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Development and Evaluation of Grade 4 Printed and Digitized Reading Materials on Topic Light, Heat and Sound

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Abstract. The aim of this research is to create engaging and informative printed and digitized reading materials for the fourth-grade level regarding Light, Heat, and Sound based on the DepEd curriculum and learners' materials. The methodology adheres to the ADDIE model with 10 sample respondents as try-out implementation. The developed materials comprised three stories and were evaluated with a DepEd rubric for General Reference Material. The material was further subjected to a readability test that provided reading ease and grade level. The final version of the reading material was converted to a digital form with audio components. The digital version was uploaded to an unlisted YouTube channel for easy dissemination. Based on the evaluation, the average rating is 4.875 on the general reference which translates to "excellent". On the readability, the two stories achieved a reading ease of 87.8 which is appropriate for 8-9 years old. Its average grade level is 3.1 which is consistent with the target learners. Post-intervention yielded an average of 93% which corresponds to "outstanding". The study concludes that it is highly possible to create reading material that embeds specific science learning content.

Keywords: Comprehension, Science-Infused descriptive story, Light, Heat and Sound

INTRODUCTION

Reading comprehension represents one of the most intricate cognitive processes that humans use, making it challenging to teach, assess, and study (AM Elleman, 2019). Reading comprehension is a complex cognitive process that requires coordinating brain processes and understanding context. As students make progress in education, more reading is necessary to cope with complex courses. However, it is challenging to practice and lack of reading materials can hinder effective reading comprehension exercises. Accordingly, this study was carried out create a printed and digitized reading material as supplementary material to science modules as part of a school reading intervention to help students in their learning about topics of Light, Heat, and Sound, as well as to improve reading fluency and measure the reading comprehension level of Grade 4 learners in

Science and English. Reading is a valuable life skill that can be applied in school and everyday life. The materials should also aid in developing reading strategies, such as predicting, visualizing, and making connections, to enhance learners' reading abilities. The study aims to respond to the following research question in order to address the problems: (1) How was the Reading Material: Grade 3 topic on Light, Heat, and Sound developed? (2) What is the evaluation of the content expert to the printed and digitized reading materials? (3) Are the reading materials appropriate to the intended grade level? (4) What is the performance of the respondents to the post-intervention questions?

There have been researches concentrating on higher-level comprehension skills, but they recognize the underlying importance that efficient word identification plays in reading comprehension (Perfetti & Stafura, 2014). There are also studies that discuss digital reading experience of young people, growing up in a digitized context, and how digital reading shapes new generations' concepts of reading and textuality (Frederico, 2017). The use of the Most Essential Learning Competencies (MELC) distinguishes this current study. The MELC served as the basis for the content of the printed and digitized reading materials, integrating scientific and literary concepts, and serving as an evaluation tool to keep track of the student's reading comprehension. The reading materials were created in the form of descriptive stories with three different objectives focusing on the MELC.

Theoretical Framework

The Cognitive Theory of Multimedia Learning (CTML) is a framework for instructional design in the field of Instructional materials. It is defined as learning that draws on auditory and visual stimuli, or learning from the combination of text and pictures, which means that deeper learning can occur when information is presented in both text and graphics than by text alone. Learners absorb sensory information through their eyes and ears and then store this knowledge in working memory, where they construct graphical and verbal models (Clark & Mayer, 2007).

