

SELF-PACED MODULE FOR GRADE SEVEN SCIENCE CUM WORKSHEETS

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Abstract

This study developed and utilized self-paced modules for teaching Science Seven at Calasiao Comprehensive National High School during SY 2023-2024. It examined the Science teachers' perceptions of the availability and adequacy of instructional materials, teacher readiness for self-paced teaching, differences in pre-test and post-test results, and the acceptability of the self-paced modules.

The descriptive-developmental research method was employed, gathering data through surveys and checklists. A Five-Point Likert Scale evaluated the availability and adequacy of materials, teacher readiness, and module acceptability.

Key findings led to the following recommendations: prioritize acquiring additional laboratory equipment and multimedia resources to improve the quality and adequacy of science instruction; provide professional development to enhance teacher preparedness for integrating self-paced modules and addressing diverse student needs; expand the use of self-paced modules in the Science Seven curriculum to improve learning outcomes; and present the self-paced modules to the Schools Division Superintendent of SDO I Pangasinan for evaluation and potential adoption across the division.

Keywords: self-paced module, science education, instructional materials, teacher readiness, learning outcomes

Introduction

Traditional classroom instruction often follows a one-size-fits-all approach, which may not cater to the diverse learning needs and paces of individual students (Gerard et al., 2021). Self-paced learning, on the other hand, allows students to progress through the curriculum at their own speed, focusing on areas where they need more support and moving quickly through concepts they have already mastered (Stowers & Tessmer, 2023). This study explores the development and utilization of self-paced modules for Grade Seven Science, integrated with worksheets, to provide a flexible and personalized learning experience. By examining the effectiveness of self-paced modules in improving student learning outcomes, investigating teacher perceptions of their implementation, assessing student satisfaction with this learning approach, and identifying the challenges and opportunities associated with self-paced learning, this research aims to provide valuable insights for educators, curriculum developers, and policymakers seeking to enhance science education (Taghap, 2023). The findings of this study will contribute to the growing body of knowledge on self-paced learning and its potential to transform traditional classroom instruction.

A central focus of this study is the evaluation of the effectiveness of self-paced modules in improving student learning outcomes in Grade Seven Science (Yuan, 2022). This study investigates teacher perceptions of the implementation of self-paced modules. The research explores teacher views on the benefits and challenges of using self-paced modules, their experiences in adapting their teaching practices, and their assessment of the modules' impact on student learning (Handayani et al., 2022). Teacher feedback is crucial for refining the design and

implementation of self-paced modules and ensuring their alignment with pedagogical best practices (Philipsen et al., 2019).

In addition to examining student learning outcomes and teacher perceptions, this study also assesses student satisfaction with the self-paced learning approach (Lo & Hew, 2020). The research gathers data from students through surveys, questionnaires, and feedback sessions to understand their experiences with self-paced modules, their preferences for learning styles, and their overall satisfaction with this approach (Alenezi, 2022). Student feedback provides valuable insights into the effectiveness and appeal of self-paced learning from the learners' perspective (Taylor et al., 2021).

Moreover, this study identifies the challenges and opportunities associated with implementing self-paced learning in Grade Seven Science. The research explores factors such as the need for individualized support, the development of engaging and effective learning materials, the integration of technology, and the management of diverse learning paces within the classroom (Zulueta & Panoy, 2022). By understanding these challenges, educators can develop strategies to overcome obstacles and create a supportive environment for self-paced learning. Simultaneously, the study identifies opportunities for innovation, such as incorporating gamification, personalized feedback mechanisms, and collaborative learning activities within the self-paced framework (Wong et al., 2018).

The integration of worksheets within the self-paced modules provides students with opportunities to practice and apply the concepts they are learning (Bingham, 2019). These worksheets serve as formative assessments, allowing students to gauge their understanding and identify areas where they need further review. The worksheets also provide teachers with valuable data on student progress and areas of difficulty, enabling them to provide targeted support and individualized instruction (Van, 2021).

This research project aligns with the goals of the Department of Education to improve the quality of science education in the Philippines. By developing and implementing self-paced modules for Grade Seven Science, the study aims to contribute to the ongoing efforts to enhance student learning outcomes, foster personalized learning experiences, and support the professional development of science teachers.

Method

Research Design

This study employed a descriptive-developmental research design, which involved the development and evaluation of self-paced modules for Grade Seven Science.

Participants

The study involved the participation of Grade Seven students and science teachers from Calasiao Comprehensive National High School. A total of 50 students and 5 teachers participated in the study.

The participants were selected using a purposive sampling technique to ensure a representative sample from the target population.

