Identifying Learners' Least-Mastered Competencies in *Filipino 11*: A Foundation for Digital Module Development

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***Abstract*—This research aims to identify the least-mastered competencies in Filipino 11 and develop a digital module to address these learning gaps. Utilizing a developmental research design, the study focused on the design, development, and evaluation of instructional materials. Guided by the Input-Process-Output (IPO) model, the study involved Filipino teachers, IT instructors, and Grade 12 students. A researcher-crafted assessment was administered to Grade 12 learners to determine areas of weakness in Filipino 11. The findings revealed that students faced challenges in the following areas: understanding the historical background of the national language, using cohesive devices effectively, interpreting language within discussions, comprehending language-related concepts, and analyzing language in digital media contexts. Based on these results, a digital module was created and structured around the 4A's instructional framework (Activity, Analysis, Abstraction, Application) in order to enhance lesson delivery. This digital module consists of five units that explore key language principles, the societal role of language, the evolution of the national language, language usage in diverse contexts, and Filipino communication skills. The module was developed using Wix, a website creation platform. For the evaluation, subject matter experts assessed the module based on content quality, instructional design, technical aspects, presentation, accuracy, and evaluation components. Findings revealed that, overall, the digital module was "highly acceptable." The study concludes that digital modules are effective tools for improving language proficiency, especially when targeting specific competency gaps. These findings imply that integrating interactive, multimedia-rich digital tools based on the 4As framework enhances language proficiency, ensures continuous learning amid disruptions, and supports personalized, flexible, and technology-driven education. Recommendations on the integration of similar tools and strategies and further exploration of its impact on student learning outcomes conclude this paper.**

***Keywords*—least-mastered competencies, digital module, *Filipino 11*, development**

I. Introduction

Communication and Research in Filipino Language and Culture—*Filipino 11* (*Komunikasyon at Pananaliksik sa Wika at Kulturang Pilipino*) is a core subject for Grade 11 senior high school students in the Philippines. The course looks into the nature, characteristics, development, and use of the Filipino language. This course emphasizes research in Filipino that focuses on its application in both communicative and socio-cultural contexts. The goal of the course is to allow students to explore the intricacies of Filipino as it operates in various cultural and social situations, enhancing their understanding of the language's role in shaping identity and community [1].

The Philippines is recognized as one of the top English-speaking countries in Asia [2]. With to the advent of technology and the influence of social media, learners are becoming adept at speaking in English more than their local language. This leads to low comprehension among the least-mastered competencies in the Filipino language. This situation calls for an innovative approach to the educational system to balance language proficiency with the demands of a tech-driven society.

Innovative approaches across a variety of disciplines are revolutionizing educational and business environments, making the effective use of digital technologies increasingly crucial. Rapid advances in digital technologies require individuals to learn new skills to stay relevant [3]. Integrating technology in education is key to equipping students with lifelong learning, adaptability, and creative problem-solving skills [4]. This shift affects relationships, information sharing, societal views, and daily life [5]. Innovative digital technologies like IoT, AI, and SMAC (social media, mobile networks, analytics, and cloud) are key to modernizing education, enabling real-time simulations, human-machine interactions, and virtual collaborations that create dynamic learning environments [6, 7]. As core components of Education 5.0, they prepare students for Industry 5.0 and a sustainable future by fostering critical thinking, adaptability, creativity, and leadership—beyond just technical skills [7, 8].

Aligning the goals of Education 5.0 with the present curriculum of Higher Education Institutions emphasizes rigorous standards in teaching, learning, and assessment practices to ensure quality education. This involves not only the creation of high-quality educational resources but also the professional development and training of teachers to effectively integrate digital tools and pedagogical innovations in the classroom [9]. As education evolves to meet the demands of a digitally connected and data-rich world, adopting the principles of Education 5.0 provides a framework for equipping students with the knowledge and skills needed to navigate complex global challenges while contributing to sustainable development.

In this context, the development of digital instructional materials for *Filipino 11* can significantly contribute to addressing the least-mastered competencies while aligning with Education 5.0's objectives. By integrating digital modules that support interactive and self-directed learning, educators can foster a more engaging, flexible, and adaptive learning experience. This approach not only helps students master subject-specific competencies but also prepares them with essential skills for lifelong learning and future workforce demands. Through this alignment with Education 5.0, educational institutions can contribute to a forward-thinking, sustainable educational system that empowers students to be active participants in the evolving landscape of Industry 5.0.

In 2018, the Philippines participated in the Program for

International Student Assessment (PISA), which provided key data on the nation's education system. Out of 79 countries, the Philippines ranked last in reading and second to last in science and mathematics, highlighting major weaknesses that prompted urgent government reforms to improve basic education quality [1]. Research shows that traditional teaching methods used in the Philippines are less effective compared to modern, supportive strategies that can boost reading performance [10]. Moreover, compared to high-performing countries like Singapore and regions in China, which offer dynamic teaching methods and better resources, Philippine schools often rely on outdated practices that hinder student success [11–13]. To address these issues, the Philippines must adopt innovative, student-centered teaching approaches that improve learning outcomes and better prepare students for a globalized world.

The swift digital transformation of education has highlighted the necessity of incorporating digital tools to improve learning experiences and results. Digital modules offer an interactive way to present knowledge and build digital literacy, critical thinking, and self-directed learning skills. They allow instructors to provide tailored, accessible opportunities that meet diverse student needs, and research shows that their integration enhances understanding and competency across disciplines [14]. The use of digital modules in education is crucial for improving students' autonomy in the learning process, as it extends beyond traditional classrooms [15]. The proliferation of digital technology in general education has rendered the enhancement of learners' digital literacy a critical issue [16]. Mastery of digital skills is crucial for educators, highlighting the necessity to develop new informational competencies in the information society [17].

