Evaluation of Flexible Learning Module on New Literacies for Preservice Teachers

Lelani Dapat*, Rivika Alda, and Remedios Bacus

***Abstract*—Reframing educational delivery due to the unprecedented disruption of classes necessitates the utilization of flexible learning materials that cater to students' diversity. Well-developed self-learning modules become vital to ensure continuity of learning with the flexible instructional modality. Adopting the Plan-Do-Study-Act (PDSA) model and using a mixed method design, this study aimed to develop, implement, and evaluate the self-learning module in Building and Enhancing New Literacies across the Curriculum (BENLAC). A total of 437 preservice teachers from a state university and five content experts evaluated the module using the validated tools: module evaluation tool, questionnaire on preservice teachers' perceptions about the module, and FGD protocol. Findings revealed that the module is developed following the principles of TAKE ─ Targeting the course outcomes; Anchoring the Universal Design for Learning and TPACK concepts; Keeping Gagne's nine events of instruction; and, Engaging through reflections and research. Thematic analysis of the validation resulted in three themes: differentiated activities, research-based, and techno-integrated learning tasks, and rubric-based assessments. The majority of the preservice teachers perceived the module as aligned with the instructional design frameworks of outcomes-based education, TPACK and UDL, Diversity and Inclusivity, and facilitative learning experiences. After the enhancements, the BENLAC module was described as having well-articulated outcomes, techno-integrated activities, and outcomes-based assessments. The rigor of module development and validation provides support to the utilization of the BENLAC module and in-sights for considering adaptations to enhance the preservice teachers' overall experience.**

***Index Terms*—Instructional design framework, module development, module validation, preservice teachers, self-learning module**

I. Introduction

Educational institutions across levels are mandated to provide quality education despite the unprecedented disruption of classes brought about by the pandemic. Reframing instructional delivery necessitates the adoption of a resilient and flexible learning system. Several studies have succinctly rationalized how flexible learning modality addressed the emergent change in the educational landscape [1–3]. Similarly, CHED Memorandum Order (CMO) 4s. 2022 stipulated the guidelines for implementing flexible learning (FL) as the design and delivery of programs, courses, and interventions that address learners' unique needs in terms of pace, place, process, and products of learning. FL is considered the most practical since it lacks restrictions on place, time, and pace of study reshaping the contour of education in the new normal [1]. While works of literature abound on remote teaching and learning, little emphasis was placed on the use of flexible learning modules in enhancing preservice teachers' new literacies, hence this study. It aims to develop, implement, and evaluate the researcher-made module in the course, Building and Enhancing New Literacies across the Curriculum, using the PDSA model.

To better address, the needs of the students, universities and local colleges conducted situational analysis and considered the categories of students in terms of internet access. As part of reframing the teaching-learning activities, the use of digital and non-digital technology was considered. Course teachers are enjoined to develop self-instructional modules, especially for those students identified in Categories 1 (with no internet connection) and 2 (with an intermittent internet connection). The concept of modules is always associated with a flexible curriculum which shall provide education stakeholders with a framework to establish realistic and clear objectives. Modules are widely used in many countries even before the pandemic. Teachers are considered at the forefront of curriculum implementation [4]. Institutions that adopted the use of modules considered developing identifiable components of a curriculum in terms of competency standards. Although various learning modules in different courses abound, a rigorous process of module development must be observed. This is grounded on the tenet that learning is maximized when content and tasks are aligned with the learning competencies.

There are stages to quality assure teacher-made modules using a descriptive-evaluative method [5]. Consequently, modules produced at all levels in all courses in a teacher education program are subjected to extensive review and validation. In a report from Philippine News Agency [6], it was emphasized that future teachers have to be introduced to performance-based modules bridging the gap between theory and practice by enhancing practical knowledge and skills in addressing students' needs. Moreover, a study in Malaysia found that the use of modules improved students' thinking skills and led to the discovery of knowledge [7].

Conscious of providing the students, across categories, with meaningful experiences that tap their schema and promote choice learning tasks, printed and digitized modules were developed, distributed, and accessed within the semester. Learning continuity was the prime concern given the limitations of time to prepare, efforts to quality assure, and mechanisms to evaluate the contents. The remote teaching solutions (in this case through the use of self-learning modules), the temporary shift of instructional delivery done on a quick setup, was meant to provide temporary access to instruction [8, 9].

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Despite uncertainties, instructional materials, such as the learning modules, have to be relevant and responsive to the attainment of the intended learning outcomes as embodied in the outcomes-based education framework. Apart from the structure and format, the content must adequately provide students with multiple opportunities to work through the different processes, multiple ways to demonstrate their progress, and multiple opportunities to validate acquired competencies.

