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DEVELOPMENT AND EVALUATION OF CONTEXTUALIZED INSTRUCTIONAL MATERIAL IN MATHEMATICS IN THE MODERN WORLD FOR HOSPITALITY MANAGEMENT STUDENTS

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ABSTRACT

The key purpose of this research was to develop and evaluate a contextualized instructional material in Mathematics in the Modern World (MMW). The study was descriptive research with content analysis design. The developed contextualized instructional material in Mathematics in the Modern World (MMW) adopted 4D (define, design, develop, disseminate) model. The acceptability of the developed contextualized instructional material in Mathematics in the Modern World (MMW) as evaluated by the Hospitality Management students and the experts as a whole and in terms of learning outcomes, content, activities, style and presentation, organization, creativity and assessment was rated highly acceptable. The findings showed that contextualization of instructional materials encouraged students to think about how information relates to their lives, making them to analyze, evaluate, and connect different ideas. It is recommended to the mathematics instructors to take initiative to use the contextualized instructional material into their daily pedagogy to address deficiencies in student mathematical skills and concepts and bridges the gap between mathematical concepts and their personal, everyday experiences.

KEYWORDS: *Development, Evaluation, Contextualized, Instructional Material, Mathematics in the Modern World, Hospitality Management*

INTRODUCTION

Mathematics in the Modern World (MMW) is a general education course designed to develop students' appreciation of mathematics as both a way of thinking and a practical tool for daily life and professional work (Bangalan & Hipona, 2022). In the Philippine higher-education framework the course emphasizes problem solving, data management, logical reasoning, and the application of mathematical ideas to contemporary issues (Jade & Oco, 2023; Kirby et al., 2023). Embedding MMW in the curriculum helps students see mathematics beyond abstract procedures and connect mathematical ideas to social, economic, and technological contexts they will encounter as graduates (Koskinen & Pitkäniemi, 2022).

Contemporary policy and scholarship stress that mathematics education must support 21st-century competencies such as critical thinking, quantitative literacy, and data interpretation—competencies essential for employability and civic (Dacles, 2024). Research and international reviews argue that modern mathematics curricula should move from rote manipulation toward real-world problem contexts, data literacy, and modelling tasks that cultivate transferable reasoning skills (Sujatha & Vinayakan, 2023; Celestine et al., 2024; Biza et al., 2022). This shift frames the rationale for contextualized instructional materials: they ground abstract concepts in meaningful, discipline-relevant scenarios that help learners transfer classroom learning to complex, real problems (Smith et al., 2022).

For students in Bachelor of Science in Hospitality Management (BSHM), mathematical knowledge is directly applicable to routine professional tasks—pricing and revenue management, forecasting occupancy, cost control, inventory and portioning, and service metrics—so contextualized MMW materials can make the link explicit (Smith et al., 2022). When mathematics instruction uses hospitality examples, BSHM learners can see immediate relevance, increasing motivation and retention while building technical skills employers expect. This applied orientation also helps learners develop data-driven decision habits, from interpreting customer metrics to evaluating promotions (Anselmo et al., 2024).

Finally, international studies on adult numeracy and mathematics education note that contextually anchored learning improves both functional numeracy and broader life-skills outcomes, supporting employability and social participation (Gal, 2024; Geiger & Schmid, 2024). Given the documented gap between classroom mathematics and workplace demands, developing instructional materials that are contextualized to hospitality scenarios, use authentic datasets, and include problem-based tasks can bridge that gap—improving transfer, fostering critical quantitative reasoning, and aligning instruction with industry practices. Therefore, a project producing contextualized MMW materials for BSHM students responds to policy imperatives and labor-market realities while addressing documented pedagogical needs.

Research Questions

The main purpose of this study was to develop and evaluated a Contextualized Instructional Material in Mathematics in the

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Modern World (MMW) for first-year students enrolled in West Visayas State University – Lambunao Campus for Bachelor of Science in Hospitality Management for the academic year 2025-2026.

