

Development and Validation of a Booklet in Educational Research: A Supplementary Material for Filipino Teacher Education Students

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Abstract

With the recent revitalization of the teacher education programs in the Philippines, along with the implementation of outcomes-based education, achieving expected outcomes and competencies in research among pre-service teachers has been a challenge for teacher educators. Through this research and development study, a booklet for undergraduate teacher education research was developed and subjected to validation by experts and intended users from a state-run university in Central Luzon, Philippines. Its paramount aim is to further intensify and deliver a more efficient and effective teaching and learning method for undergraduate research subjects through this supplementary learning material. The developmental process was guided by the analysis-design-development-implementation-evaluation (ADDIE) model. Results indicated that in general, instructional materials in undergraduate research are slightly available and slightly adequate as perceived by the respondents. There is also a need to develop a booklet specifically on topics under research methodology. The 4E x 2 model was adopted as an instructional design. Expert validators confirmed that the booklet was very much acceptable in terms of adequacy, coherence, appropriateness, and usefulness. The pre-service teachers evaluated the material, its modules, and lessons with much acceptability. Moreover, the validated material as an output of the study could serve as a potential supplementary material to facilitating learning critical content in educational research among its intended users. Further review may be initiated, and mass testing of the material is recommended.

Keywords: content validity; elementary education; pre-service teachers; research and development; teacher education

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1. Introduction

The impetus that propelled a plethora of higher education institutions (HEIs), including traditional universities and profession-oriented institutions in the world, to adapt to the ever-changing demands of times could be attributed to the conduct of research, as it serves a major metric for the ranking of academic institutions (Cameron et al., 2018; Webber, 2011). This is the similar reason why educational institutions in many countries require students, even at the high school level, to generate knowledge through the conduct of research studies as a manifestation of knowledge application and theories put-into-practice. Even among teacher education institutions (TEIs), doing research is relatively important as it is a mandatory requirement to comply with before obtaining an education degree. Hence, innovative means are being undertaken to enhance students' experiences in research writing (Alanazi & Bensalem, 2022).

In the era of globalization, technological advancements have developed rapidly, allowing students to learn more effectively and efficiently. Alternative channels of communication that a classroom teacher can employ to concretize an idea during the teaching and learning process are referred to as instructional resources (Dizon & Tolentino, 2022). IMs include lessons and activities which require pupils' active participation, exploration, and application of problem-solving skills in non-routine problems (Torio, 2015). Baan (2021) stated that instructional materials significantly impact the teaching and learning process, as well as the academic success of students. In terms of teaching, instructional materials aid teachers in clarifying and making their courses explicit. The materials themselves also aid in the transmission of information and ideas to learners, which helps to support the overall teaching process. The use of instructional materials helps generate a teaching and learning method that is more successful. Teachers can deliver results to their students more effectively and efficiently, and students can acquire more insights and learn more efficiently and properly as a result. Instructional materials are resources used to teach students, such as textbooks, modules, curriculum guides, and booklets. Teachers prepare instructional materials to encourage students to learn and improve their academic performances. Teachers find ways in sharing their expertise to serve the students better by crafting well-designed instructional materials (Casiano, 2012). Instructional materials must be carefully planned and checked for reliability and validity with underlying factors, such as learning content, examples, and even the sources used.

With the evolving educational conditions in society today, efforts to increase the development and application of instructional materials are beneficial to learners. Instructional materials, which

can be used in any learning modality, are designed to enable the learners to study by themselves. In the recent trends of learning set-up in the country, abrupt changes and implementation of new learning strategies and incorporation of new technologies were maximized to assist the teachers and students. It is imperative to prepare new instructional materials to help the learners adjust and adapt to the advancement of the learning activity. Providing instructional materials to the learners does not necessarily mean replacing the teachers, but it may encourage independent and individualized learning among the students. By giving the students access to these materials, they will further understand the core information in their lessons, as they explore and engage in the different topics in a particular course.

1.1. Literature Review

The Commission on Higher Education (CHED) of the Philippines, in charge of promoting relevant and quality higher education, sets the minimum standards for the operationalization of professional institutions, colleges, and universities. In its commitment to comply with the existing international standards, the commission developed competency-based learning standards—the Outcomes-Based Education (OBE). It is a learner-centered approach where the emphasis is not on what the teacher wants to achieve, but rather on what the learner should know, understand, demonstrate (do), and become. It is defined as the approach that focuses and organizes the educational system around what is essential for all learners to know, value, and be able to do to achieve the desired level of competence (Commission on Higher Education, 2014). It focuses on the institutional, program, and course outcomes, the social demand for education, and the results and impact of the learning system and process. It emphasizes that the outcomes should be observable and/or measurable.

Acquiring knowledge and skills in research may be challenging to students, but they may still succeed in studying and writing research papers if there is a balance in the teaching and learning process. The success of the teaching-learning process does not only rely on student factors but also on the teacher of the subject. The teacher factor affects the goals of the subject and how these goals will be achieved. It includes the teaching strategy, relevant instructional materials, and assessment techniques. To plan effective strategies, teachers need high-quality instructional materials.

Booklets are printed media used as instructional materials and are typically known as “small books” designed in a compact, creative, and engaging manner (Fauziyah, 2017, as cited in Ramadhani & Saptono, 2022). Booklets were viewed as effective alternative materials for teaching and learning to allow intended groups to facilitate the understanding of the content and achieve expected outcomes (Khotimah & Indrayati, 2016; Suniah et al., 2018; Zalita et al., 2017). Booklets can serve as useful alternatives and supplementary materials that can aid the learning of complex facts and information.