E-modules have emerged as a crucial instrument in language acquisition owing to their myriad advantages and efficacy. Digital modules boost student engagement and independence by offering interactive, multimedia content that makes learning fun and self-directed [18, 19]. They also allow students to access resources anytime, which is especially useful for those in rural areas or with busy schedules [20, 21]. Furthermore, studies indicate that e-modules significantly enhance language proficiency; for instance, students engaged with e-modules for Indonesian language acquisition shown notable improvements in media literacy and overall performance [20, 22]. Digital modules can be designed to promote specific competencies, such as problem-solving and critical thinking [23, 24]. For example, interactive digital modules have been found valuable in advancing pedagogical skills in inclusive education, with a significant increase in post-test scores for teachers.

Choosing an easy-to-use e-learning platform that supports multiple languages is key [25]. Many systems miss crucial elements like idiomatic understanding, cultural context, and support for smaller languages [25]. Technical issues, such as poor resource organization and complex sentiment analysis modules, also arise. To ensure effective learning—especially for speaking skills—combining online instruction with face-to-face interactions is vital [26, 27], making a blended learning model the best approach [28].

Several authors suggest strategies to overcome resistance to e-modules [29–33]. For instance, using exam-relevant content can boost acceptance among both students and teachers [29]. Additionally, pairing e-modules with in-person training and interactive webinars accommodates different learning styles and improves the overall educational experience.

This approach utilizes the advantages of each medium, guaranteeing that the different elements enhance one another efficiently [30]. Facilitating professional development for educators and establishing a community of practice for the exchange of e-learning material and methodologies helps mitigate resistance. Acknowledging and incentivizing innovative e-learning techniques can enhance their uptake [31]. It is essential to guarantee the availability of the requisite infrastructure and resources. This encompasses dependable internet connectivity, suitable software, and technical assistance, which might mitigate certain practical obstacles to e-module integration [31, 32]. Formulating a robust strategic plan and choosing appropriate instructional design models can enhance the quality and efficacy of e-learning. This planning should be regarded as an innovative method that improves the entire educational provision [33].

The West Visayas State University, akin to several schools worldwide, has adjusted to the new normal by adopting online learning. Prevalent methodologies encompass synchronous video conferencing platforms (e.g., *Zoom*, *Google Meet*, and *Microsoft Teams*) and asynchronous techniques, such as recorded lectures. Studies demonstrate that video-based methodologies can successfully supplant conventional instructional approaches, yielding comparable educational results [34]. Online education has adapted well to the digital age. Ehlers *et al*. (2006) [35] define e-learning as using online technologies to enhance education and provide digital resources. Users appreciate the easy access to teachers and course materials, which reduces effort, travel expenses, and other costs. Additionally, e-learning streamlines activities such as administration, lecture preparation, and attendance monitoring [36]. Research in Jamaica has demonstrated that tropical storms adversely affect student academic performance such that more severe storms lead to substantial reductions in test scores. This indicates that adverse weather not only disrupts class schedules but also has long-term negative effects on academic achievement [37].

In the Philippines, it is common for classes to be suspended due to adverse weather conditions, particularly during typhoon season. Schools and universities adhere to specific protocols that align with the storm warning signals indicating the weather's severity. When no storm warning signal is in place, local government units (LGUs) have the authority to declare localized class suspensions. The timing of these announcements can vary, as some LGUs decide early while others may delay their decisions.

Local authorities in Iloilo have taken proactive measures to protect students and residents during severe weather. The local government unit approved executive orders to suspend classes during typhoons and extreme heat, ensuring community safety during dangerous weather events [38]. On April 1–2, 2024, the city mayor further extended these measures by halting face-to-face classes in all schools—from preschool to senior high—due to high temperatures and health risks linked to El Niño, urging the adoption of alternative learning methods to keep education going [39].

While these actions are essential for safeguarding the community, they also disrupt regular classroom instruction and may lead to gaps in student learning that need to be addressed.

Developing a digital module for *Filipino 11* is essential in the current educational environment, especially considering the recurrent interruptions to in-person lessons caused by severe weather events in areas such as Iloilo City. Recent incidents demonstrate that courses are frequently suspended due to typhoons, monsoon rains, or high temperatures, hence affecting students' learning continuity [38, 39]. By utilizing digital modules, educators may guarantee that learning is accessible and continuous, irrespective of external influences. This strategy not only meets the urgent requirement for flexible and adaptive learning environments but also corresponds with global trends in incorporating technology in education to improve learning outcomes and equip students for contemporary challenges.

The need for digital modules is particularly urgent in areas like Iloilo City, where frequent suspensions of face-to-face classes due to severe weather events interrupt learning. Digital modules ensure learning continuity, regardless of external disruptions, and support a flexible, adaptive educational environment. This is vital for *Filipino 11*, where the curriculum explores the role of language in cultural identity and community formation, underscoring the need for accessible, consistent instruction.

Existing research on digital education mainly emphasizes broad technological integration rather than addressing the unique challenges of Filipino language instruction in Filipino 11. There is a clear gap in studies that develop and assess digital modules specifically targeting the least-mastered competencies, and a lack of focus on ensuring learning continuity during disruptions, such as severe weather events. Addressing these gaps is essential for enhancing language proficiency and creating resilient, modern educational practices [40]. There is a need for more research on digital technology integration in the Philippines [41].

By adopting digital learning modules, educational institutions can mitigate the impacts of weather-related disruptions, address competencies in need of improvement, and align with global educational trends. This study aims to contribute to educational improvement by developing innovative instructional materials for *Filipino 11*, offering benefits to administrators, curriculum planners, and teachers by promoting digital learning and multimedia-enhanced educational content. Future research could explore the impact of these materials on language skills and academic performance, advancing educational innovation. It also encourages multimedia-enhanced educational materials, empowering students with self-paced learning options, and promoting parental involvement in education. Future research could explore the effectiveness of these packages in improving language skills and academic performance, contributing to ongoing educational innovation.

