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Development And Acceptability Of Instructional Materials In Methods Of Research For Entrepreneurship Using Computer-Assisted Instruction

Rozalle H. Palacol, PhD [1], Mia V. Villarica, DIT[2]

[1] Laguna State Polytechnic University, College of Business, Administration, and Accountancy, Sta. Cruz, Laguna, Philippines.
[2] Laguna State Polytechnic University, College of Computer Studies, Sta. Cruz, Laguna, Philippines.
Email: [1]rozallepalacol@lspu.edu.ph, [2]mia.villarica@lspu.edu.ph
Orchid Id number: [1]0000-0002-4778-6309, [2] 0000-0003-0952-4479

ABSTRACT:

The research evaluates the acceptability and effectiveness of instructional materials used in the "Methods of Research for Entrepreneurship" course across four Bachelor of Science in Entrepreneurship (BSE) classes. The results indicate a high level of acceptability for the instructional materials, with average ratings ranging from 4.70 to 4.84, categorized as "Highly Acceptable." An impressive improvement in student performance was observed from pretest to posttest across all sections, with t-values indicating statistical significance at $p < 0.001$. These findings suggest that the instructional materials significantly enhance student learning outcomes, leading to a better understanding and application of the Methods of Research for Entrepreneurship course. This research contributes to the formulation of effective pedagogical strategies for entrepreneurship education, highlighting the significant role of methodically designed instructional materials in improving student performance.

KEYWORDS: *ADDIE Model, Computer Assisted Instruction, Research, Instructional Materials.*

INTRODUCTION

The experience of human development within the context of such technological advancements signifies the possession of an unparalleled volume of information readily accessible [1] Learners of today's generation are characterized as digital natives, they view technology as an essential element of their lives and are generally at ease with it. Compared to earlier generations, they learn and engage differently, frequently favoring interactive and visual learning techniques over conventional teaching methods. [2].[3] as discussed, many students find themselves mere moments away from acquiring solutions to their inquiries, as all requisite knowledge is merely a brief search away. Digital natives can independently educate themselves on any subject of interest without the necessity of departing from their personal space [4].

A 21st-century education is about giving students the skills they need to succeed in this new world and helping them grow the confidence to practice those skills [5] [3]. With so much information readily available to them, skills focus more on making sense of that information, sharing it, and using it in smart ways. It was not enough to simply add technology to existing teaching methods and technology must be used strategically deployed to benefit students [6]. As stated [7] , advancements in technology created opportunities for higher education institutions to reach a broader base of students through distance education, commonly called online education. Demand for distance education has increased year after year from 2002 to 2012, online enrollments hit an all-time high as mentioned by [8]. Online course design is rooted in the same solid principles of face-to-face teaching but requires additional considerations as enumerated [6]. The default mode of communicating course content, in general, is face-to-face and minimal in an online course, which is no longer applicable to flexible learning environments as witness to the post-pandemic education environment [9].

The Laguna State Polytechnic University (LSPU) has already started to adopt the post-pandemic education approach, which is a flexible learning environment such as online, synchronous asynchronous, and modular approaches to accommodate academic disruption suitable for the student's needs through a clear guideline by the Academic Affairs. LSPU has already shifted its classroom through the implementation of blended learning using free Learning Management Systems (LMS) namely Google Classroom.

The demand to adhere to the instructional materials and pedagogy based on the flexible learning environment is reflected in various research. [10] mentioned that the faculty must employ different methods in instruction delivery. [11] discussed the importance of student-centered design in improving student engagement in online courses. [12] proved the effectiveness of DLPs (digital learning platforms) in improving academic achievement and student engagement. It

highlights important elements that have a big impact on DLP effectiveness, like student characteristics, teacher roles, and technology infrastructure. [13] examines the impact of a large-scale ed-tech intervention in China, which connected over 100 million rural students with high-quality teachers via satellite internet, and found that it significantly improved students' academic achievement, labor performance, and computer usage up to ten years after implementation. The program effectively reduced the rural-urban education gap by providing equal access to quality educational resources, demonstrating the long-term benefits of integrating technology in education to address disparities in educational outcomes. On the other hand, [14] revealed that the use of CAI as supplemental material in training could be beneficial, and CAI could still be employed as an alternate teaching approach.

