

## Effect of Self Learning Modules (Slms) In Developing Conceptual Understanding of Pupils In Tle 6

<sup>1</sup>,ARIEL O. DE GUZMAN, <sup>2</sup>Fely A. Habla,Ed.D., <sup>3</sup>SORSOGON  
STATE UNIVERSITY  
<sup>3</sup>Graduate Studies

**ABSTRACT:** This paper assessed the effect of Self-Learning Modules (SLMs) in developing conceptual understanding of TLE 6 pupils in Bon-ot Big Elementary School in SY 2023-2024. The researcher used a mixed-methods and single-group pre-test/ post-test design, a sample of thirty participants, and discovered statistically significant changes in post-test scores on six competencies, with the most significant changes in the entrepreneurial and digital skill domains. The impact of the use of SLMs in terms of Cohen's d was determined to be a moderate to large positive impact. Nevertheless, the proportion of pupils who had not reached the levels of mastering digital skills was still high, which means that the introduction of SLMs was not sufficient. The qualitative results proved the significance of supplementary teacher interaction pedagogical strategies. Based on these findings, the researcher modified the SLMs by adding collaborative, real-time, and gamified features and developing lesson exemplars in the MATATAG model. Overall, the SLMs resulted in minor positive shifts in the TLE learning outcomes, yet the use of the learner-centered, interactive, and culturally responsive instructional practices is suggested to increase the effectiveness.

**KEY WORDS:** Conceptual Understanding, Effect, Grade 6, Self- Learning Modules, TLE

### I. INTRODUCTION

Textbooks are still important instruments of education; they offer form, continuity, and the knowledge that is critical for pupils to acquire. Nevertheless, many of the Philippine public schools continue to experience shortages of textbooks, as a result of delays in the procurement process, low quality of manuscripts, and logistical issues. These obstacles have an adverse impact on the quality of instruction and are a source of learning disparities, especially in impoverished communities. Statistics of the Second Congress Commission on Education (EDCOM 2), and that of the UNESCO Global Education Monitoring Report, prove that the Philippines, together with most of the developing nations, is finding it difficult to offer pupils sufficient learning resources. The Department of Education (DepEd) has, in turn, encouraged the use of Open Educational Resources (OER), especially the Learning Resource Management and Development System (LRMDS) and DepEd Commons. These websites provide Self-Learning Modules (SLMs) that were crucial during the pandemic and continue to be used as an alternative resource in locations that are short of textbooks. Even though SLMs are developed to enhance mastery on the part of the learner, particularly on skill-based coursework such as Technology and Livelihood Education (TLE), there is still skepticism regarding whether or not SLMs can help to achieve competency mastery.

Within this context, the present study examined the effect of Self-Learning Modules (SLMs) on the conceptual understanding of Grade 6 pupils of Technology and Livelihood Education (TLE) in Bon-Ot Big Elementary School, Matnog-I District. Specifically, the study investigated the differences in learners' performance before and after the treatment with SLMs, analyzed their experiential interaction with SLMs, and suggested improvements to make the instructional effectiveness better. By addressing this clear gap, the study provides empirical evidence for the usefulness of SLMs in addressing resource deficiencies and continues efforts towards quality and inclusive education, as envisioned by Sustainable Development Goal (SDG) 4.

### II. OBJECTIVES

This research was conducted to establish the effect of Self Learning Modules (SLMs) in Developing Conceptual Understanding of the Pupils in TLE 6 of Bon-ot Big Elementary School in Matnog I District, Division of Sorsogon Province, SY 2023-2024.

**Specifically, this sought answers to the following questions:**

1. What is the level of conceptual understanding of the pupils in the pre-test, along the following learning competencies:  
✚ produces simple products,

- ✚ buys and sells products based on needs,
- ✚ sells products based on needs and demands in school and community,
- ✚ posts and shares materials on wikis in a safe and responsible manner,
- ✚ posts and shares materials on blogs in a safe and responsible manner,
- ✚ participates in video and audio conferences in a safe and responsible manner?
  
- ✚ What is the level of understanding of the pupils in the post-test along the identified learning competencies?
- ✚ Is there a significant difference between the pre-test and post-test performance along the identified competencies?
- ✚ What modification in the SLM can be made to improve the conceptual understanding of the pupils in TLE 6?
- ✚ What lesson exemplar can be made incorporating the modified SLMs?