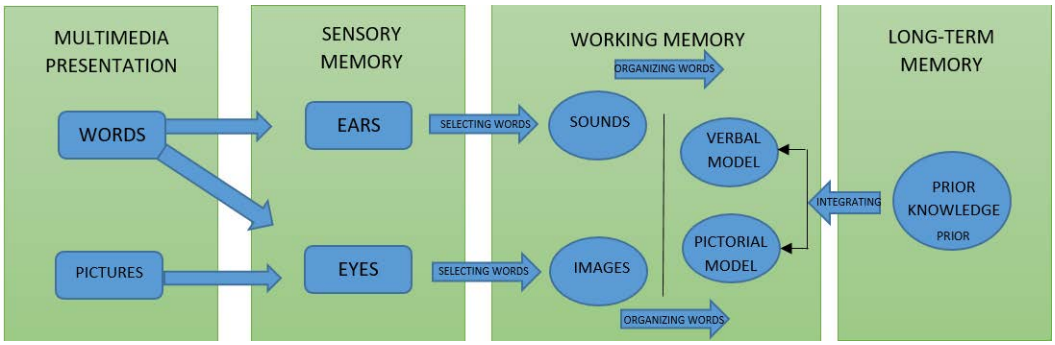

Figure 1: CTML Theory by Dr. Richard E. Meyer

Moreover, this study aims to design a science-infused reading material to be used as supplementary reading material during reading instruction or intervention to grade 4 learners on specific topics on Light, Heat and Sound. This research was based on the study of Florida State University, the ADDIE model of Edgar Dale (1964). It is used to design efficient learning experiences. Instructional designers and training developers use a learning model.

Conceptual Framework

The Input–Process–Output or IPO Method is used to understand and describe the flow of information and activities. It provides a structured approach for analyzing and designing systems by breaking them into three components: Input, Process, and Output.

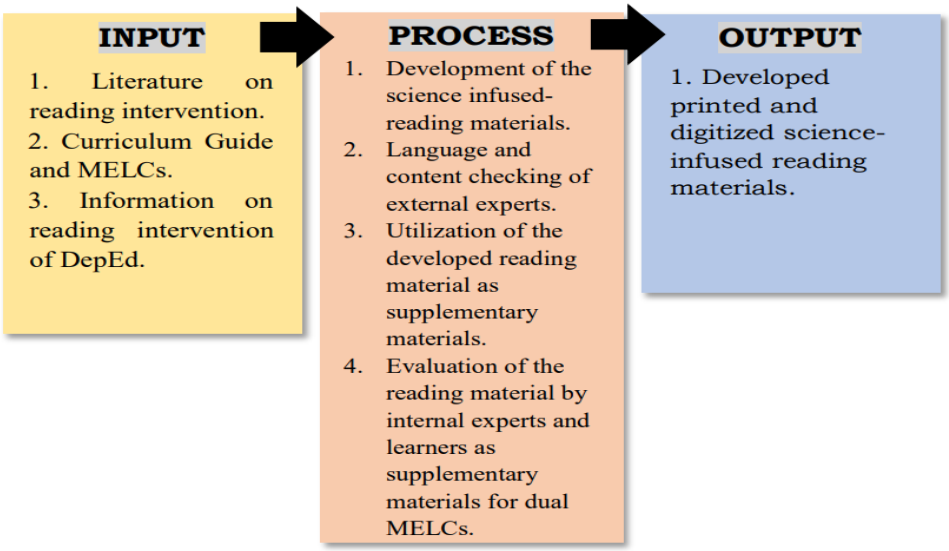

Figure 2: Input, Process, and Output of the Study

Input represents the data or information provided to the system for processing. It includes all the resources and instructions that serve as the raw material for processing. For this study, the input contains literature on reading intervention, curriculum guide and MELCS, and information on reading interventions for DepEd. On the other hand, the process represents the activities, operations, or transformations performed. It involves developing the reading materials, language and Content checking, utilizing the developed reading material as supplementary materials, and evaluation. Lastly, the output represents the results, information, or outcomes generated by the reading material after input processing. Hence, the developed print and digitized science-infused reading materials.

