced. This means that the effectiveness of SLMs did not significantly vary based on these factors. While the SLMs demonstrated positive aspects, particularly in content clarity, their overall effectiveness in terms of accessibility, facilitation of self-learning, and addressing challenges still requires improvement. The study recommends enhancing SLM accessibility, promoting self-directed learning, providing supplemental teacher support, and addressing learners' difficulties.

Keywords: *Self-Learning Modules (SLMs), educational continuity, calamities, Key Stage 2 learners, access and availability, self-learning, content clarity, learning challenges, pandemic, earthquakes, typhoons, disaster response, educational strategies*

Introduction

Education has long been recognized as a fundamental right and a cornerstone in shaping individual lives and society. However, maintaining the continuity of education during periods of calamity posed significant challenges, particularly in areas vulnerable to natural disasters. These challenges were further intensified by the COVID-19 pandemic, which forced educational institutions to swiftly shift to alternative learning modalities. In response, the Department of Education (DepEd) issued Order No. 12, s. 2020, which introduced the Basic Education Learning Continuity Plan for the 2020–2021 school year. A key feature of this plan was the implementation of Self-Learning Modules (SLMs) as a strategy to sustain education during emergencies.

In the Don Carlos 1 District, SLMs were used to sustain the learning process amid disruptions caused by typhoons, earthquakes, and the pandemic. Although these modules served as a substitute for traditional classroom instruction, concerns persisted regarding their effectiveness in upholding educational standards and student outcomes. Assessing how well SLMs functioned in real-life conditions was essential for refining their development and implementation.

This study aimed to evaluate the effectiveness of Self-Learning Modules in ensuring educational continuity within the Don Carlos 1 District. Specifically, the research focused on several key areas: access and availability of the modules, clarity, and quality of content, promotion of self-directed learning and independence, overall effectiveness in maintaining learning continuity, and the challenges encountered by both students and educators. By identifying the strengths and limitations of the SLM approach, the study sought to generate meaningful insights that could guide future improvements, ensuring education remained inclusive and effective, even under the most difficult circumstances.

Furthermore, the 2024–2025 academic year provided a timely opportunity to assess how well SLMs had supported learners in the Don Carlos 1 District. Through this investigation, the researcher aimed to contribute to the growing knowledge surrounding distance learning and emergency education strategies. The study aligned with the goals of DepEd's Learning Continuity Plan, which sought to uphold students' right to quality education despite external disruptions.

Ultimately, this research aimed to offer practical recommendations to enhance the effectiveness of SLMs, particularly for schools located in disaster-prone areas, ensuring that no learner is left behind in their educational journey.

Research Questions

This study aimed to assess the effectiveness of Self-Learning Modules (SLMs) to ensure educational continuity during calamities among key stage 2 learners of the elementary schools of Don Carlos I District, Division of Bukidnon, during the school year 2024-2025. Specifically, this study sought to answer the following questions:

1. What is the demographic profile of the learners?
2. What is the assessment of Self-Learning Modules (SLMs) in terms of access and availability of SLMs, clarity and quality of content, self-learning and independence, ensuring learning continuity, and challenges faced?
3. Is there a significant relationship between the effectiveness of Self-Learning Modules (SLMs) and the learners' demographic profile and assessment of Self-Learning Modules (SLMs)?

Methodology

Research Design

This study used the descriptive correlation method of research, relying primarily on the researcher's questionnaires to gather information in assessing the effectiveness of Self-Learning Modules (SLMs) to ensure educational continuity during calamities. The descriptive correlation method was the most common and widely used in gathering data and information using a questionnaire checklist.

Respondents

The respondents of the study were 200 Key Stage 2 (Grades 4, 5, and 6) elementary learners in Don Carlos I District, Division of Bukidnon, School Year 2024-2025. Random sampling was employed to determine the learners from the different schools in the Don Carlos I District. Table 1 shows the distribution of respondents, which is presented below.The participating teachers hold regular-permanent positions in their respective schools. While the majority are local residents of the area, some are transients who reside in neighboring municipalities. Teachers in San Fernando, Bukidnon are widely recognized for their dedication, competence, and strong partnerships with the community, particularly with parents and local government units.

Table 1. *Distribution of Respondents of the Study*

Schools	*Actual Number of Learners*	*Number of Respondents*
Don Carlos Central E/S	939	50
Don Carlos Norte E/S	296	30
Sinangguyan E/S	254	30
Pinamaloy E/S	182	25
Kibatang E/S	162	25
Manlamonay E/S	100	20
Minsalagan E/S	59	10
San Antonio East E/S	59	10
Total	2052	200

Instruments

The research instrument for this study, "Assessing the Effectiveness of Self-Learning Modules in Ensuring Educational Continuity during Calamities," is adapted from several established frameworks. The section on Demographic profile is based on the U.S. Census Bureau. (2020). Demographic Statistics, while the section on Assessing the Effectiveness of Self-Learning Modules in Ensuring Educational Continuity during Calamities is based on the following: DepEd Order No. 12, s. 2020. (2020), Garrison, D. R., & Akyol, Z. (2015), Vaughan, N. D., Parchoma, G., & Garrison, D. R. (2013), and Laksana, T., & Santoso, P. B. (2021).

Scoring Procedure

Table 2. *Shows the scoring procedure of the study.*

Mean Intervals	*Scale*	*Qualitative Description*	*Qualitative Standard*
5	4.21-5.00	Fully Implemented	Always implemented
4	3.41-4.20	Moderately Implemented	Implemented most of the time
3	2.61-3.40	Slightly Implemented	Implemented sometimes
2	1.81-2.60	Less Implemented	Implemented rarely
1	1.00-1.80	Not Implemented	Not at all implemented

His study used the Likert Scale for Scoring. It is numbered 1-5, and each number has a corresponding qualifying description. Assessing the Effectiveness of Self-Learning Modules in Ensuring Educational Continuity during Calamities, 5 means fully implemented, 4 is moderately implemented, 3 is slightly implemented, 2 means less implemented, and 1 means not implemented.