Notably, several studies made use of booklets as the subject of the research and development process such as those used among *wadi makers* in Indonesia (Dewi et al., 2020), eating practices in Malaysia (Teng et al., 2017), science literacy skills (Ramadhani & Saptono, 2022), health education (Farizan et al., 2020), microscopic fungi species (Sulaiman et al., 2019), elementary science (Pratiwi et al., 2020), among others. Dewi et al. (2020) for instance, developed a booklet to provide non-formal education in rural areas in Central Kalimantan to enrich the knowledge and skills of *wadi makers* in the production. Teng et al. (2017), on the other hand, crafted a booklet about Sunnah eating practices that was composed of ways and recommendations on how to live a healthy lifestyle suitable for Malaysians. Ramadhani and Saptono (2022) also developed a booklet to increase the science literacy skills of Indonesian students. Another booklet titled “Be SAFE” was produced to promote awareness about drowning prevention and water safety among the parents of primary school pupils in Selangor (Farizan et al., 2020). Meanwhile, a book was designed by Sulaiman et al. (2019) about the variety of 21 microscopic fungi species. Sulaiman et al. (2019) claimed that the booklet is effective in the achievement of students’ learning. In the study of Pratiwi et al. (2020), a Predict-Observe-Explain (POE) learning model-based booklet was crafted to provide Grade 4 students of Bendo 1 Elementary School, Blitar City, Indonesia with a teaching material intended for science subjects.

Considering that booklets are widely acknowledged to be of use by different researchers such as medical personnel, cultural advocates, scientists, and educators around the world, it would be an interesting supplementary material of use by Filipino student-researchers that is tailor-fitted to their context. This goes with the belief that interest and motivation would fuel their desire to understand and apply concepts in research effectively.

The ADDIE model is a systematic five-phase instructional design process by which instructional materials and lessons can be consistently and reliably developed. It is an iterative model

involving review and revision allowing the incorporation of feedback throughout the design process which then reflects the recursive nature of the input-process-output paradigm (Molenda, 2015). The acronym ADDIE stands for its five phases, namely: Analysis, Design, Development, Implementation, and Evaluation. The Analysis phase is the foundation phase which involves defining and identifying the problem or condition necessary for crafting the learning objectives, topics or content to be taught, and mode of delivery suited for the students or target audience. From the outputs of the analysis phase, planning and designing of the pedagogical approach, instructional methods, and materials will be done in the Design phase. This phase includes writing the objectives, planning the instructions, identifying resources, and developing lessons and test items. The Development phase is the actual creation and development of the materials. It is when the content ideas are applied and brought to actuality. The actual delivery and usage of the material is the Implementation phase. The final phase is the Evaluation phase, which is when the effectiveness and efficiency of the material will be tested. It aims to obtain feedback on the usage of the learning material (Sahaat et al., 2019).

To respond to the challenge of innovating educational delivery mechanisms in higher education, the researchers ventured into developing an instructional material that can be used in any learning modality. This instructional material for research will help Filipino student researchers. There were several studies conducted about the challenges and difficulties of Filipino students in writing their research papers. Among those that caught the attention of the researchers is the result of the study conducted by Garingan (2019), where it was found out that students with a Bachelor's in Elementary Education (BEE) experienced a high extent of difficulty in writing research. It was also given the emphasis that the BEE students had difficulty in all aspects of learning and developing skills in research. Based on the study of Abubakar (2020), students who were taught using instructional materials have improved their academic performance. He also concluded that the use of instructional materials can reveal the full potential of the students. Therefore, this study was conducted to develop a booklet for undergraduate research students to supplement instruction and address the limited number of studies where research is of prime consideration. Given that outcomes-based education has been a mainstreamed effort in the Philippines, and the need for more locally produced materials is of call, this study, having a booklet with the end in mind, would be a significant contribution to the body of knowledge in research and development and contextualization of instruction through instructional materials development.

1.2. Conceptual Framework

As shown in Figure 1, a cyclical ADDIE model was adapted as the basis for the development of a research booklet. The first phase was determining the feasibility of the development of the research booklet based on the assessment of the availability and adequacy of research instructional materials within the college and university. Based on these findings, the design of the booklet was done using a practical instructional design model. Moreover, based on the contents of the syllabus for the research subject and the inputs from the analysis and design phases, the booklet was developed and printed. The implementation was carried out via digital distribution to the students and experts. From the feedback of the experts, from their validation, and students' feedback in terms of readability and diagnostic assessment, the effectiveness and efficiency of the booklet were evaluated. Each phase of the model presents bases for the development of the booklet. And as a cyclical model, it provides the continuous improvement and development of the material. A booklet in educational research was developed and validated as the expected output of the study.

