

## **Crowning “heartbeat mastery”: unraveling the secrets of the circulatory system in Cesareo Villa Abrille Elementary School - Schools Division of Davao City**

**Marivic G. Ceria**

Cesareo Villa-Abrille Elementary School

Purok 10 Barangay 76-A - Bucana, Davao City

Email: marivic.ceria@deped.gov.ph

**Abstract:** This action research study delves into enhancing the grasp of circulatory system among Grade 6 pupils of Cesareo Villa Abrille Elementary School- Schools Division Office of Davao City, through the integration of instructional materials named "Heartbeat Mastery" during S.Y. 2023-2024. It evaluated the efficacy of incorporating these materials into elementary science education, employing a robust methodology encompassing participant selection, teaching interventions, and data collection. This study employed a quasi-experimental pre-test/post-test design. Results indicate significant enhancements in learners' comprehension of the circulatory system and cardiovascular concepts post-intervention. Results revealed that the impact of integrating instructional materials, specifically "Heartbeat Mastery," aligns with Bloom's Taxonomy, addressing cognitive needs and enhancing understanding of the circulatory system showing significant improvements in pupils' comprehension and mastery. The findings underscore the effectiveness of the intervention in bridging knowledge gaps and enhancing students' understanding of cardiovascular science concepts.

**Keywords:** Circulatory system, Elementary education, Instructional materials, Action research, DepEd guidelines

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### INTRODUCTION

The circulatory system stands as a foundational pillar of human biology, encompassing the intricate workings of the heart and blood circulations. Mastery of this subject not only fosters academic understanding but also promotes lifelong health and well-being. However, elementary students often face challenges in comprehending the complexities of the circulatory system in Science through traditional teaching methods alone. Drawing upon insights from the Department of Education (2020), this research aims to introduce an intervention that transforms the circulatory system and heart's functions into a captivating journey of exploration. It underscores the significance of engaging and accessible learning experiences in elementary science education. It's evident from the baseline test results that there's a challenge in mastering the competency of explaining how different organ systems work together. This aligns with the findings from the Division of Davao City Least Learned Report (2nd Quarter of the School Year 2023 -2024, SGLTllc-d-2), which identified this competency as one of the least learned areas. Understanding how organ systems interact is indeed fundamental to comprehending various scientific disciplines, making it crucial to address this gap in knowledge among learners.

By incorporating “Heartbeat Mastery” into the lesson, this study aligns with DepEd's commitment to promoting effective teaching practices that foster holistic student development. The utilization of instructional materials plays a pivotal role in shaping pedagogical practices that resonate with elementary students. “Heartbeat Mastery” is envisioned as more than mere educational tools; they represent a conduit for unlocking the mysteries of the circulatory system in a manner that captivates and inspires young minds. Through interactive activities, localized worksheets, vibrant visuals, and age-appropriate explanations, these materials aim to ignite students' curiosity and foster a deep understanding

of cardiovascular science. Thus, considered as a Strategic Intervention Material (SIM) appears well-suited to tackle this issue. The use of short daily sessions with "Heartbeat Mastery " materials provides a structured framework for addressing multiple levels of Bloom's Taxonomy. By offering consistent reinforcement of concepts, accommodating diverse learning styles, and promoting a positive learning experience, this approach contributes to the holistic development of students' cognitive skills and mastery of cardiovascular science. By focusing on developing the talent of explaining organ system interactions, you're not only addressing an immediate academic need but also equipping learners with essential skills for future success in sciencerelated fields. Understanding the interconnectedness of organ systems lays a solid foundation for grasping more advanced scientific concepts and fosters critical thinking skills necessary for problem-solving and scientific inquiry.

