VALIDATION AND EFFECTIVENESS OF DEVELOPED LEARNING MATERIALS: BASIS FOR ENHANCEMENT
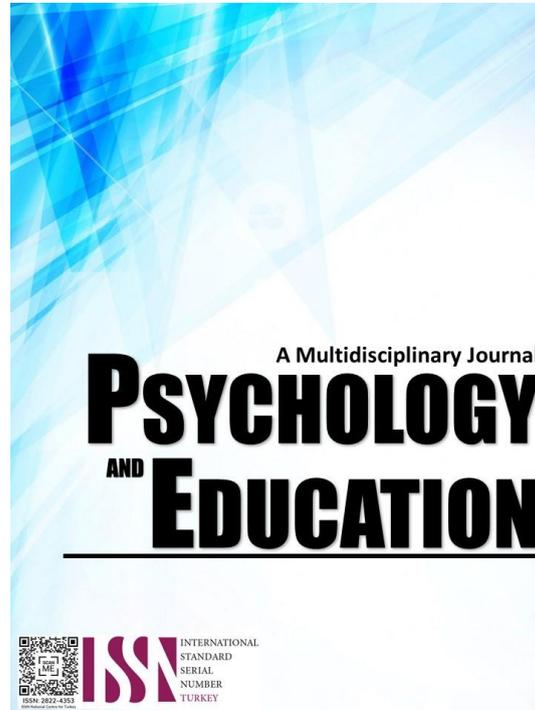

PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Validation and Effectiveness of Developed Learning Materials: Basis for Enhancement

Elaine Anzures*
For affiliations and correspondence, see the last page.

Abstract

The objective of this study was to validate and assess the efficacy of created learning materials for Assessment of Student Learning 2 as a basis for its improvement. The one-group pre-test and post-test design was used in this study. It was conducted among the randomly chosen group of 36 students in the second year of the Teacher Education College at the Iloilo State College of Fisheries-Dingle Campus who make use of the created instructional materials in their Assessment of Student Learning 2 class. The adapted questionnaire from the study of Yazon with revised items about digitized modules were used to determine the level of evaluation on the developed learning materials as to students' perception and a 50-item researcher made questionnaire which undergoes face and content validation was used to determine the effectiveness of the developed learning materials. Results showed that students assessed the learning materials as "Highly Acceptable" and "Acceptable" in terms of language usage, format, and assessment/activities. Additionally, the performance of education students before and after their exposure to the developed learning materials was shown to have significantly changed. The result suggest that the created learning tools were effective in facilitating the learning process.

Keywords: *validation, effectiveness, developed learning materials, enhancement*

Introduction

Due to the threat of the COVID-19, many educational institutions in the Philippines have suspended their academic activities and classes. Academic institutions have been enforced to entirely cancel the face-to-face teaching as a mitigation against the risk posed by the corona virus. Accordingly, various measures have been initiated to implement social isolation strategies, resulting to rapid curriculum transformation (Tria, 2020).

With the belief that teaching and learning must continue despite the pandemic, the World Health Organization advised educators to conduct alternative learning to mitigate school cancellation of classes through providing materials that can be used during the pandemic to elevate the loss of learning and provide learning opportunities while schools are closed (Al-Hanawi, et al., 2020).

With the advancement of Technology, the growth of online learning during the last decade has been remarkable. On March 2020, with the start of the lockdown and quarantine brought by the Corona Virus worldwide, education in the Philippines is affected. The traditional face-to-face approach of learning is also halt by. In the same manner, the start of pandemic in the middle of the second semester pushes universities and colleges to adjust their manner of learning modalities in the start of the new academic year. All universities and colleges in the Philippines adopted viable alternatives such as online learning, modular and blended learning from the traditional face-to-face instruction.

The Iloilo State College of Fisheries in response also to the challenges brought about by the world-wide pandemic focuses on the transition from the traditional teaching and learning to flexible learning approaches both for faculty and students as they adjust and adapt to the rapid changes in various teaching and learning styles and contexts (Ligasan, 2020). With these, each faculty member determines the status of the students in terms of the availability of devices, internet connectivity and level of digital literacy and decide on the appropriate approaches and delivery methods.

With the onset of the blended learning during its first implementation, problems such as unavailability of modules, not prepared faculty members both mentally and technologically, were encountered. Thus, training and workshops in developing learning materials were conducted to answer the different needs of the students and the teachers. Due to the absence of face to face classes, instructional materials such as modules and instructional videos are created to let the students continue learning in their most convenient time.