Specifically, it aimed to answer the following questions.

1. What contextualized instructional material should be developed in Mathematics in the Modern World (MMW)?
2. What are the experts' and students' evaluations of the developed contextualized instructional material based on learning outcomes, contents, activities, style and presentation, organization, creativity, and assessment?

METHOD

Research Design

This study utilized descriptive research with content analysis design. To develop the contextualized instructional material, the researcher adapted the 4D Model (Define, Design, Develop, and Disseminate) by Thiagarajan, et al. (1974).

Participants

Using the purposive sampling, the study involved 84 first-year Hospitality Management Students and six experts including mathematics instructors, a curriculum expert, and am English instructor.

Data Collection

An evaluation form adapted and modified from Jamon (2020) was used to measure the acceptability of the material. The contextualized instructional material develop was a contextualized worktext which uses the 4D (Define, Design, Develop, and Disseminate) Model. It was implemented as follows:

Define phase
- A thorough analysis of the students' needs.
- Content analysis of the CHED Memorandum Order (CMO) No. 20, series of 2013 and the standard course outline for Mathematics in the Modern World (MMW).
- Informal interviews and observations of existing materials, which identified a lack of "localized examples".

Design phase
- Design the format of the contextualized worktext contains the essential parts: title, learning outcomes, introduction, content, and worksheets.

Develop phase
- Developed the contextualized worktext and refining the contextualized worktext through experts' validation, and students and experts' evaluation.

Disseminate phase
- Final packaging and initial sharing of the contextualized worktext.

Data Analysis

Quantitative data were analyzed using mean and standard deviation to determine level of acceptability.

This scale and its description were used:

Scale	Description
4.50 – 5.00	Highly Acceptable (HA)
3.50 – 4.49	Acceptable (A)
2.50 – 3.49	Moderately Acceptable (MA)
1.50 – 2.49	Fairly Acceptable (FA)
1.00 – 1.49	Not Acceptable (NA)

Qualitative data from Hospitality Management students' experiences were interpreted using thematic analysis.

RESULTS AND DISCUSSIONS

Development of Contextualized Instructional Material in Mathematics in the Modern World (MMW)

The develop contextualized instructional was a contextualized worktext which consisted of six chapters: The Nature of Mathematics, mathematics Language and Symbols, Problem Solving, Data Management, Geometric Designs, and Linear Programming. The contextualized worktext included the following parts: learning outcomes, introduction, content, and worksheets. The development of contextualized instructional material utilized the 4D (Define, Design, Develop, Disseminate) Model.

Students' and Experts' Acceptability of the Contextualized Instructional Material in Mathematics in the Modern World (MMW)

Table 1: Learning Outcomes

	Experts			Students			Entire Group		
	Mean	**Description**	**SD**	**Mean**	**Description**	**SD**	**Mean**	**Description**	**SD**
1. The instructional material is accompanied by a list of specific learning outcomes.	4.33	A	0.52	4.62	HA	0.52	4.60	HA	0.54
2. The learning outcomes suit the particular topic.	4.33	A	0.52	4.62	HA	0.60	4.60	HA	0.60
3. The learning outcomes are realistic and simple.	4.67	HA	0.52	4.64	HA	0.55	4.64	HA	0.55
4. The learning outcomes are fitted to the level and needs of the students.	4.33	A	0.52	4.66	HA	0.53	4.63	HA	0.53
5. The learning outcomes are attainable.	4.67	HA	0.52	4.62	HA	0.51	4.62	HA	0.51
Over-all rating	4.47	A	0.45	4.63	HA	0.45	4.62	HA	0.54

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The findings showed in Table 1 that the learning outcomes of the contextualized instructional material in Mathematics in the Modern World (MMW) is "highly acceptable" with over-all rating of (*M=4.62, SD=0.54*). In view of this, the experts rated "The learning outcomes is realistic and simple." and "The learning outcomes are attainable." as the highest with a mean of 4.67 and standard deviation of 0.52. For the students, "The learning outcomes are fitted to the level and needs of the students." as the highest mean of 4.66 and standard deviation of 0.53. As a whole, "The learning outcomes is realistic and simple." as the highest with a mean of 4.64 and standard deviation of 0.55.