Feedback from teachers and students provide insights to improve the modules [10]. The conventional end-of-module feedback obtained routinely for all modules had a positive effect on student engagement when less favorable comments on certain elements were addressed. There was a strong consensus on module benefits as evidenced by the filled-out feedback forms which led to the conceptualization of the evaluation project.

Module evaluation serves as a potent tool in making informed decisions about any changes to support students' remote learning where teachers' evaluation and students' feedback were considered in enhancing the module on technical writing [11]. The findings revealed the different responses from the students and teachers. The modules were evaluated as fit for the curriculum and recommended for use. Corrections and suggestions from experts and students were integrated into the modules. Notably, the results of their study suggest that the developed modules were following the principles of instructional materials development. Considerably, it is argued that less emphasis has been placed on module evaluations as compared to teaching evaluations [12]. As such, in their study, students' evaluation of module (SEM) questionnaire was developed to obtain the students' feedback on their modules with the view of overcoming their perceived learning difficulties.

It has been established that the evaluation of modules paved the way for better and more meaningful student learning. Despite the perceived challenges at the onset of the pandemic, higher education institutions in the Philippines adopted flexible teaching and learning delivery. It offered online distance learning for students with stable internet connections and offline distance learning for students with unstable or no internet access. Teacher-made modules, in print and digitized formats, were used during synchronous (via a learning management system) and asynchronous sessions where students can work on the activities on their own. As they do, they can consult their course teachers through email, messenger, or text.

Notably, the development of the module is anchored on the pedagogical framework of outcomes-based education (OBE), TPACK, Universal Design for Learning, and Learner Diversity in an inclusive classroom. As a framework in higher education program implementation, OBE clearly articulated the idea of what preservice teachers are expected to know and be able to do. The TPACK model considers how these knowledge domains intersect to effectively teach and engage them with technology-mediated teaching pedagogies. Moreover, as learners are diverse, multiple ways of presenting the content, engaging the preservice teachers, and assessing their understandings are emphasized with the use of the universal design of learning framework side by side with the principles of diversified teaching in an inclusive learning environment.

Acknowledging the vital role of instructional materials in providing quality teaching and learning, this study intends to evaluate the current module used in Building and Enhancing New Literacies across the Curriculum (BENLAC) in terms of its design and implementation. This course is offered to all first-year college students enrolled in the teacher education program. Constructive feedback from a pool of module evaluators and selected preservice teachers provided inputs to quality enhancement of the content and structure of the module.

II. Objectives of the Study

This study aimed to develop, implement, and evaluate a flexible learning module on Building and Enhancing New Literacies across the Curriculum (BENLAC). Specifically, it answers the following:

1) How was the module developed?
2) How was the module enhanced based on the validators' feedback and pilot testing results?
3) What is the pre-service teachers' perception of the module in terms of structure, content, learning activities, and assessment?
4) What are the preservice teachers' views and experiences on the use of the BENLAC module?

III. Research Methodology

A. Research Design

This action research adopted the PDSA model and employed the mixed method approach in developing, implementing, and evaluating the practice of using the module in Education 3: Building and Enhancing New Literacies.

The PDSA phases underscore the planning, highlighting the target course, and competencies (PLAN), writing the module with its approved components anchored on the instructional framework (DO) subjecting the developed module to experts' evaluation and pilot testing (STUDY) and enhancing the module based on feedback and pilot test results (ACT). Through the PDSA action research model, teachers and students (pre-service teachers) alike are allowed to plan, reflect, and evaluate their thinking skills and strategies as areas that need to be improved are identified, improvement plans are in place, analysis of improvement strategies are actualized and data obtained are used to make decisions [13].

1) Plan phase

Phase 1 of the study focused on the planning, development, and creation of the module and research instruments. The authors developed the ***module, Building and Enhancing New Literacies in the 21st Century,*** The ***Questionnaire on Students' Perception about the Module*** (QSPM), ***Module Validation Checklist*** which identifies whether essential components are present or absent.

The bulk of this phase was development of module, *Building and Enhancing New literacies in the 21st Century*

anchored on the following framework Outcomes-based Education (OBE), Technological, Pedagogical, Content Knowledge (TPACK), Universal Design for Learning (UDL), Gender and Development (GAD), and Diversity and Inclusivity (DI), and creation of the research instruments which were evaluated by experts underwent face validation by content experts.

2) Do phase

After careful evaluation of all research instruments and modules. These are adopted and implemented in all 10 classes of first year students in the College of Teacher Education with a total number of 437 students in total. The module underwent pilot testing and pre-tests before adoption and implementation and instructional intervention through the module. These modules were sent to the participants through a Portable Document File (PDF). The entire module lasted for 16 weeks. After the intervention, the participants were asked to take post-tests using the research instruments. The results were compared and analyzed to the pre-tests to obtain quantitative data. After the post-tests selected 20 students (coded as PST 1-20) participated in the Focus Group Discussion (FGD) to obtain qualitative feedback from their experience being exposed to the module.