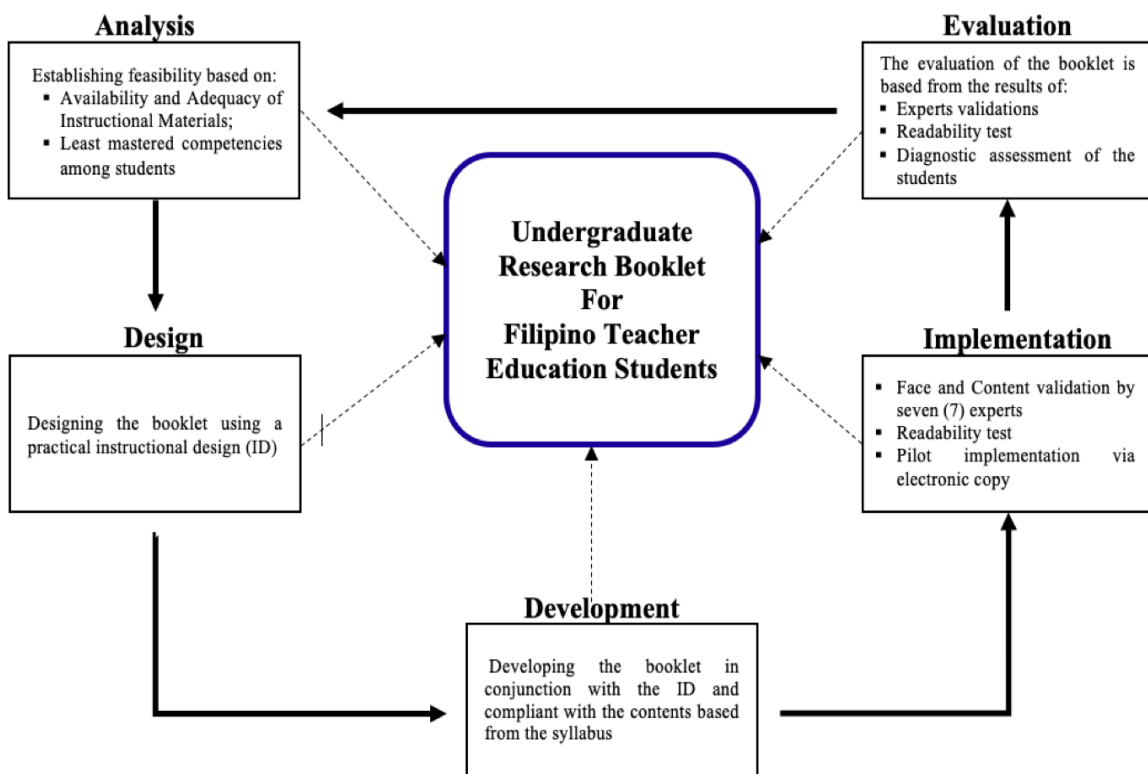


Figure 1. The paradigm of the Study

1.3. Objective of the Study

The researchers aimed to develop a booklet as supplementary instructional material in educational research for Filipino teacher education students. Specifically, the following questions were answered:

1. How may the feasibility of developing a research booklet in educational research be described in terms of:
 - 1.1. status of the availability and adequacy of instructional materials related to educational research; and
 - 1.2. least mastered concepts or topics by the teacher education students?
2. How may the identified topics be developed into a booklet?
3. How may the face and content validity of the developed booklet be described by the students and experts in terms of content and format?
4. What is the readability assessment of the developed booklet?
5. What was the developed booklet for undergraduate teacher education research?

2. Method

2.1 Research Design

The descriptive-educational research and development (R&D) model was the research design employed in this study. According to Borg and Gall, as cited in Tolentino et al. (2020), educational R&D is a research model used by researchers to construct, produce, and review instructional products, materials, and other interventional programs grounded on a critical research process. R&D is the most fitting design for this study as this was geared toward the development of a research booklet as supplementary material for undergraduate teacher education students within the premise of the concepts that were perceived to be challenging by the students and a needs assessment analysis.

2.2 Respondents

For this study, four (4) sets of respondents were involved. The first set included the research teachers ($n = 12$) from a teacher education institution situated in Central Luzon, the Philippines where the study was conducted. They were purposely selected because of their involvement as research teachers to undergraduate students and their engagement in faculty research (either published or presented in research conferences). Also, a total enumeration (census) of elementary education major students ($n = 150$) who were enrolled in the educational research course at the time of the study was

also included in this group. Both groups were asked to assess the status of the availability and adequacy of instructional materials related to educational research in their institution.

The second group consisted of a randomly selected sample of teacher education students ($n = 76$) who were chosen from the initial census of students in the first set. Included in their qualifications as respondents were that they must be enrolled in a bachelor's program in elementary education and were currently enrolled in an educational research course at the time of the study in the second semester of the academic year 2021-2022. Students accomplished an informed consent form after explaining in detail the purposes of the study and the extent of their participation.

The third set of respondents included seven (7) expert-validators who evaluated the proposed booklet on educational research. Two (2) of the validators are experts in instructional materials development as they are members of the University's Textbook and Instructional Materials Development (TIMD) committee, an office that is in charge of checking and validating the content of the developed instructional material, while the other three (3) are research specialists designated by the Research Management Office (RMO), an office that is in charge on reviewing paper presentations of the faculty in the institution (each for quantitative, qualitative, and mixed methods approaches) and two (2) have specialization in the English language. To establish the content validity of the proposed booklet, the expert validators evaluated the material in terms of content and format. Moreover, their comments and suggestions for enhancement were also sought to determine the face validity of the material and were eventually integrated during the enhancement phase.

Respondents in the fourth set included 20 students from the same student group enrolled in the educational research course selected via maximum variation sampling to evaluate the developed booklet using a students' evaluation checklist. The selection was grounded on their association with the proposed booklet during its pilot implementation, and the researchers captured all students who performed in from the extremes (top and least performers) and those that lie in the average based on their midterm grades.

