International Journal on Integrated Education (IJIE)

e-ISSN: 2620 – 3502
p-ISSN: 2615 – 3785

Volume: 8 Issue: 4 | December 2025

https://journals.researchparks.org/index.php/IJIE

Article

Contextualized 7Taps Microlearning Modules for Enhancing Metacognitive Skills of Grade 11 Students

Raymundo Jr. R. Gabelo*[1]

1. University of Cabuyao, Philippines
* Correspondence: pamburgos.2020@gmail.com

Abstract: In recent years, educational institutions had increasingly adopted various technological tools to facilitate learning, improve engagement, and promote self-directed learning. This study contributed valuable insights into how the Grade 11 students' metacognitive skills can be enhanced to improve their educational outcomes. Specifically, utilizing contextualized 7taps Microlearning Modules in Practical Research 1 subject. This quantitative quasi- experimental study focused primarily on investigating the utilization of contextualized 7taps microlearning modules to enhance the metacognitive skills of grade 11 students at Bigaa Integrated National High School. The participants were 30 learners from 11- TVL, specifically 15 students from the HE strand and 15 students from the ICT strand. These learners utilized the tablets provided by the school and the local government of Cabuyao City. Both the control and experimental groups initially showed "Unsatisfactory" performance in Practical Research 1, highlighting the need for instructional support. After the intervention, both groups improved to a "Satisfactory" level, with the experimental group (using 7Taps) performing slightly better. However, the difference between the two groups was not statistically significant. Despite this, the study confirmed that both traditional and microlearning methods effectively improved research skills. The 7Taps platform offered a self-paced, engaging way for students to reflect and build metacognitive strategies. The study emphasized the role of digital tools in enhancing critical thinking, problem-solving, and research literacy. It concluded with a call for further research on the long-term impact of microlearning, the most effective digital tools, and the necessary teacher training to fully leverage technology in research instruction.

Keywords: Contextualized, 7taps Microlearning, Metacognitive, Research Literacy, Digital Tools

Citation: Gabelo. R. J. R. Contextualized 7Taps Microlearning Modules for Enhancing Metacognitive Skills of Grade 11 Students.International Journal on Integrated Education (IJIE) 2025, 8(4), 324-330.

Received: 20th Apr 2025
Revised: 29th Apr 2025
Accepted: 8th May 2025
Published: 18th May 2025

1. Introduction

In recent years, educational institutions had increasingly adopted various technological tools to facilitate learning, improve engagement, and promote self-directed learning. One such innovation is the 7taps Microlearning Platform by Kate Udalova last October 2020, which offers a unique approach to learning through bite-sized, focused content tailored for various educational needs. This study sought to contribute valuable insights into how the Grade 11 students' metacognitive skills can be enhanced to improve their educational outcomes. By utilizing contextualized 7taps Microlearning Modules in Practical Research 1 subject, educators at Bigaa Integrated National High School can create a more dynamic and responsive learning environment that addresses the unique challenges faced by their students.

2. Materials and Methods

Research Design

This research employed a quantitative type, specifically a quasi-experimental research design, to investigate the utilization of contextualized 7taps microlearning modules for enhancing metacognitive skills of Grade 11 students at Bigaa Integrated National High School[1]. The researcher utilized a total of three contextualized modules anchored to the 7taps Microlearning Platform, suited to the topics provided in the Curriculum Guide and the five targeted Most Essential Learning Competencies (MELCs) in the 3rd Quarter of Practical Research 1[2]. These five MELCs are: 1) explain the importance of research in daily life; 2) differentiate quantitative from qualitative research; 3) describe characteristics, strengths, weaknesses, and kinds of qualitative research; 4) illustrate the importance of qualitative research across fields; and 5) synthesize information from relevant literature.

The researcher created a 30-item pretest to be completed by both groups of participants. Following this, a 30-item posttest was administered after the discussion and utilization of the contextualized 7taps microlearning modules[3]. All pretests and posttests were anchored to the Most Essential Learning Competencies for Practical Research 1, the table of specifications, content validation by experts, and pilot testing. Thus, the instrument underwent reliability testing using the internal consistency method. The results of the Kuder-Richardson 20 revealed that the test on metacognitive skills reached an "Acceptable Reliability" level (a = .716, 30 items)[4].

