**The Use of Task Cards in Science: Its Impact on the Academic Performance of Multigrade Pupils in Malabanig Elementary School**

ABSTRACT

|  |
| --- |
| This study aimed to investigate the efficacy of Task Cards as an alternative teaching scheme for Science in a multigrade setting, specifically at Malabanig Elementary School. Employing a descriptive approach, a one-group pre-test and post-test activity was conducted to assess the impact of Task Cards.Descriptive statistics like frequency, percentage, mean and standard deviation were used on performance of the multigrade pupils before and after using the task cards in Science 3 and 4 using the scale:The results indicate a notable enhancement in academic performance among both Grade 3 and Grade 4 learners in Science. Remarkable improvements were observed from the 3rd quarter across both grades, affirming the effectiveness of Task Cards in facilitating learning outcomes. These findings underscore the significance of the teaching strategies employed, coupled with the successful implementation of Task Cards, in fostering academic progress in Science for Grade 3 and Grade 4 pupils at Malabanig Elementary School. It is recommended that teachers continue to identify areas for improvement and adapt teaching strategies accordingly, thereby sustaining and amplifying the positive impact of using Task Cards on student learning.  This significant improvement in the performance of Multigrade pupils in Science 3 and Science 4 after the implementation of task cards highlights that this teaching strategy effectively boosts learning outcomes by making lessons more engaging, interactive, and conducive to better comprehension and retention of scientific concepts during the Third Quarter.  Thus, the result of the study highlights the improvement in the performance level of the learners using the task cards indicating their academic development. |

*Keywords: Task Cards,Science, Academic Performance,Pupils*

INTRODUCTION

In the field of education, where the primary beneficiaries of the school service are the pupils, constant assessment is necessary to be able to complete the tasks with the best outcomes. However, sometimes not all the learners passed the diagnostic test, the results were not as good as the researcher had hoped, especially for multigrade schools.

Multigrade teaching is described as classrooms in which pupils learn across two or more grades and are taught by the same teacher for two or more years ( NGSS Lead States. 2013). The nature of the multi-grade class is that the pupils differ in their number, ages, and ability but are taught by one teacher in one classroom. These classrooms are generally referred to as multi-age, multi-grade, and combined classes. It portrays teaching in a single learning space with pupils of different classroom levels using different strategies and techniques that fits to the learners (DE BORJA et.al,2020). Many times, teaching in this type of classroom is very challenging.

Science subjects in elementary school is designed to stimulate curiosity and encourage students to explore the world around them through observation and experimentation (Ruiz, J. (2020). [Hands-on activities and inquiry-based learning are integral, helping learners develop critical thinking and scientific skills](https://learning-center.homesciencetools.com/article/science-topics-k-6/). [These approaches not only foster love for science but also equips students with the tools to ask questions, seek evidence, and understand their surroundings](https://teacherhow.com/subjects-that-elementary-school-teachers-teach/) (Amini, R., & Helsa, Y. (2018, September).

In the Philippines, implementing appropriate innovations and interventions to fill the gap of learning among the learners are being prioritized. In fact, DepEd Order No. 39, Series of 2012( Department of Education. 2006), provides an order to improve student’s achievement, certain innovations and interventions that are well-planned and crafted and primarily focus on how to make learning meaningful for students using different interventions. One suggested intervention is the use of task cards in teaching.

Task cards are teaching aids that include written instructions on how to execute a skill together with an image of the skill (Iserbyt, P., & Byra, M. 2013). These are cards, either printed or digital, with an activity on them that students must complete. But there is where the simplicity ends. Task cards might include questions, movement, and collaboration. They can provide differentiated instructions to all kids [7].

Task cards are collections of miniature cards, generally containing questions or tasks, that are intended to promote active learning. They appear in various forms such as labeling a diagram, multiple choice answer, completing a concept map, drawing a diagram, etc(Carlos, C. 2024).