METHODOLOGY

The researchers used developmental research in this paradigm. Science content professionals and reading experts verified the produced printed and digitized reading material in terms of Practicality, Reliability, Validity, and Authenticity. Thus, this study utilized Convenience Sampling. The beneficiary of this study is the selected ten (10) fourth-graders from public and private schools situated in Iligan City. Both qualitative and quantitative data are collected during the development process and after the try-out phase. The post-assessment test results of students in the try-out phase are used to collect quantitative data. In contrast, qualitative data is acquired from the thoughts and suggestions of content experts on the developed reading material. The reading materials used the ADDIE model, which included five stages: analysis, design, development, implementation, and evaluation.

For this study, the researcher concentrated on the Flesch Kincaid Grade Level scores, which reflect the number of years of educational attainment needed for a person to comprehend the text effectively on the initial reading. Reading material development, which includes creating assessment tests for comprehension. Language professionals and science content experts will go over it to see if there are any modifications or recommendations that could help revise the material and the assessment. For the purpose of evaluating the materials' content, correctness, language, and graphics, content experts were given an Evaluation Rating Sheet for General Reference Materials that had been amended from the Department of Education (DepEd).

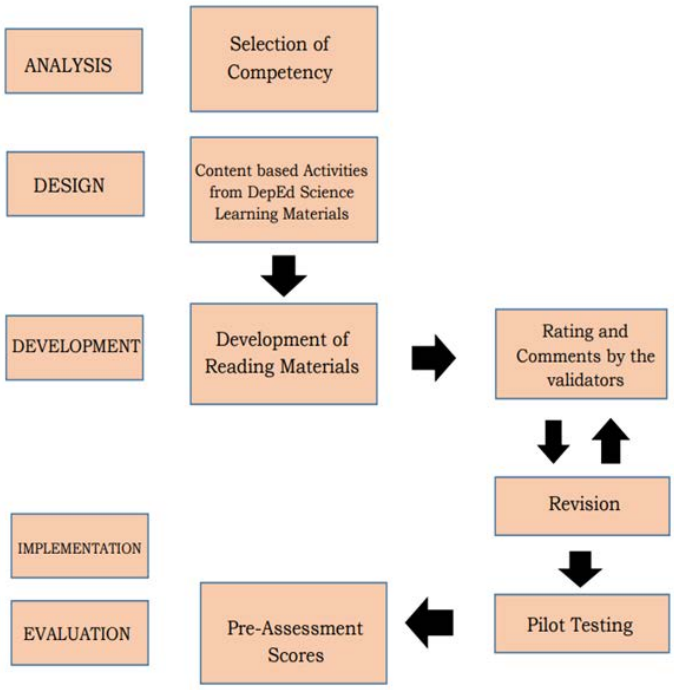

Figure 3: Steps used in gathering data.

The ADDIE model was utilized in the study to come up with a visual representation of how the researcher created the reading material. The selection of competency can be identified in the MELCS during the Analysis stage. In the Design stage, researchers look into the content and activities from the DepEd Science Learning Materials, which will be the basis of the reading materials. It is in the Development stage where reading materials are created, and then rating and feedback from evaluators are required for revision. If the reading materials aren't revised further, the researchers will conduct pilot testing and evaluate the Pre-Assessment results.

RESULTS AND DISCUSSION

This chapter features the results and discussions in accordance with the overall procedure of the study as outlined by the ADDIE Model: Analysis, Design, Develop, Implement, and Evaluate.

Analysis Stage: Selection on the Competency

This research focuses on learning issues that can be traced back to the characteristics of the subject matter itself, particularly within the context of the K-12 Basic Education Curriculum's Most Essential Learning Competencies (MELCs) for Grade 3 with a code S3FE-IIIe-f-3. This requires learners to describe how Light, Heat, and Sound travel; investigate properties and characteristics of Light, Heat, and Sound; and 3. Describe ways to protect oneself from exposure to excessive Light, Heat and sound. Table 3.1 below shows the K-12 Basic Education Curriculum MELCs Specialized subject (Grade 4). Our approach was multi-faceted. We first conducted a detailed review on the MELCs to pinpoint specific learning goals and identify any gaps or challenges. This review ensured that the curriculum objectives were clear and achievable for Grade 3 students. Next, we analyzed instructional materials, including textbooks to assess their alignment with the curriculum objectives. This analysis involved evaluating the clarity of explanations and the effectiveness of practical activities provided, ensuring that these resources adequately supported the curriculum. Then, we observed classrooms to see how students learned

about Light, Heat, and Sound. We focused on how well approach and interactive activities were used, as these methods are key for making the concepts of Light, Heat, and Sound clear and engaging for students.