[15] focus on understanding LMS student learning experiences stated that new technology, delivery platforms, and pedagogies are required given the increasingly diverse student body and the moving educational formats from traditional in-person to online learning. Additionally, it stated that for online learning to be successful, both the courses and the platforms must not only support institutional objectives but also meet the individual needs of each student by offering easily navigable and accessible online learning environments. Moreover, they mentioned that learning experiences should offer learners a relevant and personalized learning environment. The authors suggest that educators must use research-based practices to support stakeholders interested in techniques that enhance the student experience in online learning, thereby assisting instructors in designing courses with thoughtful and targeted learning outcomes.

METHODOLOGY

This study adopted the descriptive type of research. The target population of this research was 3rd year BS Entrepreneurship students for AY 2021-2022. Only four (4) sections were involved in pretest and posttest procedures with LMS.

The development of a course guide and instructional materials for "Methods of Research" in entrepreneurship utilized the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model, incorporating a Learning Management System (LMS), specifically Google Classroom, for students enrolled in the subject during the academic year 2021-2022. The Analysis phase, foundational to subsequent stages, involved identifying potential solutions and the problem's origin, employing methods like needs, job, and task analyses to determine instructional goals and tasks [16] [17]. The Design phase used these outputs to formulate a development strategy, creating an outline to achieve instructional objectives, including defining the target population, articulating objectives, and selecting a delivery system [18] [19]. The Development phase expanded on previous stages by creating lessons and materials, including instructional content and computer-based training [17], [20]. Implementation involved delivering instruction effectively across various formats, ensuring comprehension and mastery of learning objectives [18] [19]Finally, the Evaluation stage assessed the effectiveness and efficiency of the instructional approach throughout the process [21]. The developed instructional materials underwent evaluation from the college level and were approved for dissemination.

The facilitators were asked to implement the Methods of Research instructional materials for BS Entrepreneurship students who were enrolled for the subject for AY 2021 – 2022 and utilizing Google Classroom. A survey instrument was validated and disseminated after the semester to assess the student's acceptability of the instructional materials using the 5-point Likert scale level of acceptance. The survey tool bears the criteria such as content, sequencing & pace knowledge, and application clarity of information adopted from the study of [22] the assessment of LMS was adopted from the study of [23]. Descriptive statistics such as mean and standard deviation was used to extract significant interpretations from the responses.

The Pretest and Posttest consist of ten (10) item multiple-choice questions. After five months of instruction, the scores were encoded, tabulated, and analyzed. The instruments used for this research were meant to determine the acceptance. Ability and t-test to determine the significant difference in the level of performance of the four sections.

RESULTS AND DISCUSSION

The development of instructional materials for "Methods of Research" in entrepreneurship education utilized the ADDIE model, incorporating a Learning Management System (LMS) to enhance student engagement and understanding. The instructional materials were structured into six modules, each focusing on a different aspect of research methodology. Module 1 introduced foundational concepts such as the definition, uses, and classifications of research, while Module 2 focused on developing research proposals and reviewing related literature. Module 3 covered research methodologies, including design validity and sampling methods. Module 4 focused on interpreting research findings and writing reports,

and Module 5 emphasized product analysis and testing. Finally, Module 6 concluded by summarizing research outcomes and providing recommendations.

Table 1. Acceptability of instructional materials for Methods of Research for Entrepreneurship of the BSE students.

Indicator	M	SD	V.I.
1. Content	4.84	0.39	HA
2. Sequencing & Pace	4.71	0.49	HA
3. Knowledge and application	4.81	0.43	HA
4. Clarity of information	4.71	0.53	HA
5. Learning Management System	4.70	0.52	HA
Over-all for Acceptability of Instructional Materials for Methods of Research for Entrepreneurship	**4.75**	**0.47**	**HA**
Note. N=174. V.I.=Verbal interpretation. The mean is interpreted as follows: 4.21–5:00= Highly Acceptable (PA), 3.40–4.19= Slightly Acceptable (SA), 2.60–3.39= Undecided (UD), 1.80–2.59=Slightly Unacceptable (SU), 1.00–1.79=Unacceptable (UA).			