Instrumentation (Validation and Scoring of Instruments)

The primary aim of this study was to investigate the use of Contextualized 7taps Microlearning Modules in enhancing the metacognitive skills of Grade 11 students at Bigaa Integrated National High School. To develop these modules, the researcher selected five Most Essential Learning Competencies (MELCs) from the K–12 Curriculum Guide and the MELCs list for the 3rd Quarter of Practical Research 1. Additionally, the researcher thoroughly analyzed the concept and features of 7taps microlearning as introduced by Kate Udalova[5].

To ensure the modules' validity, a letter was sent to the School Head of Bigaa Integrated National High School, specifically addressed to the School Learning Resource Quality Assurance Department. This letter requested assistance from various school personnel to validate the material: Mark Anthony S. Salmazan, SLRQA Coordinator, and Gilbert R. Escala, Master Teacher II, for technical process and layout; Diana Jane P. Reyes, Head Teacher I in English, and Mari Joyce A. Logo, Teacher III and School Research Coordinator, for content and language. Following this, the researcher obtained a letter of permission from the Schools Division Superintendent, which was submitted to the Records Unit, to seek approval for the conduct of the study at Bigaa Integrated National High School. To evaluate the effectiveness of the materials and their contribution to the teaching-learning process, the researcher designed a 30-item pretest and posttest, reflecting the five selected MELCs in the Practical Research 1 subject and guided by the table of specifications.

3. Results and Discussion

Table 1. The Pretest Mean Scores of Control and Experimental Groups.

Test	Group	N	Mean	SD	Verbal Interpretation
PRE TEST	Control	15	9.07	1.33	Unsatisfactory
	Experimental	15	8.73	1.28	Unsatisfactory

Legend: *Very Satisfactory 25-30; Satisfactory 19-24; Moderately Satisfactory 13-18; Unsatisfactory 7-12; Very Unsatisfactory 1-6*

The pretest mean scores for both the control (M = 9.07, SD = 1.33) and experimental (M = 8.73, SD = 1.28) groups indicate an "Unsatisfactory" level based on the given interpretation scale. These results suggest that both groups had similar initial performance before the intervention.

Table 2. Significant Difference between the Pretest Mean Scores of the Control and Experimental Groups.

Test	Statistic Welch's t	p-value	Decision	Conclusion	Cohen's d Effect Size	Interpretation
PRE TEST	0.698	0.491	Failed to reject Ho	No significant difference	0.255	Small Effect

Significant if p<0.05; df=28; d=0.01 Very small, d=0.2 Small, d=0.5 Medium, d=0.8 Large, d=1.2 Very large, d=2.0 Huge (Sawilowsky, 2009)

Independent samples t-test was run to test if there is a significant difference between the pretest mean scores of the control and experimental groups. Independent samples t-test showed no significant difference between the pretest mean scores of the control and experimental groups (p>0.05).

Recent studies demonstrate that effective technological integration significantly enhances students' research skills, helping them better navigate the complex digital information landscape. For instance, students actively engaging with digital tools and resources show improved learning outcomes across various subjects, with adaptive learning technologies and AI-driven platforms providing personalized support that boosts academic performance and engagement[6].

Table 3. The Posttest Mean Scores of Control and Experimental Groups.

Test	Group	N	Mean	SD	Verbal Interpretation
POST TEST	Control	15	21.13	2.64	Satisfactory
	Experimental	15	22.47	2.47	Satisfactory

Legend: *Very Satisfactory 25-30; Satisfactory 19-24; Moderately Satisfactory 13-18; Unsatisfactory 7-12; Very Unsatisfactory 1-6*

The posttest results show an improvement in both groups, with the control group (M = 21.13, SD = 2.64) and the experimental group (M = 22.47, SD = 2.47) reaching a "Satisfactory" level. The experimental group achieved a slightly higher mean score, suggesting a potential positive effect of the intervention.