We also reviewed student assessments to evaluate their grasp of the concepts and application of what they learn. This analysis revealed whether students met the desired learning outcomes. This research stage uncovered important specific findings, the gap between instructional materials and curriculum goals led to inconsistent teaching effectiveness across classrooms hence, Interactive approach and applications of the topic will significantly enhanced students' understanding in the Topic Light, Heat, and Sound. Based on these findings, we recommended improving alignment, and enhancing the instructional materials. These measures are aimed at addressing the identified issues and improving educational outcomes. The results are summarized, which compares Grade 3 MELCs with the Grade 4 specialized subject MELCs. This comparison shows how crucial it is for the curriculum to build on previous lessons and maintain a clear progression. Overall, this research stage examined how the subject matter, specifically Light, Heat, and Sound, impacts learning. It identified key challenges and effective approach, and provided recommendations to enhance teaching and learning outcomes on students.

Design Stage: Content based on activities from DepEd science learning material

In this stage of the research, we developed science reading materials for Grade 4, focusing on Light, Heat, and Sound, based on the K-12 Basic Education Curriculum (S3FE-IIIe-f-3). The design centered on three core objectives from the competency, aiming to make learning engaging and enhance student's learning performance. The Supplementary Reading Material's content was based on the K-12 DepEd Science Learner's Material for Grade 4, ensuring it complemented the curriculum and was accessible for students. This involved analyzing the guidelines, reviewing existing resources, and incorporating appealing and relevant visuals and examples. The outcome was a set of materials designed to enhance engagement and understanding through interactive visuals and clear activities, aligning with curriculum goals and supporting effective science education.

Development stage: Development of the reading material, rating, and comments by content experts

Throughout this period, the developers' reading material underwent a variety of versions. The developers made several versions of the Science-based story until they created a refined version that meets the competencies and objectives of the grade 4 MELCs. An assortment of tools was utilized to assess the readability level of the stories in the early versions of the reading material, and several sets of evaluators examined the science and literacy content of the reading materials.

The researchers created supplemental reading materials for the first version of Developing Science-Infused Reading Material, which bases its competency on the MELCs Intervention from the K–12 Curriculum (S3FE-IIIe-f-3). The researchers used familiar objects and settings to make it relatable for learners. After showing the first version of the story to the literary content evaluator, the researchers took note of the comments and suggestions that can be shown below to provide a better version of the story. The evaluator remarked that the developers should focus on constructing a descriptive story to widen the information inclined to the topics of Light, Heat, and Sound.

In version 2, researchers revised the reading materials based on the evaluator's previous recommendations and developed a science-infused descriptive story, highlighting all the competencies. As you can see there are numbers beside each line indicating which of the lines induced the first, second, and third competencies. A table was created to list the three competencies and specify the lines where they are located. This is a clear illustration of how methodically everything was made. However, it should be enhanced and rendered sufficient to make the reading material more sensible and reliable. That being said, the evaluator's advice must be taken into account. The shift from three write-ups, one for each competency under MELCs, to creating a descriptive story took place, still involving the three competencies but now compiled in a story alone.

In version 3, from "Amazing Grace", the title changed to "Science-like Life" since it suits the content of the story. As you can see, the story gave justice to the word "descriptive" because it looks more descriptive than the previous version. At this point, the output was checked with corrections and suggestions on it. This version contains significant knowledge unlike the previous one. However, it becomes more intricate, making it difficult for the intended audience (grade 4) to understand the narrative. That being stated, it defeats the purpose of reading comprehension, which is said to be the focal point of the reading material for grade 4 students to learn from. It would be challenging to make the reading comprehension effective with the reading material produced. In conclusion, the evaluator proposed disregarding this one and creating another story that is simpler and more understandable, which resulted in another version.