Adjustments were made and asynchronous learning, offline and online platform were adopted in the SY 2021-2022. However, the use of different instructional materials was not evaluated in terms of its effectiveness in the perception of the students.

In an article written by Kim (2020) in the International Journal of Early Childhood (pages145–158), he cited the advantage of using different learning materials as perceived by one student: *Despite the struggles that I had in learning the lessons online, I can say that I have learned more than I could ever have imagined. For many of the students this semester might have been the worst of all, but for me, I see it as a semester that took me out of my comfort zone. Having those instructional materials makes me comfortable in learning by my own. And when you are out of your comfort zone you can learn and experience imaginable things."*

Flexibility is an area of strength of the varied learning materials that has been identified by researchers (Petrides, 2002; Schrum, 2002). In Petride's (2002) study, he reported that participants revealed that it was easier to work in collaborative groups with various learning materials, since there were many rooms of learning. In addition to flexibility with time, choices related to the learning experience were also reported as positive. Participants in Chizmar and Walber's (1999) study on web-based learning environments guided by principles of good learning materials also indicated that the ability to freely pick and choose from the menu of diverse learning experiences enabled them to find the approaches that best fit the way they learn. According to Lardizabal et al (1996), students can find the following advantages; they work at their own pace; they assume responsibility for learning; they find that textbooks are not the only source of learning; they know exactly what they have to learn; they are encouraged to master the module; and competition for grades is reduced.

While we know the characteristics, satisfaction, and outcomes of students who take their classes through the use of different learning materials, we know less about the effectiveness of it in terms of the learner's perception. Students who have positive experiences are more likely to continue education using the developed learning materials in the future. Data about student perception on the effectiveness of the developed learning materials also can provide information to help institutions and faculty design and deliver better courses, which could help improve student learning in these courses. Such data also could help institutions and faculty of Iloilo State College of Fisheries to determine what challenges students face, which could in turn improve persistence and retention in learning. Since development of effective learning materials can increase the comprehensibility of students is very important in overcoming difficulties

that appears to interface in the distance learning, then, this has been the thinking force to validate the effectiveness of the teacher-made learning materials as to their performance.

Research Questions

The purpose of this study was to validate and evaluate the effectiveness of developed learning materials in Assessment of Student Learning 2 as basis for enhancement and improvement of the materials. Specifically, it sought to answer the following questions:

1. What is the students" mean evaluation of the developed learning materials in terms of format, content, language used, and assessment/activities?
2. What part of the developed learning materials needs enhancement?
3. What is the academic performance of the respondents before and after the use of developed learning materials?
4. Is there a significant difference in the performance of the respondents before and after the use of developed learning materials?

Literature Review

Self-Learning Modules

American educators were the ones who originally popularized modular instruction. According to John L. Hughes' (2000) as cited by Yazon (2016), modular learning is a form of personalized instruction that provides the foundation for direct interaction between the students and the subject matter. The students are required to answer often to the modules at their rate of learning, through the contact with an educational program. Assessment of Students" Learning is a three-unit professional education subject taken by Education students. It involves concepts and principles on what and how our future teachers assess their future learners. Though there are existing references in this subject, there is a learning material suitable for both offline and online activities that contains all the lessons stipulated in the course design or learning program used in the college. As instructor of this Assessment of learning for almost 4 years, the researcher had seen the relevance of having developed learning materials in delivering the content of this subject. Aside from the fact that it will offer individualized instruction, the module blends the theory and practice which are vital to students" learning experiences. Modular instruction is not only

used by the Higher Education Institutions but also the Department of Education.

The Department of Education (DepEd), which restarted classes in October 2020 despite the still widespread coronavirus pandemic, determined that modular learning was a useful teaching strategy in this context. Self-paced modules are used in modular learning, a type of distant education. These self-learning programs are based on the DepEd's MELCS, or most essential learning capabilities.

The modules should ideally have sections on assessment and motivation that act as a comprehensive road map for both the teacher's and the students' desired skills. The instructors will keep tabs on the progress of the students via home visits (while adhering to social segregation norms) and feedback methods, and they will direct those who want extra assistance (Estrada, 2021).