The results from Table 1 indicate a high level of acceptability for the instructional materials used in teaching "Methods of Research for Entrepreneurship" across the four BSE sections. Each indicator, such as content, sequencing and pace, knowledge and application, clarity of information, and computer-assisted instructions, garnered mean scores ranging from 4.70 to 4.84, all categorized as "Highly Acceptable" (HA). The overall acceptability mean score was 4.75, also classified as HA. The standard deviations for these indicators were relatively low, suggesting consistent evaluations among the 174 respondents. This consistency and high acceptability results suggest that the instructional materials are well-suited for supporting student learning outcomes in entrepreneurship research methods. The materials effectively meet the curriculum needs, with no significant areas of concern identified across the different aspects evaluated.

A pre-test and post-test were conducted to evaluate the effectiveness of these instructional materials to determine the significant difference in the level of performance of the four BSE sections in Methods of Research for Entrepreneurship using an LMS the results are shown in Table 2.

Table 2. Significant Difference in the Level of Performance of the Four Sections in Methods of Research using Computer Assisted instruction

Section	Treatments	t value	Mean	Sig (2-tailed)	Analysis
Section A	Pretest	3.574*	9.15	< .001	Significant
	Posttest		13.34		
Section B	Pretest	4.202*	9.95	< .001	Significant
	Posttest		13.2		
Section C	Pretest	4.118*	9.75	< .001	Significant
	Posttest		13.35		
Section D	Pretest	2.839*	9.73	< .001	Significant
	Posttest		12.64		

*** Significant at .05**

Table 2 shows the summary of results in difference in the level of performance of the four sections in Methods of Research for Entrepreneurship using LMS. As to its result from the study, the independent t-test showed that there is a significant difference in the student performance when grouped according to Section A $t(2,7.69) = 3.57$, $p < .001$; Section B $t(2,7.69)$

= 4.20, p < .001; Section C t(2,7.69) = 4.12, p < .001; and Section D t(2,7.69) = 2.84, p < .001. The null hypothesis is said to be rejected based on the significance level that is less than .05. This supports the claims [14] mentioned that both computer-assisted training and traditional techniques were effective in teaching secondary school pupils, as seen by the higher posttest than pretest results. As a result, the LMS tool would continue to be a valuable additional learning resource and an alternate teaching approach.

The results from the t-test analysis indicate significant improvements in scores across all four sections (A, B, C, and D) from pretest to posttest. The t-values for each section were statistically significant at a p-value of less than 0.001, suggesting that the observed improvements were not due to chance. The mean pretest scores ranged from 9.15 (Section A) to 9.95 (Section B), while posttest scores increased to a range of 12.64 (Section D) to 13.35 (Section C). This consistent improvement across sections suggests that the instructional methods or materials used were effective in enhancing student performance. The significant gains indicate a substantial positive impact on learning outcomes, supporting the effectiveness of the educational interventions employed.

CONCLUSIONS

The results show a high level of student acceptability of the instructional material integrated in the LMS in the e-learning environment. The ADDIE demonstrates a high level of performance in the development of instructional materials for the four sections of BSE students. This model supports the creation of instructional materials for effective teaching and learning [17]. The study shows a significant difference between the t-test scores of the four sections. These findings strongly suggest that the instructional materials using the LMS improved student performance in all sections, with Section B showing the most significant result. The use of LMS was an effective approach in teaching research as indicated by the pretest and posttest scores. This could further be attributed to the synchronous nature of the class was applicable and properly implemented by the facilitators. The implementation of the teaching and learning methodology seems to have increased progress in the overall performance of the students during the implementation. The students tended to cooperate and passionately participated in this study.

RECOMMENDATIONS

The following recommendations were made based on the findings of the study. The Curriculum and Instruction Development (CID) to properly carry out the use of LMS in the instructional materials as a tool for teaching and learning. LMS is an effective method to improve teaching quality and the university may provide training courses for facilitators and students to eliminate ethical biases in the implementation of artificial intelligence for instruction. Continuous improvement and evaluation of the instructional materials, instructional technology, and pedagogy are suggested focusing on a student-centered approach in the flexible learning environment. Further studies can be done using qualitative and experimental research on different courses and at different levels.

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