While there is a growing body of research on the general benefits of technology in education, relatively few studies specifically investigate the effectiveness of different technological tools and strategies in enhancing research skills among senior high school students. This is a notable oversight, as research skills—such as evaluating sources, synthesizing information, and utilizing digital databases—are crucial for academic success, primarily as students must conduct more complex research tasks in higher education and beyond. For example, the use of the STARBOOKS online learning platform in Philippine public schools significantly enhanced Grade 9 students' research capabilities, as evidenced by improved science investigatory project scores and positive student feedback, highlighting the potential of ICT tools to develop essential research skills in secondary education[7].

Table 4. Test of Significant Difference between the Posttest Mean Scores of the Control and Experimental Groups.

Test	Statistic Welch's t	p-value	Decision	Conclusion	Cohen's d Effect Size	Interpretation
POST TEST	-1.426	0.165	Failed to reject Ho	No significant difference	0.521	Medium Effect

Significant if $p<0.05$; df=27.9; d=0.01 Very small, d=0.2 Small, d=0.5 Medium, d=0.8 Large, d=1.2 Very large, d=2.0 Huge (Sawilowsky, 2009)

Independent samples t-test was run to test if there is a significant difference between the posttest mean scores of the control and experimental groups. Independent samples t-test showed no significant difference between the posttest mean scores of the control and experimental groups ($p>0.05$).

Integrating technology in teaching research skills to senior high school students holds great promise for enhancing students' academic performance and preparing them for future educational challenges. However, significant gaps still need to be in the research literature, particularly concerning the effectiveness of specific digital tools, the professional development needs of teachers, and the long-term impact of technology use on research outcomes. By addressing these areas, researchers can contribute valuable knowledge to improve technology integration in teaching research skills, ultimately enhancing students' academic success and preparing them for success in the digital age. A study by Magtoto (2022) highlights that while learners and educators positively perceive technology integration, there is a need for targeted interventions to improve both students' and teachers' ICT skills and literacy to maximize academic achievement. This research underscores the importance of continuous professional development and tailored technology literacy programs to support effective use of digital tools in senior high school curricula[8].

Table 5. The Pretest and Posttest Mean Scores of Control and Experimental Groups.

Test	Group	N	Mean	SD	Verbal Interpretation
PRE TEST	Control	15	9.07	1.33	Unsatisfactory
	Experimental	15	8.73	1.28	Unsatisfactory
POSTTEST	Control	15	21.13	2.64	Satisfactory
	Experimental	15	22.47	2.47	Satisfactory

Legend: *Very Satisfactory 25-30; Satisfactory 19-24; Moderately Satisfactory 13-18; Unsatisfactory 7-12; Very Unsatisfactory 1-6*

The pretest results indicate that both the control (M = 9.07, SD = 1.33) and experimental (M = 8.73, SD = 1.28) groups had an "Unsatisfactory" level of performance in Practical Research 1 before the intervention. However, after utilizing the Contextualized 7Taps Microlearning Modules, the experimental group showed greater improvement in the posttest (M = 22.47, SD = 2.47) compared to the control group (M = 21.13, SD = 2.64), with both reaching a "Satisfactory" level. These results suggest that the use of microlearning modules positively influenced students' research skills and understanding.

Students who engaged with microlearning materials exhibited higher levels of comprehension and retention than those exposed to more lengthy lectures. By breaking down complex concepts into manageable chunks, educators can help students focus on

understanding rather than merely memorizing facts. This method enhances comprehension and encourages metacognitive strategies such as self-monitoring and self-regulation as students reflect on their learning processes.

Table 6. Test of Significant Difference between the Pretest and Posttest Mean Scores of the Control and Experimental Groups.