3) Study phase

Both quantitative and qualitative data were explored to determine the effects of the intervention on the participants. The quantitative data comprise the pre-post test scores of the participants while the qualitative data results were validated and confirmed from FGD where thematic analysis in identifying themes is employed.

4) Act phase

After careful analysis of data, results, observations and reflections were communicated. This was done through an organized public unpacking of the module and research conference. The results were considered as bases for the development of the curriculum.

B. Research Environment and Participants

The study was conducted in one of the premier universities in Region VII which offers teacher education programs. It is a public higher education institution funded by the Philippine government and regulated by the Commission on Higher Education.

Table I shows the participants of the study who are the first-year preservice teachers from 10 classes (N= 437 students) in Educ 3: Building and Enhancing New Literacies across the Curriculum. In the pilot testing, 23 pre-service teachers were involved, while 20 of the total number of respondents participated in the focus group discussion.

TABLE I: PARTICIPANTS' PROFILE

Class Section /Program	No. of Students	Gender	Major
BSED English A	45	F-40 M-5	English
BSED English B	44	F-38 M- 6	English
BSED English C	45	F-43 M- 2	English
BSED English D	44	F-35 M- 9	English
BEED 1-A	43	F-40 M- 3	General Education
BEED 1-B	40	F-38 M- 2	General Education
BEED 1-C	43	F-35 M- 8	General Education
BECED 1-A	47	F-40 M- 7	Early Childhood Educ.
BECED 1-B	45	F-38 M- 7	Early Childhood Educ.
BECED 1-C	43	F-36 M- 7	Early Childhood Educ.
Total	437		

C. Research Instruments

The study utilized the following instruments:

Module in Education 3: Building and Enhancing New Literacies. The BENLAC course is offered to all preservice teachers to equip them with the concepts and skills of the identified new literacies. The module is created to help preservice teachers actualize the 7 new literacy skills of the 21st century through the varied activities, strategies, and opportunities for them to explore. These new literacies include globalization and multicultural literacy, social literacy, media literacy, financial literacy, digital literacy, ecological literacy, and arts and creativity. The concepts and activities are presented in eight chapters following CMO No. 74-83, s.2017.

Module Evaluation Tool. The tool consists of the checklist (Part 1) for the module structure and validation of content (Part 2) on adherence to the instructional framework. Three experts were consulted to look into the components of the module and its contents in terms of the four frameworks: Outcomes-based Education (OBE); Technological Pedagogical and Content Knowledge (TPACK); Universal Design for Learning (UDL); and, Diversity and Inclusivity (DI). The module validation checklist consists of 21 statements that evaluators had to describe the extent of the presence of the components of the chapters and lessons on whether the component is absent, partially present; or fully present.

Questionnaire on Pre-service Teachers' Perceptions about the Module (QSPM). These 5 sub-scales questionnaire has 25-item statements for the respondents to indicate agreement on a 4-point Likert scale: 1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree. This questionnaire was administered online using Google Forms. The statements were aligned with the framework of OBE, UDL, TPACK, and DI.

Focus Group Discussion Protocol. This consist of 5 fundamental questions (with follow-up questions for probing) conducted online using Zoom and Google Meet. The questions focus on: the articulation of learning outcomes in the module; technologies used in the module; learning activities that promote engagement/interaction; manifest diversity and inclusion; and the module as a learning tool.

D. Data Gathering Procedure Using the PDSA Model

The Plan-Do-Study-Act action research model infuses both quantitative and qualitative research techniques. The

model includes a systematic series of gaining essential knowledge to improve the module.

The pre-implementation started with the submission of the paper to the ethics committee for review. Upon approval, transmittal letters and consent forms were distributed. Considering the limitations of this pandemic, the letters were sent through email.

After this phase, actual implementation commenced. Since the interview questionnaires and surveys used in this study have already undergone experts' review and pilot testing, these were converted and made available through google forms. The checklist for module structure and format; and, teaching-learning materials, and interaction scales, are disseminated to the teachers of the course and the identified experts. The questionnaire concerning the implementation and use of the module and teaching-learning materials was sent to the pre-service teachers. To supplement the data gathered from the surveys, focus group discussions were also conducted for each group- pre-service teachers, teachers, and experts. Data generated from the surveys and questionnaires as well as from the focus group discussion were then subjected to data analysis.

E. Data Analysis

To determine the teachers' and experts' evaluation results of the module in terms of its structure and format, percentage distribution was used. Qualitative comments were also generated to strengthen the discussion and rationalize the results.