In Version 4, there are now three stories; Playing with Margarine, The Bright Flashlight, and The Garcia Family. This is not just about creating three stories, each presenting a certain competency accordingly; Describe how Light, Heat, and Sound travel, Investigate the Properties and Characteristics of Light, Heat, and Sound, and Describe ways to protect oneself from exposure to excessive Light, Heat, and sound. This version is stepping forward from text-only manuscripts to visualized. Now that this version applies graphics to each story, with the use of photos gathered from Google photos and Canva for reference, the researchers visualize the story's concept before illustrating the entire story using Canva. Version 4 was created to bring the text-only manuscript to life by adding text, components, and applying color theory to the designed reading material. Characters and situations are depicted to highlight key plot points before adding more elaborate features, such as backgrounds, on the latter part.

Short Story One. The first story of this version represents a competency which is to "Describe how Heat travels." Considering it only needed a little polish, the evaluator opted to make his criticisms and suggestions verbally rather than writing them down. The comments in the table were taken note by the developers as they paid attention to the evaluator's explanation. After pondering, the researchers applied them right away. This is due to the fact that images can assist students understand the meaning of words in a manner that is clearer. For example, if a student is learning the word "run," they may recall it better if they see an image of something or someone running. By all means, given that the goal of designing reading materials is to strengthen learners' reading comprehension, proper word usage and sentence form to avoid grammatically incorrect statements must be considered. The graphic design approach was meticulously detailed to ensure that the aesthetics appropriately portrayed the story being told. This improved the readers' knowledge and understanding of the context. The creators further modified the artwork to make them more interesting to learners in 4th grade. These adjustments aim to improve the learning experience for all students by making it easier for students to understand and apply the concepts taught in the reading material. The changes should result in a more engaging and successful educational endeavor.

Short Story Two. The Bright Flashlight is the second story of this version which represents the second competency, “Investigate properties and characteristics of Light”. As with the first story in this version, neither corrections nor comments were made to the printed draft, but rather were explained verbally during the consultation. The story was fine, but the evaluator remarked that the illustration should be improved, therefore the researchers decided to enhance the visuals along with using a suitable color scheme and adjusting the contrast. That one is supported by Anja Zorko (2017) with her statement that the color combination is one of the best for achieving optimal text readability and legibility. Moreover, the right color harmony can result in a harmonious graphic that will encourage readers to peruse the reading material.

Short Story 3. The third story, “The Garcia Family” shares knowledge of the third competency, which is “Prevention of Excessive Exposure.” The evaluator reiterated the comments from the previous stories. In addition, the dialogues of the story must be clarified so that the Grade 4 learners can understand the content of the story. The objects and information must also be accurate so as not to feed the readers with the wrong idea.

The researchers relied on literacy tools including Flesch Kincaid Grading Level and Flesch Kincaid Reading Ease as the development of the reading materials made progress. To make sure that the reading materials are legible for Grade 4 learners, readability strategies were employed. The researchers' primary goals were to obtain a 90 or higher on the Flesch Kincaid Reading Ease (FKRE) and a 4.0 or lower but not more than 5.0 on the Flesch Kincaid Grade Level (FKGL) scores to meet the standards for the Grade 4 level.