2.3. Instruments

2.3.1. Needs Assessment Survey

A needs assessment survey was utilized to describe the status of the availability and adequacy of instructional materials related to educational research. Items listed were adopted from Selga (2013) to determine the availability and adequacy of instructional materials related to educational research as assessed by the research teachers and students. The survey instrument was subjected to a reliability test using internal consistency via Cronbach's alpha with a computed value of .968 indicating very high reliability.

2.3.2. Perception of Research Competence

The researchers adopted the research instrument developed by Molina (2019). This instrument was developed to measure the research competencies of senior high school students. This was modified based on the content of the course syllabus of research used in the teacher education

program. The modified instrument was subjected to content and construct validation and was later subjected to a reliability test using Cronbach's Alpha with a reliability coefficient of 0.991 establishing very high reliability of the questionnaire.

2.3.3. Expert Validators' Instrument

The instrument used to evaluate the proposed material made use of the adapted instrument from Rogayan and Dollete (2019) which was further subjected to revalidation in the study by five (5) experts. An item-content validity index (I-CVI) of 1.0 was obtained indicating its high content validity. Its reliability was interpreted as very high with a Cronbach's alpha value of 0.91.

2.3.4. Students' Evaluation Checklist

A student evaluation checklist adapted from Rogayan and Dollete (2019) was used by the researchers to allow students to assess the developed booklet. The checklist was face and content validated by the same experts in the revalidation of the expert validators' instrument, and reliability testing via internal consistency was both performed. An item content validity index (I-CVI) of 1.0 indicated its highly acceptable level of validity (Lynn, 1986). Cronbach's alpha values of .818 and .941 were recorded in the student evaluation checklist; and evaluation of the modules and lessons, respectively, which manifested an acceptable internal consistency (Fornell & Larcker, 1981).

2.3.5. Readability Test

In assessing the validity of the booklet along with readability, which is ensuring that the contents of the material (e.g., level of vocabulary) were understandable and appropriate to college students' level, the Flesch Reading Ease Formula and Flesch-Kincaid readability tests were utilized through the aid of *Readability Formulas' Calculator*. A Flesch reading ease score ranging from 60-70 is relatively acceptable according to Readability Formulas.com, as asserted by Terblanche and Burgess (2010). However, to conform to the Philippine context, the legend for interpretation provided by Selga (2013) was adopted with a target reading ease score for this study of 31-50 which indicates a verbal description of "difficult" and appropriate for 3rd to 4th-year college students (the level where research writing is introduced).

2.4. Data Collection

The development aspect of this study was anchored on the Analysis, Design, Development, Implementation, and Evaluation (ADDIE), a widely acknowledged model for product development in education.

2.4.1. Analysis

The analytical aspect of the development process commenced with establishing the feasibility of the critical competencies or topics through the administration of a questionnaire to assess the research competencies of the students involved in the study. Further validation by experts and end-users was also considered for the analysis.

2.4.2. Design

Cognizant of the identified topics, as confirmed by the research teachers and students, the structure and instructional design of the booklet were decided on and concurred by the researchers. A practical instructional design (ID) was adopted to develop the contents from topics to modules and lessons.

2.4.3. Development

This was the phase intended for the iterative process of developing the components of the booklet. In conjunction with the ID used, it was ensured that the contents were strictly compliant with the contents of the syllabus and the needs determined in the “analysis phase.”

2.4.4. Implementation

Before the utilization of the developed booklet, it was preliminarily subjected to face and content validation by seven (7) expert validators in terms of adequacy, coherence, appropriateness, and usefulness. Their feedback was also sought relative to the improvement of the proposed material for subsequent revision. A readability test was also conducted to verify the applicability of the words used in the material to the level of the intended group. Then, a pilot implementation of the booklet was facilitated to a research class from the same group who were subjected to a diagnostic assessment. An electronic copy of the booklet was made available to all students. At the end of a 6-week utilization of the booklet by the participants, 30 students accomplished the provided checklist for every unit in the booklet.

2.4.5. Evaluation

The evaluation of experts and students, their feedback and suggestions, and the readability scores were eventually considered in the finalization of the booklet. A revision culminated in the developmental process.

3. Results and Discussion

3.1. Feasibility of Developing a Research Booklet in Educational Research (Analysis)

3.1.1. Status of the Availability and Adequacy of the Instructional Materials related to Educational Research

Table 1 reflects the results of the respondents' assessment of the availability and adequacy of instructional materials related to educational research. It could be noted that all printed instructional materials are slightly available (worktext, module, manual, worksheet, and pamphlet), while textbooks were perceived to be moderately available. The results further indicate that the mean scores are clustered as justified by the standard deviation range of 0.69 to 0.90. It could also be surmised that the highest mean scores were noted among textbooks, despite their slightly available and adequate status from the respondents' perception. As such, this corroborated with the findings of

Selga (2013) who noted the resembling status for textbook materials related to science, technology, and society (STS). This further justified the feasibility to develop instructional materials that are handy, practical, and contextualized, to educational research. Modules have relatively low mean score results as these were scarcely used among higher education institutions (Camara, 2016).

Table 1. Availability and Adequacy of IMs related to Educational Research.

