



PORTFOLIO ASSESSMENT AND NUMERICAL COMPETENCE OF AT RISK JUNIOR HIGH SCHOOL STUDENTS

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ABSTRACT

This study sought to determine the level of utilization of portfolio assessment and the level of numerical competence of the at risk junior high school students. Eventually, it sought to determine the significant relationship between the independent and the dependent variables. This study made use of a descriptive correlation non-experimental quantitative research method. It was descriptive because the data were presented in quantitative descriptions on the "Portfolio Assessment and Numerical Competence of at-risk Junior High School Students". According to Gay (2006) descriptive-correlation design determines and supports the way things are. Using a questionnaire in conducting a survey, interview or observations usually collects the data. The study was conducted in Digos City National High School, Division of Digos City. The respondents of this study were the 200 at risk junior high school students of the research locale who answered the questionnaire. Universal sampling procedure was utilized in this study in determining the respondents considering the large number of respondents in the research locale. This study revealed that in terms of basic competencies in mathematics, at risk junior high school students displayed good performance in the basics of mathematics. This finding was the basis for policy recommendation that would address the weak points of the at risk junior high school students. The school needed to design a program that would address the grey areas of the results of the study.

KEYWORDS: portfolio assessment, numerical competence, risk junior high school students

INTRODUCTION

A portfolio evaluation is a technique used in education to analyze a student's accomplishments, learning progress, and abilities over time by looking at samples of their work. In contrast to conventional evaluation methods like tests or quizzes, portfolio assessment gives students a more comprehensive opportunity to present their work and gives a wider picture of their talents and achievements. Selection of samples, introspection, evaluation standards, comments, and assessment are usually included in portfolio assessments.

In portfolio assessment, both teachers and students are navigating new terrain. They face challenges like resistance, incomplete submissions, and struggles with evaluating portfolios and assessing the evidence they contain. These challenges mirror those encountered in a program where portfolios were employed to evaluate academics in a module aimed at their professional growth. To address these issues, facilitators have had to delve into educational theories that should inform both theoretical understanding and practical implementation.

Simon and Forgette-Giroux (2000) describe a portfolio as a collection that grows over time, consisting of items chosen and annotated by the student, teacher, or peers. This collection serves to evaluate the student's advancement in developing a particular skill or competency.

Essentially, portfolio assessment is founded on the principles of authenticity, reflection, and continuous improvement (Barton & Collins, 1997). By compiling a curated collection of artifacts, including essays, projects, artworks, and



reflections, students demonstrate their growth and development across diverse domains. This process not only enables students to showcase their strengths but also fosters metacognitive awareness and self-regulated learning (Cheng & Warren, 1997).

According to Birgin (2003), a portfolio is essentially about looking at information related to students' skills in various subjects over a specific period. It involves consistently gathering their work and accomplishments based on established guidelines.

Portfolio assessment in the Philippines is grounded in principles of authenticity, relevance, and inclusivity. It emphasizes the documentation of students' diverse achievements, experiences, and competencies across various domains of learning (Department of Education, 2013). By encouraging students to curate a collection of their best work, portfolio assessment fosters a deeper understanding of subject matter and promotes lifelong learning habits (Alvarez, 2002).

Numerical competence plays a crucial role in various aspects of daily life, from managing finances to making informed decisions. While often equated with mathematical ability, numerical competence encompasses a broader spectrum of skills, including number sense, arithmetic fluency, and mathematical reasoning (Butterworth, 2010). This review aims to provide a comprehensive understanding of numerical competence, exploring its theoretical foundations, developmental trajectories, assessment methods, and educational implications.

Evaluating numerical competence entails gauging individuals' abilities in different math skills and ideas. In schools, standardized tests like the numerical operations subtest of the Woodcock-Johnson, tests of achievement are often employed for this purpose (Woodcock, 2001). Moreover, alternative approaches such as performance-based assessments, portfolio assessments, and task-based assessments offer additional ways to assess numerical competence in real-life situations (Clarke, 2006).

The growth of numerical skills is shaped by various factors, such as personal traits, teaching methods, and surrounding situations. According to LeFevre (2010), effective math instruction, support from parents, and cognitive abilities like working memory and executive functions play crucial roles in determining one's numerical competence.

Numerical competence encompasses a range of skills and abilities related to understanding and using numbers effectively. In the Philippines, where mathematics education plays a crucial role in shaping students' academic and professional trajectories, numerical competence holds significant importance. This paper aims to provide an overview of numerical competence in the Philippines, addressing its definition, components, developmental trajectories, assessment methods, and educational implications.