Unlike the usual broad scope of previous research in Filipino curriculum, this study is specific in terms of its targets: learners, topic, and use of the digital module. the major objective of this investigation is to pinpoint the precise competencies in *Filipino 11* that students find the most difficult to master. It sought to create specialized instructional resources designed to address these inadequately learned competencies to meet the distinct needs of learners. The study examined the characteristics and composition of this material to ascertain its efficacy and appeal to learners. The study also collected expert evaluations of the instructional materials according to several criteria, including content quality, instructional effectiveness, technical aspects, presentation, organization, accuracy, relevance of information, and the quality of assessment components. Specifically, this study sought to answer the following questions:

1) What are the students' least-mastered competencies in *Filipino 11*?
2) What instructional material can be developed and what features can be produced to cater to the least-mastered competencies of learners?
3) What is the experts' evaluation of the level of acceptability of the instructional material as to (a) content, (b) instructional quality, (c) technical quality, (d) presentation and organization, (e) accuracy and up-to-dateness of information, and (f) assessment?

This paper is structured as follows: the methodology section covers key elements such as research participants, ethical considerations, and data collection instruments. The research procedure is detailed using the input-process-output framework. The results and discussion section follows, leading to the conclusions, and recommendations.

II. Methodology

A. Research Design

The research employed a developmental research design, systematically investigating the creation, implementation, and evaluation of educational processes, products, and programs. As defined by Seels and Richey (1994) and cited by Nelson (2004) [42], this approach ensures that educational components meet criteria for internal consistency and effectiveness. Developmental research may focus on specific instructional design projects, task execution, or overall process analysis, each evaluated for its contribution to educational improvement.

Moreover, this study utilized Type I developmental research, focusing on the design, development, and evaluation of a specific educational tool or product, as described by Richey and Klein (2005) [43]. Type I research is highly context-specific, ensuring a detailed examination of both the process and the impact on learners' interaction with the developed materials. In this case, the research supports the development of a digital module for Filipino 11, incorporating comprehensive assessment and analysis to improve its effectiveness in real-world educational settings.

The study collected both quantitative and qualitative data. Quantitative data include survey scores, reliability coefficients, and descriptive statistics (e.g., means and ranks). Qualitative data are also gathered through expert evaluations, feedback, and observations regarding the design, usability, and instructional quality of the module. This mixed-methods approach supports a comprehensive evaluation of the educational tool in real-world settings.

Furthermore, the IPO (Input-Process-Output) model

served as the foundation for the processes in this study (See Fig. 1). Fig. 1 presents the research paradigm that demonstrates the processes involved in the research.

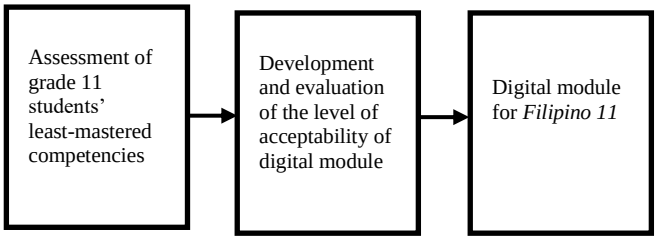

Fig. 1. Development and evaluation process of the digital module for Filipino 11.

Sampling. The study employed purposive sampling to select teacher evaluators based on their specialized expertise in Filipino language instruction. Specifically, six teachers were chosen to validate and provide iterative feedback on the digital module. In addition, a convenience sampling approach was used for the Grade 12 students, drawing participants from specific sections who had completed the Filipino course. This combination ensured that the evaluators were highly qualified for in-depth insights, while the student sample provided a practical basis for assessing the least-mastered competencies in the curriculum. Despite the small number of participants (i.e., 6 teacher evaluators), the purposive sampling employed ensured that the evaluators are highly qualified individuals for the evaluation of the module. Small expert samples are deemed appropriate in specific cases such as when exploring novel issues where deep insights are more critical than broad consensus; for example, validating or evaluating the acceptability of a novel digital module [44]. Moreover, the structured evaluation framework and the consistency and depth of experts' feedback ensures the reliability of the findings by exercising objectivity and certainty [44].

Participants. This study involved faculty teaching Filipino subjects, IT instructors and Grade 12 students as participants in the various stages.

Teachers. Six teachers were chosen to be the participants of the study. From this number, four faculty who were teaching Filipino subjects validated the digital module. These teachers were purposively chosen based on their expertise in teaching different subjects in Filipino subjects either in the senior high school or in the tertiary level. In addition, these four Filipino teachers, together with two Information Technology teachers also served as evaluators of the level of acceptability of the digital module for *Filipino 11*. They were further requested to give comments and suggestions on every part of the digital module as their comments are deemed necessary and integral to the iterative process of the design. Their comments and suggestions were used in the development and improvement of the digital module.

Grade 12 students. Grade 12 students served as participants for the study. A total of 41 students from STEM 2A of the Iloilo National High School-Senior High School Department, enrolled during the first semester of the academic year 2019-2020, participated in the pilot testing phase. These students, however, were excluded from taking the test to identify the least-mastered competencies.

Ethical considerations. The current study was conducted in accordance with the American Psychological Association's APA 2009 [45] ethical guidelines. Moreover, ethical rules of privacy and confidentiality were adhered to in the conduct of research. This study must ensure that it "does no harm" to participants. The researcher adhered to the subsequent ethical guidelines during the execution of the study: (1) Authorization to conduct the study among Grade 11 students was obtained from the university president of the West Visayas State University, as well as the principal and assistant principal of Iloilo National High School–Senior High School Department; (2) the researcher assured participants that they would not incur any harm related to the study; (3) should a participant experience discomfort and choose not to respond to the questions, the researcher acknowledged their right to abstain; and (4) the anonymity of students was maintained, and their confidentiality upheld.

