



Comparative Analysis of Academic Performance Across Curricular Programs: A Basis for Enhancement Program

Jade Mark C. Abapo

Tangub City National High School, Misamis Occidental, Philippines

E-mail: jademark.abapo@deped.gov.ph ORCID ID: <https://orcid.org/0009-0005-2438-6176>

Ronalyn T. Langam

Northwestern Mindanao State College of Science and Technology, Misamis Occidental, Philippines

E-mail: ronalyn.langam@nmsc.edu.ph ORCID ID: <https://orcid.org/0000-0001-8830-9093>

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Abstract

Background and Aim: Education is one of the most important factors in national development, and the Philippine K-12 curriculum reform included special programs such as the Special Program in the Arts (SPA), the Special Program in Journalism (SPJ), and the Special Program in Sports (SPS) to offer differentiated learning opportunities. Achievement differences across programs, however, still exist in some areas, notably Mathematics and English Language Arts. The purpose of this study is to analyze academic performance at the quarterly level for each curriculum program, identify significant differences among curricular programs, and to make recommendations for improvement interventions that will support underperforming curricular programs, consistent with UNSDG 4 (Quality Education).

Materials and Methods: A quantitative-comparative research design was employed, which included the learners from the five curricular programs in Grade 10, a total of 365 learners. Examination scores were translated to Mean Percentage Scores (MPS) in the quarterly periods. The Welch's ANOVA test was applied because the assumption of equal variances was violated for the first three quarters, while the Kruskal-Wallis test was applied for the fourth quarter, as it violated both normality and variance. Specific group differences were found using post hoc tests (Games-Howell and Dwass-Steel-Critchlow-Fligner).

Results: Significant differences were observed among programs ($p < .001$). STE learners achieved mastery-level performance (MPS 74.7%–81.1%), SPA, SPJ, and SPS learners showed steady improvement (MPS 65.7%–75.3%), and Regular learners remained lower-performing (MPS 56.8%–65.8%).

Conclusion: The findings suggest that learners in specialized programs demonstrated higher academic performance than learners in the Regular Program. Achievement gaps are recommended to be closed through targeted interventions, including remedial classes, contextualized modules, peer mentoring, and professional teacher development. The results of this study add to the discussions of curriculum reform and the policies, such as the ARAL program (RA 12028, 2024), that support the use of differentiated instruction in promoting inclusive and equitable quality education.

Keywords: Curriculum differentiation, Special curricular programs, Academic performance, Enhancement program, Mean Percentage Score

Introduction

Education has been universally acknowledged as a key driver of national development, and the quality of learning outcomes is directly connected to economic growth, social equity, and global competitiveness (UNESCO, 2023). As the United Nations (2015) emphasized, SDG 4 is one of the global visions for inclusive and equitable education for all learners to gain relevant skills and competencies that support lifelong success. This global agenda highlighted the need for evidence-based reforms to address achievement gaps and promote equity in diverse learning environments.

In the Philippine context, the K-12 curriculum reform was implemented to enhance the skills and abilities of learners and ensure that the education system aligns with international standards (EDCOM II, 2025). This framework implemented specialized curricular programs such as Science, Technology, and Engineering (STE), Special Program in the Arts (SPA), Special Program in Journalism (SPJ), and Special Program in Sports (SPS) to offer differentiated learning opportunities based on learners' interests, strengths, and career pathways (Abrigo et al., 2025). These programs provide an opportunity to enhance learning experiences and increase engagement beyond the Regular Program.

Students in specialized programs (programs with targeted curricula or unique admissions criteria) may also have higher achievement in the core subjects (Mathematics, Science, English) than their peers in the Regular Program (the standard curriculum for most students) (Baron, 2022; Velasco, 2020). This





continues to be an inequity because there may be less support and resources available for larger cohorts in Regular tracks compared to specialized tracks, which provide contextualized (specifically designed for student needs) support and resources. These gaps are identified in EDCOM II (2025), which urges attention to these issues to make sure reform is implemented and has a positive impact on learning outcomes for all tracks.

But the selection effects are an important one to consider. Students accepted to STE programs are likely to be higher performing at baseline because they usually have entrance exams or specific requirements (PIDS, 2025). This makes it difficult to compare performance because some variations could be due to existing skills or to the different programs being used. This study used the Mean Percentage Score (MPS) data from the quarters to compare results between the different programs; however, it is not possible to completely account for prior achievement levels. Recognizing this limitation is significant and helps interpret the findings and trends in performance, not just the cause-and-effect relationships.