Duker (1972) added that modular instructions catered to individual learning differences so that learners are prompted to actively participate in determining what they need to learn. Good (1975) recognized in his research the "individualization" of the modules because learners proceed with the instructions at their own pace. Their learning must be done at a volume and pace that corresponds to their aptitude, drive, and interests. According to Lardizabal et al (1996), students can find the following advantages in working with the developed modules: They work at their own pace; They assume responsibility for learning; They find that textbooks are not the only source of learning; They know exactly what they have to learn; They are encouraged to master the module; and Competition for grades is reduced.

Learning Materials for Blended Learning

According to Horn and Staker (2015), "Blended learning is any formal education program in which a student learns at least in part through online learning, with some element of student control over time, place, path, and/or pace" (p. 34). Blended learning environments are also commonly referred to as "hybrid" courses or classes. Any mixture of online learning and face-to-face (or traditional) settings can be classified as "blended learning." For the purposes of this paper, the terms "blended" and "hybrid" will be used synonymously.

Prescott, Bundschuh, Kazakoff and Macaruso (2016) explained, "Blended learning can take various forms, thus allowing users to adapt a program that best fits their pedagogical goals and physical setting" (p. 1). In

other words, blended learning provides teachers with the ability to personalize learning for students. In a meta-analyses of 45 studies, Means, Bakia and Murphy (2014) found that, "on average, students in conditions that included significant amounts of learning online performed better than students receiving face-to-face instruction," and went on to state that, "the subset of the studies employing blended learning approaches was entirely responsible for the observed online advantage" (p. 20). Hence, blended learning is suggested to be more beneficial than fully online or fully traditional settings.

Francis (2012) pointed out that, "Simple class size and access to technology can lead to students having a greater opportunity to be off-task and disengaged in the classroom" (p. 147). This can happen in blended learning environments as well, even with the teacher in the same room. When building a blended learning experience or hybrid course, engagement and motivation are crucial to the success of students regardless of their age.

Andrew Miller, an experienced online teacher of K-12 students, has experienced the challenges of motivating and engaging his students. Through his experiences, Miller (2012) found that, "If you want students to be engaged…it [the activities] must be meaningful" (para. 3). In order for learning activities to be meaningful, they must have purpose. Thus, providing varied learning materials, both offline and online tools can increase the performance of the students.

Methodology

This research study employed the one-group pre-test and post-test design. A one-group pretest–posttest design is a type of research design that is utilized by behavioral researchers to determine the effect of a treatment or intervention on a given sample. This research design is characterized the use of a single group of participants (i.e., a one-group design). This denotes that all participants are part of a single condition—meaning all participants are given the same treatments and assessments (Fraenkel, et all 2006). A pre-test and posttest method were used to determine the effectiveness of developed learning materials to the students' academic performance.

Participants

The respondents of this study were the randomly selected 36 second year Teacher Education College students of Iloilo State College of Fisheries-Dingle

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Campus who use the developed learning materials in their Assessment of Student Learning 2 class using the Slovin's Formula

Instruments of the Study

The adapted questionnaire from the study of Yazon, A. (2016) with revised items about digitized modules were used to determine the level of evaluation on the developed learning materials as to students' perception.

On the other hand, a 50-item researcher made questionnaire divided into 5 Units which undergoes face and content validation was used to determine the effectiveness of the developed learning materials. Furthermore, it is pilot tested among the Second year Education students of West Visayas State University-Pototan Campus with a reliability value of 0.87.

Procedures

Permission to conduct the study was secured from the Campus Administrator and Dean of the College of Education. The researcher also informed the participants such as their participation in this study would not affect their grades in school. The researcher personally administers the instrument via google forms. After scores were determined, all data was coded and entered into SPSS and statistical analyses was conducted using the mean and t-test for dependent samples as statistical tools. All data was computed set at 0.05 alpha level of significance.

Results

This section presents the results of the study. It deals with the presentation, analysis and interpretation of the data in relation to the specific problems. The results are described into two parts: the descriptive data analysis and the inferential data analysis.

Descriptive Data Analysis

Validation of Developed Learning Materials in terms of Format, Content, Language Used, and Assessment or Activities. Table 1 shows the mean scores in the validation of developed learning materials in Assessment of Student Learning as to format, content, language used, and assessment or activities. The developed learning materials as to format, content and assessment/ activities is interpreted as "Highly Acceptable" with means of 4.32, 4.23, and 4.21, respectively. Results of the study

indicate that on its entirety, the developed learning materials are very good and acceptable to the students. The students' "highly acceptable" rating in terms of format, content and assessment/activities showed that the learning materials have objectives which are clearly stated in behavioural form, specific, measurable, and attainable. Also, the content is well-planned, formulated, organized, and relevant to the topics of each lesson of the modules, and was considered the needs of the students for assessment. On the other hand, in terms of language used it has a mean of 4.15 interpreted as "acceptable". The "acceptable" interpretation" indicates that language used is clear, concise, motivating, and easy to understand.