Group	Statistic Student's t	p-value	Mean difference	Decision	Conclusion	Cohen's d Effect Size	Interpretation
Control Group	-14.7	< .001	-12.1	Reject Ho	With significant difference	-3.8	Huge Effect
Experimental Group	-20.6	< .001	-13.7	Reject Ho	With significant difference	-5.33	Huge Effect

Significant if p<0.05; df=14; d=0.01 Very small, d=0.2 Small, d=0.5 Medium, d=0.8 Large, d=1.2 Very large, d=2.0 Huge (Sawilowsky, 2009)

Dependent samples t-test was run to test if there is a significant difference between the pretest and posttest mean scores of the control and experimental groups. Dependent samples t-test showed significant difference between the pretest and posttest scores in English of control group (t=-14.7, p< .001). It also showed significant difference between the pretest and posttest scores in English of experimental group (t=-20.6, p< .001).

The 7Taps microlearning platform offers a promising solution for addressing these gaps by providing short, interactive modules that allow Bigaa Integrated National High School students to learn research concepts at their own pace. These modules can guide students through successive steps of the research process, promoting metacognitive awareness and helping them acquire essential research skills while reflecting on their understanding and enhancing their strategies. Furthermore, 7Taps enables students to revisit content and engage in reflective practices, which aids in developing metacognitive abilities such as monitoring comprehension and identifying areas of difficulty[9].

4. Conclusion

The study investigated the impact of Contextualized 7Taps Microlearning Modules on the research skills of senior high school students at Bigaa Integrated National High School. Pretest results showed both control and experimental groups had an "Unsatisfactory" level of performance in Practical Research 1, indicating the need for instructional intervention. Initial statistical analysis confirmed comparable baseline knowledge between groups. Following the intervention, both groups significantly improved to a "Satisfactory" level in the posttest, with the experimental group using 7Taps modules performing slightly better, though no significant difference was found between groups' posttest scores. Both traditional and technology-based methods effectively enhanced research proficiency[10].

The study emphasized the growing importance of digital tools in education for developing critical thinking, problem-solving, and research literacy. The 7Taps platform provided an engaging, self-paced learning experience that promoted metacognitive strategies by allowing students to reflect, revisit content, and develop essential research

skills. Microlearning modules serve as valuable supplements to traditional teaching, guiding students through research processes in a structured yet flexible way.

However, the study also highlighted the need for further research on the long-term effectiveness of microlearning, the most beneficial digital tools for research instruction, and the professional development required to maximize technology integration. Addressing these gaps can improve teaching practices and better prepare students with 21st-century research competencies. Recent research in higher education shows that microlearning modules designed with 7Taps significantly improve learning performance and engagement compared to traditional methods[11].

5. Acknowledgement

Every journey begins with a single step, but it is the people who walk beside us—offering strength, wisdom, and love—who make the destination truly meaningful.

First and foremost, my deepest and most sacred gratitude is offered to God Almighty, the true author of all wisdom. In moments of stillness, He whispered clarity. In seasons of doubt, He poured out strength. His light led me through every dark hallway of uncertainty, and His grace carried me farther than I could ever go alone.

To my ever-patient Research Professor, Dr. Joanna Marie De Borja, your keen intellect and steady encouragement were the compass that kept this study grounded and purposeful. I am deeply blessed to have been guided by your hand.

To my compassionate and devoted Thesis Adviser, Dr. Juanita B. Corre, your honest critiques and constant affirmation gave shape to ideas and soul to pages. For your unwavering presence, I am endlessly grateful.

To the esteemed panel of experts, Dr. Allen Cris Montillano, Dr. Shienna Marie Caparas, Dr. Ma. Lorena Tagala, Dr. Shielilo Amihan, and Dr. Antonio Yango—thank you for challenging me to think deeper and reach higher. Your sharp insights transformed this research into something richer, more rigorous, and more profound.

To the dedicated instrument validators, Ma'am Mari Joyce Logo, Sir Gilbert Escala, and Ma'am Diana Jane Reyes and the keen-eyed statistician, Dr. Jeffrey Astillero, your behind-the-scenes brilliance ensured the study's integrity and credibility. Your meticulous work turned a good study into a trustworthy one, and I am sincerely thankful. Ma'am Clarissa Dabu, thank you for your little push whenever I was doubting myself, thank you for reminding me that I have the capability to move forward.