While quarterly assessment data are available, few studies have applied inferential statistical comparisons. There is limited research determining whether program-based differences are statistically significant across quarters, and whether performance trends are sustained over time (Balagtas et al., 2025; Philippine Institute for Development Studies [PIDS], 2025). Without rigorous comparative statistical analysis, educational leaders lack the empirical evidence needed to inform policy, resource allocation, and targeted interventions.

This research fills these gaps by using refined statistical analysis techniques (Welch's ANOVA and Kruskal–Wallis) to compare academic performance by quarter across the five curricular programs. It aimed to investigate notable differences in performance trends, analyze inequity issues, and develop programs to facilitate underperforming groups. The study thus enabled advancing the conversation on curriculum reform and is consistent with SDG 4 (inclusive and equitable quality education).

Objectives

This study aimed to give empirical evidence for the effectiveness of specialized programs in the Philippine K–12 system. The objective of the research was to find out whether there was a significant difference between student performance in the various programs and subjects and whether these differences remained constant across the four quarters of the school year. In addition to the gaps in achievement, it aimed to consider actionable solutions: to propose enhancement or intervention programs that can be put in place to support underperforming groups. Thus, the research is part of UNSDG 4 (Quality Education), which aims to give all learners and youth equitable access to and quality of learning outcomes.

Specifically, this study sought to answer the following questions:

1. What is the profile of the respondents as to sex and Program?
2. What is the quarterly academic performance of learners in each special curriculum program in terms of: Regular Program; Science, Technology and Engineering (STE) Program; Special Program in the Arts (SPA); Special Program in Journalism (SPJ); and Special Program in Sports (SPS)?
3. Is there a significant difference in quarterly academic performance across curricular programs?
4. Based on the findings, what enhancement or intervention programs can be implemented to improve performance in underperforming curricular programs?

Literature review

Curricular Programs & Learner Outcomes

Differentiation in curriculum has been identified as a successful instructional strategy to improve learner outcomes through curriculum and instruction differentiation in relation to learner interests, strengths, and career pathways. The Special Program in the Arts (SPA), Special Program in Journalism (SPJ), Special Program in Science, Technology, and Engineering (STE), and Special Program in Sports (SPS) are programs of enrichment designed to promote engagement and achievement in areas that go beyond the Regular track (Abrigo et al., 2025). However, it is significant that the selection effects that surface in programs such as STE, where only students with high grades in entrance exams and admission





requirements enter the program, must also be recognized as a confounding factor in performance comparisons (Philippine Institute for Development Studies, 2025).

These studies exhibit that special programs were linked with higher achievement, although this could be due to preexisting ability. This research extends that evidence by examining performance in each program in each quarter, acknowledging selection bias as a constraint.

Academic Performance and Assessment Practices

Assessment practices are significant influencers of learning outcomes in different learning pathways. Cerezo et al. (2025) specified that the specialized programs showed advantages when they used authentic assessments, which are those in arts, journalism, and sports; on the other hand, the Regular track students used traditional written tests and remedial activities. Balanced assessment approaches to gain a more comprehensive understanding of competencies are also highlighted in international studies (Darling-Hammond & Adamson, 2015).

These findings indicated that assessment design in different programs acknowledged performance differences between programs. The present study aimed to provide a common denominator for outcome comparisons on different assessments by employing Mean Percentage Scores (MPS) as a standardized measure.

Mean Percentage Score (MPS) as a Measure of Achievement

The DepEd grading system has adopted MPS to measure learners' attainment across subjects in a unified way. MPS can be used for quarterly comparisons to establish mastery levels. Studies conducted in the past have revealed that STE learners consistently score higher than Regular learners, especially in the areas of Mathematics and Sciences on the MPS (Baron, 2022; Velasco, 2020).

MPS is used as the dependent variable in this study, allowing the opportunity for statistical comparisons of quarterly performance between the programs. Focus on comparability bolsters the validity of achievement gap findings.