Instructional Material	Availability of Instructional Materials				Adequacy of Instructional Materials			
	Research Teachers		Research Students		Research Teachers		Research Students	
	<i>M (SD)</i>	VD	<i>M (SD)</i>	VD	<i>M (SD)</i>	VD	<i>M (SD)</i>	VD
Textbook	2.50 (0.76)	SA	2.53 (0.90)	MA	2.67 (0.94)	MA	2.59 (0.90)	MA
Worktext	2.17 (0.90)	SA	2.32 (0.96)	SA	2.00 (0.82)	SA	2.42 (0.87)	MA
Module	1.83 (0.90)	SA	2.34 (0.94)	SA	1.67 (0.75)	NA	2.40 (0.92)	SA
Manual	2.33 (0.75)	SA	2.39 (0.90)	SA	2.50 (0.96)	SA	2.36 (0.86)	SA
Worksheet	1.83 (0.69)	SA	2.31 (0.97)	SA	1.67 (0.75)	NA	2.36 (0.93)	SA
Pamphlet	2.00 (0.82)	SA	1.96 (0.85)	SA	2.00 (0.82)	SA	2.15 (0.89)	SA

Highly Available/Adequate (3.26-4.00); Moderately Available/Adequate (2.51-3.25); Slightly Available/Adequate (1.76-2.50); Not Available/Adequate (1.00-1.75)

3.1.2. Least Mastered Concepts or Topics in Research

As shown in Table 2, the respondents are generally “competent” in research conceptualization, formulation of research methods, and data gathering, processing, and analysis. However, among the three topics, it was indicated that the least mastered concepts or topics in the research of the respondents were in the formulation of research methods and design. Usually, this is considered one of the challenges encountered by the student-researchers. In the study of Qasem and Zayid (2019), lack of knowledge about the research methodology, selecting the appropriate research tools and data analysis, and following ethical standards were considered as the obstacles faced by the students.

Table 1. Availability and Adequacy of IMs related to Educational Research.

Research Competency	Mean (SD)	VD
Research Conceptualization		
1. Identify research topic	2.58 ± 0.59	C
2. Select research topic	2.67 ± 0.63	C
3. Construct research titles	2.52 ± 0.60	C
4. Describe the background of the research	2.39 ± 0.65	SC
5. Formulate research questions that can be investigated	2.53 ± 0.59	C
6. Select relevant literature that are related to the present study	2.60 ± 0.63	C
7. Cite literatures and related studies	2.67 ± 0.63	C
8. Construct theoretical and/or conceptual framework	2.33 ± 0.85	SC
9. Define the terms in the study	2.31 ± 0.76	SC
WM	2.51	C
Formulation of Research Methods and Design		
10. Choose the most appropriate research design	2.55 ± 0.67	C
11. Select study sites appropriately	2.41 ± 0.74	SC
12. Has knowledge on the different approaches in research	2.54 ± 0.64	C
13. Can identify the Quantitative research design.	2.42 ± 0.65	SC
14. Can identify the Qualitative research design.	2.40 ± 0.58	SC

Research Competency	Mean (SD)	VD
15. Can identify the Mixed Method research design.	1.92 ± 0.60	SC
16. Describe and choose the sample of the study	2.46 ± 0.72	SC
17. Construct research instruments	2.30 ± 0.76	SC
18. Propose proper data gathering procedures	2.72 ± 0.75	C
19. Select the appropriate statistical tool in analyzing data based on the posited objectives	2.19 ± 0.77	SC
20. Impose appropriate ethics in research	2.99 ± 0.73	C
WM	2.45	SC
Data Gathering, Processing and Analyzing		
21. Gather data	3.21 ± 0.48	C
22. Present data	2.48 ± 0.87	SC
23. Infer and explain qualitative data	2.32 ± 0.87	SC
24. Process statistical techniques to analyze quantitative data	2.42 ± 0.90	SC
25. Present results	2.46 ± 0.84	SC
26. Create a coherent summary	2.61 ± 0.80	C
27. Draw conclusions from research findings	2.55 ± 0.84	C
28. Formulate recommendations	2.62 ± 0.4	C
WM	2.58	C
Grand Mean	2.51	C

3.2. Preparation of the Booklet (Design)

The 4E x 2 (read as “4E by 2”) (Marshall, 2007) was utilized as the instructional design model in designing the contents of the modules in the booklet. The 4Es represent the four (4) sequential phases which are (a) engage, (b) explore, (c) explain, and (d) extend. This is an inquiry-based instructional model developed and grounded on the synergy of “formative assessment, inquiry instructional models, and metacognitive reflection” (Marshall, 2009, p. 1). In this study, the 4Es instructional model was analyzed to be appropriate because of its simple formatting and strong foundation on an inquiry-based approach, which is essential for research students. Shown in Table 2 is the description of each part of the booklet.

The researchers adopted the 4E instructional model in writing its content. This model is divided into four phases: engage, explore, explain, and extend. In the booklet, the “engage” phase pertains to activities that aim to determine what the students already know about the lesson. It also aims to captivate their attention to share their understanding of the lesson. The “explore” phase includes an activity or brief review that will help the students connect the current lesson or activity to the previous topic. This may also entail creating their personal understanding of the current lesson. While in the “explain” phase, the introduction of the lesson is presented, in which research concepts are discussed in detail. The concepts are explained, and examples are provided for the students to easily comprehend their meaning and relevance. In the last phase, which is the “extend” phase, activities that test students’ skills and mastery of the lesson are included. They are required to take this part to determine their understanding of the lesson. There are four main topics in the booklet, and these are approaches in research, selecting participants or key informants and respondents, research instruments, and ethical considerations in doing research.

Table 3. Description of the Parts of the Booklet following the 4E x 2 ID Model.

