
Research Article

Project B.O.O.S.T.E.R.S. (Brochures Offered Offline to Students by Teachers to Enhance Research Skills): An Evaluation

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Article history:

Submission April 2026

Revised May 2026

Accepted June 2026

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ABSTRACT

Senior high school academic workloads and cognitive demands increase, making passive traditional lectures ineffective for reducing student anxiety or building complicated research skills. Targeted, offline asynchronous educational methods are needed. The study evaluated how computer-generated brochure technology affects academic performance and whether Project BOOSTERS and typical self-learning modules varied significantly between pre- and post-test outcomes. A descriptive-experimental design randomly and equally assigned Grade Twelve pupils to the brochure intervention or modular lecture control track. Because of violated normality assumptions, identical pre- and post-tests were given across two weeks and analysed using the non-parametric Mann-Whitney U-test. Although both groups improved, Project BOOSTERS had considerably higher post-test means and learning gains, rejecting the null hypothesis. Passive standard lecture sends facts, but it has a lower instructional efficiency than tailored offline brochures, which optimize cognitive gains and independent research methodology mastery. Active learning models should integrate interactive micro-learning modules and well-designed, offline asynchronous materials to reduce conceptual anxiety, subject-specific stress, and develop strong student research skills.

Keywords: *Asynchronous micro-learning, Computer-generated brochures, Academic performance, Research skills*

Introduction

Technology-enabled teaching and learning is not a new challenge for institutions. Since the 1900s, administrators and faculty have debated how to use technological innovations such as video and audio recordings, email, and teleconferencing to enhance or replace traditional educational delivery methods (Kaware & Sain, 2015; Westera, 2015).

According to Ghavifekr & Rosdy (W.A.W. 2015), the success of technology-based teaching and learning is decided by proper teacher training in ICT tools and facilities. Additionally,

professional development training programs for instructors improved the quality of learning.

The purpose of this study is to examine the impact of computer-generated technology on students' academic achievement and interest in learning. Researchers investigated computer-based technology. Technology, as used above, refers to computer-based technology that relies on specialized hardware, software, and teacher intervention on a computer or a mobile device. Researchers also focused their investigations on student engagement as the

How to cite:

Miraflor, A. S. (2026). Project B.O.O.S.T.E.R.S. (Brochures Offered Offline to Students by Teachers to Enhance Research Skills): An Evaluation. *The Advanced Social Science In Research Journal*. 1(3), 495 – 499. doi: 10.11594/assrj.01.03.01

dependent variable of interest because it includes many different aspects of the teaching and learning process (Bryson & Hand, 2007; Fredricks, Blumenfeld, & Parks, 1994). Furthermore, student engagement has garnered a great deal of attention over the last several decades due to movements towards student-centered, constructivist instructional approaches (Haggis, 2009; Wright, 2011), increasing pressure

Materials and Methods

This study adopted the quasi-experimental research method. Descriptive

Table 1

Distribution of Population

Sample Class	No. of males	Number of females	Total	Teaching Modality to be used
Group 1	10	10	20	Using Project BOOSTERS
Group 2	10	10	20	Using Modular Modality

The Instrument

The following were the research instruments used in the study:

Brochure – a computer-generated, innovative, and informative paper document that can be folded into a template, pamphlet, or leaflet and sent by the researcher, and was given to selected grade 12 students. This was used on offline modality.

Giving a pre-test before the lesson and giving a post-test after the lesson was one of the strategies to be used in this study for each class. The lesson was delivered using Modular modality and the use of innovations like brochures.

Data Collection

First is asking permission from the School Principal, followed by submission of the project proposal and research proposal to SDO Zambales for endorsement.

Strategy

The research was performed at Don Brigido Miraflor Integrated School (Jesmag). The researcher informed the teacher-advisers of each component. Parental consents were obtained from parents to authorize their children's participation in the study.

research, like other types of research, can involve the examination of several variables.