In version 5, Following a readability test, the researchers employed Quillbot to evaluate the grammar and simplify the terms for the young learners. Quillbot is a free online paraphrase tool with the inclusion of free summarizer, grammar check, and plagiarism check to help you restructure and rephrase your documents. A Google Forms survey indicated that students could utilize Quillbot to rewrite text without affecting its meaning (Nurmayanti & Suryadi, 2023). However, when the rewritten writings from the software are not adequate for grade 4, the researchers chose specific phrases and words to keep. The developers made a few changes before the stories were readability tested once more. To attain a desirable reading score on the readability test, certain sections were alternated with simpler terminology, reduced with shorter sentences, and proper spacing and punctuation were followed. The stories are well organized, with clear phrases that are easy for readers to comprehend, hence indicating that the text is written at a fourth-grade reading level.

The researchers kept the cover page's graphic style because it is void of issues. Other components of the reading material were improvised in terms of graphic designs to the story layout, such as the background scenes, visually appealing elements, along with additional character illustrations because those features must be present to make the reading material appear imaginative, resourceful, and engaging for Grade 4 learners. The designs may look basic, but those are imaginative and comprehensible enough. According to Mayer's Cognitive Theory of Multimedia Learning (2009), the words and images we use for instruction are crucial, which is why the researcher did everything they could to create this version of reading material that is free from complexity and contains sufficient information for grade 4 learners. The premise only applies to the first story, "Playing with Margarine." The fifth version is the final version of the reading material, which is available in both printed and digital formats.

The researchers conform to the evaluators' ideas and recommendations to adhere to correct grammar, observe clear transitions, provide clear illustrations, the use of right terms, and the uniformity of the angles and lines used in the reading material. For justification, Mead, S. (2013) observed that students learn best through their senses of hearing and sight, and the researchers used multimedia resources to create an E-audiobook, which was an electronic version of a book that could be read on a computer, tablet, or

mobile device (Queenslibrary.org, 2013). The researchers produced a final edition of the reading material after weeks of revisions and reviews. It is suggested that the researchers have the document's readability evaluated as the story develops. The Flesch Kincaid Readability Tool was used by the researchers to evaluate the readability of the reading content. This indicates the years of education required for readers to fully comprehend the reading material. For this reading material, the developers used WebFX, an internet website that analyzes text and calculates its readability level using various readability methods.

Table 1: Readability Test Results of the Quilbotized Material (Version 5)

Version 5	**Readability Test**	
Part 1: *Playing with Margarine*	Flesch Kincaid Reading Ease Flesch Kincaid Grade Level	92.9 3.7
Part 2: *The Bright Flashlight*	Flesch Kincaid Reading Ease Flesch Kincaid Grade Level	90 4.3
Part 3: *The Garcia Family*	Flesch Kincaid Reading Ease Flesch Kincaid Grade Level	90.1 2.8

Readability Test Results of the Quilbotized Material (Version 5)

Average:	Flesch Kincaid Reading Ease Flesch Kincaid Grade Level	90.83 3.6

Based on WebFX evaluations, the text is consistently appropriate for 4th-grade readers. All three versions of the text received Flesch Kincaid Reading Ease scores above 90, suggesting that they are appropriate for 9 to 10-year-old readers. Furthermore, the Flesch Kincaid Grade Level scores ranged from 2.8 to 4.3, indicating that the material is legible by fourth-grade readers. These findings indicate that the material is appropriate for 4th-grade learners, as it corresponds to their expected reading ability.

The average Flesch Kincaid Reading Ease is 90.83 and 3.6 for Flesch Kincaid Grade Level indicating that the upgraded Version 5 is verified to be suitable for the targeted readers and that the text is relatively easy to read. The stories are well organized, with clear phrases that are easy for readers to comprehend, hence indicating that the text is written at a fourth-grade reading level.

As shown in the table above, the validators gave 5 or excellent, mostly in the Factor A. Content of the Reading Material. 5 for factor A.1 - factor A.3 including factor 5, factor 6, factor 8 which indicate as excellent and factor 4 they rate differently so the mean for this factor is 4.5 which indicates as very satisfactory. While for the typographic layout/design, the validators gave 4 or very satisfactory since according to them, some of the cover design of the reading material does not support the concept presented. The overall percentage of the evaluation of the validators is 96% and the reading materials gained a total mean score of 38.5 indicating that it passed the criterion.