Part of the Booklet (4Es)	Description
Engage	This part of the module includes activities which aim to determine what the students already know about the lesson. It also aims to captivate their focus to share their understanding about the lesson.
Explore	This part of the module may include an activity or brief review that will help the students connect the current lesson or activity to the previous topic. This may also entail creating their personal understanding about the current lesson.
Explain	This part of the module introduces the lesson, wherein research concepts will be discussed in detail. The concepts will be explained, and examples are provided for the students to easily comprehend its meaning and relevance.
Extend	This part of the module includes activities to test the students' skills and mastery about the lesson. They are required to take this part to determine their understanding about the lesson.

3.3 Development of the Booklet in Educational Research (Development)

This study was initiated to develop a booklet as a supplementary resource for undergraduate teacher education students. The slightly available and adequate instructional materials in educational research justified the need to come up with a compact material to supplement students' learning of critical skills in research. Considering that based on the students' assessment of research competencies, there is a need for research methodology to be prioritized in the development of a dedicated booklet at the time of the study.

In terms of the physical structure, the final version of the booklet was titled "*A Booklet for Research Methodology*" and has a dimension of 190.5 mm x 114.3 mm. The booklet is made up of 60 pages which include the preface, table of contents, and main topics. The front cover was designed by the authors.

The developed booklet is composed of five (5) modules, with the first module comprising three (3) lessons while the second to fifth modules each present a single lesson. The topics presented in the modules are shown in Table 4. The primary basis for selecting the content topics for the module is the necessity of these topics in developing the research knowledge and skills of the students required for conducting their thesis. The first module presents discussions about the different research designs which the researchers consider to be vital. Gaining a better understanding of research designs provides student researchers with relevant knowledge to conduct quality research works. Data analysis was also given emphasis as one of the topics in the modules because of its importance in the conduct of research. The research booklet also gives emphasis on ethical considerations in research. It is important for the students to recognize and adhere to ethical practices in all steps of the research

process. As emphasized by Hesse-Biber and Leavy (2006), ethics should be a primary consideration and at the forefront of the research agenda.

The content of the module was also based on and in compliance with the course syllabus of the research subject that the students are currently taking. The authors divided the topics in the module based on their expertise which resulted in a collaborative discussion framework of the module. Upon the author's completion of the designated topic, the content would be presented to the other co-authors for discussion, comments, suggestions, and internal validation.

Table 4. Arrangement of Topics in the Booklet.

Module/ Lesson Number	Topic Title
Module 1	Approaches in Research
Lesson 1	Quantitative Research
Lesson 2	Qualitative Research
Lesson 3	Mixed Method Research
Module 2	Selecting Participants, Respondents, or Key Informants
Module 3	Research Instruments
Module 4	Data Analysis
Module 5	Ethical Considerations in Doing Research

3.4. Content and Face Validity of the Booklet (Implementation)

The validators, composed of experts in research across approaches, instructional materials development committee members, and English language experts evaluated the booklet in terms of adequacy, coherence, appropriateness, and usefulness anchored on the same set of criteria by Rogayan and Dollete (2019) as seen on Table 5. In terms of adequacy, all indicators were strongly agreed upon by the experts as justified by an overall mean of 3.96. This indicates that the booklet satisfactorily complied with the requisite requirements of instructional material in terms of instruction and activities that stimulate independent learning through the purposeful use of images and graphs to represent a difficult abstract concept, which was sequentially arranged through the aid of an appropriate instructional design.

Table 5. Results of Experts' Validation

Criteria	Mean (SD)	VD
Adequacy		
1. Instruction corresponds with activities	4.00±0.00	Strongly Agree
2. Learning activities satisfy the stated objectives	3.86±0.37	Strongly Agree
3. Provides independent activities	3.86±0.37	Strongly Agree
4. Evident graphical and pictorial images	4.00±0.00	Strongly Agree
5. Concepts presented logically	4.00±0.00	Strongly Agree
WM	3.94	Strongly Agree
Coherence		
1. Contains relevant activities	4.00±0.00	Strongly Agree
2. Activities provide practical work	3.86±0.37	Strongly Agree
3. Activities develop creativity and resourcefulness	3.86±0.37	Strongly Agree
4. Provides relevant information for better understanding	4.00± 0.00	Strongly Agree
5. Activities conform with the concepts	4.00 ±0.00	Strongly Agree
WM	3.94	Strongly Agree
Appropriateness		
1. Adapted to intended learners	4.00±0.00	Strongly Agree
2. Based on the PPST standards/ learning competencies	4.00±0.00	Strongly Agree
3. Provides immediate needs	4.00±0.00	Strongly Agree
4. Arranged in the correct sequence	4.00±0.00	Strongly Agree
5. Provides varied activities to sustain interest	4.00±0.00	Strongly Agree
WM	4.00	Strongly Agree
Usefulness		
1. Easy to understand	4.00 ± 0.00	Strongly Agree
2. Provides knowledge and skill	4.00 ± 0.00	Strongly Agree
3. Encourages creative and critical thinking	3.86 ± 0.37	Strongly Agree
4. Serves as an instructional tool	4.00 ± 0.00	Strongly Agree
5. Helps facilitate lesson presentation	4.00 ± 0.00	Strongly Agree
WM	3.97	Strongly Agree
Overall Mean	3.96	Strongly Agree

Strongly Agree (3.50–4.00); Agree (2.50–3.49); Disagree (1.50–2.49); Strongly Disagree (1.00–1.49)