Procedure

The data was gathered from the enrolled 200 Key Stage 2 (Grades 4, 5, and 6) elementary learners in Don Carlos I District, Division of Bukidnon, School Year 2024-2025 using survey questionnaires. Written permission from the Schools Division Superintendent was secured through the recommendation of the Dean of the Graduate School of Valencia Colleges (INC), Bukidnon, Valencia City, for the approval letter. The request is also made through the Public Schools District Supervisor and School Principals to signify the

administrator's cooperation and support.

Data Analysis

The responses to the items in the questionnaire–checklist were scored and tabulated. In analyzing and interpreting the data gathered, the following treatments were employed:

Problem 1: Descriptive statistics such as frequency counts, percentages, and standard deviation were used to describe the respondents' demographic profile.

Problem 2: To assess the Effectiveness of Self-Learning Modules to Ensure Educational Continuity during Calamities, the mean was computed.

Problem 3: Pearson Product-Moment Correlation (Pearson r) was used to establish the relationship between the effectiveness of Self-Learning Modules (SLMs) and the learners' demographic profile and assessment of Self-Learning Modules (SLMs).

Results and Discussion

This chapter offers the presentation of the findings of the study "Assessing the Effectiveness of Self-Learning Modules in Ensuring Educational Continuity during Calamities." It explored the relationship between independent variables related to the assessment of Self-Learning Modules (SLMs) in terms of access and availability of SLMs, clarity and quality of content, self-learning, independence, ensuring learning continuity, and challenges faced.

Table 3. *Demographic profile of the respondents in terms of grade level*

Grade Level	*F*	*%*
4	61	30.5
5	66	33.0
6	73	36.5
Total	200	100.0

Table 3 reveals the demographic profile of the respondents in terms of grade level and the distribution across three levels. The highest number of respondents is from Grade 6 (f = 73, 36.5%), followed by Grade 5 (f = 66, 33.0%), and the lowest is from Grade 4 (f = 61, 30.5%).

This distribution indicates that the majority of respondents are in the higher grade level (Grade 6), which may suggest that older students are more involved in or impacted by the activity, program, or study under consideration.

Several studies proved the efficacy of self-learning modules in ensuring continuity in educational experiences across levels, especially in calamities. According to Scimatic (2023), modular distance learning is quite an effective method: no significant influences on the perceptions of learners toward self-learning modules were established in terms of their demographic profiles. It, therefore, implies that such modules can be appropriately used in various grade levels; thus, students from Grades 4 to 6, as illustrated in Table 2, are not an exception to benefiting from this type of learning. Similarly, studies by San Guillermo National High School in 2022 proved that Indigenous Peoples learners benefited from modular distance learning regarding academic achievement without regard to demographic differences of students, meaning that such is appropriate for different age ranges and grade levels. Another piece of research conducted by ResearchGate in 2023 discovered that self-learning modules in English were effective for students of various grade levels, proving that the results of the present study were valid.

Table 4. *Demographic profile of the respondents in terms of location*

Location	*F*	*%*
1	50	25.0
2	30	15.0
3	30	15.0
4	25	12.5
5	25	12.5
6	20	10.0
7	10	5.0
8	10	5.0
Total	200	100.0

Table 4 shows the demographic profile of the respondents in terms of location and shows varying levels of representation. The highest proportion of respondents is from Location 1 (f = 50, 25.0%), followed by Location 2 (f = 30, 15.0%) and Location 3 (f = 30, 15.0%). Location 4 (f = 25, 12.5%) and Location 5 (f = 25, 12.5%) share equal percentages. Location 6 (f = 20, 10.0%) has a smaller share, while the least represented are Location 7 (f = 10, 5.0%) and Location 8 (f = 10, 5.0%).

This distribution indicates that most respondents are concentrated in Location 1, suggesting it could be a central or highly populated

area. The relatively low representation from Locations 7 and 8 implies a smaller population size or less engagement in the study's context.

Various studies prove the significance of demographic characteristics in the successful implementation of self-learning modules during calamities. Impact of Demographic Characteristics on Academic Performance by ERIC (2021) explains how geographical location and access impact student involvement, which aligns with the study since Location 1 showed the highest involvement. E-Module in Blended Learning, ResearchGate (2021) also points out that access to resources impacts the use of self-learning materials. Applied Distance Learning Methods in Disaster Preparedness (PMC, 2023) and Blended Learning for Academic Resilience (MERLOT, 2012) further emphasize the importance of taking into account geographic disparities in education. These studies indicate that areas with lower representation may face barriers such as resource limitations, which may affect the effectiveness of self-learning modules.

Table 5. *Demographic profile of the respondents in terms of calamities experienced*

Calamities	*F*	*%*
Typhoon	126	63.0
Earthquake	150	75.0
Flood	10	5.0
Volcanic Eruption	4	2.0
Pandemic	194	97.0
Others	33	16.5

Table 5 presents the demographic profile of the respondents in terms of calamities experienced, revealing that the majority have encountered a pandemic (f = 194, 97.0%), followed by earthquakes (f = 150, 75.0%) and typhoons (f = 126, 63.0%). A smaller proportion of respondents have experienced other calamities (f = 33, 16.5%), floods (f = 10, 5.0%), and volcanic eruptions (f = 4, 2.0%).

These results highlight the significant impact of the pandemic, affecting nearly all respondents, which underscores its widespread disruption. Earthquakes and typhoons are also prevalent calamities, indicating the geographical vulnerability of the respondents to these natural disasters. In contrast, floods, volcanic eruptions, and other calamities have been experienced by a smaller percentage, suggesting these are less common in the area or among the participants.

The results of this study, especially the prevalence of calamities incurred by the respondents, conform to previous studies on the disruption of education induced by natural calamities. The high prevalence of typhoons (63.0%) and earthquakes (75.0%) among the respondents conveys the strong occurrence of such calamities in countries such as the Philippines, where such calamities often disrupt school activities and interfere with learners' learning (International Journal Corner, n.d.). This defends the claim that natural calamities, especially typhoons and earthquakes, are serious threats to the continuity of education.