The questionnaires on pre-service teachers' regard for the implementation and use of the module, teaching-learning materials, and provision for teacher-student interaction were analyzed using descriptive statistics. Mean and standard deviation were determined and the confidence interval was then calculated.

The qualitative results derived from the focus group discussions were thematically analyzed using Braun and Clarke's steps, namely: (a) familiarizing oneself with the data, (b) generating initial codes, (c) searching for themes, (d) reviewing potential themes, (e) defining and naming themes, and (f) producing the report [14].

F. Ethical Considerations

This study complied with the requirements of the ethics committee. The researchers ensured compliance with the ethical standard protocols. Before the distribution of questionnaires, informed consent forms were properly distributed and participants were informed that such is not compulsory and that they may opt not to answer. The informed consent contains the ethical considerations that the researcher and the participants must agree with, namely: the study's purpose, benefits, risks and discomforts, voluntary participation, withdrawal from the study, and confidentiality and anonymity.

IV. Results and Discussion

A. Module Development

The content of the BENLAC module is anchored on one of the core professional education courses for preservice teachers. Concepts of the new literacies in the 21st century as an evolving social phenomenon and shared cultural practices across learning areas were the focus of teaching-learning activities and assessment tasks. Flexible and field-based explorations and various learning activities for in-class or off-class, wired or non-wired delivery modalities were given a premium towards the development of the desired beginning teacher competencies as embodied in the Philippines Professional Standards for Teachers [15].

The module has eight chapters with at least two lessons per chapter. Chapter 1 provides an introduction to the key concepts which also include traditional and 21st-century literacies; Chapter 2 focuses on Globalization and Multicultural Literacy; Chapter 3 talks about Social Literacy; Chapter 4 talks about Media Literacy; Chapter 5 presents the concepts of Financial Literacy; Chapter 6 introduces Cyber/Digital Literacy; Chapter 7 acquaints the preservice teachers with the concerns relating to the environment through Ecological Literacy; Chapter 8 lets them explore their creativity through the topic on Arts and Creativity Literacy.

Each chapter in this module contains 2-3 lessons and each lesson is divided into four parts*: Take Note*, *Take On*, *Take Action*, and *Take Off*. The chapter ends with the *Take the Lead*. Consistent with Gagne's nine events of instruction, the lesson parts are as follows:

Take Note provides the activities that set the context of the lesson. It allows the pre-service students to gain attention, informs them of the objectives, and stimulates recall of prior learning.

Take On presents the contents and provides relevant discussion for each lesson. It is in this part where the pre-service teachers are provided with guidance and a possible takeaway may be derived when applicable.

Take Action elicits performance through practice activities and is designed for both synchronous and asynchronous classes. Feedback from activities and opportunities for skill practice are provided to deepen their understanding

Take Off assesses the preservice teachers' understanding of the lesson through pen and paper tests or product and performance assessments where a scoring rubric is used to rate students' outputs.

Take the Lead is given at every end of the chapter that asks for their reflection or synthesis of the lessons. Activities include building accountability and applicability of learning in the community. Students integrate learned competencies for successful civic participation in a global environment.

B. Process of Module Development

The module design was determined by considering the BENLAC competencies reflected in the CMO 74, s. 2017. A module overview was written first to provide the grounding of everyday literacies in various settings and to orient the preservice teachers on what is covered in the eight chapters. Each part is guided by the principles of TAKE: targeting the course outcomes, anchoring in the Universal Design for Learning and TPACK, keeping Gagne's nine events of instruction, and engaging through reflections and research.

Targeting the course outcomes. To build the focus of the

module, the beginning teacher indicators were revisited in terms of developing the preservice teachers' strategies to promote their learners' literacy and critical and creative thinking skills. Specifically, the focus of the learning outcomes was on the demonstration of the content knowledge on the 21st-century literacies and its application within and across curriculum teaching areas, the integration of the elements of these literacies in a meaningful context within and beyond the classroom and in the preservice teachers' participation in a creative process of communicating their feelings, and advocacies in promoting the different 21st-century literacies. This is consistent with the outcomes-based education principles of higher education program implementation [16].

Anchoring in the UDL and TPACK framework. In crafting the module, the preservice teachers' cognitive functioning and abilities were maximized. Literature suggests that UDL and TPACK enhanced opportunities for engagement, expression, and academic performance [17, 18].

Guided by the principles of UDL, the content was chunked into eight chapters and presented in more than one format with multiple ways to motivate the students as they interact with the content and with their peers. In addition, the techno-based activities were conceptualized to promote and enhance learning outcomes. The effectiveness of lesson delivery with technology integration; hence the activities were designed for wired and non-wired modalities which can be used for synchronous and asynchronous classes [19]. Aside from objective-type tasks, performance-based activities were also provided like online surveys, creating podcasts, video reflections, creating blogs, brochures, and infographics.