As shown in Table 1, the overall rating of experts was "acceptable" with (*M=4.47, SD=0.45*) and over-all rating of "highly acceptable" was found from the students with (*M=4.63, SD=0.45*). Overall, the results imply that the contextualized instructional material could potentially reduce math anxiety by grounding Mathematics in the Modern World (MMW) in relevant and attainable goals. It serves to be more inclusive and effective. This is supported by the study of Abude (2021), who notes that when teachers design their own instructional materials, they can better align content with students' specific needs, leading to more effective outcomes.

Table 2: Contents

	Experts			Students			Entire Group		
	Mean	**Description**	**SD**	**Mean**	**Description**	**SD**	**Mean**	**Description**	**SD**
1. The sequence of the topics jive with the topics in Mathematics in the Modern World.	4.50	HA	0.55	4.66	HA	0.50	4.64	HA	0.50
2. The contents of the lessons and self-tests help on reaching the learning outcomes.	4.50	HA	0.55	4.58	HA	0.50	4.58	HA	0.50
3. The contents include the necessary topics and self- tests that will lead to the enhancement of learning.	4.50	HA	0.55	4.67	HA	0.52	4.66	HA	0.52
4. The lessons are clear and well presented.	4.50	HA	0.55	4.62	HA	0.51	4.61	HA	0.51
5. The guide questions help students to understand the lesson better and recall necessary concepts.	4.17	A	0.41	4.75	HA	0.44	4.71	HA	0.46
Over-all rating	4.43	A	0.37	4.66	HA	0.37	4.64	HA	0.50

The findings showed in Table 2 that the contents of the contextualized instructional material in MMW is "highly acceptable" with over-all rating of (*M=4.64, SD=0.50*). In view of this, the experts rated "The sequence of the topics jive with the topics in Mathematics in the Modern World.", "The contents of the lessons and self-tests help on reaching the learning outcomes.", "The contents include the necessary topics and self-tests that will lead to the enhancement of learning.", and "The lessons are clear and well presented." as the highest with a mean of 4.50 and standard deviation of 0.55. For the students, "The guide questions help students to understand the lesson better and recall necessary concepts." as the highest mean of 4.75 and standard deviation of 0.44. As a whole, "The guide questions help students to understand the lesson better and recall necessary concepts." as the highest with a mean of 4.71 and standard deviation of 0.50.

As shown in Table 2, the overall rating of experts was "acceptable" with (*M=4.43, SD=0.37*) and over-all rating of "highly acceptable" was found from the students with (*M=4.66, SD=0.37*). Overall, the results imply that the contextualized instructional material jives with the official Mathematics in the Modern World (MMW) course outline. The idea that what is taught matches the goals of the course. In the study of Tinonas et al. (2023) found that students perceive modular instruction as effective specifically when the materials are clear, well-aligned with objectives, and engaging.

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Table 3: Activities

	Experts			Students			Entire Group		
	Mean	**Description**	**SD**	**Mean**	**Description**	**SD**	**Mean**	**Description**	**SD**
1. The instructional material provides variety of learners' activity.	4.50	HA	0.55	4.64	HA	0.53	4.63	HA	0.53
2. Activities are relevant to the topics.	4.67	HA	0.52	4.70	HA	0.49	4.70	HA	0.49
3. Activities are relevant to the objectives of the lesson.	4.50	HA	0.55	4.51	HA	0.55	4.51	HA	0.55
4. Activities are relevant and self-motivating to the learners.	4.67	HA	0.52	4.58	HA	0.54	4.59	HA	0.54
5. Activities are presented from the simple ones to the more complex examples	4.50	HA	0.52	4.60	HA	0.52	4.59	HA	0.52
Over-all rating	4.57	HA	0.43	4.61	HA	0.40	4.60	HA	0.52

The findings showed in Table 3 that the activities of the contextualized instructional material in MMW is "highly acceptable" with over-all rating of *(M=4.60, SD=0.52*).