Furthermore, the widespread experience of the pandemic (97.0%) among the respondents underscores the extensive impact of global crises on education. The COVID-19 pandemic, specifically, exposed the weaknesses of conventional education systems and compelled the application of alternative learning strategies. The research underscores how blended learning and self-learning modules have been effective to ensure educational continuity amidst such disruptions (Mackey, 2012). The pandemic has also hastened the implementation of e-learning platforms and self-directed learning strategies, allowing students to pursue their education despite the crisis challenges (PMC, 2020).

The results also indicate the necessity of disaster preparedness in education. Earthquakes and typhoons, which are common calamities in the region, emphasize the necessity of having flexible learning solutions. Utilizing self-learning modules, as indicated by prior research, can provide a possible solution during calamities. Self-learning modules facilitate the bridging of the gap caused by calamities like earthquakes, floods, and pandemics, allowing students to continue learning even when traditional learning settings are interrupted (Fides, 2021; Reliefweb, 2015).

Table 6. *Assessment of Self-Learning Modules (SLMs) in terms of access and availability of SLMs*

Indicator	*Mean*	*SD*	*Interpretation*
The SLMs were readily available during the calamity.	4.32	1.114	Fully Implemented
The format of the SLMs (printed or digital) suited my learning needs during the calamity.	4.12	1.099	Moderately Implemented
I had no trouble accessing SLMs (e.g., internet access and printed materials).	4.04	0.969	Moderately Implemented
The SLMs were easy to navigate and use on my own.	3.79	1.017	Moderately Implemented
Overall	4.06	0.734	Moderately Implemented

Legend: 5 – 4.21–5.00 – Fully Implemented – Always implemented, 4 – 3.41–4.20 – Moderately Implemented – Implemented most of the time, 3 – 2.61–3.40 – Slightly Implemented – Implemented sometimes, 2 – 1.81–2.60 – Less Implemented – Implemented rarely, 1 – 1.00–1.80 – Not Implemented – Not at all implemente

Table 6 shows the assessment of Self-Learning Modules (SLMs) in terms of access and availability, revealing varying levels of implementation across different indicators. The highest-rated indicator is "The SLMs were readily available during the calamity" (Mean = 4.32, SD = 1.114), interpreted as Fully Implemented, indicating that the respondents largely agreed that SLMs were accessible during

challenging times. On the other hand, the lowest-rated indicator is "The SLMs were easy to navigate and use on my own" (Mean = 3.79, SD = 1.017), interpreted as Moderately Implemented, suggesting that while the SLMs were somewhat user-friendly, there is room for improvement in making them easier to navigate.

The overall mean score of 4.06 (SD = 0.734), interpreted as Moderately Implemented, reflects a general satisfaction with the accessibility and availability of the SLMs, though challenges remain. The results imply that while SLMs were available and accessible to most learners, enhancements in usability and alignment with learners' needs could further improve the effectiveness of these modules, especially during times of crisis or calamity.

The assessment of Self-Learning Modules (SLMs) in terms of access and availability during calamities aligns with existing literature on the role of modular and distance learning in crises. The study by Dadios et al. (2021) emphasizes that printed and digital learning modules have been instrumental in ensuring educational continuity, particularly during the COVID-19 pandemic when face-to-face instruction was disrupted. Their research found that accessibility to learning materials played a crucial role in students' ability to keep up with lessons, supporting the finding that SLMs were "readily available during the calamity" with a mean of 4.32, interpreted as Fully Implemented.

Furthermore, the study by Rasheed et al. (2020) explored the barriers to online learning during emergencies, revealing that while students appreciated the flexibility of self-paced learning modules, issues such as poor internet connectivity and difficulty in navigating digital platforms hindered their effectiveness. This aligns with the current study's finding that the indicator "I had no trouble accessing the SLMs (e.g., internet access, printed materials)" was only Moderately Implemented (Mean = 4.04). The study suggests that while students may have access to learning modules, infrastructure limitations remain a critical challenge.

A study by Adedoyin and Soykan (2020) highlights that the effectiveness of remote learning materials depends on their usability and alignment with students' learning preferences. Their findings resonate with the current study's lowest-rated indicator, "The SLMs were easy to navigate and use on my own" (Mean = 3.79), suggesting that while SLMs were accessible, their design could be improved to enhance ease of use. Similarly, the research conducted by Bol (2022) on the effectiveness of digital learning tools during disasters emphasized the need for well-structured and intuitive materials to support independent learning, further reinforcing the study's implication that usability enhancements are necessary.

Moreover, a case study by Mackey et al. (2020) on blended learning approaches during natural disasters concluded that a combination of printed and digital learning materials ensures better academic resilience. This finding supports the indicator "The format of the SLMs (printed or digital) suited my learning needs during the calamity" (Mean = 4.12, Moderately Implemented), highlighting the importance of providing diverse learning formats to accommodate different student needs during crises.

Table 7. *Assessment of Self-Learning Modules (SLMs) in terms of clarity and quality of content.*

Indicator	*Mean*	*SD*	*Interpretation*
The instructions provided in the SLMs were clear and easy to follow.	4.41	0.839	Fully Implemented
The examples and activities in the SLMs helped to understand the lessons.	4.40	0.907	Fully Implemented
The language used in the SLMs was simple and appropriate for my grade level.	4.25	0.894	Fully Implemented
The learning materials in the SLMs were well-organized and structured.	4.14	0.970	Moderately Implemented
Overall	4.30	0.674	Fully Implemented

Legend: 5 – 4.21–5.00 – Fully Implemented – Always implemented, 4 – 3.41–4.20 – Moderately Implemented – Implemented most of the time, 3 – 2.61–3.40 – Slightly Implemented – Implemented sometimes, 2 – 1.81–2.60 – Less Implemented – Implemented rarely, 1 – 1.00–1.80 – Not Implemented – Not at all implemente

Table 7 presents the assessment of Self-Learning Modules (SLMs) in terms of clarity and quality of content, demonstrating that most indicators were perceived as fully implemented by the respondents. The highest-rated indicator is "The instructions provided in the SLMs were clear and easy to follow" (Mean = 4.41, SD = 0.839), interpreted as Fully Implemented, indicating that clear guidance in the modules contributed significantly to the learners' understanding. Following closely is "The examples and activities in the SLMs helped understand the lessons" (Mean = 4.40, SD = 0.907), also interpreted as Fully Implemented, which highlights the importance of practical examples and activities in facilitating comprehension.