Task cards allow my pupils to learn independently and may be used in a variety of ways in the classroom. At the most basic level, task cards are a collection of cards. A task card is a little card, often the size of an index card or smaller, with an activity or question on it. Some task cards feature clip art, while others may provide brief directions, examples, or a fast definition that will aid the work. There are two types of task cards: one that asks a question and requires an answer from students, and one that proposes an action for students to do. There are also question cards that might be multiple-choice or short/long answer (Jessica. 2024).

Task cards are motivating, especially to the learners that struggle with learning daily ( Carlos, C. 2024). Imagine that one learner must learn to read, and the teacher gives a worksheet with a bunch of words. This can be quite overwhelming to a small child. However, when put the difficult words on a task card, the child can work on one sentence at a time, and it won’t feel so overwhelming. Learners will feel the same sense of accomplishment working through these task cards, as they would when they complete their sight word cards (Iserbyt et.al, 2010).

Task cards allow students to be independent learners and can use them in a variety of ways in the classroom (Iserbyt et.al, 2010). At the basic level, task cards are a set of cards that have tasks or questions written on them. They are one of the many teaching tools that are very effective when it comes to reinforcement and assessment (Iserbyt et.al, 2010). Preparing challenging task cards are also good for students who are very fast in picking up the lessons. They can be set aside for students who have completed their other work and used them as an enrichment.

Task cards can be implemented in many ways. Use them individually, in pairs, with small groups, or as an activity for the whole class (Iserbyt, et.al ,2024 ) depending on the topic you are discussing and the knowledge and skills of the students regarding that unit. They are also an effective alternative for student worksheets that may seem to be boring at times. They are meant to be done during practice and review (Carlos, C. 2024).

Task cards are also differentiated. Each student can complete a card that fits her own unique learning style. A struggling student can complete a task card that is multiple choice, while a more-able student can complete one that is short or long answer (Breslin,et.al 2013). Each student is completing a task card that is structured to his or her own needs. Task cards are quite versatile and can be used in a variety of ways. For example, you can use them in your learning centers, with independent work, in small or whole groups, for games, homework, or you can even give them to your early finishers( Valencia, F., & Villanueva, A. 2024).

Mathematics and science are the subjects that have been recorded that has the need to use task cards (Iserbyt, et.al 2010).

Task cards are designed to be interactive and entertaining, promoting active learning. Students can guide their own learning with the prompts and instructions on the activity cards. They can do tasks, conduct experiments, observe, and ask questions. All of these possibilities encourage children to think critically and creatively.

Task cards are an excellent approach to incorporate group or cooperative learning activities. In addition to teaching science, students will learn collaboration and communication skills. Working together to complete activities allows children to learn from one another and develop key social skills( Kelly, L. Year).

Based from the researcher experienced as a teacher, the struggles of the multigrade pupils in grasping certain science concepts. The complexity of the subject, combined with the multigrade setup, often makes traditional instruction overwhelming. This challenge has motivated the resarcher to explore the use of task cards as a supplementary strategy to enhance student engagement and improve their understanding of science.

With these potential benefits, this study aims to investigate the use of task cards as a supplementary strategy to improve the science performance and attitudes of learners in Malabanig Elementary School in Kabugao, Apayao. It is the researcher’s hope that these task cards, designed for individual, paired, and group activities, will enhance the achievement and positive attitudes of multigrade pupils in Science 3 and 4.

2. statement of the problem

This study assessed the use of using task cards in improving the performance in Science 3 and 4 of multigrade pupils in Malabanig Elementary School.

Specifically, it sought answer the following:

1. What is the performance of the multigrade pupils before using the task cards in :
   1. Science 3

1.2 Science 4

1. What is the performance of the multigrade pupils after using the task cards in Science :
   1. Science 3
   2. Science 4
2. Is there a significant difference in the performance of multigrade pupils in Science 3 and 4 before and after the use of task cards?

**2.1 Hypothesis**

There is no significant difference in the performance of multigrade pupils in Science 3 and 4 before and after the use of task cards.

**3.METHODOLOGY**

3.1 research design

This study utilized the pretest, post-test, one group research design. This is a design where Grade 3 and 4 pupils who served as participants undergo a pretest, then an intervention using task cards, and finally the conduct of post-test.