Keeping Gagne's nine events of instruction. To ensure meaningful engagement with the module, the lesson presentation followed the structure espoused by Gagne [20]. The nine events- gain attention, inform the learners of the objectives, activate prior learning, present content, provide guidance, practice, provide feedback, assess performance, and enhance retention with the transfer of learning. Keeping the stages in mind, each chapter supports a strong foundation through various stimuli to meet the conditions of learning. The first three stages were captured in the Take on section. The use of discussion boards, forum questions, and short videos were some of the ways to get the PST's attention. Multiple ways of presenting the content and practice exercises were in the Take Action section (stages 4-6). These provide the scaffolds and allow the pre-service teachers to apply their knowledge and skills to deepen their understanding of the concepts. Assessment of performance (stages 7-8) helped the PSTs identify areas they have not mastered and need additional explanations. Rubrics were used to assess their performance and self-assessments were meant to develop their reflective thinking skills. The Take the Lead part of the lesson was meant to enhance pre-service teachers' retention and transfer of skills in a personalized context to better prepare them for the world of work. Some studies revealed a positive impact of Gagne's nine events of instruction on student learning and course evaluation [21, 22].

Engaging through reflections and research. Significant learnings gained and contextualizing learned competencies are assessed in the Take the Lead part where the preservice teachers were asked to complete a Reflectionnaire and research-related tasks after each chapter. Scoring rubrics were used to rate pre-service teachers' responses.

C. Module Validation and Enhancement

To ensure that the module supports the course goals and course outcomes, an expert review of the module was conducted prior to its implementation. Two experts reviewed the module using the validated module evaluation tool. This tool has three parts. Part 1 has the following components: module overview/rationale, course contents, course learning outcomes, learning experiences, assessment, enhancement, and references/resources. Part 2 complies with the design framework — OBE, TPACK, UDL, and DI. Part 3 consists of the qualitative aspect of the validation. Parts 1 and 2 require the identification of the extent of presence and extent of compliance of the different components of the module.

Each expert review of the module comprising 8 chapters was positive and points to improve are consistent between both reviewers on nearly all parameters. This includes those that indicate accuracy and completeness of the content and SMART (specific, measurable, attainable, realistic, and time-bounded) objectives. The qualitative analysis of open comments from the reviewers revealed common themes and was coded as the following: differentiated activities catering to varied learning delivery settings; research-based and technology-integrated learning activities, and the development of rubrics for varied assessments. The result of the validation has prompted the module writers to enhance the module based on the generated themes and these are integrated into the different parts of the lesson – *Take Note*, *Take On*, *Take Action*, *Take Off*, and *Take the Lead*.

Differentiated activities catering to varied learning delivery settings. The call for inclusivity in education across nations has become an inevitable challenge for teachers [23]. The "one size fits all" are most common in classrooms [24–26]. Considering the multitasks a teacher has to do while contextualizing and varying activities for a class of 50 students, differentiating instruction is sometimes a herculean task. However, the teachers may miss important insights about how learning works best if they neglect differentiating instruction [26]. Differentiated instruction (DI) is considered to be an ideal answer for addressing students' differences in the classroom thus highly promoted by most teachers. It is also noted that research on DI in teaching has demonstrated favorable student academic outcomes [27, 28], higher student engagement and learning motivation [29], and increased learner confidence [30]. The BENLAC module has been enhanced by integrating differentiated instruction which can be in these three areas: content, process, and product [31].

Content pertains to the knowledge and skills stipulated in the curriculum for students to learn. The teacher using the module may present the content in various formats which includes pre-recorded lectures, videos, handouts, podcasts or audio recordings, and lectures. The Take Note and Take On part of the lesson where the concepts are discussed have been chunked, simplified using infographics and other graphic organizers, and supplemented using informative videos. This

allows varied learning format delivery catering to students' needs, interests, and settings. Students may also have the opportunity to choose their content and content delivery based on their specific learning requirements. This also ensures that the module crafted and the delivery of the BENLAC course is anchored on inclusive education and diversity.

Process pertains to the way students are taught. This may be in the form of group learning, independent learning, and individualized instruction. These activities are reflected in the lesson parts — Take Note and Take Action of the module. As teachers teach the same lesson or skill to students, they can differentiate the process by providing varied ways for students to make sense of the lesson learned. Teachers can provide different opportunities for students to master the lesson or skills. In the BENLAC module, students make sense of the materials presented through think-pair-share activities, problem-based situations, immersions, and observations, and even through individual tasks. A wide range of options is provided for students based on their readiness levels, interests, and learning profiles.