### III. METHODOLOGY

This research adopted a mixed-method design to establish the effect of the Self Learning Modules (SLMs) in Developing Conceptual Understanding of the Pupils in TLE 6 at Bon-ot Big Elementary School. Learning outcomes were measured using a one-group pretest-posttest design, and unstructured interviews were used to capture the experiential knowledge of the pupils. The primary tool was a 25-item multiple-choice test on the basis of the Most Essential Learning Competencies (MELCs) in ICT and Entrepreneurship that was expert-validated and pilot tested to establish reliability (Cronbach's alpha = 0.71). The respondents were thirty pupils, and five content validators were employed to assist in the development of the instrument. The SLMs were administered and utilized in a period of four weeks; posttests and interviews were subsequently conducted. Descriptive statistics (frequency, percentage, weighted mean, and standard deviation) and inferential statistics (paired t-test and Cohen's d effect size) were used to analyze quantitative data. Thematic synthesis was used to analyze qualitative data to inform the interpretation of the empirical data.

### IV. RESULT AND DISCUSSION

#### FINDINGS

##### **The data collected resulted in the following findings:**

1. The results of the pre-test show that the overall level of conceptual understanding in all competencies was low; most of the responses were in the Faulty or No Understanding categories. Competencies A to E had a low level of Complete Understanding (3-8 percent), and 44-51 percent of responses were categorized as No Understanding. Competency F was the most critical with a Weighted Mean of 0.38, the highest percent of No Understanding (73 percent), and the lowest percent of Complete Understanding (2 percent). These findings imply that there is a massive conceptual gap that needs to be filled with intensive remediation and instructional support, particularly Competency F.
  
2. According to the post-test findings, the pupils have gotten much more conceptual understanding of the six TLE competencies, with the WM= 1.29 and SD= 1.13, which demonstrates moderate mastery. The highest level of conceptual understanding was found in competencies B, WM = 1.36, SD = 1.17, and A, WM = 1.29, SD = 1.18, indicating that pupils learned from practical activities. Competency E, WM=1.32, SD=1.16, also improved significantly but still reached the lowest level of complete understanding. At the same time, competency D, WM=1.28, SD=0.96, had the highest partial understanding, which means that pupils are becoming familiar with digital responsibility concepts, but still need guidance to master them. Competency F improved, but some pupils still had difficulties. In general, the lower standard deviations post-test than pre-test indicate that pupils have a better understanding of the topics in a more consistent way, indicating the efficacy of the SLMs in improving conceptual understanding.
  
3. The findings indicate that there is a statistically significant difference between the pre-test and post-test scores, which means that the Self-Learning Modules (SLMs) produced a moderate positive effect on the conceptual knowledge of TLE 6 pupils. The t-values of all six competencies were higher than the critical value of 2.045 at the 0.05 level, and therefore, the null hypothesis was rejected, and the gains were due to the SLM

intervention. The effect sizes found using Cohen's *d* were moderate to large. Of special concern, effect sizes were extremely high in the digital literacy skills of posting and sharing materials on wikis and participating in responsible video/audio conferences, which underscores the strong influence of SLMs on these aspects. Nevertheless, the proportion of pupils who were in the Faulty or No Understanding groups remained high, and the majority of pupils failed to achieve the 75% mark on the post-test, indicating that, despite the usefulness of SLMs, they cannot be used alone to achieve the academic standards.

4. Considering the findings, the adjustment of certain features of the Self-Learning Modules, i.e., the integration of collaborative learning, differentiated instruction, real-life situations, and gamification, is likely to contribute to the enhancement of the interaction with TLE 6 among pupils. These changes are aimed at making education more engaging, inclusive, and practical in regard to skills such as the production of simple products, buying and selling processes, and responsible blogging.

5. In line with the Deped Order No. 10, s.2024, the Matatag Curriculum Lesson Exemplar format is the basis for developing the Lesson Exemplars as an output of this study. The developed Exemplars are structured in a four-day cycle of review, instruction, activities, reflection, and formative assessments, therefore, addressing the new standards, teacher professional development, and creating a student-centered, teacher-friendly learning environment.

## **V. CONCLUSIONS**

**The findings of the study led to the following conclusions:**

1. The Grade 6 pupils were found in pretest to have poor knowledge of ICT and Entrepreneurship, particularly in the field of digital competencies, which is why early, systematic, and differentiated pedagogical interventions are necessary.