Table *2*: Evaluation rating for the Content of the three stories (Playing with Margarine, The Bright Flashlight, and The Garcia Family)

Criteria	Validator 1	Validator 2	Mean	Interpretation
Content reference, enriches, and / or leads to the mastery of certain learning competencies for the level and the subject it was intended.	*5*	*5*	*5*	*Excellent*
Facts are accurate.	*5*	*5*	*5*	*Excellent*
Information provided is up-to-date.	*5*	*5*	*5*	*Excellent*
Language is appropriate for the level of the target user.	*5*	*4*	*4.5*	*Very Satisfactory*
Visuals are relevant to the text and suitable to the age level and interests of the target user.	*5*	*5*	*5*	*Excellent*
Visuals are clear in content and detail.	*5*	*5*	*5*	*Excellent*

Implementation stage: Pilot-testing

In this research stage, we focused on the actual implementation of the developed science reading materials, specifically for Grade 4 students on the Topic Light, Heat, and Sound. Our primary objective was to assess the practical application and effectiveness of these supplementary reading materials in a real educational setting. To execute this phase, we coordinated with Dona Juana Actub Lluch Memorial Central School. First, we obtain necessary permissions from the school head and class advisers. This collaboration was crucial for conducting a thorough testing of the materials. We selected ten Grade 4 students as participants for this trial, ensuring a representative sample to evaluate the materials' impact. The evaluation process involved both printed and digitized versions of the reading materials. Teachers from the school, who were part of the evaluation team also played a significant role in this stage. They meticulously reviewed the content, layout, and overall appropriateness of the materials. Their feedback was essential for confirming that the materials met the educational standards and were suitable for the target age group. An important aspect of the evaluation was assessing the alignment of the reading materials with the Learning Resource Management and Development System (LRMDS) requirements. This alignment check was successful, with the materials corresponding to the majority of the LRMDS standards, which indicated that they were well-suited for educational use. We also conducted a post-intervention feedback from the participating students. This feedback revealed that the students were able to read and comprehend the stories effectively. The positive responses from the learners confirmed that the materials were engaging and supported their engagement and understanding of the Topic Light, Heat, and Sound. Overall, this stage of the research involved a comprehensive trial of the science reading materials at Dona Juana Actub Lluch Memorial Central School. The successful implementation, thorough evaluation by teachers, and favorable feedback from students underscored the materials' effectiveness in enhancing Grade 4 learners'

comprehension of Light, Heat, and Sound. This phase validated the practical applicability of the materials and provided valuable insights for future use and refinement.

Evaluation Stage: Post-assessment scores

This phase is crucial in assessing the newly developed reading materials designed to enhance students' literacy skills and performance. The primary aim was to evaluate the effectiveness, feasibility, and overall impact of these materials on student learning outcomes. To achieve this, we administered a post-assessment test to the participants as post-intervention, which consisted of five questions of varying difficulty levels per story. This test was strategically developed to measure different aspects of reading comprehension and understanding of the topics covered in the reading materials. The questions were crafted to evaluate how well students could grasp and understand the concepts behind Light, Heat, and Sound presented in the materials. The post-assessment was conducted after the students had engaged with the reading materials, allowing us to gauge their comprehension and retention of the content. The results provided significant insights into the effectiveness of the materials in enhancing literacy and understanding. Analysis of the post-assessment results revealed how well students were able to process and understand the information. This evaluation was crucial for determining the materials' impact on students' performance. Overall, this phase involved a thorough assessment of the reading materials' effectiveness through a structured post-assessment test. The findings from this evaluation were essential in confirming the materials' efficacy in improving literacy and understanding of the specific topic among students.