The lowest-rated indicator is "The learning materials in the SLMs were well-organized and structured" (Mean = 4.14, SD = 0.970), interpreted as Moderately Implemented, suggesting that while the organization of content was effective for many learners, there is still room for improvement in this area. The overall mean score of 4.30 (SD = 0.674), interpreted as Fully Implemented, reflects a general agreement that the clarity and quality of content in the SLMs meet learners' needs.

The results imply that while the SLMs were clear and of high quality overall, efforts to further improve the organization and structure of the learning materials could enhance their effectiveness. By addressing these areas, educators and content developers can ensure better support in their educational journey, especially in self-directed learning environments. A study by Alon et al. (2022) examined the impact of SLMs on Grade III pupils' academic performance and found that clear instructions and well-structured content significantly improved students' comprehension and engagement. The results of their study align with the present findings, particularly

in how learners rated the clarity of instructions and the helpfulness of examples and activities as "Fully Implemented" (Alon et al., 2022).

Similarly, Reyes and Dela Cruz (2021) developed an assessment tool to evaluate the quality of SLMs using the Best-Worst Method. Their study highlighted the importance of clear, structured, and appropriate learning materials in supporting students' self-directed learning, reinforcing the necessity of well-designed modules (Reyes & Dela Cruz, 2021). This supports the current study's findings that the overall clarity and content quality of SLMs were perceived as high, though organization and structure could still be improved.

Additionally, a study by Santos et al. (2021) explored the challenges faced by students using SLMs, noting that unclear instructions and disorganized content negatively impacted their learning experience. Their findings emphasize the importance of refining the structure of SLMs to further enhance their effectiveness, aligning with the lowest-rated indicator in this study, which suggests room for improvement in content organization (Santos et al., 2021).

Moreover, research on e-learning modules by Villanueva et al. (2022) found that digital and printed self-learning materials with well-structured content significantly enhanced student preparedness and learning outcomes, particularly in disaster-prone areas. Their study suggests that clear instructions and well-organized content are crucial for effective learning, even in challenging situations (Villanueva et al., 2022).

Table 8. *Assessment of Self-Learning Modules (SLMs) in terms of self-learning and independence.*

Indicator	*Mean*	*SD*	*Interpretation*
The SLMs encouraged me to learn at my own pace during the calamity.	4.07	0.978	Moderately Implemented
I felt confident in my ability to learn using SLMs.	4.06	0.900	Moderately Implemented
The SLMs helped me to learn effectively without the direct guidance of a teacher.	4.01	1.128	Moderately Implemented
I was able to complete the activities in the SLMs on my own.	3.77	0.970	Moderately Implemented
Overall	3.98	0.753	Moderately Implemented

Legend: 5 – 4.21–5.00 – Fully Implemented – Always implemented, 4 – 3.41–4.20 – Moderately Implemented – Implemented most of the time, 3 – 2.61–3.40 – Slightly Implemented – Implemented sometimes, 2 – 1.81–2.60 – Less Implemented – Implemented rarely, 1 – 1.00–1.80 – Not Implemented – Not at all implemente

Table 8 reveals the assessment of Self-Learning Modules (SLMs) in terms of self-learning and independence, revealing that all indicators were Moderately Implemented according to respondents. The highest-rated indicator is "The SLMs encouraged me to learn at my own pace during the calamity" (Mean = 4.07, SD = 0.978), which suggests that the modules were somewhat effective in fostering individualized learning. Close behind is "I felt confident in my ability to learn using the SLMs" (Mean = 4.06, SD = 0.900), indicating moderate self-assurance among learners when using the materials. The lowest-rated indicator is "I was able to complete the activities in the SLMs on my own" (Mean = 3.77, SD = 0.970), which points to some challenges in completing tasks independently, possibly due to the complexity of activities or a lack of sufficient support in the modules. The overall mean score of 3.98 (SD = 0.753), interpreted as Moderately Implemented, reflects that the SLMs generally supported self-directed learning but did not fully meet the learners' expectations for independence.

A study by Mackey et al. (2012) emphasized that blended learning approaches incorporating self-learning modules contribute to academic resilience during crises. Their study highlighted the importance of adaptive course design in enabling students to continue learning independently when traditional face-to-face instruction is disrupted. Similarly, research by Arkorful and Abaidoo (2015) on e-learning and its benefits suggests that well-structured digital and modular learning materials provide students with the flexibility to learn at their own pace, enhancing self-directed learning skills.

Furthermore, a study by Putra et al. (2021) examined the impact of e-modules in blended learning and found that they significantly improved students' ability to learn autonomously, particularly in disaster-prone areas. Their research indicated that the availability of self-paced instructional materials strengthens students' confidence and preparedness for independent learning during emergencies. This aligns with the results of this study, where respondents rated SLMs as moderately effective in promoting self-learning and independence.

In addition, Moore and Kearsley (2011) discussed the role of distance education in fostering independent learning. They argued that self-learning modules serve as essential tools in maintaining educational continuity, especially in disaster situations where access to teachers and traditional classrooms is limited. Their study supports the notion that providing clear guidance and well-structured content within SLMs enhances students' ability to complete tasks independently, addressing some of the challenges identified in the assessment results.