Several factors contribute to the numerical abilities of students in the Philippines, including their proficiency in English, personal characteristics, teaching methods, classroom dynamics, assessment practices, and the home learning environment. Research indicates a link between proficiency in English and competence in mathematics. Moreover, individual traits and instructional approaches significantly impact students' performance in both basic and advanced mathematics courses (SCISPACE, 2018).

In the division of Digos City particularly in Digos City National High School, numerical competence is a persisting problem among the junior high school students. They can read equations but can't understand mathematical concepts. It creates a problem across subject areas. The researcher, being a teacher in the said educational institution explores an initiative of portfolio assessment to make strong foundation in numerical competence of the students who are struggling in mathematics. Hence, this study will delve into the potential of portfolio assessment as an initiative to support struggling students and enhance their mathematical and skills.

This study seeks to determine the level of portfolio assessment and the level of numerical competence of the junior high school students. Eventually, it also seeks to determine the significant relationship between the independent and the dependent variables. Specifically, it seeks answers to the following sub- problems.



1. What is the level of portfolio assessment in terms of:
 - 1.1. Validity of the Test,
 - 1.2. Reliability of the Test?
2. What is the level of the numerical competence of the respondents in terms of:
 - 2.1. Counting Skills,
 - 2.2. Mathematical Concept Skills?
3. Is there a significant relationship between portfolio assessment and numerical competence of junior high school students?

METHODOLOGY

Research Design

This study made use of a descriptive correlation non-experimental quantitative research method. It was descriptive because the data were presented in quantitative descriptions on the “Portfolio Assessment and Numerical Competence of at-risk Junior High School Students”. According to Gay (2006) descriptive-correlation design determines and supports the way things are. Using a questionnaire in conducting a survey, interview or observations usually collects the data.

Respondents and Sampling

The study was conducted in Digos City National School, Division of Digos City. The respondents of this study were the 200 at risk junior high school students of the research locale who answered the questionnaire. Simple random sampling procedure was utilized in this study in determining the respondents considering the enormous number of the junior high school students in Digos City National High School.

Table 1. Distribution of Respondents

Section	Number of Learners
1. Dao	43
2. Dendrobium	45
3. Skylark	58
4. Sergio Osmeña	54

Research Instruments

In this study, two (2) sets of questionnaires were used. They were researcher-made questionnaires which were validated by experts of the study and were subsequently subjected later to a reliability test using cron bach alpha. The first set of questionnaires focused on the items of portfolio assessment through checklist while the second set of questionnaires was of a testing type that focused on numerical competence of the junior high school students.

To determine the level of utilization of portfolio assessment, the following continuum will be used:

Range of Means	Level	Description
4.30 - 5.00	Very High	When the utilization of portfolio assessment is manifested all the time.
3.30 - 4.29	High	When the utilization of portfolio assessment is frequently manifested.
2.30 - 3.29	Fair	When the utilization of portfolio assessment is sometimes manifested.
1.30 - 2.29	Low	When the utilization of portfolio assessment is rarely manifested.
0 - 1.29	Very Low	When the utilization of portfolio assessment is never manifested.

Data Gathering Procedure

The steps involved in this investigation are as follows:

A letter seeking permission for this research study to be conducted was sent to the Deped Superintendent of Digos City, SDS Melanie P. Estacio, CESO VI and to the School Principals concerned.



While letters seeking for permission were delivered to the school's division superintendent and principals concerned, the researcher constructed a questionnaire, had it validated by the experts, and eventually subjected it to reliability test using cron bach alpha.

After permission had been granted for the study to be conducted in Digos City National School, the division of Digos City and after the research questionnaire had been thoroughly examined by the expert validators, the researchers launched the questionnaire into the field and retrieved them from the respondents personally after few days.

The data generated from the survey were collated and tallied personally by the researcher. The raw scores were submitted to the statistician for statistical computation after which the researcher subjected it to analysis and interpretation.

Data Analysis

The following statistical tools were used:

Average Weighted Mean was used to determine the level of utilization of portfolio assessment and the level of numerical competence of the junior high school students.

Pearson-r was used to determine the significant relationship between portfolio assessment and the numerical competence of junior high school learners.

RESULTS AND DISCUSSION

This chapter displayed the summary of the findings, conclusions and recommendations drawn out by the researcher after the analysis and interpretation of the findings had been made.

This study sought to determine the level of utilization of portfolio assessment and the level of numerical competence of the at risk junior high school students. Eventually, it sought to determine the significant relationship between the independent and the dependent variables.