Equity and Intervention Programs

Specialized tracks show steady improvement; there are equity concerns regarding the performance of the learners in the Regular program. Remedial classes, peer mentoring, and teacher capacity building have been recognized as intervention strategies that help close achievement gaps (Republic Act No. 12028, 2024; UNESCO, 2023). These strategies are institutionalized in the ARAL Program in the Philippines and are focused on the areas of reading, mathematics, and science.

The results of this study highlighted a set of interventions that can be used to tackle disparities. Using statistical analysis, this research identifies underperforming programs and offers evidence for targeted improvement programs.

Teacher Professional Development and Instructional Leadership

The role of the teacher is a critical component of maintaining learning gains within curricular tracks. Instructing about differentiated instruction, formative assessment, and content area specialization has been linked to positive student engagement and outcomes (Kress, 2004). DepEd Order No. 16, s. 2017 focuses on research-based instructional leadership and capacity building as vital to implementing the curriculum.

The key element in maintaining specialized programs is providing teachers with the professional development capacity and help with the regular program. The results of the present study regarding achievement gaps further support the importance of professional development as a component of intervention strategies.

Conceptual Framework

The principle that underlies this study is that it affects learning achievement. The Regular track is a generalized curriculum, and Specialized programs like STE, SPA, SPJ, and SPS are enriched learning experiences designed to meet the interests and strengths of learners. The model assumes that membership in a curricular program (independent variable) can influence quarterly academic performance (dependent variable) as measured by Mean Percentage Scores (MPS).



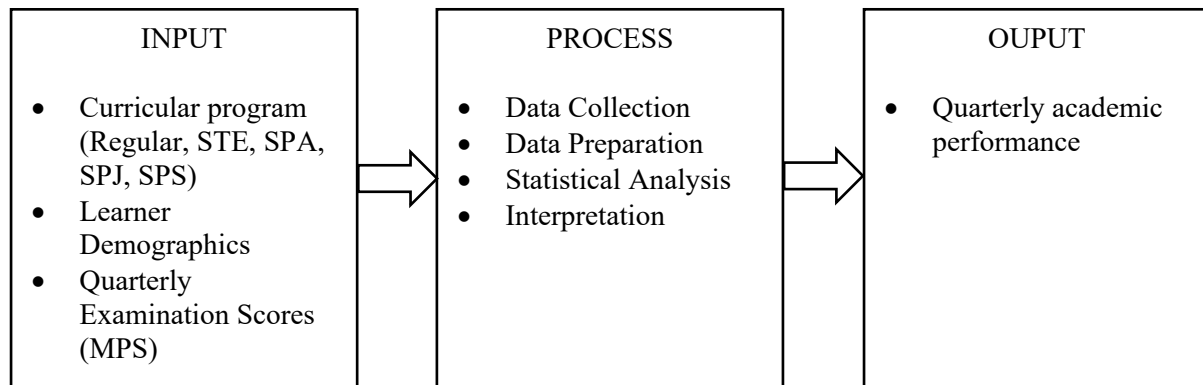


Figure 1. Conceptual Framework of the Study

Methodology

Research Design

The quantitative-comparative research design was used to compare differences in academic performance at the quarterly level among five curricular programs (Regular, STE, SPA, SPJ, SPS). This was used for comparisons of means between independent groups. The design was also adapted for use as a basis for an intervention or enhancement program for underperforming learners. The assumption of equal variances was violated for the first three quarters, and Welch's ANOVA was used. Levene's test confirmed heterogeneity of variances (Q1: $F = 6.46$, $df1 = 4$, $df2 = 360$, $p < .001$; Q2: $F = 20.44$, $df1 = 4$, $df2 = 360$, $p < .001$; Q3: $F = 7.37$, $df1 = 4$, $df2 = 360$, $p < .001$). Normality was satisfied (Shapiro–Wilk: Q1 $W = 0.994$, $p = 0.159$; Q2 $W = 0.995$, $p = 0.328$; Q3 $W = 0.997$, $p = 0.694$). In the fourth quarter, both assumptions were violated (Levene's test: $F = 10.21$, $p < .001$; Shapiro–Wilk: $W = 0.94$, $p = 0.036$); therefore, the Kruskal–Wallis test was used in this quarter.

Effect size was reported along with the p-value, and in the range 0.12 to 0.18 for Welch's ANOVA and 0.819 for Kruskal–Wallis, both of which are considered to have a moderate level of effect. Specific group differences were identified through post hoc analysis (Games-Howell for Q1–Q3 and Dwass-Steel-Critchlow-Fligner for Q4).