In view of this, the experts rated "Activities are relevant to the topics." and "Activities are relevant and self-motivating to the learners." as the highest with a mean of 4.67 and standard deviation of 0.52. For the students, "Activities are relevant to the topics." as the highest mean of 4.70 and standard deviation of 0.49. As a whole, "Activities are relevant to the topics." as the highest mean of 4.70 and standard deviation of 0.49.

As shown in Table 3, the overall rating of experts was "highly acceptable" with (*M=4.57, SD=0.43*) and over-all rating of "highly acceptable" was found from the students with (*M=4.61, SD=0.40*). Overall, the results imply that the tasks or activities in the contextualized instructional material felt real and relevant, they moved from being seen as task that needs to be done to being seen as tools for understanding. The results support the research by Ogates (2025) indicates that integrating real-life contexts into mathematics instruction, such as through learning activity sheets, significantly enhances student engagement and learning outcomes.

Table 4: Style and Presentation

	Experts			Students			Entire Group		
	Mean	**Description**	**SD**	**Mean**	**Description**	**SD**	**Mean**	**Description**	**SD**
1. The presentation is clear observing correct grammar.	4.33	A	0.52	4.70	HA	0.49	4.68	HA	0.49
2. The language is clear and comprehensive in terms of vocabulary.	4.33	A	0.52	4.57	HA	0.50	4.56	HA	0.50
3. The structure, style and format are appropriate to the target clientele.	4.50	HA	0.55	4.61	HA	0.49	4.60	HA	0.49
4. The directions can be followed by the students without much help from the professor.	4.83	HA	0.41	4.52	HA	0.57	4.54	HA	0.56
5. There are illustration encourages for learning new meanings.	4.50	HA	0.52	4.57	HA	0.61	4.57	HA	0.60
Over-all rating	4.57	HA	0.33	4.60	HA	0.39	4.59	HA	0.53

The findings showed in Table 4 that the style and presentation of the contextualized instructional material in MMW is "highly acceptable" with over-all rating of (*M=4.59, SD=0.53*). In view of this, the experts rated "The directions can be followed by the students without much help from the professor." as the highest with a mean of 4.83 and standard deviation of 0.41. For the students, "The presentation is clear observing correct grammar." as the highest mean of 4.70 and standard deviation of 0.49. As a whole, "The presentation is clear observing correct grammar." as the highest mean of 4.68 and standard deviation of 0.49.

As shown in Table 4, the overall rating of experts was "highly acceptable" with(*M=4.57, SD=0.33*) and over-all rating of "highly acceptable" was found from the students with (*M=4.60, SD=0.39*). Overall, the results imply that the contextualized instructional material fosters learner's autonomy. The contextualized instructional material reduces the student's dependence on the teacher, making it an excellent tool for distance learning, hybrid setups, or self-paced study modules. The results support the Studies at institutions like Central Philippines State University by Tinonas et al. (2023) have shown that students

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perceive modular instruction as highly effective when the materials are engaging and clearly presented.

Table 5: Organization

	Experts			Students			Entire Group		
	Mean	**Description**	**SD**	**Mean**	**Description**	**SD**	**Mean**	**Description**	**SD**
1. The contents of the instructional material are well organized.	4.50	HA	0.55	4.64	HA	0.53	4.63	HA	0.53
2. The lessons and self-tests of the instructional material are arranged in ascending order of difficulty.	4.17	A	0.41	4.58	HA	0.54	4.56	HA	0.54
3. The organization of the lessons and self-tests develops problem solving skills.	4.33	A	0.52	4.60	HA	0.58	4.58	HA	0.58
4. The organization of the instructional material is appropriate to bridge the gap of learning.	4.33	A	0.52	4.58	HA	0.59	4.57	HA	0.58
5. The instructional material is useful supplement to reinforce the transfer of learning.	4.83	HA	0.41	4.52	HA	0.55	4.54	HA	0.54
Over-all rating	4.43	A	0.15	4.59	HA	0.46	4.58	HA	0.56