2. The post-test scores revealed a better and more stable level of conceptual understanding, which means that the Self-Learning Modules (SLMs) were effective and managed to produce learning in a variety of pupil groups.

3. The conceptual understanding was moderately positively influenced by the SLMs, and all competency areas showed statistically significant improvements, but still a substantial part of the pupils did not achieve the desired mastery levels.

4. The further cognitive comprehension, the engagement of learners, and the acquisition of entrepreneurial and digital skills are likely to be boosted as soon as SLMs are adjusted to be more inclusive, interactive, and context-specific.

5. The implementation of MATATAG Lesson Exemplars as a part of SLMs assists in experiential, real-life learning, reaffirming the 21st-century skillsets, and assisting teacher staff in the effective delivery of the curriculum and contributing to high-performing results in Technology and Livelihood Education.

## **VI. RECOMMENDATIONS:**

**The study findings resulted in the following recommendations:**

1. Implement ICT and entrepreneurship progressions at an early grade level in school through different teaching methods and frequent evaluation to make sure that learners develop early digital and entrepreneurial competencies.

2. Continue using structured SLMs, supplement them with scaffolding and images, and engage teachers in professional development that will help them to create and use updated materials better.

3. Implement contextualized activities, collaborative learning, and gamification within SLMs and make the lesson inclusive and facilitated by regular feedback.

4. Continue to ensure SLMs are learner-focused, interactive, and culturally responsive by using play-based and real-life activities to develop entrepreneurial and digital literacy skills.

5. Promote the use of the MATATAG Lesson Exemplar format in TLE and other learning areas since its systematic structure encourages life skills, student engagement, and 21st-century skills.

## BIBLIOGRAPHY

### A. Books

1. Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson.
2. Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2019). *Professional Learning in the Learning Profession: A Status Report on Teacher Development in the United States and Abroad*. National Staff Development Council.
3. Ghaemi, S. N. (2023). Randomization. In *A Clinician's Guide to Statistics in Mental Health* (pp. 21–26). chapter, Cambridge: Cambridge University Press.
4. Johnson, D. W., & Johnson, R. T. (2019). *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning*. Allyn and Bacon.
5. Stokes, L., Anders, J., Bernini, M., & Gray, H. (2020). Understanding School Context in Coastal Communities. In *Exploring Teacher Recruitment and Retention* (pp. 84-97). Routledge.
6. Tomlinson, C. A. (2021). *How to Differentiate Instruction in Mixed-Ability Classrooms*. ASCD.

### B. JOURNALS

1. Ahuja, A. (2015). Professional development of teachers. *Educational Quest-an International Journal of Education and Applied Social Sciences*, 6(1), 11-15.
2. Andrade, C. (2021). The inconvenient truth about convenience and purposive samples. *Indian journal of psychological medicine*, 43(1), 86-88.
3. Badeo, J. M., & Koc, B. C. O. K. (2021). Use of comic-based learning module in mechanics in enhancing students' conceptual understanding and motivation. *Science Education International*, 32(2), 131-136.
4. Benito, S. M., Bantulo, J. S., & Haudar, F. S. (2022). Effectiveness of self learning modules (SLM) in teaching mathematics 3. *International Journal of Recent Research in Thesis and Dissertation*, 3(1), 33-45.
5. Black, P., & Wiliam, D. (2018). Assessment and Classroom Learning. *Assessment in Education: Principles, Policy & Practice*, 5(1), 7-74.
6. Bloom, B. S. (1968, May). Learning for mastery. *Evaluation Comment*, 1(2). Regional Education Laboratory for the Carolinas and Virginia. <https://files.eric.ed.gov/fulltext/ED053419.pdf>
7. Byrd, J., Gallagher, M. A., & Habib, E. (2022, October). Assessments of students' gains in conceptual understanding and technical skills after using authentic, online learning modules on hydrology and water resources. In *Frontiers in Education* (Vol. 7, p. 953164). Frontiers.
8. Cabiles, R. C. (2023). Evaluation of English Self-Learning Modules in the Implementation of Modular Distance Learning. *Journal of English Education and Linguistics*, 3(2), 33–69. <https://doi.org/10.56874/jeel.v3i2.883>
9. Caguia, E. M. S., & Roy, J. J. (2023). Contextualization of Self-Learning Modules in Music, Arts, Physical Education, and Health (MAPEH). *International Journal of Research Publications*. <https://doi.org/10.47119/ijrp1001371112023567>
10. Cobanbana, L. L. O., & Pañares, N. C. (2023). Utilization of Self-Learning Modules and Pupils' Academic Performance during the Transition Period. *Utilization of Self-Learning Modules and Pupils' Academic Performance during the Transition Period*, 125(1), 9-9.
11. Feters, M. D., & Tajima, C. (2023). Mixed methods research designs.
12. Gueta, M. F., & Janer, S. S. (2021). Distance learning challenges on the use of self-learning module. *United International Journal for Research & Technology*, 2(07), 58-71.
13. Hasanati, A., Supriana, E., & Mufti, N. (2023). Effectiveness of digital modules with recitation programs to improve students' conceptual understanding and critical thinking skills in learning work and energy. *Nucleation and Atmospheric Aerosols*. <https://doi.org/10.1063/5.0114390>
14. Have, E. C. S. (2016). Policy Paper 23.
15. Hollins, T. J., Seabrooke, T., Inkster, A., Wills, A., & Mitchell, C. J. (2023). Pre-testing effects are target-specific and are not driven by a generalised state of curiosity. *Memory*, 31(2), 282-296.
16. Kohan, N., Soltani Arabshahi, K., Mojtahedzadeh, R., Abbaszadeh, A., Rakhshani, T., & Emami, A. (2017). Self- directed learning barriers in a virtual environment: a qualitative study. *Journal of Advances in Medical Education and Professionalism*, 5(3), 116–123. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5522903>
17. Malgapo, C. R. (2024). Effectiveness of Self-Learning Module Developed on the Enhancement of Student' Academic Performance in Basic Calculus Amidst COVID-19. <https://doi.org/10.20944/preprints202412.2255.v1>