Research Participants

The participants consisted of **365 Grade 10 learners** enrolled in different curricular programs: Regular ($n = 188$), STE ($n = 67$), SPA ($n = 65$), SPJ ($n = 11$), and SPS ($n = 34$). Stratified sampling was used to ensure representation of programs and sex. While the sample sizes for most groups were adequate, the SPJ group's small size ($n = 11$) limits the reliability of comparisons involving this program, even with robust statistical alternatives. This limitation is acknowledged in interpreting results.

Research Instrument

The primary instrument employed in this study was the learners' Quarter Examination Results, which were then transformed into Mean Percentage Score (MPS) according to the Department of Education (DepEd) grading system. The assessment of the students' competence was comprehensive in each quarterly examination, where the core competencies of Mathematics, Science, English, Filipino, Araling Panlipunan, and MAPEH were addressed.

The examinations were created by the subject teachers and validated at the school level. Content validation and item analysis were achieved through expert review, which was conducted during the pilot administration to assess the quality of the items, and validating the difficulty of items and content coverage were performed as moderation procedures. Each quarterly exam consisted of 50 multiple-choice questions, with some short-answer and performance-type questions as appropriate. Essay-type items were used in language and performance tasks, and standardized analytic rubrics were used in SPA and SPS.



Standardized procedures for scoring were employed: objective items were teacher-scored or machine-scored, and performance tasks were scored using validated rubrics that were consistent and equally rigorous for raters and programs. All programs used the same assessment in core and common learning areas for quarterly exams, which provided comparable assessment outcomes. However, subjects of specialization were program-specific and required subjects to be completed to evaluate specific skills in each curriculum track. Differences in overall MPS across programs were interpreted while considering these variations.

Although MPS offers a consistent and measurable assessment of learners' academic performance, it is recognized that examination results cannot measure all aspects of learning, including creative, collaborative, and applied skills. Therefore, the results are considered a sign of academic achievement in the context of formal assessments.

Data Gathering Procedure

The data collection process was conducted systematically and properly to ensure accuracy, reliability, and ethical compliance. The official school records of students in Grade 10 of the five curriculum programs (Regular, STE, SPA, SPJ, SPS) were retrieved for the quarterly examination scores, with the approval of the school head and registrar. To have a common yardstick for academic performance, these scores were subsequently transformed into Mean Percentage Score (MPS) according to the DepEd standard grading system for each quarter. Stratified sampling was used to ensure representation of programs and sex, and to ensure the diversity of the learner population. Collected data were then encoded in Jamovi software, cleaned to check for inconsistencies, and verified against official records to ensure data integrity. The ethical principles were followed rigorously, informed consent was secured from learners and parents, confidentiality was ensured by anonymizing the records, and results were presented as aggregate data. This procedure was well-structured to maintain the trustworthiness and applicability of the dataset for advanced statistical analyses and broaden the study's goal of comparing trends in performance at a curriculum track level.

Data Analysis

The data analysis of this research was done by a statistical approach that is very rigorous, to ensure the results are valid and reliable. Scores from each quarter of examination were converted into Mean Percentage Scores (MPS), and inconsistencies were removed. First, the Shapiro–Wilk test was used to evaluate normality, and Levene's test was used to assess homogeneity of variances. Results revealed that normality was satisfied for the first three quarters, but variance was found to be unequal among groups, so Welch's ANOVA was used as a powerful alternative to the one-way ANOVA model that can handle unequal variances and unequal sample sizes. In the fourth quarter, neither assumption was met, and the non-parametric Kruskal–Wallis test was used instead of the normal distribution test. Effect sizes (η^2 , ϵ^2) were calculated to assess practical significance. Finally, post hoc analyses were used to determine specific group differences; Games-Howell for Q1–Q3 and Dwass-Steel-Critchlow-Fligner for Q4. The data were analyzed by these procedures so that the number of learners in each curricular program (Regular, STE, SPA, SPJ, SPS) could not influence the statistical results, especially in the case of the small number of learners in the SPJ track. The multi-layered analytical approach used was able to yield strong evidence of performance gaps between programs, consistent with best practices in educational research, and served the purpose of the study in guiding interventions for improvement.