Data gathering instruments. This study used a number of instruments to gather the data needed to ascertain the least-mastered competencies of students and to develop the digital module for Grade 11 Filipino course. The researcher used two instruments, namely: a researcher-made test and an evaluation form.

Researcher-made test. The researcher-developed test for *Filipino 11* was constructed using a table of specifications to identify learners' least-mastered skills. It initially included 115 multiple-choice items covering five chapters of the Grade 11 Filipino curriculum, validated by experts, and pilot-tested on a Grade 12 STEM strand group. After analysis, the test was reduced to 69 items on account of some questions which did not meet the required discrimination coefficient of 0.20. The test achieved a reliability score of 0.71 using the Kuder-Richardson 20 (KR-20) formula, indicating acceptable reliability. Discrimination indices were classified according to ScorePak® guidelines, ensuring that items predominantly and positively correlated with overall performance. Moreover, to score the learners, one point was given for every right answer and zero for the wrong response.

Evaluation form. The evaluators of the Instructional Material (IM) employed the West Visayas State University's [46] modified evaluation form for non-printed instructional lessons, document number WVSU-IQA-SOI-05-F02, to assess the acceptability of the digital module regarding content, instructional quality, technical quality, presentation and organization, and assessment. This instrument has also completed the validation process. The assessment form has the assessors' names, instructions, and metrics for each criterion. The evaluators may decide whether to disclose their names. The guidelines for filling out the evaluation form are located in the instructions section. The primary segment of the evaluation form involves evaluators assessing the digital module about content, instructional quality, technical quality, presentation and arrangement, accuracy and currency of material, and assessment. The grading system consisted of the following categories: Very Acceptable (VA) - "4", Acceptable (A) - "3", Moderately Acceptable (MA) - "2", Barely Acceptable (BA) - "1", and Not Acceptable (NA).

B. Data Collection

This study employed the IPO framework to produce digital module for *Filipino 11*, incorporated into the developmental research technique. The approach is elaborated upon in the

following explanations:

Input Stage. The study commenced by securing the necessary permissions from key institutional authorities, the principal as well as assistant principal of Iloilo National High School–Senior High School to ensure full adherence to institutional protocols and ethical guidelines. Six teachers (four experts in Filipino subjects and two IT instructors) were selected to evaluate the module, and 41 Grade 12 students participated in the pilot testing phase, providing valuable insights for final revisions.

To identify the least-mastered competencies, the researchers developed a test covering five core topics: Language Concepts, Functions of Language in Society, History of the National Language, Language Situations in the Philippines, and Communicative Competence of Filipinos. The initial test consisted of 115 multiple-choice items (five per competency) and underwent face and content validation by experts from West Visayas State University to ensure its relevance and accuracy. Based on pilot testing and item analysis, the test was revised to 69 items (three per competency) to meet established discriminant criteria. The test's reliability was confirmed with a KR-20 coefficient of 0.71, demonstrating its internal consistency and suitability for measuring the targeted competencies.

The final survey was then administered face-to-face to the 111 Grade 12 students from three sections: HUMSS 12C (n = 36), GAS 12B (n = 33), and ABM 12B (n = 42). All participants had completed the Grade 11 Filipino course during the previous semester. After administering the test, the researcher systematically analyzed the results. Tests were checked, scores were categorized by competency, and frequency scores were totaled. The mean score for each competency was calculated, and competencies were ranked based on performance. The bottom five competencies were identified and subsequently used for the next phase of the study.

Process stage. This stage employed a systematic approach in designing, testing, and refining digital modules. Through needs analysis, expert validation, and iterative revisions, the digital module for Grade 11 Filipino was continually improved to effectively address students' learning gaps and provide an engaging, comprehensive educational experience. This stage outlines the steps taken to design, construct, and refine digital modules aimed at improving students' least-mastered competencies in *Filipino 11*. Clear, measurable learning outcomes were defined, and the content was organized in manageable sections, progressing from basic to advanced concepts. *Wix* [47], a website builder, was utilized in making the digital module. The initial material was validated by a panel of six teachers, whose feedback led to revisions to improve clarity and effectiveness of the DM. Then, the DM was finalized based on the feedback of the validators. Topics were carefully balanced so as to avoid overloading students with information and to ensure that vertical articulation follows smooth progression from junior to senior high school. Integration across subjects was emphasized through performance tasks in relation to language, arts, values, research, and technology. The continuity of lessons followed a spiral approach, where activities became more complex over time, reinforcing lasting knowledge and skills. Topics were arranged in sequence from simple to complex to align with students' learning needs.

In designing the digital module, the following steps were followed:

Determining initial data. In determining the initial data for the development of the digital module (DM), the gathered data from the input stage served as the basis in developing the blueprint of the DM.

Determining the content. After the initial design plan had been identified, the researcher proposed the following content and features for the digital module: *Home*, *About the Teacher*, *Prologue*, *Pre-Test*, and the f*ive units* included in the DM. The DM also follows the 4A's model in lesson development. Here are the following segments in every phase:

Activity: Teachers ignite curiosity and catch students' interest by using engaging activities that build on their prior knowledge.

Analysis: During this phase, teachers break down, organize, and simplify information, enabling students to delve deeper into the subject. This helps activate students' cognitive processes, transforming information into lasting knowledge.

Abstraction: In this stage, students process and express the content in their own words. By using open-ended questions, teachers guide students to connect concepts to real-life experiences, fostering deeper understanding and making knowledge more memorable.