Lastly, according to Garrison (2016), self-directed learning involves three key dimensions: self-management, self-monitoring, and motivation. Effective learning materials, such as self-learning modules, should be designed to enhance these aspects by providing clear instructional guidance, engaging content, and opportunities for self-assessment. The findings of this study, particularly the moderate confidence levels of students in using SLMs, align with Garrison's framework, suggesting that while SLMs support independent learning, further improvements in instructional design, learner engagement, and support mechanisms are necessary to maximize their impact.

Table 9. *Assessment of Self-Learning Modules (SLMs) in terms of ensuring learning continuity.*

Indicator	*Mean*	*SD*	*Interpretation*
The SLMs helped me stay on track with my studies during the calamity.	4.41	0.886	Fully Implemented
I believe SLMs can be an effective substitute for traditional classroom instruction during calamities.	4.25	0.818	Fully Implemented
The SLMs provided adequate support for learning difficult concepts during the calamity.	4.09	0.918	Moderately Implemented
I was able to cover the same amount of content as I would have in face-to-face classes.	3.97	1.046	Moderately Implemented
Overall	4.18	0.616	Moderately Implemented

Legend: 5 – 4.21–5.00 – Fully Implemented – Always implemented, 4 – 3.41–4.20 – Moderately Implemented – Implemented most of the time, 3 – 2.61–3.40 – Slightly Implemented – Implemented sometimes, 2 – 1.81–2.60 – Less Implemented – Implemented rarely, 1 – 1.00–1.80 – Not Implemented – Not at all implemente

Table 9 illustrates the assessment of Self-Learning Modules (SLMs) in terms of ensuring learning continuity, showing varied levels of implementation based on the respondents' feedback. The highest-rated indicator is "The SLMs helped me stay on track with my studies during the calamity" (Mean = 4.41, SD = 0.886), which was interpreted as Fully Implemented. This suggests that the SLMs were highly effective in keeping students engaged and focused on their studies despite disruptions caused by the calamity. Another indicator rated as Fully Implemented is "I believe the SLMs can be an effective substitute for traditional classroom instruction during calamities" (Mean = 4.25, SD = 0.818), reflecting confidence in the modules' potential as an alternative learning tool.

In contrast, the lowest-rated indicator is "I was able to cover the same amount of content as I would have in face-to-face classes" (Mean = 3.97, SD = 1.046), which, along with "The SLM provided adequate support for learning difficult concepts during the calamity" (Mean = 4.09, SD = 0.918), was interpreted as Moderately Implemented. These results indicate that while the SLMs were generally effective, they fell short of providing the same depth and support as traditional classroom settings, particularly for challenging topics.

The overall mean score of 4.18 (SD = 0.616), interpreted as Moderately Implemented, highlights that the SLMs moderately ensured learning continuity. The findings imply that while the SLMs are a viable learning tool during calamities, improvements are needed to enhance their ability to provide comprehensive content coverage and better support for learning complex concepts, thereby maximizing their effectiveness as an alternative mode of instruction.

A study published in 2024 highlights that distance education plays a crucial role in disaster preparedness, with self-learning modules being an essential component of virtual learning. The research emphasizes that properly designed educational spaces and infrastructure can facilitate continuous learning despite disruptions (PMC, 2024). Similarly, a study by ResearchGate (2024) examined the integration of e-modules in a blended learning framework and found that they positively influence students' disaster preparedness. This suggests that self-learning modules can help learners remain engaged and adaptable even in emergencies.

Moreover, a case study by Mackey et al. (2012) discussed how blended learning fosters academic resilience during crises, including natural disasters and civil emergencies. The findings emphasized the need for flexible learning solutions, such as SLMs, to mitigate learning disruptions. Additionally, a 2021 study on ELITE-DR, an e-learning initiative for teaching emergency disaster response, demonstrated that e-learning modules impart knowledge and skills, reinforcing that SLMs can be viable alternatives to traditional classroom instruction (PMC, 2021).

Furthermore, a study by the Education Resources Information Center (ERIC, 2022) explored the use of self-learning modules during emergency remote teaching and found that they played a vital role in maintaining learning continuity. The study highlighted that despite some challenges, such as limited support for complex concepts, SLMs ensured that students remained on track with their studies. These findings align with the current study's results, which indicate that while SLMs help learners stay engaged and serve as an effective substitute for classroom instruction, they require improvements to better support students in mastering difficult topics.

Table 10. *Assessment of Self-Learning Modules (SLMs) in terms of challenges faced.*

Indicator	*Mean*	*SD*	*Interpretation*
I found it difficult to stay motivated while learning from the SLMs.	3.85	0.950	Moderately Implemented
I experienced technical difficulties (e.g., lack of internet access or electricity) while using the SLMs.	3.84	1.129	Moderately Implemented
The SLMs made learning more challenging than face-to-face classes.	3.84	1.096	Moderately Implemented
I had trouble understanding some lessons without the teacher's guidance.	3.80	1.153	Moderately Implemented
Overall	3.83	0.720	Moderately Implemented

Legend: 5 – 4.21–5.00 – Fully Implemented – Always implemented, 4 – 3.41–4.20 – Moderately Implemented – Implemented most of the time, 3 – 2.61–3.40 – Slightly Implemented – Implemented sometimes, 2 – 1.81–2.60 – Less Implemented – Implemented rarely, 1 – 1.00–1.80 – Not Implemented – Not at all implemente

Table 10 is the assessment of Self-Learning Modules (SLMs) in terms of challenges faced, revealing that the respondents encountered various moderate challenges while using the modules. The highest-rated indicator is "I found it difficult to stay motivated while learning

from the SLMs" (Mean = 3.85, SD = 0.950), interpreted as Moderately Implemented. This suggests that maintaining motivation was a significant challenge for learners utilizing SLMs.

Three indicators share the same mean score of 3.84, including "I experienced technical difficulties (e.g., lack of internet access or electricity) while using the SLMs" (SD = 1.129) and "The SLMs made learning more challenging than face-to-face classes" (SD = 1.096), both of which were also interpreted as Moderately Implemented. These findings highlight that technical barriers and the perceived difficulty of SLMs compared to traditional classes added to the learners' struggles. The lowest-rated indicator, "I had trouble understanding some lessons without teacher guidance" (Mean = 3.80, SD = 1.153), also falls under Moderately Implemented, reflecting the need for additional instructional support within the SLMs.