Table 1. *Mean Validation of the Developed Learning Materials*

Components	Mean	Descriptive Rating
Format	4.32	Highly Acceptable
Content	4.23	Highly Acceptable
Language Used	4.15	Acceptable
Assessment/Activities	4.21	Highly Acceptable

Part of the Developed Learning Materials that Needs Enhancement. Table 2 shows the mean scores of the developed learning materials as to format, content, language used and assessment/activities. When interpreted as to different items, Item No. 8 (*Instructions are clear and easy to follow),* Item No. 11 (*I easily understood each lesson because of the provided learning materials online and offline),* Item No. 12 (*There is adequate presentation/discussion of content because of the varied learning materials provided)* and Item No. 20 *(I found it easier to study my course using these learning materials because of varied assessment activities)* are items that have low mean scores and needs improvement as perceived by the respondents. The result implies that students wants a clear and specific directions, simple language, variety of activities and clarity of the content.

According to the Directorate General of PMPTK, Ministry of Education (2014), the module can be said to be good if it is self- instructional, self-contained, can stand-alone, adaptive and user-friendly. In other words, the module must be easy to understand so that it becomes easier for students to understand the contents and serves to increase the ability of students to learn on their own without depending on the presence of educators.

Table 2

A. Format	Mean	Interpretations
How do you perceive the developed learning materials as to format?		
1. The layout of the learning materials are arranged in a logical, sequential order and informative manner.	4.31	Highly Acceptable
2. The font size, font style and colors of the learning materials are readable.	4.50	Highly Acceptable
3. The designs, effects, animations and themes used in the technology-based learning materials are clear and not a hindrance of its focus on information.	4.29	Highly Acceptable
4. Titles, subtitles and key concepts in the learning materials are clearly defined.	4.36	Highly Acceptable
5. Illustrations, pictures, videos and course site are properly laid out for easy reference.	4.17	Highly Acceptable
B. Language Used	Mean	Interpretations
How do you perceive the developed learning materials in terms of its language used?		
6. The words used in the learning materials are appropriately used.	4.39	Highly Acceptable
7. The vocabulary used is suitable to my comprehension level.	4.11	Acceptable
8. Instructions are clear and easy to follow.	4.00	Acceptable
9. The lessons are presented in paragraphs/sentences or language used in the videos and powerpoint presentations are grammatically correct.	4.36	Highly Acceptable
10. The learning materials are accompanied by clear and specific directions and links for their use.	4.28	Highly Acceptable
C. Content	Mean	Interpretations
How do you evaluate the learning materials in terms of its content?		
11. I easily understood each lesson because of the provided learning materials online and offline.	4.03	Acceptable
12. There is adequate presentation/discussion of content because of the varied learning materials provided.	4.00	Acceptable
13. The illustrations/captions/videos guided me easily in following the instructions in the learning materials.	4.14	Acceptable
14. The ideas, concepts and points presented are well-explained.	4.19	Acceptable
15. Supplementary activities enhance students' understanding of the content.	4.39	Highly Acceptable

Academic Performance Before and After the Use of Developed Learning Materials. Table 3 shows the academic performance of the education students in Assessment of Student Learning before and after its exposure to the developed learning materials. The result showed that before the use of the developed learning materials, the Education students' academic performance is "moderately effective" with a mean of 15.22. Whereas, a "very good" interpretation was noted after its exposure to the developed learning materials with a mean of 32.25. The result implies that the developed learning materials was effective in facilitating the learning process among Education students. This is in consonance with the study conducted by Yazon (2016) that the developed module in Assessment of Student Learning 1 was effective in increasing the performance of the respondents.