3.2 Locale of the study

This study was conducted at Malabanig Elementary School (MES) in Kabugao, Apayao for the School Year 2024-2025. This is a multigrade school.

The school is located in Sitio Malabanig-Lucab, Kabugao, Apayao, and one of the barangay schools in Kabugao District Division of Apayao.

**3.3 Respondents of the Study**

The participants of this study are the multigrade learners of Malabanig Elementary School from grade 3 to grade 4. Total enumeration involving all the multigrade pupils of Grade 3 and 4 enrolled for School Year 2024-2025.

**3.4 Research Instrumentation**

The main instrument used in this study was a standardized multiple tests prescribed by the Department of Education, CAR. The pre-test and post-tested contained 30- item multiple choice for Grade 3 and 40- item multiple choice for Grade 4.

**3.5 Data Gathering**

First, the researcher sought permission from the PSDS and principal for conduct the study. Parents and pupils were informed on their participation to the study. Secondly, administration of pre-test to the pupils prior to the intervention. Third was the implementation of the Task Cards intervention. Fourth was the administration of the post-test with the same level of difficulty .

Data were consolidated, tabulated and analyzed.

**3.6 Statistical Analysis**

Descriptive statistics like frequency, percentage, mean and standard deviation were used on performance of the multigrade pupils before and after using the task cards in Science 3 and 4 using the scale:

Grade 3:

**SCORE PERCENTAGE DESCRIPTIVE SCALE**

28-30 93 % and above - excellent

26-27 87% to 92% - very good

24-25 81% to 86% -good

22-23 75% to 80% - fair

0-21 74% and below - poor

Grade 4:

**SCORE PERCENTAGE DESCRIPTIVE SCALE**

37-40 93 % and above - excellent

35-36 87% to 92% - very good

32-34 81% to 86% -good

30-32 75% to 80% - fair

0-29 74% and below - poor

**4.RESULT AND DISCUSSION**

**1.Performance of the multigrade pupils before using the task cards**

* 1. **Science 3**

**Table 1.** Frequency and percentage distribution of multigrade pupils according to performance in Science 3 before using the task cards

|  |  |  |
| --- | --- | --- |
| **Performance Level** | **Frequency** | **Percentage** |
| Excellent | 0 | 0.00 |
| Very good | 0 | 0.00 |
| Good | 4 | 36.36 |
| Fair | 2 | 18.18 |
| Poor | 5 | 45.45 |
| Total | 11 | 0.00 |

Table 1 shows the result of Science performance of the multigrade pupils before using the task cards in Science 3. There are 4 or 36.36 % pupils who obtained good performance , 2 or 18.18% with fair performance and 5 or 45.45% with poor performance. This implies that the pupils do not have good performance in Science 3 along the different topics during the Third quarter.

**Table 2. Mean and Standard Deviation of Performance of Pupils in Science 3 in the Pretest**

|  |  |  |  |
| --- | --- | --- | --- |
| Topic | No. of Items in the Pre-test | Mean Correct Answers | Standard Deviation |
| Force and Motion | 5 | 3 | 1.54 |
| Light, Sound, Heat, and Electricity | 25 | 18 | 0.64 |
| Overall Mean Pretest in Science 3 | 30 | 21  (Poor) | 2.49 |

The performance of Grade 3 pupils is supported by the mean score 21 correct answers out of total 30 items pre-test as indicated in Table 2. The scores are highly spread as reflected by the high value of the standard deviation. This implies that the pupils have not correctly answered even half of the total 40 -item multiple choice test. In addition, the pupils mean score of 3 correct answers on the topic Force motion out of 5 questions, while 18 correct answers out of 25 questions along Lifght, Sound, Heat, and Electricity as shown in Table 2.

**1.2 Science 4**

Table 3. Frequency and Percentage Distribution according to Performance level of the pupils in the third quarter Science IV pre-test before the use of Task Cards

|  |  |  |
| --- | --- | --- |
| **Performance Level** | **Frequency** | **Percentage** |
| Excellent | 0 | 0 |
| Very good | 0 | 0 |
| Good | 0 | 0 |
| Fair | 0 | 0 |
| Poor | 17 | 100.00% |
| Total | 17 | 100.00% |

Table 3 shows the result of Science pretest of the pupils before the use of Task Cards. It shows here that all pupils before the use the Task Cards have poor performance.