18. McComas, W. F. (2014). Teaching for Conceptual Understanding. In *The Language of Science Education: An Expanded Glossary of Key Terms and Concepts in Science Teaching and Learning* (pp. 105-105). Rotterdam: SensePublishers.
19. Mercado, F. (2024). Relationship between junior high students' perceptions of self-learning modules and their academic performance. *Journal of Research, Policy & Practice of Teachers & Teacher Education*, 14(2), 15–27. <https://doi.org/10.37134/jrpptte.vol14.2.2.2024>
20. Oktariani, M. (2023). The Effects of Game Simulation Implementation on Economics Concept Understanding. *Technium Soc. Sci. J.*, 49, 475.
21. Reyes, J. D. (2024). Effectiveness of Abstract – Visual – Concrete Approach in Enhancing Students' Level of Conceptual Understanding and Mathematical Self-Efficacy. 1(12), 860–875. <https://doi.org/10.55927/ijcs.v1i12.11722>
22. Ricafort, J. D. (2024). Effectiveness of Active Learning Strategy in Improving Students' Conceptual Understanding in Light and Optics. *Puissant*, 5, 1300-1317.
23. Salvane, C. F., & Orongan, M. J. (2024). Performance, Conceptual Understanding, and Self-Efficacy of Students via Contextualized Self-learning Modules in Junior High School: Performance, Conceptual Understanding, and Self-Efficacy of Students. *International Journal of Curriculum and Instruction*, 16(1), 107-128.
24. Sandoval, A. L., Acuzar, J. R. P., Alimpuyo, M. N. J., Borgonos, C. N. P., Gabutero, R. R. B., Maulawin, C. P. F., & Trinidad, N. A. P. (2024). Utilization of Self-Learning Module in the Development of Reading Comprehension of Grade Four Amethyst. *International Journal of Research Publications*. <https://doi.org/10.47119/ijrp1001441320246171>
25. Shao, M., Hong, J.-C., & Zhao, L. (2022). Impact of the self-directed learning approach and attitude on online learning ineffectiveness: The mediating roles of internet cognitive fatigue and flow state. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.927454>
26. Sipayung, T. N., & Simanjuntak, S. D. (2017). Efektivitas pembelajaran kooperatif dengan menggunakan modul. 6(3), 393–398. <https://doi.org/10.24127/AJPM.V6I3.1154>
27. Valle, N. N., & Valle, L. (2024). Appraisal of the technology and livelihood education-information and communication technology in the new normal. *HO CHI MINH CITY OPEN UNIVERSITY JOURNAL OF SCIENCE-SOCIAL SCIENCES*, 14(1), 3-11.
28. Xing, T., Beyerlein, S., & Crepeau, J. (2024). Impact of Self-Directed Learning Modules on Preparing Students to Take the FE Exam. <https://doi.org/10.18260/1-2--43494>

