DESCRIPTIVE ANALYSIS OF THE NATIONAL ACHIEVEMENT TEST OF PRIMARY AND SECONDARY STUDENTS IN MISAMIS ORIENTAL, PHILIPPINES

[1]**Branzuela, Nicanor Jr. F.,** [2]*****Sarah O. Namoco,, [3]**Joan Grace Q.,** [4]**Duero, Angelo Mark P. Walag**
University of Science and Technology of Southern Philippines
C.M. Recto Ave., Lapasan, Cagayan de Oro City 9000, Misamis Oriental, Philippines
*Corresponding Author: sarah.namoco@ustp.edu.ph

ABSTRACT. *The performance of the Department of Education in the Philippines in terms of the National Achievement Test during the SY 2017-2018 showed a decline in the quality of education. Thus, this study aims to investigate the NAT performance of Grade 3, 6, and second-year high school students during the said period in terms of their school size and school location. The secondary data utilized in this study were archived from the four DepEd divisions in the province of Misamis Oriental, Philippines, with the approval of the Bureau of Education Assessment and from the Schools Division superintendents. The data were analyzed using a two-way ANOVA. Results revealed that the Division of Cagayan de Oro City scored highest compared to other divisions in terms of overall performance, while the Division of El Salvador City had the lowest overall performance. Alternately, the performance of all divisions is consistently highest in Filipino and Araling Panlipunan while lowest in mathematics and science. Furthermore, all subjects and skills differ significantly when grouped according to size and division, except in the problem-solving skill for Filipino subjects. The findings of this study are hoped to help the DepEd in their curriculum revisions and policy-making. Conclusion and recommendation are also discussed in this paper.*
Keywords: DepEd Misamis Oriental, NAT Performance, School location, School size, SY 2017-2018

1. INTRODUCTION

Education is the foundation of societal progress [1], and the assessment of student achievement serves as a critical indicator of the effectiveness of educational systems [2, 3]. In the Philippines, to achieve higher academic performance among Filipino learners, the Department of Education (DepEd) has several implementing guidelines to enhance and enforce the learning process, such as RA No. 10533 (Enhanced Basic Education Act of 2013), DO 8, S. 2015 (Guidelines for Classroom Assessment in the K to12 Basic Education Program), and DO 55, S. 2016 (Guidelines for National Assessment of Student Learning in the K to 12 Basic Education Program). These guidelines aim to measure students' progress and academic performance. The K to 12 curriculum uses both national and international large-scale assessments to evaluate the effectiveness and efficiency of the education system. One of these assessment systems is the National Achievement Test (NAT) [4].

Benito [5] illuminates that the NAT is a national assessment aligned with the 2013 Education Act and outlined in DO 55, s. 2016. It assesses students in Grades 6, 10, and 12 to ensure that the implementation of Basic Education meets academic standards, guides career choices, and evaluates the effectiveness of the education system. Moreover, it plays an essential role in evaluating the learning outcomes of primary and secondary students across various subjects and skills. The NAT is a standardized assessment that measures students' knowledge and competencies, helping education authorities and policymakers make informed decisions to enhance the quality of education. The NAT results not only provide a wide view of student performances but also give clarity on the possible interaction of variables such as school size, school division, and subject challenges. Understanding these factors is essential for administrators, educators, and policymakers to improve the quality of education and address the specific needs of students in different regions of the country to achieve greater performance.

Several studies have discussed the impact of school location and size on NAT performance. According to Ramos et al. [6], rural students tend to perform worse than their urban counterparts. Teachers in rural areas have less academic preparedness [7]. Additionally, the presence of inequities in basic education is evident [8] and is compounded by a lack of resources and weak policies [9]. This empirical evidence is thus investigated in the basic education setting of the Philippines, particularly in the Department of Education in the Misamis Oriental Division, which has a reported low performance in the NAT taken during the SY 2017-2018 [10].

The purpose of this study is to present a comprehensive analysis of NAT performance in Misamis Oriental. It further aims to provide a clearer understanding of the educational landscape in the Philippines to provide evidence-based strategies for developing better student outcomes and eventually contribute to the country's progress in the field of education.

2. RESEARCH QUESTION

The ultimate objective of this study is to describe the performance of the primary and secondary students in their NAT results during the SY 2017-2018 to provide foundational knowledge that could provide evidence-based information and a stepping stone for future research endeavors. Specifically, it pursued the following research questions:

1. What is the Performance of the Students in the National Achievement Test?
2. Is there a significant difference in the NAT Performance of Students when grouped according to Size and Division?

3. RESEARCH METHODOLOGY

Research Design

A descriptive research design was employed to evaluate the performance of primary and secondary students in the National Achievement Test (NAT) across the four divisions of Misamis Oriental during the 2017–2018 school year. Descriptive research design involves collecting quantitative data to describe the characteristics of the population or phenomenon being studied [11]. More so, it does not investigate causality or relationships but rather reveals distinctive characteristics of a specific population. In this study, the objective is to describe the NAT performance of students across the four divisions in Misamis Oriental and to analyze any significant differences in results when

categorized by school size and division. Therefore, a descriptive design is appropriate, as it utilizes secondary data to describe the students' NAT performance and investigate if there are significant differences across the four divisions when grouping according to size and division [12].