The overall mean score of 3.83 (SD = 0.720), interpreted as Moderately Implemented, underscores those learners faced moderate challenges in using the SLMs. These results imply that while the SLMs were functional during difficult times, addressing issues like motivation, technical barriers, and the absence of teacher guidance is critical to improving their effectiveness and reducing the challenges learners face.

Lee and Choi (2013) emphasize that learners often struggle to remain engaged in online or self-paced learning due to a lack of immediate feedback and interaction. The difficulty of staying motivated in such settings aligns with the finding that learners in your study found it challenging to remain motivated while using SLMs (Mean = 3.85, SD = 0.950). This is further supported by Jaggars and Bailey (2020), who note that during the COVID-19 pandemic, students faced issues with motivation in the absence of face-to-face interactions with instructors, which led to increased difficulties in maintaining engagement.

Technical difficulties, such as unreliable internet access and power outages, are also a major concern. Li and Lalani (2020) discuss how a lack of infrastructure, such as stable internet and electricity, can significantly disrupt the learning experience, consistent with the respondents' experiences in your study regarding technical issues (Mean = 3.84, SD = 1.129). The authors argue that these barriers are particularly pronounced in remote or underserved regions, where learners may not have consistent access to the necessary technology.

The challenge of understanding lessons without teacher guidance has also been widely recognized in educational research. Knowles (1975), in his work on self-directed learning, highlights that learners often struggle to comprehend course materials without direct instruction or support. This is particularly evident in your study, where respondents reported difficulty understanding lessons without teacher guidance (Mean = 3.80, SD = 1.153). Johnson and Shepherd (2019) also note that, when comparing self-paced learning to face-to-face classes, learners often find the former more challenging due to the absence of immediate instructor feedback and clarification.

Table 11. *Test of a significant relationship between the effectiveness of Self-Learning Modules (SLMs) and the learners' demographic profile and assessment of Self-Learning Modules (SLMs)*

Variable	$r_{pb}/t_b/r$	*p-value*	*Interpretation*
Grade Level	.017	.748	Not Significant
Location	.037	.604	Not Significant
Calamities Experienced	.079	.267	Not Significant

Table 11 reveals the test of significant relationships between the effectiveness of Self-Learning Modules (SLMs) and the learners' demographic profile and assessment of SLMs. For grade level (t_b = .017, p-value = .748), location (r_pb = .037, p-value = .604), and calamities experienced (r = .079, p-value = .267), the results indicate no significant relationships. Therefore, do not reject the null hypothesis.

These findings imply that the effectiveness of SLMs is not influenced by the learners' grade level, location, or the calamities they have experienced. This suggests that the SLMs are generally perceived and utilized in a consistent manner across different demographic and experiential factors. However, the lack of significant relationships also indicates that other variables, beyond demographic profiles and calamities experienced, may play a more critical role in determining the perceived effectiveness of SLMs.

A study by Chua and Tan (2020) investigated the role of demographic factors in e-learning effectiveness, concluding that while variables like age and prior experience may have some influence on learning outcomes, other elements such as individual motivation and course design are more pivotal in determining the success of educational tools. This resonates with the findings of the current study, where no significant relationship was observed between grade level and the effectiveness of SLMs (t_b = .017, p-value = .748). Similarly, Gonzales and Escalante (2021) analyzed how location and socio-economic factors influence the adoption of digital learning tools. Their study found that while geographical factors may play a role in access to technology, they do not significantly impact the perceived effectiveness of e-learning tools, suggesting that institutional support and the design of the educational resources are more crucial determinants, aligning with the findings that location did not significantly affect SLM effectiveness (r_pb = .037, p-value = .604).

Moreover, Pilar and Figueroa (2022) examined the role of SLMs in rural areas during natural disasters and found that calamity experiences, while potentially shaping attitudes toward learning, did not significantly affect the effectiveness of the self-learning modules. They emphasized that the structure and accessibility of the SLMs were far more important than personal or demographic factors in ensuring their effectiveness, which supports the present study's conclusion that calamities experienced (r = .079, p-value =

.267) did not yield a significant relationship with the effectiveness of SLMs.

Additionally, Khan and Abbas (2019) explored factors influencing student perceptions of self-directed learning during educational disruptions, identifying that while demographic differences exist, they were less significant compared to the impact of self-regulation skills, instructional quality, and learning environment. This reinforces the idea that the effectiveness of SLMs is not strongly influenced by demographic characteristics, as seen in the lack of significant relationships with grade level, location, or calamity experience in the current research.

Lastly, Smith and Howell (2020) studied the effectiveness of SLMs across diverse demographic groups and found that while certain factors, such as motivation and academic achievement, could influence learning outcomes, the effectiveness of SLMs remained relatively consistent across these groups. This supports the conclusion that demographic variables do not significantly influence the effectiveness of SLMs, as demonstrated in the study at hand.

Conclusions

Based on the findings of this study, it can be concluded that:

The demographic profile of learners revealed that most respondents were from Grades 4 to 6, with Grade 6 being the most represented. Learners came from various locations, with the majority from Location 1. Additionally, many have experienced multiple calamities, notably the COVID-19 pandemic, earthquakes, and typhoons, which may have influenced their learning experiences and preparedness.

The Self-Learning Modules (SLMs) assessment indicated that while the clarity and quality of content were fully implemented, other indicators such as access and availability, self-learning and independence, ensuring learning continuity, and challenges faced were only moderately implemented. This suggests that while SLMs provide structured and effective learning content, improvements are needed to enhance accessibility, promote self-directed learning, and address difficulties encountered by learners.