3.4.1. Strength of the Booklet

The physical aspect of the booklet was appreciated by the expert validators specifically the simple yet organized layout. In support of this, Expert 1 (E1) mentioned that “*The layout and organization of lessons, activities and other tasks provide smooth transitions*” and this was supported by Expert 2 who said that “*The layout and the simplicity of the discussions make research appealing to the readers.*” Torres (2012) stated that instructional materials shall follow a criterion that will be helpful to the learners in enhancing the learning process. The language, content, format, activities, and organization of the material shall be considered. The researchers considered all these aspects to produce a quality research booklet. It was also evident that the booklet is user-friendly, which simply means that the concepts, activities, and instructions can be easily understood and may also encourage

the students to develop more interest in research. As E7 mentioned, *"It is a very good booklet which will definitely be a big help to the users. It is something that seems to simplify research which many will not dare to venture into unless required. It is something that will pique the interest of the students and will develop a fondness for research."* This was supported by Tuimur and Chemwei (2015) who asserted that instructional materials shall stimulate students to learn. It must also have the potential to help teachers better explain vague concepts clearly. This instructional material shall also provide practical experiences based on the included activities that will develop students' mastery of skills.

3.4.2. Experts' Suggestions for Improvement

Three expert validators suggested adding more examples and web links for research papers to further enhance the reading and understanding capacities of the students. As verbalized, E3 stated that *"Add specific objectives to each lesson. Add a web link to reading materials (Research papers) as activity. Read and reflect."* While two expert validators suggested widening the target clientele of the booklet. As mentioned by E4, *"The proponents may further expand on the scope of the target clients."* This was also supported by the E5, who said that *"Additional examples intended for other programs may be considered to make it also useful to other colleges."* To address these suggestions, the researchers added more examples and reference materials in the booklet. As stated by Khuana et al. (2017), to engage the students in attaining research and analytical skills, adding inquiry-based activities is encouraged. With regards to the widening of the scope of target users, the researchers decided to stick with its target clients at present, but such consideration will be made in future revisions of the booklet.

3.4.3. Students' Evaluation

The developed booklet underwent pilot testing for a research class of elementary education major students (pre-service teachers). They were provided with a copy of the booklet and have used it simultaneously in the actual content on research methodology based on the syllabus. After four (4) weeks, they were asked to evaluate the material. Table 6 shows the results of the students' evaluation using a checklist. Results indicate that by and large, the pre-service teachers who participated in the pilot testing of the booklet "agreed" with its acceptability as justified by a weighted mean of 3.24. The highest mean of the agreement was seen on the item, "Learning objectives are attainable." This implies that the set objectives for each content are feasible and can be achieved within the prescribed time. They further agree that the content can be comprehended with ease; indicates differentiated

activities; provides interest because of the use of graphic organizers; contains assessment tasks that can stimulate learning and enjoyment and increases their regard and value toward research.

Table 6. Students' Evaluation Checklist

Items	Mean (SD)	VD
The instructions are easy to understand.	3.25±0.62	Agree
Learning objectives are attainable.	3.40±0.58	Agree
Varied activities are evident.	3.35±0.73	Agree
Graphic organizers enhanced my interest	3.20±0.68	Agree
The activities enhanced my understanding of the lessons	3.35±0.57	Agree
I enjoyed answering the activities	3.05±0.67	Agree
The activities increased my interest in educational research	3.10±0.54	Agree
Overall Mean	3.24	Agree

Strongly Agree (3.50–4.00); Agree (2.50–3.49); Disagree (1.50–2.49); Strongly Disagree (1.00–1.49)

Pre-service Teachers' Evaluation of the Modules

The selected topics included in the research booklet were included based on the results as the least perceived research competency of the students. As revealed in Table 7, all the modules in the booklet were regarded as “much acceptable” with a weighted mean of 3.32. This justifies that the lessons included in the booklet are relevant and acceptable in terms of their content and activities.

Table 7. Pre-service teachers' evaluation of the modules and lesson

Content	Mean (SD)	VD
Module 1	3.45±0.59	Much Acceptable
Lesson 1	3.25±0.77	Much Acceptable
Lesson 2	3.40±0.66	Much Acceptable
Lesson 3	3.00±0.84	Much Acceptable
Module 2	3.45±0.74	Much Acceptable
Module 3	3.40±0.73	Much Acceptable
Module 4	3.42±0.75	Much Acceptable
Module 5	3.30±0.78	Much Acceptable
WM	3.32	Much Acceptable

Very much acceptable (3.50–4.00); Much acceptable (2.50–3.49); Not much acceptable (1.50–2.49); Not at all acceptable (1.00–1.49)

The Readability of the Content of the Booklet

Ultimately, the booklet underwent a readability assessment to ensure that the content was valid in terms of its appropriateness to the intended age group or level in the educational system by being particular with the vocabulary words used in each of the modules and lessons. As seen in Table 8, the highest Flesch Reading Ease score of 56.3, with a verbal description (VD) of “fairly difficult,” was noted in “Module 4: Data Analysis.” The grade level was found appropriate for 1st to 2nd-year college students which justified that data analysis should be discussed using simpler use of words to be easily understood. Aside from Module 4, all modules had reading ease scores that range from 32.9 to 49.6, with a verbal description of “difficult”, and seemed to be intended for 3rd to 4th-year college students. This is also the same year level where research is introduced and taught as a separate course in teacher education programs in the Philippines. This further implies that of all the content composition, Module 4 could be the easiest to understand by the intended group as far as vocabulary was concerned. Instructional materials, whether print or non-print, must consider assessing their readability (Lagos, 2020; Tolentino & Tacubanza, 2020) and must acknowledge the terminologies used, grammar, vocabulary, and appropriateness to the intended grade level (Adora, 2019; Selga, 2013).