### **C. MEMORANDA**

1. Department of Education. (2020, July 20). Policy guidelines for the provision of learning resources in the implementation of the Basic Education Continuity Plan (DepEd Order No. 018, s. 2020). <https://www.deped.gov.ph/2020/07/20/july-20-2020-do-018-s-2020-policy-guidelines-for-the-provision-of-learning-resources-in-the-implementation-of-the-basic-education-continuity-plan/>
2. Department of Education. (2024). DepEd Order No. 010, s. 2024: Policy guidelines on the implementation of the MATATAG curriculum. [https://www.deped.gov.ph/wp-content/uploads/DO\\_s2024\\_010.pdf](https://www.deped.gov.ph/wp-content/uploads/DO_s2024_010.pdf)
3. DO 8, S. 2015 – Policy Guidelines On Classroom Assessment For The K To 12 Basic Education Program

### **D. ONLINE SOURCES**

1. Abdullah, B. (2024, November 7). Technology and livelihood education: Key insights. *DigitalXFuture*. <https://digitalxfuture.com/blog/technology/technology-and-livelihood-education-key-insights>
2. Bragg, S. (2024, December 18). What is effectiveness? *AccountingTools*. <https://www.accountingtools.com/articles?effectiveness>
3. Buasen, B. A. (2024, February 10). The pivotal role of technology and livelihood education programs in shaping tomorrow's workforce. *Amianan Balita Ngayon*. <https://amiananbalitangayon.com/the-pivotal-role-of-technology-and-livelihood-education-programs-in-shaping-tomorrows-workforce>
4. Costa, D. (2025, April 10). Business finance. *Britannica Money*. <https://www.britannica.com/money/business-finance>

5. DepEd Tambayan. (2022, February 3). Grade 6 self-learning modules (SLM) 3rd quarter. Retrieved from <https://www.depedtambayanph.net>
6. EDCOM 2 Communications. (2023, June 2). Sen. Gatchalian to DepEd, GPPB: Explore preselection of textbooks to speed up procurement process. Education Commission 2. <https://edcom2.gov.ph/sen-gatchalian-to-deped-gppb/>
7. EDCOM 2 Communications. (2023, September 6). Sen. Pia to DepEd: Find ways to fast-track textbook procurement, delivery. Education Commission 2. <https://edcom2.gov.ph/sen-pia-to-deped-find-ways-to-fast-track-textbook-procurement-delivery/>
8. K to 12 Edukasyong Pantahanan at Pangkabuhayan and Technology and Livelihood Education Curriculum Guide (2016). Retrieved from <https://www.deped.gov.ph/wp-content/uploads/2019/01/EPP-CG.pdf>
9. Marshman, E., DeVore, S., & Singh, C. (2020). *Holistic framework to help students learn effectively from research-validated self-paced learning tools*. *Physical Review Physics Education Research*, 16(2), 020108. <https://doi.org/10.1103/PhysRevPhysEducRes.16.020108>
10. Merit India. (2023, December 6). Effect vs impact in research proposal. MERIT India. <https://www.meritindia.org/blog/effect-vs-impact-in-research-proposal>
11. Merriam-Webster, (2022). Post-Test. Retrieved from: <https://www.merriam-webster.com/dictionary/posttest#:~:text=Definition%20of%20posttest,the%20effectiveness%20of%20the%20program>
12. Senate of the Philippines. (2023, May 5). Jinggoy pushes digitized copies of textbooks to ensure 1:1 student-textbook ratio in public schools. [https://legacy.senate.gov.ph/press\\_release/2023/0505\\_estrada1.asp](https://legacy.senate.gov.ph/press_release/2023/0505_estrada1.asp).
13. The DepEd Teachers Club. (2024). Lesson exemplars (LE). <https://depedclub.com/category/files-section/lesson-exemplars-le/>
14. UNESCO (2022). Institute for Statistics (UIS). Open Educational Resources. Retrieved from <https://www.unesco.org/en/communication-information/open-solutions/open-educational-resources>
15. UNESCO, 2023. Textbook availability and content. Making a cost-effective textbook policy. Retrieved from: <https://policytoolbox.iiep.unesco.org/policy-option/textbook-availability-and-content/>
16. UNESCO. (2006). Framework for the UNDESP international implementation scheme. Retrieved from <http://unesdoc.unesco.org/images/0014/001486/148650E.pdf>