**Table 4. Mean and Standard Deviation of Performance of Pupils in Science in the Pretest**

|  |  |  |  |
| --- | --- | --- | --- |
| Topic | No. of Items in the Pre-test | Mean Correct Answers | Standard Deviation |
| Force | 5 | 4 | 0.89 |
| Magnetic Force | 5 | 3 | 0.64 |
| Light,Sound ,Heat and electricity | 15 | 12 | 0.99 |
| Properties and characteristics of light,heat,sound& electricity | 10 | 7 | 0.74 |
| Properties and characteristics of light | 5 | 3 | 0.46 |
| Overall Mean of Protest | 40 | 29  (Poor) | 2.13 |

**Performance of the multigrade pupils after using the task cards**

* 1. **Science 3**

**Table 5**. Frequency and percentage distribution of multigrade pupils according to performance in Science 3 after using the task cards

|  |  |  |
| --- | --- | --- |
| **Performance Level** | **Frequency** | **Percentage** |
| Excellent | 7 | 63.64 |
| Very good | 1 | 9.09 |
| Good | 3 | 27.27 |
| Fair | 0 | 0.00 |
| Poor | 0 | 0.00 |
| Total | 11 | 100.00 |

Table 5 presents the frequency and percentage distribution of multigrade pupils' performance in Science 3 after using task cards. The data indicates that a majority (63.64%) achieved an Excellent performance, followed by 27.27% in the category and 9.09% in Notably, none of the students scored in the categories, suggesting that the task cards effectively facilitated learning and comprehension in Science 3. The results imply a generally high level of performance among the pupils after using the instructional tool.

**Table 6. Mean and Standard Deviation of Performance of Pupils in Science 3 in the Post test**

|  |  |  |  |
| --- | --- | --- | --- |
| Topic | No. of Items in the Posttest | Mean Correct Answers | Standard Deviation |
| Force and Motion | 5 | 5 | 1.54 |
| Light, Sound, Heat, and Electricity | 25 | 23 | 0.64 |
| Overall Mean Post test in Science 3 | 30 | 28  (Excellent) | 2.40 |

Table 6 presents the mean and standard deviation of pupils' performance in Science 3 in the post-test. The data indicates strong mastery across topics, with an overall mean score of 28 out of 30, classified as Excellent. The topic Force and Motion had a perfect mean score of 5, though with a slightly higher standard deviation (1.54), suggesting some variation in individual performance. Meanwhile, Light, Sound, Heat, and Electricity had a mean score of 23 out of 25, with a lower standard deviation (0.64), indicating more consistent performance among pupils. These results imply that the instructional methods used were effective in enhancing understanding of Science 3 concepts.

**Table 7. Frequency and percentage distribution of multigrade pupils according to performance in Science 4 after using the task cards**

|  |  |  |
| --- | --- | --- |
| **Performance Level** | **Frequency** | **Percentage** |
| Excellent | 2 | 25.00 |
| Very good | 4 | 50.00 |
| Good | 1 | 12.50 |
| Fair | 1 | 12.50 |
| Poor | 0 | 0 |
| Total | 8 | 100.00 |

Table 7 illustrates the frequency and percentage distribution of multigrade pupils' performance in Science 4 after using task cards. Half of the pupils (50.00%) performed at a Very Good level, while 25% achieved an Excellent rating, indicating a generally high level of mastery. Meanwhile, 12.5% of pupils were in both the Good and Fair categories, suggesting some variability in learning outcomes. Notably, no pupils fell into the Poor category, implying the task cards were effective in supporting student learning. These results highlight the potential of structured instructional tools in enhancing multigrade students' understanding of scientific concepts.