The findings showed in Table 5 that the organization of the contextualized instructional material in Mathematics in the Modern World (MMW) is "highly acceptable" with over-all rating of (*M=4.58, SD=0.56*). In view of this, the experts rated "The instructional material is useful supplement to reinforce the transfer of learning." as the highest with a mean of 4.83 and standard deviation of 0.41. For the students, "The contents of the instructional material are well organized." as the highest mean of 4.64 and standard deviation of 0.53. As a whole, "The contents of the instructional material are well organized." as the highest mean of 4.63 and standard deviation of 0.53.

As shown in Table 5, the overall rating of experts was "acceptable" with (*M=4.43, SD=0.15*) and over-all rating of "highly acceptable" was found from the students with (*M=4.59, SD=0.46*). Overall, the results imply that the contextualized instructional material is well-organized. This makes students reduces their frustration and allows them to follow the mathematical logic more easily, leading to a smoother learning experience. The result support the research by Agup (2022) highlights that the provision of learning resources is a critical action plan to supplement learner needs.

Table 6: Creativity

	Experts			Students			Entire Group		
	Mean	**Description**	**SD**	**Mean**	**Description**	**SD**	**Mean**	**Description**	**SD**
1. The instructional material adds new knowledge and skills that would lead the students to create new problems related to the topic.	4.17	A	0.41	4.70	HA	0.46	4.67	HA	0.47
2. The instructional material contributes to the acquisition of concepts, understanding and solving insights.	4.67	HA	0.52	4.58	HA	0.54	4.59	HA	0.54
3. The instructional material provides contribution to the addition of new insights problem solving skills.	4.67	HA	0.52	4.68	HA	0.47	4.68	HA	0.47
4. The illustrations effectively capture the interest of the students.	4.50	HA	0.52	4.50	HA	0.57	4.50	HA	0.52
5. The instructional material provides solving insight that would lead the students to create new solutions to the problem at hand.	4.50	HA	0.52	4.70	HA	0.49	4.69	HA	0.49
Over-all rating	4.50	HA	0.35	4.63	HA	0.40	4.62	HA	0.51

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The findings showed in Table 6 that the creativity of the contextualized instructional material in Mathematics in the Modern World (MMW) is "highly acceptable" with over-all rating of (*M=4.62, SD=0.51*). In view of this, the experts rated "The instructional material contributes to the acquisition of concepts, understanding and solving insights." and "The instructional material provides contribution to the addition of new insights problem solving skills." as the highest with a mean of 4.67 and standard deviation of 0.52. For the students, "The instructional material adds new knowledge and skills that would lead the students to create new problems related to the topic." and "The instructional material provides solving insight that would lead the students to create new solutions to the problem at hand." as the highest mean of 4.70 and standard deviation of 0.49 and 0.46. As a whole, "The instructional material provides solving insight that would lead the students to create new solutions to the problem at hand." as the highest mean of 4.69 and standard deviation of 0.49.

As shown in Table 6, the overall rating of experts was "highly acceptable" with (*M=4.50, SD=0.35*) and over-all rating of "highly acceptable" was found from the students with (*M=4.63, SD=0.40*). Overall, the results imply that contextualized instructional material encourages students to apply mathematical logic in innovative ways. This suggests the contextualization is successful in moving students from passive receivers of information to active problem solvers. The result supports the study by Ammamiarihta et al. (2017) concluded that materials developed using the 4D model significantly increase students' combinatorial thinking and mathematical problem-solving abilities