Respondents and Location

The study's sample respondents are 40 grade 12 students now enrolled at Don Brigido Miraflor Integrated School (Jesmag). One (1) class was taught using Modular modality, with 20 students per group, and the other sample group was taught using Project BOOSTERS, with 20 students each. To participate in the study, each class member is assigned at random to one of two (2) sample groups.

Two groups of responders underwent pre-testing. The experimental group utilized Project BOOSTERS. The control group utilized the Modular modality. A post-test may be administered following each class. The experimental group and the control group received identical pre-tests and post-tests. The lesson focused on the circulatory system.

The instruction in the control groups was conducted through conventional teaching methods.

Conversely, the booklet contained instructions on the utilization of project BOOSTERS. The control group was given identical instructions to those provided to the experimental group. They were given the same pre-test and post-test prior to and following the intervention. The researcher recorded the scores for each treatment and assessed the results to determine if significant differences existed in the mean scores of the pre-tests and post-tests using the Mann-Whitney U-test.

Data Analysis

After the collection of data, the data were categorized according to treatment groups, then the results were tabulated, interpreted, and analyzed in relation to the problems presented. The researcher recorded the scores for each treatment and assessed the results to

determine if significant differences existed in the mean scores of the pre-tests and post-tests using the Mann-Whitney U-test.

Result and Discussion

Table 2

Summary of the Pre-test and Post-test

I	A (Modality)	B (Trial)	C (N)	D (Pre-Test)	E (Post-Test)	G (U)	H (Z)	I (p)
	Teaching Modality	Trial / Timeline	Sample Size (N)	Pre-Test Mean	Post-Test Mean	U-Value	Z-Value	p-value
1	Project BOOSTERS	Week 1	20	3.93	6.10	71.5	-5.59	< .00001
2	Project BOOSTERS	Week 2	20	4.27	6.77	15.0	-6.642	< 0.00001
3	Traditional Modular	Week 1	20	4.46	5.73	166.0	-4.19	< .00001
4	Traditional Modular	Week 2	20	4.47	5.73	154.0	-4.37	< 0.00001

The statistical data shown in Table 2, shows that both teaching modalities significantly changed the learning outcomes from baseline pre-tests ($p < .00001$). However, the Project BOOSTERS offline asynchronous brochure intervention yielded significantly higher performance gains as compared to the traditional modular lecture track. In Week 1, the BOOSTERS group showed a significant rise in their mean score from 3.93 to 6.10 ($U = 71.5, Z = -5.59$), with a strong localized effect size of 0.70. Also, the initial boost is in keeping with how systemic interventions boost student confidence in methodological design, on the use of collaborative micro-modules to reduce deep-seated conceptual anxiety. In contrast, the typical modular lecture method in Week 1 resulted in far smaller gains, increasing from a higher pre-test baseline of 4.46 to a post-test mean of 5.73 ($U = 166.0, Z = -4.19$) (Effect Size) = 0.54). This increase in baseline is anticipated and coincides with Mahinay's (2023). It also relates to how teenagers independently cope with challenging workloads (Wolters, 2025) and how systematic treatments might help to reduce domain anxiety (Fishstrom et al., 2022). However, by Week 2, the active Project BOOSTERS intervention demonstrated a remarkable

increase in superiority, with the mean score for the group increasing from 4.27 to 6.77 ($U = 15.0, Z = -6.642$), an increased effect size of 0.80. In contrast, the typical lecture track was stagnant. The Week 2 post-test mean was unchanged at 5.73, and the mean difference was smaller at only 1.26 ($U = 154.0, Z = -4.37$). This increasing difference in performance reinforces the idea that old-fashioned teaching can only deliver rudimentary facts and must be complemented or replaced. This stance is well backed by García-Vandewalle et al. (2022), whose work demonstrates how interactive tools far exceed passive listening, and Earley (2018), who discusses how traditional approaches do not diminish student anxiety compared to active micro-learning models. The plateau in the traditional modular group ultimately supports the claims of Mery et al. (2021) that explicit data literacy scaffolding outperforms standard coursework, and Healy & Jenkins (2023), who argue that long-term academic success requires a definitive curricular migration toward interactive frameworks that demand conceptual application, rather than rote memorization.