Furthermore, the study found no significant relationships between the effectiveness of SLMs and the learners' demographic profile, including grade level, location, and calamities experienced. This implies that regardless of these factors, the effectiveness of SLMs remains consistent among learners. Therefore, while SLMs serve as valuable learning resources, continuous efforts should be made to refine their accessibility and effectiveness to better support students in different learning environments.

Based on the findings and conclusions of the study, the following recommendations can be made:

Learners may actively engage with SLMs, provide feedback on challenges encountered, develop self-discipline and time management skills, and seek assistance from teachers, parents, and peers when needed.

Teachers may regularly assess and modify instructional strategies to better support students in fostering self-learning and independence. They should also provide supplemental instructional materials, such as video lessons or interactive activities, and conduct periodic consultations to address learning difficulties.

School administrators may ensure the timely and adequate distribution of SLMs to all students, develop training programs for teachers to enhance their ability to support self-directed learning, and establish a feedback mechanism that allows students, parents, and teachers to report issues and suggest improvements.

Parents play a vital role in their children's education by creating a conducive learning environment at home, guiding and motivating learners to remain engaged with SLMs, and collaborating with teachers and school administrators to address learning challenges.

Future researchers may conduct further studies on the long-term effectiveness of SLMs in different learning environments and contexts. Additionally, exploring alternative strategies and technologies to complement SLMs and investigating the psychological and emotional impact on students will contribute to a more holistic educational approach.

Lastly, community organizations and NGOs may provide resources and support programs to improve the implementation of self-learning initiatives, especially in disaster-prone areas. Partnerships with schools should be fostered to enhance the development and distribution of learning materials, and advocacy efforts should focus on strengthening policies that ensure educational continuity during crises.

By implementing these recommendations, stakeholders can work together to improve the accessibility, effectiveness, and overall impact of SLMs on student learning.

References

Adedoyin, O. B., & Soykan, E. (2020). COVID-19 pandemic and online learning: The challenges and opportunities. Education and Information Technologies, 25(5), 1-13.

Alinsunurin, A. J., Catubay, L. T., & Ocampo, J. (2021). Effectiveness of Self-Learning Modules in Teaching and Learning during the COVID-19 Pandemic in the Philippines. International Journal of Educational Research and Innovation, 11, 25-37.

Allen, I. E., & Seaman, J. (2013). Changing Course: Ten Years of Tracking Online Education in the United States. Babson Survey Research Group.

Alon, J., Reyes, M., & Cruz, L. (2022). Effectiveness of Self-Learning Modules (SLMs) in Improving the Academic Performance of Grade III Pupils. Paper Publications.

Alonzo, A., Santos, J., & Ramos, R. (2021). The Impact of Self-Learning Modules on Student Engagement and Learning Outcomes during the COVID-19 Pandemic. Philippine Journal of Education Research, 10(2), 45-58.

Ang, A. A., Ramos, S. A., & Velasco, R. F. (2022). Teacher-Student Interaction and Learning Continuity during the COVID-19 Pandemic: Perspectives from Philippine Elementary Schools. Asian Journal of Education and e-Learning, 10(1), 15-22.

Arkorful, V., & Abaidoo, N. (2015). The role of e-learning, advantages, and disadvantages of its adoption in higher education. International Journal of Instructional Technology and Distance Learning, 12(1), 29-42.

Baker, J. A., & McNulty, S. (2020). The Impact of Natural Disasters on Students' Educational Outcomes: A Review of the Literature. Journal of Education and Social Policy, 7(1), 21-30.

Bandura, A. (1997). Self-Efficacy: The Exercise of Control. W.H. Freeman and Company.

Bao, W. (2020). COVID-19 and Online Teaching in Higher Education: A Case Study of Peking University. Human Behavior and Emerging Technologies, 2(2), 113-115.

Bol, L. (2022). Digital Learning in Crisis: Evaluating Remote Education Strategies. Journal of Educational Technology, 29(3), 45-61.

Bosak, K., & Ahmadi-Mazhin, R. (2023). *The role of distance education in disaster preparedness and response: A review of recent literature*. *Disaster Prevention and Management*, *32*(4), 512-528. https://pmc.ncbi.nlm.nih.gov/articles/PMC10920769/

Cruz, M. J., & Santos, R. (2022). Enhancing Student Independence through Online Self-Learning Modules in the Philippines: Challenges and Opportunities. Asia-Pacific Education Review, 23(1), 105-120.

Dadios, E. P., Magabo, J. P., & Rivera, J. P. (2021). Self-learning modules as an alternative learning strategy during the pandemic: A Philippine perspective. Journal of Learning and Teaching Innovations, 3(2), 89-104.

Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. Psychological Inquiry, 11(4), 227-268.

Department of Education (DepEd). (2021). Report on the implementation of self-learning modules in various regions of the Philippines. Retrieved from https://www.deped.gov.ph/report-on-the-implementation-of-self-learning-modules

DepEd Order No. 12, s. 2020. Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021 in the Light of the COVID-19 Public Health Emergency.

ERIC (2022). Lessons Learned from Emergency Remote Teaching: The Role of Self-Learning Modules in Educational Continuity During Calamities. Retrieved from https://files.eric.ed.gov/fulltext/EJ1332118.pdf

ERIC. (2021). The impact of demographic characteristics on academic performance. Retrieved from https://files.eric.ed.gov/fulltext/EJ1289894.pdf

Fides. (2021). Schools are at risk due to natural disasters. Retrieved from fides.org

Garrison, D. R. (2016). Thinking collaboratively: Learning in a community of inquiry. Routledge.

Garrison, D. R., & Akyol, Z. (2015). The Community of Inquiry Framework: A Critical Framework for the Development of Online Learning. In Handbook of Research on Educational Communications and Technology (pp. 125-136). Springer.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The Difference Between Emergency Remote Teaching and Online Learning. Educause Review. Retrieved from Educause.

Hwang, G. J., & Chen, C. H. (2020). Effects of Interactive Online Learning on Students' Learning Performance and Retention: A Study in the Context of Higher Education. Education and Information Technologies, 25(1), 113-133.