Table 7: Assessment

	Experts			Students			Entire Group		
	Mean	**Description**	**SD**	**Mean**	**Description**	**SD**	**Mean**	**Description**	**SD**
1. The assessment is related to the learning outcomes.	4.33	A	0.52	4.74	HA	0.44	4.71	HA	0.46
2. The self-test serve to facilitate better understanding of the lesson discussed.	4.50	HA	0.55	4.68	HA	0.50	4.67	HA	0.50
3. Assessment activities and self-test are suited to the level and needs of the students.	4.17	A	0.41	4.60	HA	0.52	4.57	HA	0.52
4. Assessment tasks and self-tests are adequate that cover the topics discussed in the instructional material.	4.50	HA	0.55	4.63	HA	0.51	4.62	HA	0.51
5. The activities and tests stimulate higher order thinking skills.	4.17	A	0.42	4.55	HA	0.55	4.52	HA	0.55
Over-all rating	4.33	A	0.41	4.64	HA	0.38	4.62	HA	0.51

The findings showed in Table 7 that the assessment of the contextualized instructional material in Mathematics in the Modern World (MMW) is "highly acceptable" with over-all rating of (*M=4.62, SD=0.51*). In view of this, the experts rated "The self-test serve to facilitate better understanding of the lesson discussed." and "Assessment tasks and self-tests are adequate that cover the topics discussed in the instructional material." as the highest with a mean of 4.50 and standard deviation of 0.55. For the students, "The instructional material adds new knowledge and skills that would lead the students to create new problems related to the topic." and "The instructional material provides solving insight that would lead the students to create new solutions to the problem at hand." as the highest mean of 4.70 and standard deviation of 0.49 and 0.46. As a whole, "The assessment is related to the learning outcomes." as the highest mean of 4.71 and standard deviation of 0.46.

As shown in Table 7, the overall rating of experts was "acceptable" with (*M=4.33, SD=0.41*) and over-all rating of "highly acceptable" was found from the students with (*M=4.64, SD=0.38*). Overall, the results imply that ensures that what is being measured in the tests directly reflects the intended goals of the Mathematics in the Modern World (MMW) subject. The result support the research of Bostan et al., (2025) indicates that well-structured modules significantly improve student competencies when they include self-tests and exercises that provide the repetition necessary for retention and mastery of the specific topics discussed.

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Table 8: Overall Acceptability

	Experts			Students			Entire Group		
	Mean	**Description**	**SD**	**Mean**	**Description**	**SD**	**Mean**	**Description**	**SD**
Learning Outcomes	4.47	A	0.45	4.63	HA	0.45	4.62	HA	0.54
Contents	4.43	A	0.37	4.68	HA	0.50	4.64	HA	0.50
Activities	4.57	HA	0.43	4.61	HA	0.40	4.60	HA	0.52
Style and Presentation	4.50	HA	0.33	4.60	HA	0.39	4.60	HA	0.53
Organization	4.43	A	0.15	4.59	HA	0.46	4.58	HA	0.56
Creativity	4.50	HA	0.35	4.63	HA	0.40	4.62	HA	0.51
Assessment	4.33	A	0.41	4.64	HA	0.38	4.62	HA	0.51
Over-all rating	4.46	A	0.21	4.62	HA	0.35	4.61	HA	0.52

The overall acceptability of contextualized instructional material in MMW is "highly acceptable" with overall rating of (*M=4.61, SD=0.52*). In view of this, the experts rated the activities part obtained the highest rating of (*M=4.57, SD=0.43*). For the students, the contents obtained the highest rating of (M=4.68, SD=0.50).

Based on the aforementioned result of the study, the participants rated the contextualized instructional material as "highly acceptable" in terms of learning outcomes, content, activities, style and presentation, organization, creativity, and assessment.

The overall high acceptability of the contextualized instructional material is consistent with the findings of Fabrigas and Taban (2025) regarding the effectiveness of localized teaching materials. The experts' preference for the activities part aligns with Yuliardi et al. (2024), who noted that systematic design enhances mathematical creativity. Meanwhile, the students' high rating for content validates the assertions of Marasigan (2019) and Abude (2021) that instructional materials are most successful when specifically fitted to the level and needs of the learners.