Application: Students are encouraged to apply what they have learned to solve problems and transfer their knowledge to real-world scenarios.

Design creation. To ease posting of contents on the website, a prototype of a digital module was designed and created. The researcher used *Wix*, a versatile, no-code platform for building websites, offering a range of business tools that support projects from personal blogs to sophisticated online business hubs. It includes integrated features for eCommerce, marketing, scheduling, branding, and more. As a longstanding player in the website development field, *Wix* has established itself as a leader in web design and a pioneer in adopting innovative technologies like AI-driven website creation [47].

Design finalization. Finally, after determining the initial data as well as the proposed content and creating a prototype website as seen in Fig. 1, the researcher finalized the planning and design phases. Significant improvements for the development of the digital module were made based on the ideas and recommendations of the validators/evaluators. The key and visible part of this stage is the layout design and development of the proposed digital module.

Output Stage. This stage is a critical phase in the instructional design process. The final version of the digital module was distributed to the evaluators by sharing the website link. Fig. 2 shows a screenshot of the DM prototype, which was used in the evaluation process after incorporating the suggestions and recommendations from the research instrument validators.

Through careful evaluation, data analysis, and revisions, the digital module (DM) is refined to meet the needs of students and teachers. Its primary goal is to enhance the digital module for the Grade 11 Filipino course, ensuring that the material is accessible, effective, and ready for use both

inside and outside the classroom for learners' convenience. To further improve accessibility, the refined digital module can be accessed through the website https://kwkpfilipino.wixsite.com/portfolio-1, providing students and teachers with an easy-to-navigate platform for continuous learning. This online platform ensures that the DM remains available anytime, supporting flexible and self-paced learning experiences.

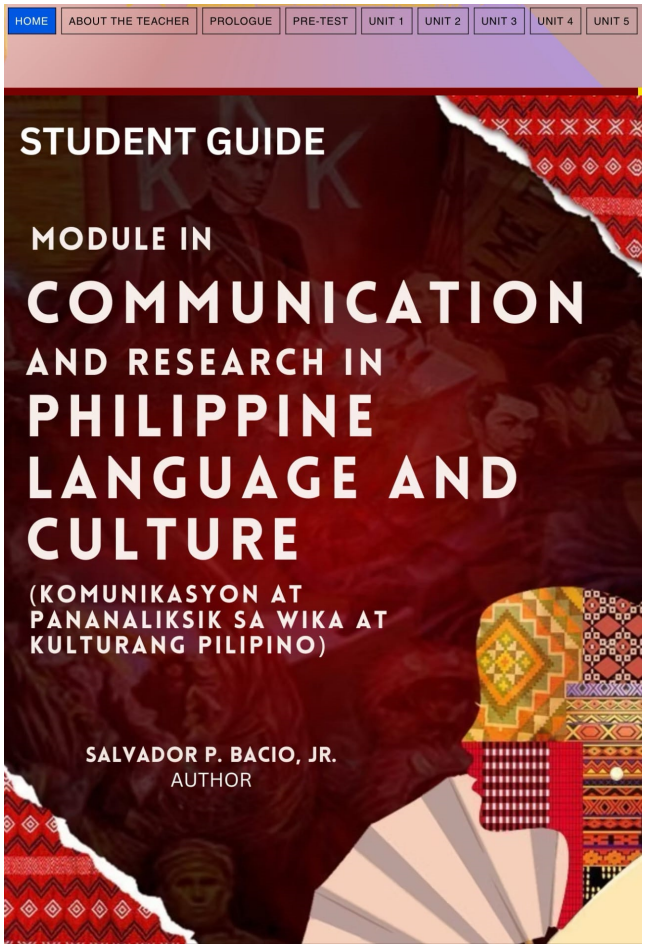

Fig. 2. The digital module prototype.

C. Data Analysis Methods

The data analysis of this study involved a systematic approach using descriptive statistics. After the researcher-made test was administered, each student's responses were checked and scores were organized by specific language competencies. Frequency counts were totaled, and the mean score for each competency was calculated to create a clear numerical picture of students' mastery. This method allowed the competencies to be ranked, with particular attention given to the bottom five areas where students performed the poorest. These statistical tests and measures were essential because it provides an objective baseline that highlights the aspects of the course *Filipino 11* that require targeted intervention. This, then, served as guide in the subsequent development of the digital module.

In addition, reliability testing using the KR-20 formula ensured that the assessment tool was consistent and dependable, confirming that the findings represent true learning gaps.

Furthermore, expert evaluations of the instructional material were analyzed using descriptive statistics—calculating mean ratings and standard deviations across criteria such as content, instructional quality, overall technical quality, presentation and organization, accuracy and up-to-datedness information, and assessment—to objectively determine its overall quality. This quantitative analysis not only pinpointed strengths and areas for improvement in the digital module but also provided evidence-based support for refining instructional practices and enhancing curriculum development.

III. Results and Discussion

A. Least-Mastered Competencies in Filipino 11

The findings of the survey of 111 students in *Filipino 11* as shown in Table 1 indicated the top five least-mastered competencies that underscored specific areas of language learning that require targeted instructional interventions. The topmost competency that needs intensive attention calls for learners' awareness of the scope and importance of the National Language, signifying students' insufficient understanding of the historical and socio-political context of the Filipino language, which is essential for deeper cultural appreciation. Tying up closely is the competency that entails learners' mastery in using cohesive devices for language use, which further suggests a need to enhance their constructive ability for effective and coherent communication in both academic and informal setting.