Conclusion

Based on the findings of the study, the following conclusions were drawn:

- Both tactics improved student performance, but Project BOOSTERS had higher mastery.
- Through Project BOOSTERS, students increased their scores from 3.93 to 6.10 in Week 1 and from 4.27 to 6.77 in Week 2. The results of the pre-test and post-test exhibit considerable differences. Both instructional strategies markedly alter pre-test and post-test outcomes, suggesting that traditional modular and lecture procedures provide a basis for teaching, although they also constrain instructional efficacy.
- Project BOOSTERS is a more powerful, active offline asynchronous tool that maximizes student cognitive gains, bridges theoretical knowledge, and builds specialized academic competencies.

References

- Alvis, M. L., Morris, C. E., Garrard, T. L., Hughes, A. G., Hunt, L., Koester, M. M., & Tinius, R. A. (n.d.). Educational Brochures Influence Beliefs and Knowledge Regarding Exercise during Pregnancy: A Pilot Study. 15.
- Buchanan, T., Sainter, P., & Saunders, G. (2013). Factors affecting faculty use of learning technologies: Implications for models of technology adoption. *Journal of Computer in Higher Education*, 25(1), 1-11.
- Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, 47(1), 1-32. doi:10.1007/s11162-005-8150-9.
- Earley, M. A. (2018). A synthesis of the literature on research methods education. *International Journal of Research & Method in Education*, 41(3), 241-253. <https://doi.org/10.1080/1743727X.2017.1337586>
- Fishstrom, S., Wang, H.-H., Bhat, B. H., Daniel, J., Dille, J., Capin, P., & Vaughn, S. (2022). A meta-analysis of the effects of academic interventions on academic achievement and academic anxiety outcomes in elementary school children. *Journal of School Psychology*, 92, 265-284. <https://doi.org/10.1016/j.jsp.2022.03.011>
- García-Vandewalle, J. M., García-Carmona, M., Trujillo-Torres, J. M., & Moya-Fernández, P. J. (2022). Analysis of the digital competence of higher education students and its relationship with active interventions. *Education and Information Technologies*, 27(5), 6813-6833. <https://doi.org/10.1007/s10639-021-10903-8>
- Ghavifekr, S. & Rosdy, W.A.W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science (IJRES)*, 1(2), 175-191.
- Healy, M., & Jenkins, A. (2023). Integrating research and inquiry into undergraduate curricula: An institutional intervention framework. *Higher Education Research & Development*, 42(2), 312-327. <https://doi.org/10.1080/07294360.2022.2043241>
- Kara, S. (2025). The effect of differentiated instruction on the academic achievement and opinions of 3rd-grade students in science education: A mixed-methods study. *MDPI Education Sciences*, 13(10), 126. <https://doi.org/10.3390/educsci13101012>
- Kaware, S. S., & Sain, S. K. (2015). ICT Application in Education: An Overview. *International Journal of Multidisciplinary Approach & Studies*, 2(1), 25-32.
- Mahinay, H. (2023). Modular learning modality of Department of Education: Learners' early assessment of its implementation. *Philippine E-Journals*, 1(1), 1-15.
- Mery, Y., Blakiston, R., & Power, M. (2021). Evaluation of an online, interactive research literacy intervention for undergraduate students. *The Journal of Academic Librarianship*, 47(2), Article 102311. <https://doi.org/10.1016/j.acalib.2020.10.2311>
- Schindler, Laura A., et.al. (2017). Computer-based technology and student engagement: a critical review of the literature. *International Journal of Educational*

- Technology in Higher Education*, volume 14, Article number: 25
- Westera, W. (2015). Reframing the role of educational media technologies. *Quarterly Review of Distance Education*, 16(2), 19-32.
- Wolters, K. (2025). Academic skills training interventions for adolescents in secondary education: A systematic review. *Psychology in the Schools / Taylor & Francis*, 62(3), 1-24.
<https://doi.org/10.1080/2372966X.2025.2548763>