CONCLUSIONS

Students enrolled in hospitality field relies heavily on hands-on skills and prefer active learning, a lack of contextualization hinders the development of abilities like problem-solving, guest interaction, and operational efficiency. It is encouraged the use of contextualized instructional material which successfully transforms Mathematics in the Modern World (MMW) subject from an intimidating subject into a practical, engaging, and highly effective learning experience that meets both expert standards and student needs. Also, it increases student engagement, improve comprehension, and boost academic performance by linking mathematical concepts to students' real-life experiences, culture, and local environment. Additionally, the overall acceptability of the instructional material is "highly acceptable". Therefore, the researcher had achieved the usefulness in developing the contextualized instructional material that is ready and usable which can be utilized to bridge mathematical concepts with students' daily experiences by integrating real-world scenarios.

REFERENCES

1. *Abude, A. J. (2021). The effectiveness of modular distance learning modality to the academic performance of students: A literature review. Himalayan Journal of Education and Literature, 2(2), 1–3. https://doi.org/10.47310/hjel.2021.v02i02.001*
2. *Agup. (2022). Engagement in Mathematics of First Year Students: A Basis for The Formulation of an Action Plan For Student-Teacher Interaction. 34(6), 65. https://www.researchgate.net/publication/372988724*
3. *Ammamiarihta, Syahputra, E., & Surya, E. (2017). Development of learning devices oriented problem based learning to increase student's combinatorial thinking in mathematical problem solving ability. Proceedings of the 2nd Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2017). https://doi.org/10.2991/aisteel-17.2017.71*
4. *Anselmo, C. T., Matulin, M. V., & Maramag, K. J. C. (2024). Bridging the Gap: Technical and Management Competencies of BSHM Graduates in the Philippine Context. EIKI Journal of Effective Teaching Methods, 2(4). https://doi.org/10.59652/jetm.v2i4.318*
5. *Bangalan, & Hipona, J. (2022, October 28). Mathematics in the Modern World as a Science Of Patterns With An Integration Of Outcome Based Teaching-... ResearchGate; unknown. https://www.researchgate.net/publication/364813755*
6. *Biza, I., González-Martín, A. S., & Pinto, A. (2022). "Scaffolding" or "Filtering": A Review of Studies on the Diverse Roles of Calculus Courses for Students, Professionals and Teachers. International Journal of Research in Undergraduate Mathematics Education, 8(2), 389–418. https://doi.org/10.1007/s40753-022-00180-1*
7. *Bostan, M., Sevinç, Ş., Lada, M., & Kubáček, Z. (2025). The nature of reasoning-and-proving items in textbooks: The cases of Türkiye, Norway, and Slovakia. International Electronic Journal of Mathematics Education, 20(3), em0829. https://doi.org/10.29333/iejme/16185*
8. *Celestine, A. B., Obeng-Denteh, W., Kwabi, P. A., Abraham, S., & Gyamfi, A. (2024). Everyday Uses of Mathematics and the Roles of a Mathematics Teacher. Science World Journal, 19(3), 2024. https://doi.org/10.4314/swj.v19i3.29*
9. *CHED. (2022). 2022 (3rd Edition). https://chedro3.ched.gov.ph/wp-content/uploads/2022/06/CHED-Citizen_s-Charter_Brochure.pdf*
10. *Commission on Higher Education. (2013). CHED Memorandum Order No. 20, series of 2013: General Education Curriculum –*

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Holistic understandings, intellectual and civic competencies. https://ched.gov.ph/wp-content/uploads/2017/10/CMO-No.20-s2013.pdf