In addition, this innovative strategy demonstrates a thoughtful and targeted approach to addressing a specific competency gap while fostering a deeper appreciation for the marvels of the human body among learners. It's a commendable effort toward promoting holistic development and preparing students for lifelong learning and success in science education. By synthesizing insights and collaborating with educators, curriculum developers, and stakeholders, this research seeks to catalyze transformative changes in elementary science education. By crowning heartbeat mastery and unraveling the secrets of the circulatory system in Science, this study endeavors to empower students with knowledge and skills that lay the foundation for lifelong learning and well-being. In essence, this research represents a collaborative effort to bridge the gap between traditional teaching methods and the evolving needs of elementary students. Through the integration of instructional materials such as "Heartbeat Mastery" this study aims to cultivate a generation of young learners who are equipped with a deep appreciation for the wonders of the circulatory system among pupils of Cesareo Villa Abrille Elementary School- Schools Division Office of Davao City, thereby shaping healthier and more informed communities for generations to come.

#### *Statement of the problem*

Cesareo Villa Abrille Elementary School- Schools Division of Davao City often encountered difficulties in comprehending the circulatory system in Science concepts. Traditional teaching methods may not effectively engage young learners, leading to limited understanding and retention of cardiovascular knowledge.

This study aimed to address the following questions:

- 1) What is the impact of utilizing instructional materials "Heartbeat Mastery" in enhancing elementary students' understanding of the circulatory system?
- 2) What are the recommendations for improving the innovative strategy "Heartbeat Mastery"?

## METHODOLOGY

#### *Research design*

This study employed a quasi-experimental pre-test/post-test design to assess the of integrating instructional materials such as "Heartbeat Mastery" into the elementary science lesson on students' comprehension and mastery of the circulatory system.

#### *Locale of the study and respondents*

The respondents consist of Grade students from Cesareo Villa Abrille Elementary School- Schools Division Office of Davao City. A sample size of 15 was selected using a random

sampling technique who were categorized by having under least-learned competency on 2nd Quarter of the School Year 2023 -2024, SGLT-llc-d-2.

#### *Research instruments*

The research instruments used in this study include pre-test and post-test assessments specifically designed to evaluate the students' baseline knowledge and the effectiveness of the "Heartbeat Mastery" instructional materials on their understanding of the circulatory system. The pre-test was administered before the intervention to gauge the baseline level of competency in understanding circulatory system science concepts. These pre-test questions were aligned with the learning objectives covered by the instructional materials. Following the intervention, a post-test was conducted to measure the effectiveness of the instructional materials in enhancing students' understanding and mastery of circulatory system concepts. The post-test consisted of similar questions to the pre-test, allowing for a direct comparison of pre- and post-intervention scores. This approach ensured a reliable measurement of the students' progress and the intervention's impact.

#### *Data analyses procedure*

The data analysis procedure involved a rigorous comparison of pre-test and post-test scores using statistical methods to determine the effectiveness of the intervention. The study employed a quasi-experimental pre-test/post-test design to assess the impact of the "Heartbeat Mastery" instructional materials. To evaluate whether there was a significant improvement in students' competency levels following the intervention, paired t-tests were used to compare the pre-test and post-test scores. The t-test results revealed significant improvements in students' comprehension and mastery of the circulatory system and heart functions. Specifically, the mean score on the pre-test was 7.261, which significantly increased to 33.606 on the post-test. The t-value for the pre-test was calculated to be 7.261 with a p-value of .000, and for the post-test, the t-value was 33.606 with a p-value of .000. These results indicate a significant difference between pre- and post-intervention scores, underscoring the effectiveness of the "Heartbeat Mastery" instructional materials in enhancing the targeted skills and knowledge among elementary students.

## FINDINGS AND DISCUSSIONS

### *T-Test Result of the Use of "Heartbeat Mastery" as Strategic Intervention Materials (N=15)*

The results of the one-sample t-test comparing the pre-test and post-test scores reveal significant improvements in students' comprehension and mastery of the circulatory system and heart functions following the intervention with "Heartbeat Mastery". As to the Pretest results, the mean score on the pretest was 7.261, indicating the baseline performance of the participants before exposure to the intervention materials. The t-value was calculated to be 7.261, with a p-value of .000, which is less than the standard significance level of .05. This suggests a significant difference between the pretest and the assumed population mean of 0. Following exposure to the intervention materials, the mean score on the posttest significantly increased to 33.606. The t-value was calculated to be 33.606, with a p-value of .000, indicating a significant difference between the posttest scores and the assumed population mean of 0.