Ethical Considerations

The school research committee obtained ethical clearance. Consent of learners and parents was gained, and it was stressed that participation was voluntary and that confidentiality was maintained. It was important to report the results in aggregate form, as data were anonymized to protect identities. The study was conducted in compliance with DepEd Order No. 16, s. The guidelines for 2017 (Research Management Guidelines) and principles of beneficence, respect, and justice.





Results and Discussions

1. What is the profile of the respondents as to:

Table 1. Profile of the respondents (n=365)

Profile		Frequency	Percent
Regular	Male	89	24.4%
	Female	99	27.1%
STE	Male	21	5.8%
	Female	46	12.6%
SPA	Male	31	8.5%
	Female	34	9.3%
SPJ	Male	2	0.5%
	Female	9	2.5%
SPS	Male	21	5.8%
	Female	13	3.6%

Note. *STE* = Science, Technology, and Engineering; *SPA* = Special Program in the Arts; *SPJ* = Special Program in Journalism; *SPS* = Special Program in Sports.

The data shows that most learners are in the Regular program (51.5%), with the remaining learners in the specialized programs of STE (18.4%), SPA (17.8%), SPS (9.4%), and SPJ (3%). The overall gender balance is slightly skewed towards female learners, with higher female representation in STE and SPJ, indicating evolving gender trends in science and journalism participation. It has significant implications that larger cohorts may have more stable peer learning environments and receive more resources allocated to them, while smaller cohorts, such as SPJ, have a risk of being marginalized because of limited numbers. These differences reveal a possible achievement gap between programs that can be detected through ANOVA when comparing mean performance scores. However, it is important to note that sample sizes are not equal, especially the small sample size of the SPJ group, and should be carefully handled in the statistical analysis and treated with Welch's ANOVA and/or the non-parametric alternatives to determine valid results.

These findings support recent assessments of the MATATAG curriculum, which underscores the need for reforms to be complemented by equitable resource distribution and contextualized support to prevent gap widening of learner groups (Abrigo et al., 2025). Likewise, descriptive analyses of students' performances reveal both that the type of assessment (written vs. practical tasks) can have a significant impact on performance and that a blend of assessment types is necessary to tap into the various strengths of learners, which is consistent with the MATATAG experience (Cerezo et al., 2025). Overall, the data provide evidence that specialized programs can add to differentiated learning opportunities, and that they are not equally distributed, so there is a need for targeted interventions to ensure the principles of equity and inclusion that are at the heart of UNSDG 4 are respected.

2. What is the quarterly academic performance of learners in each special curricular program?

Table 2. Learners' Quarterly Academic Performance Across Special Curricular program

Program	Quarterly Academic Performance											
	1 st Quarter			2 nd Quarter			3 rd Quarter			4 th Quarter		
	Mean (%)	SD	Performance level	Mean (%)	SD	Performance Level	Mean (%)	SD	Performance Level	Mean (%)	SD	Performance Level
Regular	56.8	2.92	Average	61.3	4.12	Average	62.5	2.88	Average	65.8	3.03	Moving Towards Mastery
STE	78.2	1.92	Moving Towards Mastery	74.7	1.66	Moving Towards Mastery	76.7	1.97	Moving Towards Mastery	81.1	1.81	Moving Towards Mastery





Quarterly Academic Performance												
Program	1 st Quarter			2 nd Quarter			3 rd Quarter			4 th Quarter		
	Mean (%)	SD	Performance level	Mean (%)	SD	Performance Level	Mean (%)	SD	Performance Level	Mean (%)	SD	Performance Level
SPA	61.5	2.12	Average	65.7	3.09	Moving Towards Mastery	66.2	2.58	Moving Towards Mastery	75.3	1.92	Moving Towards Mastery
SPJ	68.4	1.95	Moving Towards Mastery	69.7	0.77	Moving Towards Mastery	70	1.83	Moving Towards Mastery	72.4	1.03	Moving Towards Mastery
SPS	62.9	2.82	Average	64.4	2.15	Average	69	1.4	Moving Towards Mastery	72.4	1.9	Moving Towards Mastery

Note. STE = Science, Technology, and Engineering; SPA = Special Program in the Arts; SPJ = Special Program in Journalism; SPS = Special Program in Sports.