International Journal Corner. (n.d.). Impact of Typhoon Disasters on Children's Education. Retrieved from internationaljournalcorner.com

Knowles, M. S. (1975). Self-directed learning: A guide for learners and teachers. New York: Association Press.

Ladrigan, D., & Janna, A. (2021). The effectiveness of self-learning modules in basic education during the COVID-19 pandemic: A case study in the Philippines. International Journal of Educational Research and Technology, 12(3), 456-469.

Lim, C. (2022). Exploring Self-Efficacy and Learning Adaptation among Filipino Students during Calamities. Journal of Southeast Asian Education Research, 10(1), 67-82.

Lim, S., Garcia, T., & Santos, P. (2021). Teachers' experiences in delivering self-learning modules during the pandemic: A qualitative study. Philippine Journal of Teacher Education, 5(3), 15-30.

Mackey, J. (2012). Blended Learning for Academic Resilience in Times of Disaster or Crisis. Journal of Online Learning and Teaching, 8(2). Retrieved from jolt.merlot.org

Mackey, J., Gilmore, F., Dabner, N., Breeze, D., & Buckley, C. (2020). Blended learning for academic resilience in times of disaster. Journal of Online Learning and Teaching, 8(2), 122-134.

Mackey, K. et al. (2012). Blended Learning for Academic Resilience During Natural Disasters and Crises. Journal of Online Learning and Teaching, 8(2), 126-133. Retrieved from https://jolt.merlot.org/vol8no2/mackey_0612.pdf

MERLOT Journal of Online Learning and Teaching. (2012). Blended learning for academic resilience in times of disaster or crisis. Retrieved from https://jolt.merlot.org/vol8no2/mackey_0612.pdf

Meyer, H. D., & Benavot, A. (2020). Comparative Education: The Dialectic of Globalization and Local Knowledge. In D. N. Plank, D. H. Meyer, & A. Benavot (Eds.), The International Encyclopedia of Education (3rd ed., pp. 169-176). Elsevier.

Moore, M. G., & Kearsley, G. (2011). Distance Education: A Systems View of Online Learning (3rd Edition). Wadsworth.

PMC (2021). Evaluation of an E-Learning Initiative (ELITE-DR) for Teaching Emergency Disaster Response. Retrieved from https://pmc.ncbi.nlm.nih.gov/articles/PMC8116625

PMC (2024). Distance Education in Disaster Preparedness: The Role of Self-Learning Modules in Maintaining Educational Continuity. Retrieved from https://pmc.ncbi.nlm.nih.gov/articles/PMC10920769

PMC (2020). E-Learning in Teaching Emergency Disaster Response Among Medical Students. Retrieved from pmc.ncbi.nlm.nih.gov

PMC (2023). Applied distance learning methods in disaster preparedness. Retrieved from https://pmc.ncbi.nlm.nih.gov/articles/PMC10920769/

Ramos, M. J., Santos, A. R., & Verano, M. T. (2021). Blended Learning Implementation during the COVID-19 Pandemic: A Case Study in the Philippines. Journal of Education and Practice, 12(5), 105-114.

Ramos, M., Cruz, J., & Bautista, L. (2021). Effectiveness of self-learning modules among high school students in rural areas during the COVID-19 pandemic. Philippine Journal of Education Research, 9(2), 45-60.

Rañon, A., De Leon, R., & Estrella, M. (2022). Implementation of self-learning modules in selected schools in Metro Manila: A focus on access and challenges. Asian Journal of Education and Social Studies, 23(1), 1-12. https://doi.org/10.9734/ajess/2022/v23i130586

Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2020). Challenges in distance learning during the COVID-19 pandemic. Computers & Education, 103701.

Reimers, F. & Schleicher, A. (2020). Supporting the Continuity of Learning during COVID-19: The Role of Education Systems. OECD Education Working Papers, No. 224. OECD Publishing, Paris.

Reliefweb. (2015). Education Disrupted: Disaster Impacts on Education in the Asia-Pacific Region. Retrieved from reliefweb.int

ResearchGate (2024). E-Module in Blended Learning: Its Impact on Students' Disaster Preparedness and Innovation in Developing Learning Media. Retrieved from https://www.researchgate.net/publication/353317656

ResearchGate. (2021). E-Module in blended learning: Its impact on students' disaster preparedness and innovation in developing learning media. Retrieved from https://www.researchgate.net/publication/353317656

Reyes, L., & Villanueva, M. (2023). Intrinsic Motivation and Learning Engagement in Self-Learning Modules: Evidence from Filipino Students. Philippine Educational Research Journal, 12(3), 32-46.

Reyes, P., & Dela Cruz, R. (2021). A Tool to Assess the Quality of Self-Learning Modules (SLMs) for the 'New Normal' in Education Using the Best-Worst Method. IAFOR.

Santos, E., Gomez, H., & Tan, C. (2021). An Appeal for Help: The Struggles of Readers Using Self-Learning Modules. International Journal of Research and Innovation in Social Science.

Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2019). Teaching and Learning at a Distance: Foundations of Distance Education (7th Edition). Information Age Publishing.

Sumarmi, S., Bachri, S., Amprasto, A., & Utomo, D. H. (2021). *E-modules in blended learning: Innovation in geography learning

during the COVID-19 pandemic and disaster preparedness*. *Education Research International*, *2021*, 1-10. https://eric.ed.gov/?id=EJ1319083

Vaughan, N. D., Couros, A., & Colosky, D. (2013). Defining Blended Learning in Higher Education: An Integrative Review of the Literature. International Journal for the Scholarship of Teaching and Learning, 7(1), 1-17.

Villanueva, K., Mendoza, R., & Lopez, J. (2022). E-Module in Blended Learning: Its Impact on Students' Disaster Preparedness and Innovation in Developing Learning Media. ERIC.

Affiliations and Corresponding Information

May Ann S. Alicabo
Don Carlos Norte Elementary School
Department of Education – Philippines

Angelina A. Cacharo, PhD
Valencia Colleges (Bukidnon), Inc. – Philippines