Ethical Consideration
Ethical principles and considerations were observed throughout this study. It also follows appropriate permission in seeking the data. Further, personal and other important information involved in this study was treated with the highest level of confidentiality in adherence to the Data Privacy Act of 2012 [12]. We properly cite and acknowledge the works of other researchers and materials used in the study. Moreover, the study does not use any offensive or discriminatory language.

Data Collection and Statistical Technique
The study utilizes secondary data from the NAT results of the students at the primary and secondary school levels during the school year 2017-2018 from the four divisions of Misamis Oriental. Necessary permissions to collect the data were sought from the Bureau of Education Assessment and the division offices in Misamis Oriental province. The data was analyzed using descriptive statistics to determine their performances and inferential statistics using a two-way ANOVA to examine the influence of the two divisions and school size, respectively.

4.   ANALYSIS AND DISCUSSION
Performance of Secondary Students in the National Achievement Test
Countrywide, the National Achievement Test (NAT) assesses the achievement of learning outcomes across target levels in identified periods of basic education [12]. It is a standardized test that aims to create assessment tools that permit a valid inference about the knowledge and skills that students possess in a specific content area. The NAT performance of high school students for the divisions of Cagayan de Oro City, Gingoog City, Misamis Oriental, and El Salvador City is summarized in Figure 1. Consistently, the Division of Cagayan de Oro City scored highest compared to other divisions in terms of overall performance, while the Division of El Salvador City had the lowest overall performance. It is understandable to expect higher performance from large school divisions as they are allocated more human and material resources. In particular, large school divisions have access to a higher number of textbooks, better-trained teachers, more experienced administrators and teachers, and better stakeholder support, to name a few, which are all found to support student performance [13–15]. Similarly, schools in large school divisions have access to a higher school budget allotment. This suggests that these schools can spend more budget on training and seminars, general services, classroom structuring, repair and maintenance, and school supplies, which are all found to correlate to higher NAT performance [16]. In addition, intra-regional variability for NAT performance is also high, as previously reported by Alinsunurin [17]. The same author also suggested that a higher economic index is associated with higher academic performance.

The performance of all divisions consistently performed highest in Filipino and Araling Panlipunan while lowest in mathematics and science. This result is consistent with the findings of the study by Gain and Ancho [16], where

Filipino and Araling Panlipunan were the highest-scoring subjects while English, math, and science were the lowest-scoring. Similarly, Imam [18] reported that learners have difficulty performing reading, mathematics, and science. This suggests that learners have general difficulty in English, math, and science. Even with the consistency of this finding, this does not automatically mean that learners possess poor abilities in these areas. As suggested by Tumlos-Castillo and Baylon [19], Imam [18], Maandig et al. [20], and Alinsunurin [17], reading and comprehension skills have some degree of influence on student performance. Another report suggests that teacher performance also affects performance in NAT [21].

In terms of skills, all divisions consistently scored highest overall in problem-solving (PS) compared to information literacy (IL) and critical thinking (CT) in most subjects. This expectation arises from the fact that the basic education curriculum in the Philippines anchors on inquiry-based learning, specifically problem-based and project-based learning in English, mathematics, and science [22]–[24]. Research has shown that these teaching methods develop students' problem-solving, critical thinking, conceptual understanding, creativity, and communication skills.

Differences in NAT Performance when grouped according to Size and Division
The National Achievement Test performance of Grade 10 Students SY 2017 to 2018 was compared in terms of their division and school size. The result of two-way ANOVA is summarized in Figure 2. As shown, all subjects and skills differ significantly in when grouped according to size and division except in the Problem-Solving Skill for Filipino subject. This suggests that the performance of both large and medium schools and that the three divisions differ significantly in all skills and subjects except problem-solving in Filipino. This is expected as the school size has been noted to affect student achievement [25]. Further, they noted that the relationship between school size and student achievement is U-shaped which means that it's the relatively small and large school that has the highest achievement. This could imply that there are benefits to both small and large schools in terms of student achievement. Further, this highlights the importance that policymakers should move away from the notion of an ideal school size, specifically for public high schools [25]. In another cross-country study, they found contradicting results. School size is not considered as a major driver of student achievement and its effects are only relevant in settings where the teacher quality is low [26]. Further, the same authors suggested that school systems do not matter so much for student achievement which is contrary to the results of this present study.

All subjects and skills showed significant differences when grouped according to the school division. This means that the performance of students in these subjects and specific skills differs as a function of the school division. The amount of fiscal and administrative resources, types of teachers, available teacher support, location, stakeholder support, and other nontangible variables that differ among these school division offices explain this difference. This suggests that the school division from which students come can also impact their performance.