Product refers to which students can show their ability to use and apply the new concepts and skills acquired. Teachers can differentiate the product by providing varied ways for students to demonstrate learning through the assessment activities — product or performance tasks. Other than the course summative test, the module has provided varied assessment tasks reflected in the Take Action, Take Off, and Take the Lead. These tasks reflect the real-world application and provide clear directions and the right degree of complexity. These are in the form of exit tickets, movie reviews, blogs and vlogs creation, podcasts and vodcasts, infographics and infomercials, research paper analysis, synthesis, and the like. Within the literature on DI, there are a plethora of instructional practices that teachers can adapt to address diversity and inclusivity within a classroom [32].

Research-based and technology-integrated learning activities. Teachers and students can significantly benefit from well-designed course curricula that facilitate research-driven learning processes [33]. With phenomenal changes in terms of data access and sharing observed over the past years, educational institutions have acknowledged the importance of research-based approaches to cement student outcomes. However, there has been a challenge in the seamless integration of research-based activities and approaches in the classroom. The review from the experts suggests that the module writers should incorporate research-based activities in different areas of the lesson. This is another enhancement done in the module and integrated into different parts of the lesson mainly along with Take On, Take Action, and Take Off. For instance, students or pre-service teachers read and synthesize research articles regarding a topic and come up with a survey and present their findings to the class. This approach has shifted the student's position as "knowledge users" to a more complex position as "knowledge creators" [34].

Moreover, other than the incorporation of research-based activities, more technology-integrated learning activities were also added. Teacher education institutions have already embraced the teacher's role in adopting and leading the conceptualization of new methods and new concepts of 21st-century teaching to stay relevant [35]. These learning technologies and tools provide a multitude of resources and interactive activities that promote student engagement. Thus, gaining a better understanding of how students learn in the context of technology is useful to develop technology-driven learning environments [36]. Thus, these tools are integrated into all parts of the lesson from Take On to Take the Lead in the form of videos, podcasts, vodcasts, audio recordings, infographics, infomercials, blogs, and vlogs. Educational reform efforts based on best practices highlight student-centered teacher facilitation leveraging information and communications technologies (ICT) as the most effective way of preparing modern learners [37]. This also answers the urgent need for higher education institutions to inculcate digital skills among future professionals [38].

Rubric-based formative and summative assessments. Rubrics are tools that provide the criteria and standards [39]. Rubric-based assessment affords teachers and students a tool for conducting meaningful assessments. This also addresses the concern of teacher subjectivity when grading students' outputs or performance. Through the set of criteria presented prior to the tasks, students are provided with clear expectations of their learning and areas for potential growth. Literature provides that the use of rubrics supports consistency in scoring [40] and student learning and motivation [41]. Thus, the module has provided the rubrics, especially for product and performance assessments which are provided under Take Action. Teachers using the module may present the rubrics at the onset of the instruction. As teachers articulate the desired learning outcomes, students become focused on the learning to be done. Students who are following a rubric know from the start of the learning experience the level of achievement they have to attain in each level of instruction.

Moreover, aside from the expert review, pilot testing was also conducted to provide data about the feasibility of the module before its implementation. The pilot testing involves 23 pre-service teachers from one section in the first year which allows for more data gathered on the effectiveness of the module. It is anchored on how students respond to the activities within the teaching material, and the comments they make on the feedback form provided. Particularly, in terms of module structure, 8% of the respondents mentioned that the module may provide a section for teachers' qualitative feedback. Feedback is considered vital to improved self-efficacy and may contribute to specific performance attainments [42, 43]. The same percentage of the respondents commented on enriching and varying the learning activities and providing clear instructions on the varied assessments. This is consistent with the result of the expert review highlighting the inclusion of differentiated activities and providing clear directions and expectations for the assessment tasks. The results of the validation provide rich insights into how the module will be enhanced to gauge students' success in the utilization of the module.

D. Pre-service Teachers' Perception of the Module

The module adopts the outcomes-based education

framework as prescribed in CMO No. 46, s. 2012 – Policy Standard to Enhance Quality Assurance in Philippine Higher Education through an Outcomes-based and Typology-based QA. This policy standard from the Commission on Higher Education is issued to enhance the quality assurance system of Philippine Higher Education through learning competency-based standards and outcome-based quality assurance. The table reveals how the students perceive the structure of the module along the framework adopted in the study.

TABLE II: PERCEPTIONS OF STUDENTS BASED ON THE MODULE FRAMEWORK

	SD	D	A	SA	Mean	SD
	1	2	3	4		
Adherence to OBE	0.00	1.42	22.65	75.85	3.74	0.06
Compliance to TPACK	0.00	4.45	18.80	80.35	3.80	0.19
Adoption of the UDL	16.74	37.82	66.93	76.81	3.78	0.08
Incorporation of DI	0.00	2.14	39.28	81.24	3.80	0.19
Promotion of FLE	16.71	34.40	64.45	81.10	3.80	0.04
	6.6	16.0	42.4	79.07	3.78	0.11

Note: N=437, Legend: SD-Strongly Disagree, D-Disagree, A-Agree, SA-Strongly Agree

Table II reflects the preservice teachers' perception of the module's learning activities based on the framework: Adherence to Outcomes-based Education, Compliance to technological, Pedagogical, and Content Knowledge; Adoption of the Universal Design Learning; Incorporation of Diversity and Inclusivity; and Promotion of Facilitative Learning Experiences.