Table 7. Pre-service teachers’ evaluation of the modules and lesson.

Modules and Lessons	Reading Ease Score	VD	Level in the Philippine Educational System
Module 1: Approaches in Research			
Lesson 1: Quantitative Research	38.20	Difficult	3rd to 4th Year College
Lesson 2: Qualitative Research	43.00	Difficult	3rd to 4th Year College
Lesson 3: Mixed Method Research	32.90	Difficult	3rd to 4th Year College
Module 2: Selecting Participants, Respondents, or Key Informants	49.60	Difficult	3rd to 4th Year College
Module 3: Research Instruments	46.20	Difficult	3rd to 4th Year College
Module 4: Data Analysis	56.30	Fairly Difficult	1st to 2nd Year College
Module 5: Ethical Considerations in Doing Research	41.40	Difficult	3rd to 4th Year College
<i>Reading Ease Score</i>	<i>Verbal Description</i>	<i>Grade Level</i>	
91-100	Very Easy	5th Grade	
81-90	Easy	6th Grade	
71-80	Fairly Easy	1st - 2nd Year High School	
61-70	Normal	3rd - 4th Year High School	
51-60	Fairly Difficulty	1st - 2nd Year College	
31-50	Difficult	3rd - 4th Year College	
0-30	Very Difficult	College Graduate	

4. Conclusion

The study was conceived with the end in mind that a booklet can be developed to address the seemingly inadequate and unavailable materials in educational research and to facilitate the

learning of critical components of the content among pre-service teachers aligned with the Philippine Professional Standards for Teachers - Beginning Teacher Indicators; a basis for all learning and development programs for teachers to ensure that teachers are properly equipped to effectively implement the Program, the outcomes-based education; and the provisions of teacher education research in the Philippines. The ADDIE model was found feasible in guiding the researchers in developing the proposed material. By and large, the experts strongly agreed that the booklet was very much acceptable when aspects like adequacy, coherence, appropriateness, and usefulness were considered. The feedback in the form of recommendations assisted the authors in the enhancement of the booklet. Therefore, instructional materials development should be cyclical and iterative because integrating experts' suggestions could be instrumental in the production of quality materials. It must also be considerate of the end-users as direct beneficiaries of the booklet, hence, the students also confirmed that the modules were perceived to be much more acceptable. They further agreed that the booklet assisted them well and was provided with ease of use and subsequent learning of concepts. Test of readability as a validation confirmed that contents were tailor-fitted to their level and added another layer of confidence that the teacher-made material matched their intended level in the educational system when their vocabulary was placed into consideration. Taking all these into account, the booklet in educational research was found valid and acceptable from a bi-stakeholder perspective.

4. Limitations and Future Implications

The composition of the proposed booklet was limited only to the Methodology content of research writing as this appeared to be the most critical component for students under consideration in this study. Although other contents were not included yet, the authors may consider the development of a complete set of booklets for other content areas of research writing. In terms of methodological premises, the study was limited only to a descriptive and non-experimental quantitative exploration of students' needs that led to the development and validation of the proposed booklet. Such assessment may have been influenced by covert factors that were no longer covered and explored in the study. It is recommended that the use of qualitative research designs be considered in succeeding phases to determine these unexplored factors that could affect students' use of the booklet and knowledge acquisition. Also, experimental designs may be facilitated for future

research undertakings to verify the extent to which the material may cause improvement in learning research concepts and subsequent development of skills.

The researchers did not identify unexplored factors due to time constraints. The focus of the study deals only with identifying the weak points of the students in doing their research, which serves as the basis for coming up with a booklet that could possibly help them write their research output, specifically in the “methodology” part. After selecting thoroughly, the topics that will be included in the booklet, it was presented to the students to check their understanding. Unexplored factors which are not part of the study are the effectiveness of the booklet and the experience of the students who used it (identifying the benefits of it and how beneficial it is to them).

The generalizability of the results is limited to the locale and context of the study, the composition of the experts who validated the booklet, and the intention that the booklet was developed for teacher education students only who specialized in elementary teaching and learning. In addition, the limited exposure of the students to the use of the booklet coincided only with the weeks that research methodology was taught to them following the schedule of the course syllabus. Moreover, the modality of teaching at the time of the study was still held via virtual interaction because of the pandemic. This limited the teacher’s opportunity to observe students and their interaction with the booklet. The results of this study were obtained by following the research process thoroughly. The limitations stated do not imply that the data obtained in this study were not valid and reliable. This paper ensures data quality and ultimately research integrity even though data were obtained from a small sample size in one university.

With a small sample considered in the data collection, it is recommended that a larger group of teacher education students be considered to establish more encompassing data-driven results even for a particular institution for consideration. With the feasibility of developing a valid booklet for research, it is suggested that more materials be developed for research writing and other critical courses in the teacher education programs.

Despite these identified limitations of the study, the findings are still relevant and can be adopted by research teachers within the locality and even those from foreign countries. The justification for this is that learning resources like reading materials were still proven to be useful in teaching-learning delivery. These materials remain to be as media of knowledge and wisdom even during this digital age since they provide reliable and on-point content. Written or published materials also pave the way for creative and innovative writers and thinkers.

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