This is understandable as one research, showed that an

increase in school spending positively impacts student achievement [27].

There were no differences noted in terms of problem-solving skills in the Filipino subject in terms of school size and division. This is understandable, as Filipino as a subject aims to develop student's appreciation of the Filipino language and encourages students to read and watch Filipino literature. This suggests that due to the very nature of the subject as a language rather than as a tool to solve problems, differences as a result of school size would not be meaningful towards the development of problem-solving skills. This is supported by the findings of Alharbi

[28] that the teaching of language should also emphasize problem-solving skills rather than the development of speaking proficiency.

Consistently, the interaction of school size and division on the performance of all subjects and skills was not significant except for Araling Panlipunan Problem Solving. This means that the effect of school size on the performance in problem-solving for Araling Panlipunan depends on the division where the school belongs, while for the rest of the skills and subjects, there is no interaction between the two independent variables.
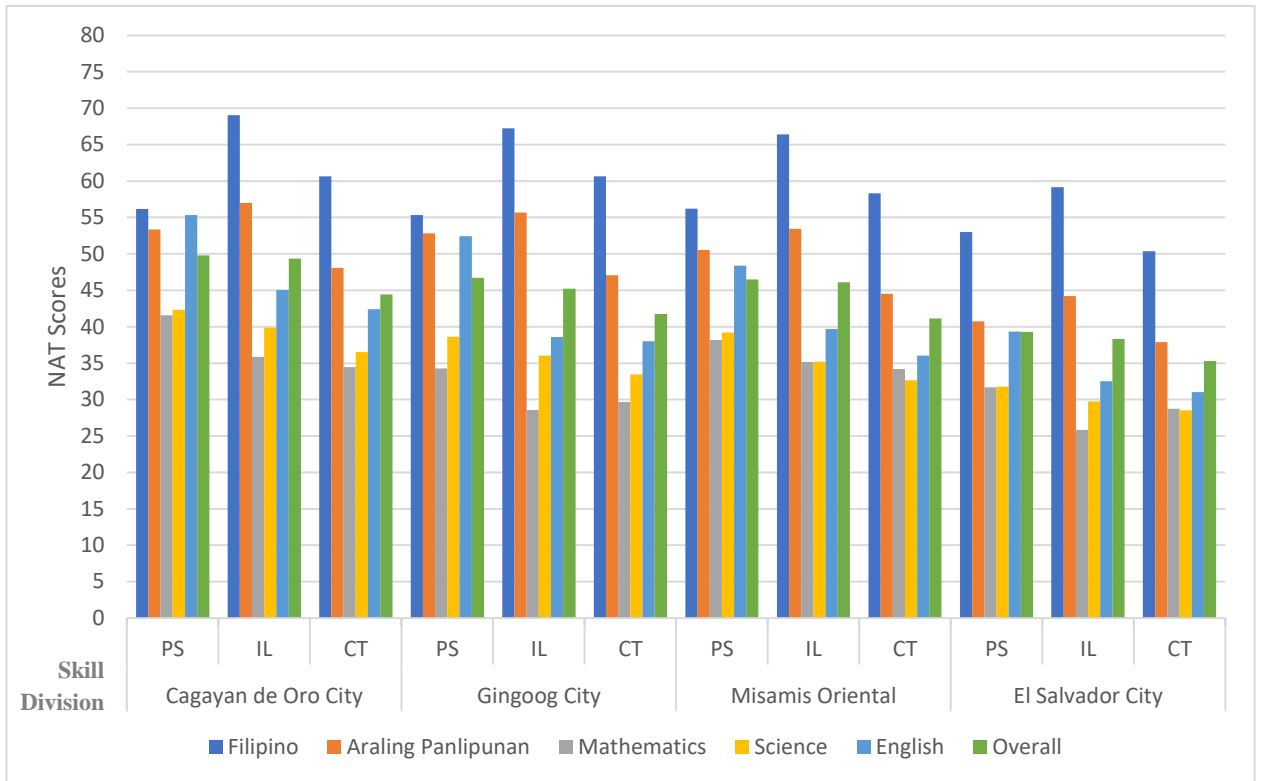

Figure 1. National Achievement Test Performance of Secondary Students SY 2017-2018 across four School Divisions

Figure 2. Heatmap showing the significant difference in mean scores of different skills in different subjects grouped according to school size and division in the National Achievement Test SY 2017-2018

5.   CONCLUSION AND RECOMMENDATION

In conclusion, the basic education learners performed well in Filipino and least in mathematics in the National Achievement Test SY 2017-2018. The school size and division affect the NAT performance of basic education learners. The interaction of school size and division is only significant in problem-solving for Araling Panlipunan.

An intervention program should be conducted to address low achievement in mathematics. Furthermore, the performance of students in this subject can be improved and at least maintained by strengthening curricular activities in Filipino. Additionally, more resources may be provided to small and medium schools to boost NAT performance. Further in-depth study is recommended to examine the factors that may have affected the low performance of the Gingoog City Division.

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