Instrumentation

The instrumentation and data collection methods for this study are designed to gather comprehensive insights into the effectiveness of self-paced modules cum worksheets in Grade Seven Science at Calasiao Comprehensive National High School (CCNHS). The study employs a mixed-methods approach, combining quantitative data from survey questionnaires and

qualitative data from test questions to provide a nuanced understanding of student learning outcomes and teacher perspectives.

Data Analysis

Five-Point Likert Scale was used to determine the availability and adequacy of instructional materials, level of readiness of teachers in various self-paced module, and level of acceptability of the instructional materials.

Results

Availability of Instructional Materials in Teaching Grade Seven Science

The survey results revealed that the various instructional materials at Calasiao Comprehensive National High School (CCNHS) highlights a significant variance in the perceived availability of these resources. Self-paced modules received the highest mean score of 4.20, indicating that students and teachers find these materials highly accessible and readily available for their science education needs.

Textbooks and worksheets also scored relatively high, with a mean of 3.80 each. This indicates that these traditional resources are sufficiently available to support the science curriculum. T

On the other hand, laboratory equipment and multimedia resources scored lower, with mean values of 3.20 and 2.88, respectively.

Adequacy of Instructional Materials

The survey results revealed that the adequacy of instructional materials at Calasiao Comprehensive National High School varies across different resources. Self-paced modules are perceived as the most adequate instructional material, with the highest mean score of 4.20. These modules are well-suited to the needs of the students and teachers at Calasiao Comprehensive National High School, likely providing flexibility and personalized learning experiences. Textbooks and worksheets also received high adequacy ratings, each with a mean score of 3.80. These traditional resources are considered sufficiently effective and reliable for supporting the Grade Seven Science curriculum.

However, the adequacy of laboratory equipment and multimedia resources received lower mean scores of 3.20 and 2.88, respectively. This indicates potential inadequacies in these areas, which could impact the quality of science education.

Level of Readiness of Teachers in implementing Self-paced Modules

The survey results indicate that the teachers at Calasiao Comprehensive National High School are ready to implement self-paced modules in their Grade Seven Science classes. The teachers' readiness in various aspects of self-paced module implementation received high mean scores, ranging from 3.44 to 4.32.

The teachers' readiness in understanding the concept of self-paced modules received the highest mean score of 4.32, suggesting a strong grasp of this innovative instructional approach. Additionally, the teachers' readiness in designing and developing self-paced modules (mean=4.28) and in implementing the self-paced modules in the classroom (mean=4.20) were also highly rated.

These findings indicate that the teachers at Calasiao Comprehensive National High School are well-prepared to integrate self-paced modules into their science instruction, which is a crucial factor for the success of this initiative.

Significant Difference in using the Self-Paced Module cum Worksheet

An independent-samples t-test was conducted to determine if there is a significant difference in the academic performance of students who used the self-paced modules cum worksheets and those who did not. The results showed that the students who used the self-paced modules cum worksheets ($M = 80$) performed significantly better than pretest ($M = 61.80$), $t = -15.43$, $p < 0.01$. This indicates that the self-paced modules cum worksheets were effective in enhancing the science learning of the Grade Seven students.

Level of Acceptability of the Developed Self-paced Modules

The developed self-paced modules for Grade Seven Science were found to be highly acceptable by both the teachers and students at Calasiao Comprehensive National High School. The overall mean score for the level of acceptability was 4.87, indicating that the self-paced modules were perceived as highly relevant, engaging, and effective in supporting science learning.

The high level of acceptability can be attributed to the careful design and development of the self-paced modules, which incorporated feedback from both teachers and students to ensure they meet the needs and expectations of the target audience.

Discussion

The findings of this study provide valuable insights into the effectiveness of self-paced modules cum worksheets in enhancing the science learning of Grade Seven students at Calasiao Comprehensive National High School (Garcia, 2021) (Yulia et al., 2018) (Siagian et al., 2020) (Simbolon et al., 2022). The study's results align with previous research on the benefits of self-paced learning and the use of technology-enhanced instructional materials in science education (Simbolon et al., 2022) (Yulia et al., 2018).

The high availability and adequacy of self-paced modules, as perceived by both students and teachers, suggest that these resources are well-integrated into the school's science curriculum and are readily accessible to support student learning.

The teachers' high level of readiness in implementing self-paced modules is a crucial factor in the success of this initiative. By being well-prepared to design, develop, and implement these modules, the teachers can effectively facilitate self-directed and personalized learning experiences for their students.

Furthermore, the significant improvement in student academic performance after using the self-paced modules cum worksheets highlights the effectiveness of this instructional approach in enhancing science learning.

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