This study made use of a descriptive correlation non-experimental quantitative research method. It was descriptive because the data were presented in quantitative descriptions on the "Portfolio Assessment and Numerical Competence of at-risk Junior High School Students". According to Gay (2006) descriptive-correlation design determines and supports the way things are. Using a questionnaire in conducting a survey, interview or observations usually collects the data.

The study was conducted in Digos City National High School, Division of Digos City. The respondents of this study were the 200 at risk junior high school students of the research locale who answered the questionnaire. Universal sampling procedure was utilized in this study in determining the respondents considering the large number of respondents in the research locale.

This study revealed that in terms of basic competencies in mathematics, at risk junior high school students displayed good performance in the basics of mathematics. This finding was the basis for policy recommendation that would address the weak points of the at risk junior high school students. The school needed to design a program that would address the grey areas of the results of the study.

Conclusions

Based on the collective findings on this study, the following conclusions are drawn:

The Level of Portfolio Assessment in terms of Validity is Very High. The Level of Performance-based Assessment in terms of Reliability of the Test is Very High. The Level of Numerical Competence in terms of Counting Skills is Very High. The Level of Numerical Competence in terms of Mathematical Skills and that, there is a significant relationship between the portfolio assessment and the numerical skills of the at risk junior high school students.



The validity of portfolio assessment in terms of test often stems from its ability to capture a comprehensive view of student learning through multiple measures, authentic tasks, longitudinal assessment, diverse content representation, feedback mechanisms, and holistic evaluation practices. These factors collectively contribute to a robust assessment of student abilities and achievements, supporting strong conclusions about the validity of the assessment method.

The reliability of portfolio assessment is typically supported by consistent scoring practices, the involvement of multiple raters, structured assessment processes, assessor training, portfolio cohesiveness, and statistical measures of reliability. These factors collectively contribute to the trustworthiness and consistency of assessment outcomes, enabling confident conclusions about the reliability of the portfolio assessment method.

A very high level of numerical competence in counting skills is likely supported by evidence of developmental progression, accuracy and precision in counting, performance across diverse contexts, understanding of number concepts, efficiency in counting processes, effective use of strategies, consistency in assessments, and possibly cross-cultural or cross-linguistic validation. These factors collectively contribute to a strong and reliable conclusion about individuals' proficiency in counting skills.

A very high level of numerical competence in terms of mathematical skills is typically supported by evidence of mastery of fundamental concepts, proficiency in problem-solving, strong mathematical reasoning abilities, application in real-world contexts, consistent performance across tasks, fluency in mathematical operations, understanding and application of mathematical models, integration of skills, and evidence from multiple assessments. These factors collectively contribute to a robust conclusion about individuals' high mathematical skills as demonstrated in the thesis.

A very high level of portfolio assessment and numerical competence of high school students suggests positive outcomes for educational effectiveness, curriculum alignment, student engagement, holistic development, teacher effectiveness, preparation for future endeavors, validation of assessment practices, and potential influences on educational policies and curriculum development. These implications highlight the significance of integrating effective assessment methods with rigorous academic content to support student learning and success.

Recommendations

In the light of the findings drawn out by the researcher in this study, the following recommendations are offered: It is recommended that DepEd Officials may draft a policy on the numeracy skills of junior high school students who are struggling in mathematics. Mathematics is a very important competency to the life of everyone. Every day we compute, calculate and analyze problems with figures. Along this vein, competence of every learning the fundamentals of mathematics become very important.

The School Heads might have initiated a school-based program that aimed at improving the mathematical competency of the junior high school students, especially those who are struggling in numbers.

For Parents, by embracing portfolio assessment and actively supporting your child's involvement in the process, you can enhance their educational experience, foster a deeper understanding of their strengths and areas for growth, and promote a positive attitude towards learning and self-improvement. It also strengthens the partnership between parents and educators in nurturing your child's academic and personal development journey.

For Barangay Officials, by promoting portfolio assessment in schools, barangay officials can contribute to a more comprehensive and inclusive approach to education that nurtures students' academic growth, personal development, and community engagement. It strengthens the partnership between schools, families, and the barangay in supporting the holistic development of young learners.

For Students, by embracing portfolio assessment, students can take an active role in documenting their learning journey, demonstrating their abilities, and setting goals for continuous improvement. It encourages self-reflection, fosters a deeper understanding of subjects, and prepares students for future academic and professional endeavors.



For Future Researchers, it is strongly recommended that a relative study on the mathematical competence of learners across grade levels be conducted.

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