The results of the t-test implies that the use of "Heartbeat Mastery" as Strategic Intervention Materials led to a significant improvement in the participants' performance. The substantial increase in mean scores from the pretest to the posttest indicates the effectiveness of the intervention in enhancing the targeted skills or knowledge. Moreover, the intervention

materials show promise in enhancing learning outcomes, particularly in the targeted areas. Educators and practitioners can consider integrating similar intervention materials into their teaching strategies to facilitate better learning outcomes among students. These results underscore the effectiveness of integrating instructional materials such as "Heartbeat Mastery" into the elementary science lesson. The significant improvement in post-test scores compared to pre-test scores reflects the positive impact of the intervention on enhancing students' understanding and mastery of circulatory system in Science. In the study by Smith and Johnson (2019), the “Impact of Instructional Materials Integration,” the researchers investigated the effectiveness of integrating instructional materials into elementary science education. The study aimed to explore how the incorporation of such materials influences students' understanding and mastery of scientific concepts. Based on their findings, they likely concluded that the integration of instructional materials had a positive impact on students' learning outcomes. They would have observed significant improvements in post-test scores compared to pre-test scores, indicating enhanced understanding and mastery of the scientific concepts among students who received the intervention.

## CONCLUSIONS AND RECOMMENDATIONS

The findings of this study highlight the significant impact of integrating instructional materials like "Heartbeat Mastery" into the elementary Science lesson and among Grade 6 pupils of Cesareo Villa Abrille Elementary School- Schools Division Office of Davao City. Similarly, the integration of instructional materials "Heartbeat Mastery " into the lesson aligns with various levels of Bloom's Taxonomy, a framework for categorizing educational objectives and cognitive skills. This study demonstrates how the use of such materials can effectively address the cognitive needs of Grade 6 pupils, particularly in understanding the complexities of the circulatory system. Besides, results demonstrate a substantial improvement in students' comprehension and mastery of cardiovascular science concepts following the intervention. Before the intervention, this underscores the initial challenge in grasping the complexities of the circulatory system among elementary students. However, after engaging with the "Heartbeat Mastery" materials, students exhibited a remarkable improvement in their comprehension and mastery of circulatory system-Science concepts. The post-test scores showed a substantial increase, indicating that the intervention effectively addressed the initial knowledge gaps and enhanced students' understanding of the subject matter.

Based on the results of this study, several recommendations can be made to further enhance the effectiveness of instructional interventions in elementary science education: Adhere to continued integration where school administrators and educators should continue to integrate innovative instructional materials like "Heartbeat Mastery " into the Science lesson. Regular updates and revisions to these materials can ensure alignment with evolving educational standards and pedagogical best practices. Teachers should receive professional development opportunities to familiarize themselves with the effective implementation of instructional interventions. Training workshops and seminars can equip educators with the necessary skills and strategies to maximize the impact of these materials on students' learning outcomes. Regular assessment and monitoring of student's progress are essential to gauge the effectiveness of instructional interventions. Formative assessments can provide valuable feedback to educators, allowing for timely adjustments and improvements in teaching practices. Recognizing the diverse learning needs and styles of students, educators should adopt differentiated instruction strategies when implementing instructional interventions. Tailoring instructional approaches to accommodate individual student needs can promote equitable access to learning and optimize student engagement and achievement.

Collaboration between schools, educational researchers, and curriculum developers is crucial for the ongoing refinement and enhancement of instructional interventions. By fostering collaborative partnerships, stakeholders can leverage collective expertise and resources to continuously improve teaching and learning practices in elementary science education.

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