Table 1. The five least-mastered competencies of Grade 11 Filipino course

COMPETENCY	f	%	Rank
Identifies the events that led to the formation and development of the National Language	29	25.83	1
Uses cohesive devices in explaining and providing examples of language use in society	30	26.73	2
Interprets the words used in the discussion	31	27.63	3
Determines the meanings and significance of language-related concepts	37	33.63	4
Identifies the different uses of language in statements read from blogs, social media posts, and others	38	33.94	5

The third least-mastered competency focuses on learners' knowledge about lexical analysis through oral or written discourse. The lack or absence of this competency presupposes a serious challenge on both teacher and learner in expanding vocabulary comprehension and contextual understanding in their day-to-day activities, even in an act of reading and critical thinking. Meanwhile, semantic difficulties in reading the lines, or much worse, reading between the lines (as shown in the third competency) may serve as barriers in a communication process as they reveal gaps in students' abstract reasoning and conceptual understanding, which are skills crucial for engaging in advanced linguistic discussions. The last competency, in relation to language use in the internet, ranks fifth and this being so, despite the ubiquity of digital platforms in students' academic life, it suggests a practical need for enhanced media literacy and critical analysis of language in modern communication channels.

Research shows that incorporating technology, especially digital modules, might improve student learning outcomes to fill these gaps. Interactive, adaptive, and personalized digital modules allow students to actively participate and receive immediate feedback. This technology-based strategy makes

learning more accessible, especially for 21st-century educational difficulties, and bridges competency gaps by delivering flexible and enhanced learning environments customized to students' requirements. Such technologies can help instructors improve *Filipino 11* students' core language abilities.

Developing educational materials that target specific topics, especially those identified as least-mastered competencies, can significantly enhance students' comprehension and performance in *Filipino 11*. Several studies emphasize the importance of addressing these challenges with tailored approaches. The identified top five challenges in Filipino instruction—identifying the different uses of language in blogs and social media, determining the meanings and significance of language-related concepts, interpreting language used in discussions, and using cohesive devices to explain language in society—highlight gaps in student proficiency. These areas suggest the need for specialized instructional strategies.

To effectively tackle these challenges, integrating digital modules into the curriculum can serve as a possible solution. Digital modules can provide interactive and engaging content that caters to diverse learning styles, making complex concepts more accessible. Research literature supports this approach, indicating that technology-enhanced learning environments can lead to improved student outcomes [48, 49]. By focusing on these least-mastered competencies through targeted digital resources, educators can create a more supportive learning environment that encourages student participation and improves overall academic performance.

For instance, Felcida *et al*. [50] notes that enhancing language education through digital tools can bridge the gap between traditional teaching methods and students' real-world language use. The inclusion of digital modules not only addresses linguistic concepts but also promotes flexible learning, which is practically useful during instances of inclement weather when in-person learning is not feasible. In addition, the integration of 21st-century skills in language instruction, such as critical thinking and digital literacy, prepares students for future challenges [51] and aligns with Education 5.0 initiatives [52], which advocate for the use of advanced technologies to facilitate learning.

Moreover, by integrating cohesive devices in instructional materials [53, 54], students can better understand and articulate complex ideas in both written and spoken language such as Filipino, leading to improved language proficiency [55, 56]. Such advancements also enable educators to address challenges in evaluating linguistic nuances, an essential skill for mastering Filipino in diverse contexts.

Incorporating these strategies into a digital module can offer students a more interactive and accessible means of engaging with the Filipino language, helping them overcome existing learning barriers while simultaneously preparing them for the demands of modern education.

B. Digital Module for Grade 11 Filipino Course

After selecting the least-mastered competencies as shown in Table 2 for the *Filipino 11* course, a digital module (DM) was carefully designed and developed. The program is divided into five units, each of which has unique lessons designed to address identified learning gaps. Unit 1 consists of five lessons that cover core language principles. Unit 2 has two lessons that look at the role of language in society. Unit 3 contains three lessons that examine the history and development of the national language. Unit 4 contains two lessons that examine language use in a variety of contexts, including social media and pop culture. Unit 5 also includes two lessons that emphasize Filipinos' communicative abilities. The DM includes 14 carefully planned lessons, each of which is matched with a distinct goal competency. These lessons are intended to guarantee that students accomplish the appropriate outcomes for each unit, encouraging overall mastery of the subject. Moreover, the DM is divided into the following sections: *the Home*, which has links to all of the covered pages such as *About the teacher*, *Prologue*, *Pretest*, and the five units that includes 14 lessons for simple access. Furthermore, the components of the DM in each lesson were formatted using the 4As in lesson development: Activity, Analysis, Abstraction, and Application.

Table 2. Outline of the topics in competencies and parts of the digital module

	Topics	Competencies
Unit 1:	Language Concepts	Determine the meanings and significance of language-related concepts
Lesson 1:	Language: Definition, Characteristics, and Importance	
Lesson2:	National Language, Language of Instruction, Official Language	
Lesson3:	Monolingualism, Bilingualism, Multilingualism, Heterogeneous, Homogeneous	
Lesson4:	Register and Variations of Language	
Lesson5:	Linguistic Community, First and Second Language	
Unit 2:	Functions of Language in Society	Uses cohesive devices in explaining and providing examples of language use in society
Lesson6:	Cohesive Devices or Grammatical Cohesion	
Lesson7:	Lexical Cohesion	
Unit 3:	History of the National Language	Identifies the events that led to the formation and development of the National Language
Lesson8:	Pre-Spanish Period and Spanish Period	
Lesson9:	Philippine Revolution Period and American Period	
Lesson10:	Japanese Period and Independence Period	
Unit 4:	Language Situations in the Philippines	Identifies the different uses of language in statements read from blogs, social media posts, and others
Lesson11:	Language Situations in Social Media and the Internet	
Lesson12:	Language Situations in Other Forms of Popular Culture	
Unit 5:	Communicative Competence of Filipinos	Interprets the words used in the discussion
Lesson13:	Sociolinguistic Competence and Discourse Competence	
Lesson14:	Pragmatic, Strategic, and Grammatical/Structural Competence	
II. Parts of the Digital Module	a. Home b. About the Teacher (Tungkol sa Guro) c. Prologue (Paunang Salita) d. Pre-Test (Panimulang Pagtataya) e. Units (1-5) (Yunit 1-5)	

The design of digital modules plays a crucial role in enhancing language learning outcomes. This is supported by a study showing a statistically significant improvement in learning achievement scores among students using digital modules compared to those in traditional settings [57].