**Table 8. Mean and Standard Deviation of Performance of Pupils in Science in the Post test**

|  |  |  |  |
| --- | --- | --- | --- |
| Topic | No. of Items in the Post est | Mean Correct Answers | Standard Deviation |
| Force | 5 | 5 | 0.52 |
| Magnetic Force | 5 | 4 | 0.00 |
| Light,Sound ,Heat and electricity | 15 | 14 | 0.76 |
| Properties and characteristics of light,heat,sound& electricity | 10 | 8 | 0.76 |
| Properties and characteristics of light | 5 | 4 | 0.35 |
| Overall Mean of Post test of Grade 4 | 40 | 35  (Very Good) | 1.93 |

Table 8 presents the mean and standard deviation of pupils' performance in science in the post-test. The results indicate strong mastery across topics, with an overall mean score of 35 out of 40, classified as Very Good. The topic Force had a perfect mean score of 5, with a low standard deviation (0.52), suggesting consistent performance among students. Generally , the pupils had improved in all of the topics. These results imply that the instructional methods used were effective in enhancing students' understanding of science concepts.

**Significant difference in the performance multigrade pupils in Science 3 before and after the use of task cards**

**Table 9**. Test of significant difference in the performance level of Grade 3 and 4 pupils in Science before and after implementing Task Cards

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Performance | Mean | DI | t | df | p-value | **Decision at α= 0.05** |
| Science 3 | | | | | | |
| Before | 21 | poor | -23.462 | 10 | .0000000004 | Reject Ho |
| After | 28 | excellent |

**Table 10. Test of significant difference in the performance level of Grade 3 and 4 pupils in Science before and after implementing Task Cards**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Performance | Mean | DI | t | df | p-value | **Decision at α= 0.05** |
| Science 4 | | | | | | |
| Before | 28 | Poor | -19.682 | 7 | .000007 | Reject Ho |
| After | 35 | Very good |

Table 9 and 10 presents the test of significant difference in the performance level of Grade 3 and 4 pupils in Science before and after implementing Task Cards. The results show a substantial improvement in students' performance, with Science 3 increasing from a mean score of 21 to 28 , and Science 4 improving from 28 to 35 . The t-values (-23.462 for Science 3 and -19.682 for Science 4), lower p- values indicate a statistically significant difference in performance before and after using Task Cards. Since the p-values are far below the 0.05 significance level, the null hypothesis (Ho) is rejected, confirming that Task Cards had a positive impact on pupils' learning outcomes. This findings is supported that Task Cards are a valuable instructional tool for enhancing student learning outcomes in science subjects.

**5.CONCLUSION**

The use of task cards in Science has proven to be an effective instructional tool that significantly enhances the performance of multigrade Grade 3 and Grade 4 pupils at Malabanig Elementary School considering increase performance in the pre-tets and post test scores. This significant improvement in the performance of Multigrade pupils in Science 3 and Science 4 after the implementation of task cards highlights that this teaching strategy effectively boosts learning outcomes by making lessons more engaging, interactive, and conducive to better comprehension and retention of scientific concepts during the Third Quarter.

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**COMPETING INTEREST**

Authors have not used declared that no competing interests exist.

**AUTHORS’ CONTRIBUTION**

As the sole author of this study, I contributed to all aspects of its development and completion, including the identification of the research topic, design of the methodology, data collection, anlysis, and interpretation. I conducted the interviews, ensured the confidentiality of the respondents, and synthesized their responses into meaningful insights. Additionally, I wrote and revised the entire manuscript and sought guidance from mentors and reviewers to improve the quality and accuracy of bthe work.

**CONSENT**

I affirm that the respondents voluntarily agreed to participate after being fully informed about the purpose, nature , and potential implications of the study. Their responses have been collected with utmost resoect for their privacy and confidentiality, in accordance with ethical research guidelines.

**DISCLAIMER**

Authors hereby declare that NO generative AItechnologies such as Large Language Models (Chat GPT), COPILOT,etc. and text-to-image generators have been used during writing or editing of this manuscript.

**ETHICAL APPROVAL**

The study was conducted with the approval and in accordance with the standards of the elementary. No ethical approval was required, as the research followed all applicable ethical guidelines, ensuring respect for the respondents’ privacy and confidentiality.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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Details of the AI usage are given below:

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