Learners' quarterly academic results are found to differ according to their curriculum program. In the Regular Program, all learners consistently scored at the “Average” level in the first three quarters (56.8%–62.5%), achieving the “Moving Towards Mastery” level in the fourth quarter (65.8%). This implies that development is slow, perhaps indicative of building progress and adaptation to demands in assessments. The STE (Science, Technology, and Engineering) Program, on the other hand, stayed within a range of high-performance year-round (74.7% to 81.1%), which is interpreted to be “Moving Towards Mastery.” This underscores the merits of targeted science instruction and maintaining academic progress.

The Special Program in the Arts (SPA) demonstrated consistent growth from “Average” in the first quarter (61.5%) to “Moving Towards Mastery” for the second quarter onward and to a good fourth quarter mean number of 75.3%. The Special Program in Journalism (SPJ) also showed steady performance at the mastery level (68.4%–72.4%), even with a relatively small number of students, indicating that specialized instruction in communication and writing skills could lead to ongoing progress. The Special Program in Sports (SPS) had an Average performance (62.9%–64.4%) and reached Moving Towards Mastery (69.0%–72.4%) in the third and fourth quarters, showing that the performance of learners in this track is concurrent with both athletic commitments and academic responsibilities.

Overall, the data indicate that specialized programs (STE, SPA, SPJ, SPS) are more likely to perform well than the Regular Program, with STE scoring highest in consistent mastery-level achievement. This is an indication that specialized curricula improve the engagement and performance of learners due to their alignment with students' interests and strengths. Recent reviews of the MATATAG curriculum highlight the importance of contextualized, decongested learning pathways, as well as the need to allocate resources equitably, to achieve good outcomes for learners across a variety of curricula and maintain those gains (Abrigo et al., 2025). Furthermore, according to Cerezo et al. (2025), the analysis of student performance in MATATAG showed that differences in assessment type can greatly impact achievement, which reinforces the need to implement a more comprehensive approach to assessing a range of student competencies.

The findings suggest that specialized programs have a positive impact on learner achievement, but there are differences in enrolment and patterns of performance that require interventions. School leaders should bolster support for smaller groups such as SPJ and SPS for sustainability, and policymakers need to continue to improve the implementation of curriculum changes to increase equity and inclusiveness. The results also support the importance of differentiated instruction and assessment in supporting students to master the UNSDG 4 (Quality Education) and give all students, regardless of program, opportunities to master.

3. Is there a significant difference in quarterly academic performance across special curricular programs?





Table 3. Difference Between Learners' Quarterly Academic Performance Across Special Curricular program

Variables		Quarterly Academic Performance		Test Statistics	p-value
		Mean (%)	Interpretation		
1 st Quarter	Regular	56.8	Average	1174	<.001
	STE	78.2	Moving Towards Mastery		
	SPA	61.5	Average		
	SPJ	68.4	Moving Towards Mastery		
	SPS	62.9	Average		
2 nd Quarter	Regular	61.3	Average	409	<.001
	STE	74.7	Moving Towards Mastery		
	SPA	65.7	Moving Towards Mastery		
	SPJ	69.7	Moving Towards Mastery		
	SPS	64.4	Average		
3 rd Quarter	Regular	62.5	Average	494	<.001
	STE	76.7	Moving Towards Mastery		
	SPA	66.2	Moving Towards Mastery		
	SPJ	70.0	Moving Towards Mastery		
	SPS	69.0	Moving Towards Mastery		
4 th Quarter	Regular	65.8	Moving Towards Mastery	298	<.001
	STE	81.1	Moving Towards Mastery		
	SPA	75.3	Moving Towards Mastery		
	SPJ	72.4	Moving Towards Mastery		
	SPS	72.4	Moving Towards Mastery		

Note. *STE* = Science, Technology, and Engineering; *SPA* = Special Program in the Arts; *SPJ* = Special Program in Journalism; *SPS* = Special Program in Sports.

Statistical analyses also provide evidence that differences in academic results exist between the five curricular programs at the quarter level. The assumption of normality was met (Shapiro–Wilk p -values $> .05$), but the assumption of homogeneity of variances was not (Levene's $p < .001$) for the first three quarters (Q1–Q3). Welch's ANOVA is more powerful than the standard one-way ANOVA if the variances are not equal, as are the variances here (between the programs from 11 learners to 188 learners), and if the sample sizes are not equal. This helped to maintain the validity of the statistical comparisons when variances and group sizes were unequal.