11. *Dacles, G. G. (2024). 21st-Century Teaching Competencies, Learning Skills and Science Content Knowledge of STEM Students Among the DepEd Schools in the Province of Capiz: A Basis for Enhancement Program. International Journal of Multidisciplinary Applied Business and Education Research, 5(12), 5006–5039. https://doi.org/10.11594/ijmaber.05.12.09*
12. *Fabrigas, J. P. G., & Taban, J. G. (2025). Contextualization and localization of teaching mathematics in the new normal. Asian Journal of Education and Human Development, 4(1), 153–160. https://doi.org/10.5281/zenodo.7742205*
13. *Gal, I. (2024). Adult education in mathematics and numeracy: A scoping review of recent research. https://rdcu.be/dxT1a. Published 2024 by ZDM—Mathematics Education). https://www.researchgate.net/publication/377499716*
14. *Geiger, V., & Schmid, M. (2024). A critical turn in numeracy education and practice. Frontiers in Education, 9. https://doi.org/10.3389/feduc.2024.1363566*
15. *Jade, S., & Oco, R. M. (2023). Students' Mathematical Skills and Performance. ResearchGate, 6(2), 328–332. https://www.researchgate.net/publication/373110709*
16. *Jamon, M. (2020). Development of Instructional Module to Bridge the Gap for Non-STEM K to 12 Graduates Enrolled in Mathematics Related Program. West Visayas State University, Iloilo City.*
17. *Kirby, J., Rencell, D., & Ching, D. A. (2023). Effectiveness of Realistic Mathematics Education Approach on Problem-Solving Skills of Students. International Journal of Educational Management and Development Studies, 4(2), 64–87. https://doi.org/10.53378/352980*
18. *Koskinen, R., & Pitkäniemi, H. (2022). Meaningful Learning in Mathematics: A Research Synthesis of Teaching Approaches. International Electronic Journal of Mathematics Education, 17(2), em0679. https://doi.org/10.29333/iejme/11715*
19. *Marasigan, M. (2019). Development of a self-instructional module for university students. Journal of Educational Research and Practice, 9(1), 45–58. https://doi.org/10.1080/21532974.2019.1577890*
20. *Ogates, R. C. (2025). Contextualized teaching on student's performance in mathematics during post-pandemic COVID-19. International Journal of Social Sciences and Management Studies, 6(1), 121–128. https://ijsmsjournal.org/2023/volume-6%20issue-1/ijsms-v6i1p121.pdf*
21. *Smith, J. M., Smith, J., McLuckie, A., Szeto, A. C. H., Choate, P., Birks, L. K., Burns, V. F., & Bright, K. S. (2022). Exploring Mental Health and Well-Being Among University Faculty Members: A Qualitative Study. Journal of Psychosocial Nursing and Mental Health Services, 60(11), 17–25. https://doi.org/10.3928/02793695-20220523-01*
22. *Smith, K., Maynard, N., Berry, A., Stephenson, T., Spiteri, T., Corrigan, D., Mansfield, J., Ellerton, P., & Smith, T. (2022). Principles of Problem-Based Learning (PBL) in STEM Education: Using Expert Wisdom and Research to Frame Educational Practice. Education Sciences, 12(10), 728. https://doi.org/10.3390/educsci12100728*
23. *Sujatha, & K Vinayakan. (2023). Integrating Math and Real-World Applications: A Review of Practical Approaches to Teaching. 8(2), 55–60. https://www.researchgate.net/publication/387401743*
24. *Tinonas, M. J., Jalique, J. B., Tamon, A. M. J., & Baltazar, J. M. S. (2023). Modular instruction modality: Its effectiveness in the lens of students. Psychology and Education Journal, 7, 701–712. https://doi.org/10.5281/zenodo.7750488*
25. *Yuliardi, R., Kusumah, Y. S., Nurjanah, N., Juandi, D., & Suparman, S. (2024). Development of a STEM-based digital learning space platform to enhance students' mathematical creativity in future learning classrooms. Eurasia Journal of Mathematics, Science and Technology Education, 20, em2545. https://doi.org/10.29333/ejmste/15665*