It can be gleaned that 79.07% of the preservice teachers strongly agreed that the module has been compliant with the framework with a mean of 3.78 which further shows that the module was positively received by the preservice teachers.

The standard deviation of 0.11 reveals that the data are clustered around the mean which means that the data points are close to the mean of 3.77. The data set indicates that a greater majority of the preservice teachers believed that the module is in adherence to the framework. Adherence to Outcomes-based Education, the preservice teachers believed that the module adheres to the requirements of outcomes-based education. The majority of the pre-service teachers expressed that the activities in the module are engaging and encourage deep and higher-order thinking. It is important to note that involving preservice teachers in the learning process increases their attention and focus and motivates them to engage in higher-level thinking. Adherence to outcomes-based education means the module has observed the four principles (clarity of focus, expanded opportunity, high expectations, and the design don) of OBE in all its instructional activities [44].

In compliance with technological, pedagogical, and content knowledge, the majority of the preservice teachers, 80.75% believed that the learning activities in the module have equipped them with the technological, pedagogical, and content knowledge (TPACK) needed in their future tasks as teachers. This framework allows preservice teachers to build their knowledge of the subject matter, technology, and pedagogy in an integrated and interdependent manner [45]. As the first step in effectively mastering digital technology as well as pedagogical and content knowledge, it is crucial to develop digital literacy and awareness. It is crucial to improve the various training and educational innovations that are pertinent to the relevance of digital technology mastery competencies and the TPACK.

On the other hand, the module's adoption of Universal Design Learning was perceived strongly and positively by about 76.81% percent of the preservice teachers. Utilizing a variety of instructional strategies, UDL aims to break down learning barriers and provide all students with an equal chance to succeed. It involves incorporating flexibility that may be changed to suit students' needs and strengths.

On the incorporation of Diversity and Inclusivity and Promotion of Facilitative Learning Experiences, it can be noted that 81.24% and 81.10% respectively believed that the learning activities are all-inclusive, diverse, and facilitative despite certain gaps as culture and traditions such as language, religion, etc.

Overall, the module was well and positively received by the preservice teachers, not only that it contains the learning activities needed in the development of the TPACK but it also accommodated individual students differing and diverse learning needs aside from the fact that it nurtures their new literacy skills but the competencies required of a future teacher. The enhancements made after the expert validation have also helped in the constructive alignment of the learning outcomes to the assessment resulting in a positive response from the pre-service teachers using the BENLAC module.

E. Students' Views and Experiences on the Module

Students' transcripts during the focus group discussion were coded and analyzed using thematic analysis [14]. The following themes emerged: Well-articulated Outcomes, Techno-Integrated Activities, and Outcomes-based Assessments.

Well-articulated Outcomes. Consistent with the policies, standards, and guidelines of CHED, the course module is developed following the outcomes-based education framework. The prime purpose of the flexible learning module is to align the learning objectives to the desired course outcomes where activities are designed to engage the students with meaningful and purposeful tasks. Considerably, embodied in the Philippine Professional Standards for Teachers (PPST) is the setting of achievable and appropriate learning outcomes that are aligned with learning competencies [15]. This congruence of learning outcomes allowed the PSTs to focus on knowledge, understanding, skills, and attitudes needed to demonstrate their acquisition of competencies.

> *"The learning outcomes in the module are articulated in such a way that students have a real sense of integrating learning inside the classroom. Concise, accurate, and relevant concepts of the lessons were presented. In the activity in the module entitled Checking the Guide, the students are expected to find a learning competency where he or they can incorporate the concepts of environmental*

literacy, ecological literacy, and eco-literacy. In this, the assessment strategies measured the desired learning outcomes." (PST1)

To optimize the chances of achieving the desired learning outcomes, PSTs must see the connection between and among the activities with the established chapter outcomes. This is termed constructive alignment where the expression of student learning is clearly stated before teaching takes place and where assessment tasks enable clear judgments as to how well those outcomes have been attained [43].

Techno-integrated Activities. For education institutions, the global move towards remote online teaching and learning necessitates teachers to switch their practices almost overnight. Teachers in the 21st century cannot endure if they will not start utilizing technology to sustain quality education [45].

Moreover, the rapid switch to online instruction and modular learning prompted them to master technology integration and become instructional material writers. All these happened with limited resources and preparation.