Advanced technologies incorporated into language teaching have demonstrated their ability to foster effective learning, encourage interaction, and transform teaching methodologies, resulting in overall positive outcomes [58]. The creation of digital modules for language education is shaped by emerging collaborations between linguistics and education, emphasizing the integration of digital tools that align with language content, skills, technology, pedagogy, and user experience [59].

The findings of this study align with the works of various authors. The 4As framework has been shown to enhance teaching and learning by fostering active student engagement, critical thinking, and the practical application of knowledge [60, 61]. It also plays a vital role in cultivating 21st-century skills, such as reasoning, generating alternative solutions, and collaboratively sharing ideas and experiences [62].

Fig. 3. Sample contents of the digital module.

Integrating the 4As framework into lesson planning has been associated with improved student attitudes toward learning, making lessons more enjoyable and easier to understand [63]. Additionally, the framework supports teacher professional growth by improving collaboration and communication skills, which in turn enriches students' learning experiences [64]. Research has also demonstrated that the 4As framework contributes to teachers' development in areas such as teaching and learning processes, content mastery, and fostering students' personal growth [65]. Furthermore, it has been found to enhance students' learning strategies and boost the perceived effectiveness of comprehension-focused learning approaches [66].

The sample contents of digital module can be found in Fig. 3.

C. Acceptability of Digital Module in Filipino 11 Course

This study determined the overall acceptability of the developed digital module in *Filipino 11* in terms of its content, instructional quality, overall technical quality, presentation and organization, accuracy and up-datedness of information, and assessment. Six (6) experts have examined and evaluated the developed digital module in *Filipino 11* to determine its acceptability.

Table 3 shows that the digital module in *Filipino 11* has been evaluated as *very acceptable,* achieving an overall mean score of 3.86 with a standard deviation of 0.06. This indicates that the manual meets the high standards of quality for instructional material in Filipino, with participants consistently rating it highly suitable for Grade 11 learners.

Table 3. The overall evaluation of the level of acceptability of video materials

Category	SD	M	Description
1.Content	0.08	3.79	Very acceptable
2.Instructional Quality	0.02	3.83	Very acceptable
3.Overall Technical Quality	0.11	3.86	Very acceptable
4.Presentation and Organization	0.15	3.83	Very acceptable
5.Accuracy and Up-To-Datedness of Information	0.21	3.88	Very acceptable
6. Assessment	0.00	4.00	Very acceptable
Overall Rating	0.06	3.86	Very acceptable

Note: n = 6. Interpretation is based on the following scale/criteria:1.00–1.50=Barely Acceptable, 1.51–2.50= Moderately Acceptable, 2.51–3.50= Acceptable, 3.51–4.00= Very acceptable

The evaluation of the instructional material across six categories shows a consistent rating of "Very acceptable." The highest mean score is found in the Assessment category (M = 4.00, SD = 0.00), indicating strong satisfaction with the assessment aspects. Accuracy and Up-To-Datedness of Information follows closely (M = 3.88, SD = 0.21), reflecting that the content is perceived as both accurate and current. Overall Technical Quality (M = 3.86, SD = 0.11) and Presentation and Organization (M = 3.83, SD = 0.15) suggest that the materials are well-organized and technically sound. The Instructional Quality (M = 3.83, SD = 0.02) and Content (M = 3.79, SD = 0.08) are also rated highly, affirming the material's instructional appropriateness and relevance. Overall, the instructional material is deemed to meet the users' expectations effectively in all categories.

The digital module for *Filipino 11* was evaluated by Instructional Material and Information Technology experts, and revisions were made based on their feedback. Although the module got a high evaluation, revisions were made to enhance its overall quality. For instance, specific activities were modified to simplify instructions, ensuring that teachers with varying levels of experience in using digital modules could easily follow them. Additionally, the evaluators recommended incorporating an alternative format for cases where internet access might be erratic or limited. This adjustment helps ensure the digital module remains accessible and functional even in areas where connectivity is an issue, further improving its usability.

The findings of this study align with existing literature on the role of digital modules in addressing competency gaps in language education. Students struggled with understanding the historical development of the national language, using cohesive devices, and interpreting linguistic nuances. This echo concerns regarding the declining proficiency in Filipino due to the growing dominance of English and digital communication. The literature reviewed further supports the effectiveness of digital modules in addressing such gaps, as studies have shown that e-learning tools enhance comprehension, engagement, and self-directed learning [18, 21]. Additionally, the incorporation of the 4As instructional framework in the digital module aligns with research emphasizing structured, interactive learning models that improve student performance [62]. The study's findings reinforce these claims, as expert evaluators rated the developed module as "highly acceptable," underscoring its pedagogical soundness and potential to bridge learning gaps. These findings align with Embajador's [67] conclusion, which emphasizes the importance of systematic evaluation in improving instructional materials to enhance student learning outcomes.The digital module not only serves as an immediate intervention for least-mastered competencies but also supports broader efforts to integrate relevant principles into language instruction, ensuring that students acquire both linguistic and digital literacy skills necessary for academic and professional success.