To the participants of this study, my Grade 11 classes of Bigaa INHS, thank you for entrusting me with your skills. Your engagement and interests gave this research its heartbeat. Your micro efforts today will surely have a macro effect in the future.

To my professors in the Graduate School, whose wisdom stretched the boundaries of my thinking—thank you. Your lessons lit fires that continue to burn in the corners of my mind.

To my family, my constant wings, thank you for holding me up when I felt I couldn't go on. Your love was the quiet power behind every late-night revision, every rewritten paragraph, every moment of perseverance. Specially to Mama and Papa, my sisters, Khaye and Ria, and my dear Enzo, I owe every victory to your unwavering belief in me.

To my best friend and soul sister, Maria Pamela Pera Burgos, thank you for being my constant in the chaos. For every coffee date at Kafe Veronica, my solace, for listening to my endless rants, for being my number one fan and unwavering believer, thank you. Your presence turned pressure into peace and breakdowns into breakthroughs. Like a diamond, you shone brightest when I needed you most. You are, and always will be, my safe space and greatest gift in this journey.

To my classmates, thank you for being my co-travelers in this academic climb. From sleepless nights to inside jokes, from breakdowns to triumphs, we shared it all. You made the journey not only bearable, but unforgettable.

This work may bear my name, but it belongs to all of us. It is the product of many minds, many hands, and many hearts. To everyone who stood by me, held space for me, or believed in me—thank you, from the deepest part of who I am. This is not just a chapter of academic life closed, it is a love letter to community, perseverance, and the quiet power of togetherness.

REFERENCES

[1] Types of Quantitative Research Methods and Designs. GCU Blog. Published April 28, 2023. Accessed May 15, 2025. https://www.gcu.edu/blog/doctoral-journey/types-quantitative-research-methods-designs

[2] Jugas RJM. *Boosting Reading Comprehension Performance: The Impact of Metacognitive Reading Strategies on Grade 11 Students*. Int J Contemp Sci. 2024;2(1):27-42. doi:10.55927/ijcs.v2i1.12033

[3] Balasundaram S, Mathew J, Nair S. *Microlearning and Learning Performance in Higher Education: A Post-Test Control Group Study*. J Learn Dev. 2024;11(1):1-14. https://files.eric.ed.gov/fulltext/EJ1423546.pdf

[4] Naser K. *Tech-Enhanced Learning: Assessing the Impact of an Innovative Microlearning Module on Postgraduate Students' Perceptions and Academic Progress*. Int J Interact Mob Technol. 2024;18(06):67-83. doi:10.3991/ijim.v18i06.46187

[5] 7taps Overview: Create Microlearning in Minutes [Video]. YouTube. Published March 27, 2025. Accessed May 15, 2025. https://www.youtube.com/watch?v=CNCLnNvHyQ8

[6] Zou D, Xie H, Hwang G. *Trends, challenges, and innovations in technology integration: A review of digital learning impacts on student achievement*. Front Educ. 2025;10:1562391. doi:10.3389/feduc.2025.1562391

[7] Palines KME, Moreno JMU, Tatlonghari AG, Ortega-Dela Cruz RA. *Integrating Information and Communication Technologies to Enhance High School Students' Research Capabilities*. J Educ Res Pract. 2025;15:1-12. doi:10.5590/JERAP.2025.15.1952

[8] Magtoto CRM. *The Influence of Technology Integration on Senior High School Curriculum in relation to Students' Academic Achievement*. Int J Acad Pedagog Res. 2022;6(4):8-22. http://ijeais.org/wp-content/uploads/2022/4/IJAPR220402.pdf

[9] 7taps. Research on how 7taps aligns with the science of learning. 7taps.com. Accessed May 15, 2025. https://www.7taps.com/research

[10] 7taps. Microlearning 2024: Research, benefits, examples, and ROI calculator. 7taps.com. Accessed May 15, 2025. https://www.7taps.com/microlearning

[11] Sathiyaseelan B, Mathew J, Nair S. *Microlearning and Learning Performance in Higher Education: A Post-Test Control Group Study*. J Learn Dev. 2024;11(1):1-14. doi:10.56059/jl4d.v11i1.752