Table 3 *Academic Performance Before and After the Use of Developed Learning Materials*

Academic Performance	N	SD	Mean	Interpretations
Before	36	3.74	15.22	Fair
After	36	5.57	32.25	Very Good

Inferential Data Analysis

Differences in the Performance of Education Students Before and After. The result revealed that there is a significant difference in the performance of Education students before and after its exposure to the develop learning materials. This is shown by the t-value of 28.891 and p-value of .000 which is less than .001 level of significance. The result implies of the effectiveness of the developed learning materials in the improvement of the Education student's performance in Assessment of Student Learning. This is in accordance to the study conducted by Yazon (2016) and Torrefranca (2017) on the effectiveness of the developed module on the performance of the students.

Table 4. *Differences in the Performance of Education Students Before and After*

Category	Mean	Sd	df	t-value	Sig. (2-tailed)
Before	15.22	3.74	35	28.981*	.000
After	32.25	5.57			

Discussion

The research's principal goal is to evaluate the self-concept, self-esteem, self-efficacy, and academic achievement of senior high school students. The purpose of this research is to explore the effect of these expectations on their academic success. Thus, this analysis used the descriptive-correlational analysis approach to define the respondents' profile in terms of self-concept, self-esteem, self-efficacy, and academic success. The research also established the magnitude of impacts that occur between and within the variables in this study. Specifically, it established a substantial influence between the respondents' self-concept, self-esteem, and self-efficacy on their academic success.

Conclusion

Based on the findings of the study, the following conclusions were made: (1) The developed learning materials in Assessment of Student Learning 2 needs enhancement and improvement especially in the language and choice of words used, variation of activities and exercises as assessment and presentation of the topic. (2) The developed learning materials was effective in facilitating the learning process among Education students.

References

Al-Hanawi, M. K., Angawi, K., Alshareef, N., Qattan, A., Helmy, H. Z., Abudawood, Y., Alqurashi, M., Kattan, W. M., Kadasah, N. A., Chirwa, G. C., & Alsharqi, O. (2020). Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. Frontiers in public health, 8, 217. https://doi.org/10.3389/fpubh.2020.00217

Chizmar, J.F. & Walber, M.S. (1999). Web-based learning environments guided by principles of good teaching practice. Journal of Economic Education, 248-264. https://files.eric.ed.gov/fulltext/ED485012.pdf

Duker, S. (1972) Individualized Instruction in Mathematics , (New Jersey, The Scarecrow Press, Inc., https://openlibrary.org/books/OL5286628M/Individualized_instruction_in_mathematics.

Estrada, LP (2021). "Are self-learning modules effective?"https://www.rappler.com/voices/imho/opinion-are-self-learning-modules-effective/

Francis, R. W. (2012). Engaged: Making Large Classes Feel Small through Blended Learning Instructional Strategies that Promote Increased Student Performance. Journal of College Teaching & Learning, 9(2), 147–152. https://doi.org/10.19030/tlc.v9i2.6910

Horn, M. B., & Staker, H. (2014). Blended: Using disruptive innovation to improve schools (1st ed.). Josey-Bass. http://hozekf.oerp.ir/sites/hozekf.oerp.ir/files/kar_fanavari/manabe%20book/Thinking/Blended_%20Using%20Disruptive%20Innovation%20to%20Improve%20Schools.pdf

Lardizabal, A. et al. (1996). Principles and Methods of Teaching. (Quezon City: Phoenix Publishing House, Inc

Means, B., Bakia, M., & Murphy, R. (2014). Learning Online: "What Research Tells Us About Whether, When and How" (1 edition). New York: Routledge.

Prescott, J. E., Bundschuh, K., Kazakoff, E. R., & Macaruso, P. (2017). Elementary school–wide implementation of a blended learning program for reading intervention. The Journal of Educational Research, 0(0), 1–10. https://doi.org/10.1080/00220671.2017.1302914

Torrefranca, E. C. (2017) Development and Validation of Instructional Modules on Rational Expressions and Variations. The Normal Lights, 11(1), 43-73.https://po.pnuresearchportal.org/ejournal/index.php/normallights/article

Tria, J. Z. (2020). The COVID-19 Pandemic through the Lens of Education in the Philippines: The New Normal. International Journal of Pedagogical Development and Lifelong Learning, 1(1), ep2001. https://doi.org/10.30935/ijpdll/8311

Yazon, A.D (2017). Validation and Effectiveness of Module in Assessment of Students Learning. International Journal of Science and Research. https://www.ijsr.net/archive/v7i11/ART20193221.pdf

Affiliations and Corresponding Information

Elaine H. Anzures
Iloilo State College of Fisheries-Dingle Campus, Philippines