The significance of these findings is supported by Sagge and Segura [68], who observed that technology-integrated modules successfully capture learners' attention and foster knowledge acquisition and critical thinking skills for 21st-century education. Furthermore, the increasing reliance on technology in modern classrooms, as noted by Sagge and Bacio [69] highlights the importance of digital solutions, particularly in the new normal educational setup where video lessons, podcasts, and online resources have become integral to teaching and learning [70–72]. By aligning with these trends, the *Filipino 11* digital module not only addresses identified competency gaps but also prepares learners for the demands of contemporary education. Its design and continuous refinement underscore the potential of technology-driven instructional materials to enhance learning outcomes, cultivate critical skills, and adapt to evolving educational needs.

IV. Conclusion

The findings of the survey on *Filipino 11* students' least-mastered competencies reveal critical areas requiring targeted interventions to enhance language proficiency. The top-ranked challenges—understanding the historical and socio-political development of the National Language, using

cohesive devices, interpreting contextual meanings, grasping abstract language concepts, and analyzing language use in digital media—highlight gaps in historical literacy, communication skills, critical thinking, and media literacy.

Addressing these gaps calls for innovative instructional strategies that integrate technology into teaching and learning processes. Digital modules, particularly those that are interactive, adaptive, and personalized, present a promising solution to make learning more engaging and effective. These tools can support students in actively building their competencies by providing immediate feedback, flexible access, and customized learning experiences.

Educators and curriculum developers are encouraged to adopt such technology-enhanced approaches to bridge these learning gaps and cultivate 21st-century skills among *Filipino 11* students. By fostering historical awareness, critical reasoning, and media literacy, these interventions can contribute to the holistic development of students as effective communicators and culturally aware individuals.

This study not only validates the actual use of the 4As paradigm but also contributes to the broader theoretical conversation in language acquisition and digital learning. It corresponds with constructivist theories, highlighting the learner's proactive involvement in knowledge construction through interaction and engagement. By incorporating scaffolding ideas into its courses, the digital module (DM) emphasizes the importance of incremental, competency-oriented learning for attaining language fluency. The study contributes to research on digital learning by illustrating how technology can be utilized to develop fair and accessible educational tools, especially in resource-limited settings. The results underscore the necessity of creating digital modules that are pedagogically robust and contextually relevant. Nonetheless, hurdles such as disparate digital literacy, inadequate technological infrastructure, and connectivity problems persist as significant factors that impede instruction. The alternate offline format provided in the DM represents progress in overcoming these obstacles; nonetheless, additional study is necessary to investigate scalable solutions for other educational environments. Furthermore, the study validates the actual applicability of the 4As framework in attaining specific language learning objectives and broadens its significance to encompass wider educational theories and digital pedagogies. The digital module provides a repeatable framework for incorporating technology into education by connecting theoretical ideas with practical application, thus enhancing the dynamic environment of 21st-century learning. Future research should investigate its long-term effects on language acquisition and examine its applicability to other subjects and learner groups.

The evaluation of the developed digital module for *Filipino 11* demonstrates its high acceptability as an instructional material, with an overall mean score of 3.86 and a consistent "Very acceptable" rating across all evaluation categories. These results highlight the module's effectiveness in meeting the right standards for instructional content, constructional quality, technical quality, presentation and organization, accuracy, and assessment. Revisions based on expert feedback have further refined the module, improving its accessibility and ease of use for both teachers and learners. Simplified instructions for activities accommodate educators with varying technological expertise, while alternative offline formats ensure usability in areas with limited internet connectivity.

These results indicate that the digital module is a well-designed and effective tool for enhancing learning in *Filipino 11*, offering a modern, accessible, and pedagogically sound resource that aligns with the demands of 21st-century education.

The digital module for *Filipino 11* signifies a substantial advancement in modernizing language instruction through the incorporation of technology into the learning process. Its outstanding evaluation scores underscore its educational validity, accessibility, and adaptability. Since addressing the obstacles of implementation in many educational settings is essential for optimizing impact, efforts in constructing a digital module can enhance inclusive and successful educational practices associated with 21st-century learning by continuously refining it based on user feedback and broadening its research foundation.

Nevertheless, it should also be noted that the research may have certain limitations. Although the study offers useful insights into digital modules for Filipino language learning, it is limited by a small, self-selected sample of 111 Grade 12 students from one institution, which may not represent the broader population. Additionally, the research relied heavily on self-reported data and test scores without comparing the digital module to traditional methods or using other objective performance measures, and it assumed all students had stable internet access—a condition that might not hold true in remote or resource-constrained areas. Hence, it is suggested to conduct future studies that encompasses a larger scope of participants to increase the generalizability of the results.

The findings suggest that educators should integrate interactive, multimedia-rich digital tools based on the 4As framework to foster self-directed learning and provide prompt feedback. This approach enhances language proficiency and supports the achievement of learning objectives while also highlighting the importance of ongoing teacher training to keep educators up-to-date with current digital technologies. In light of the frequent weather disruptions in the Philippines, digital modules serve as a vital alternative to ensure learning continues uninterrupted.

It is recommended that curriculum developers create flexible digital modules that encourage active participation, offer timely feedback, and allow for personalized learning experiences, including offline access for areas with limited resources. By emphasizing historical literacy, critical reasoning, and media literacy, these tools can effectively address language skill gaps while nurturing essential 21st-century competencies.

Future research should explore the long-term effects of digital modules on academic performance in order to determine whether improvements in the least-mastered competencies is sustained in the long run. Other areas for study may include refinement of theoretical models for instructional frameworks (e.g., 4As Framework), the applicability of digital modules in other areas of study, tailoring the digital modules into resource-limited settings, and the interaction among various multimedia elements in the digital modules. By tackling implementation obstacles

including digital literacy and technology infrastructure, these initiatives can foster inclusive, egalitarian, and effective education following modern educational objectives.

CONFLICT OF INTEREST

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