Summary of Findings

This study aimed to develop reading materials, evaluate reading materials, and trial implementation with the participation of ten (10) Grade 4 learners to record their reading fluency and reading comprehension. The reading materials were created throughout the development stage in accordance with the learning competencies of the K–12 Basic Education Curriculum. With the code S3FE-IIIe-f-3, the learning competencies are: describe how Light, Heat, and Sound travel; investigate properties and characteristics of Light, Heat, and Sound; and describe ways to protect oneself from exposure to excessive Light, Heat and sound. Five versions were developed and recognized, alleviating deficiency of the versions.

From Version 1 to Version 5, printed and digital reading materials are used through a trial-and-error procedure. Generally, remarks and recommendations on suitability for the MELCS, grammar, suitable indentation, font size, and clearly defining transitions are given. Language and physics content experts provided comments and evaluations on the materials to ensure that they integrate the precise language and design of the material. Following the final revision, a digital copy was made available for distribution.

Through the development and distribution of instructional materials, as well as data analysis, the study was able to analyze the impact of science-infused reading material. The Flesch Kincaid Readability Ease test results are shown in the Results and Discussion in Chapter 3. The first story "Playing with Margarine," achieved 92.9%, and Flesh Kincaid's grade level of 3.7 suggests that the story is easily understandable and suitable for grade 4 readers. The second story, "The Bright Flashlight," acquired 90% of Flesch Kincaid Reading Ease and a grade level of 4.3, indicating that it is well-accepted by grade 4 readers. "The Garcia Family" garnered 90.1% and a grade level of 2.8, confirming that the story is appropriate for grade 4 readers. The average Flesch Kincaid Reading Ease is 90.83 and 3.6 for Flesch Kincaid Grade Level indicating that the upgraded Version 5 is verified to be suitable for the targeted readers and that the text is relatively easy to read. The stories

are well organized, with clear phrases that are easy for readers to comprehend, hence indicating that the text is written at a fourth-grade reading level.

The reading material received a "very satisfactory" evaluation and was advised as supplemental reading for grade 4 science students. Since the outcomes of the stories in Flesch Kincaid Reading are excellent, it is evident that this has an impact on the students' performance. The overall post-intervention mean score was 12.4. The overall percentage score was computed to be 83 % and is leveled as high in an unlisted YouTube video. The content validators-evaluators rated it as satisfactory, with an overall average mean value of 3.88.

CONCLUSION

Based on the research question presented, it is quite possible to develop reading materials with science content that are intended to target both reading skills and science learning. The reading materials received a 95% rating from the validators, denoting excellent performance. According to the evaluation rating of the evaluators, the reading material is good, supporting the viability of developing high-value and highly functional reading material. The reading materials are suitable for the grade level of the target audience. As a result, it is strongly advised that students study the reading material, which can also be complemented by audio-visual measures.

RECOMMENDATION

Considering the study's findings, recommendations for further research aimed at enhancement are made. The teacher could give a reading comprehension test (PHIL-IRI) for the students using Science Reading resources on the topic of Light, Heat, and Sound, with English and Science as its two areas of study. Prospective researchers could increase font size to take in for electronics such as cellphones, tablets, etc. Since the number of respondents is limited to ten students, the future researcher should conduct the study on a wider scale. Grade 4 Science material have been shown to help improve students' reading comprehension. Therefore, it is highly encouraged that instructional materials be included before the subject is given. In developing an e-audiobook, future researchers could utilize poems and stories with accompanying music and instrumental backdrop to guarantee learners recall the information. Future researchers should not limit the material to graphics, images, or audio with the goal of putting multisensory strategy forward. Multisensory activities, claimed by educational intellectuals, may stimulate substantial emergent literacy. Engaging students with multimedia activities is an excellent approach to help them realize their potential. Future researchers should showcase icons such as Maranao and Cebuano being involved as characters in the stories, or depict prevalent local environments and cultures to emphasize the significance of diversity and inclusion. Since this study relied on non-probabilistic means, future researchers can replicate it with a different sample of learners for verification.

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