The results of the expert review and pilot testing incited the enhancements of the BENLAC module. It is worth noting that during the validation, one parameter that the reviewer highlighted was the inclusion of research-based and technology-integrated learning activities. This finding was also supported by the results of pilot testing wherein 8% of the student respondents mentioned the need to provide varying activities for them to choose from. Thus, enhancements were made along this line before the actual implementation and utilization of the module.

Students revealed during the focus group discussion that they appreciated the varied technology-mediated and technology-integrated activities afforded to them in the module. The pre-service teachers said,

> *"I like the Take On parts containing online reading and there were also video materials." (PTS 5)*
>
> *"Students were given opportunities to express themselves and showcase their talents and abilities." (PTS 2)*
>
> *"Like the 'Myday', infographics, research, etc., that add some variety and interactivity to the module. The student's access to information and vital discussions is not limited. I was able to use easily accessible and free websites to make my outputs like the Canva." (PTS 10)*

The rapid and unpredictable social changes have created a considerable impact on pedagogical practices. With these changes, teacher competencies must be redefined [46]. Anchoring on students' interests and readiness, teachers should be able to design enriched and innovative learning environments that students can explore using technology. Teaching students in the new generation requires more than just making use of simple digital resources in presenting the lesson [47]. One approach that highlights technology integration in the context of teaching and learning is the technological pedagogical content knowledge (TPACK) model [48] patterned after the TAWOCK model [49]. TPACK is one of the frameworks used in this study and served as the model to which technology is integrated along the varied and differentiated activities in the module.

Outcomes-based Assessment. Assessing student outcomes aims to establish what has been learned [50, 51] to promote continuous learning improvement. Outcomes-based assessment informs teachers of the extent to which students are learning based on the set intended learning outcomes. The first theme that was generated from the focus group discussion is Well-articulated Outcomes. This is consistent with the third theme on Outcomes-based Assessment as these findings highlighted constructive alignment. Constructive learning is deep learning and not just merely learning facts [52]. It is aligning the essential components of a program or course from the school's vision and mission, higher education institution (HEI) graduate attributes, teaching methods, and assessment procedures, to incorporating diversity and inclusivity [51]. The use of aligned teaching design alongside constructivism led to the term constructive alignment theory [52].

Moreover, outcome-based assessments should cater to a diversity of learning styles, guide learning, and attain the HEI's set quality and standards [51]. This further implies that assessment approaches should be aligned with the learning outcomes reflected in the module. The module writers ensured that these provisions are observed during the module enhancements. It can also be noted that during the expert review and pilot testing, an item on enhancing assessments was also emphasized. These pre-service teachers shared,

> *"Say for example the second learning outcome which stated how to become financially literate. This learning outcome was easily demonstrated in the following activities in the module and made sure that it does not stray from its intended result." (PTS 2)*
>
> *"It provides a reflection on what is most important in assisting learners in gaining information and abilities. The expected outcomes were realistic, attainable, and specific." (PTS 20)*

Ensuring constructive alignment takes careful planning, especially since the nature of the module and its components may vary depending on the course. Thus, the module writers must be guided by the principles of OBE, UDL, TPACK, and DI to ensure that outcome-based assessments are focused on outputs rather than inputs and are designed to attain the outcomes and goals.

V. Conclusion

To quality assure the flexible learning module in BENLAC, components were carefully identified and alignment of teaching-learning and assessment tasks with the course outcomes and competencies targeted were critically reviewed following the experts' validated evaluation tools. The rigor of module development and validation provides support to the utilization of the BENLAC module in Education 3 classes. Students' feedback after the implementation of the module provided relevant insights and impetus for considering how

some aspects of the module could be redesigned and improved to level up students' satisfaction and success, and better enhance their overall experience. The design, validation, implementation, and evaluation of the instructional material or module in BENLAC has highlighted not just the rigorous process of designing the instructional material but also the need to subject it to pilot testing and review before implementation. Feedback should also be solicited from the direct implementers of the material and its users which can provide rich input in the continuous enhancements of the instructional material. Thus, it is recommended that instructional materials such as modules undergo validation and continuous review and evaluation from different stakeholders to make certain of its quality and effectiveness.

CONFLICT OF INTEREST

The authors declare that the research was conducted without any commercial relationships that could be construed as a potential conflict of interest.

AUTHOR CONTRIBUTIONS

L. Dapat, R. Alda, and R. Bacus contributed to the conception and preparation of the design of the study. R. Bacus and R. Alda collected and tabulated the data on teachers' digital surveys. L. Dapat and R. Alda interviewed the participants. L. Dapat and R. Bacus wrote the first draft of the manuscript. All authors wrote sections of the paper and helped in its revision.

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