The Kruskal–Wallis test was used for the fourth quarter (Q4), which was used when both assumptions were met: Levene's test indicated unequal variances ($p < .001$) and the Shapiro–Wilk test showed a significant departure from normality ($p = .036$). The Kruskal–Wallis test is non-parametric, and it needs no normal distribution; it can be used with ordinal or non-normally distributed data. Pairwise comparisons also found most pairs of programs significantly different, apart from the comparable performance of SPJ and SPS.

The findings show that the STE program had the highest performance in all quarters (74.7%–81.1%) and the highest number of mastery cases, which shows that it is the most effective. The Regular program continued to struggle and had the lowest means (56.8%–65.8%), ranging from “Average” to “Moving Towards Mastery”, and only achieved “Moving Towards Mastery” in the final quarter, while the means for SPA, SPJ, and SPS were improving steadily at “Moving Towards Mastery”. The Regular track is a track that does not seem to be able to support mastery without targeted interventions, whereas the specialized programs are able to offer enriched learning environments that lead to increased achievement.

The findings are consistent with more recent assessments of the MATATAG curriculum, which highlight the importance of providing context and decongesting learning pathways for improved learning outcomes, as well as the need to ensure balanced access to resources to maintain these gains throughout the variety of programs (Abrigo et al., 2025). Similarly, both descriptive analyses of student





performance are based on the differences in assessment types that impact achievement, which is why it is essential that all assessment methods are not equal (Cerezo et al., 2025).

The findings suggest that special programs can be effective in improving academic attainment, yet there are equity issues with the Regular program learners who continue to lag. Non-specialized programs need to be supported in terms of resources and enrichment opportunities, which must be distributed fairly and equitably. Instructional leaders need to plan for differentiated interventions to address achievement gaps and continue the strengths of specialized programs. Overall, these results confirm the importance of curriculum differentiation to achieve UNSDG 4: Quality Education in a way that promotes inclusivity and mastery among all learners.

4. Based on the findings, what enhancement or intervention programs can be implemented to improve performance in the underperforming curricular program?

The results showed that throughout the whole study period, learners in the Regular Program had scores that were lower than learners in the specialized programs, but the learners in the SPA and SPS programs had scores that were “Average” and increased over the course of the program. The findings of this analysis indicate that it is important to implement targeted interventions to maintain mastery-level achievement and close achievement gaps between programs.

Table 4. Academic Performance Intervention Program for Underperforming Curricular Program

Objectives	Activities/Strategies	Persons Involved	Timeframe	Success Indicators
Improve mastery of core subjects among Regular learners	Conduct weekly remedial and enrichment classes in Math, Science, and English; administer quarterly diagnostic tests	Subject Teachers, Department Head, School Head	Quarterly (after exams)	Increased mean percentage scores; more learners reaching “Moving Towards Mastery”
Strengthen academic support for SPA and SPS learners, balancing specialization and academics.	Develop contextualized modules linking arts/sports with academic content; integrate blended learning strategies.	SPA/SPS Teachers, Curriculum Coordinators	Monthly	Improved quarterly performance; reduced the gap between specialization and academics
Provide peer-assisted learning opportunities.	Implement a peer mentoring program where STE/SPJ learners tutor Regular and SPS peers; organize collaborative study groups.	Peer Tutors, Class Advisers	Bi-weekly	Positive feedback from mentees; improved performance in monitored subjects
Enhance teacher capacity in differentiated instruction.	Conduct professional development workshops on formative assessment, arts/sports-integrated pedagogy, and differentiated teaching.	School Head, Master Teachers, Division Supervisors	Semi-annual	Teachers apply strategies in class to improve learner engagement and outcomes.





Objectives	Activities/Strategies	Persons Involved	Timeframe	Success Indicators
Support holistic learner development.	Offer study skills workshops, time management training, and wellness programs for SPA and SPS learners.	Guidance Counselor, Teachers, Parents	Quarterly	Learners demonstrate improved study habits and resilience, and higher academic scores.
Monitor and evaluate learner progress.	Use performance dashboards and feedback sessions to track improvement and adjust interventions.	School Head, Teachers, Learners	Quarterly	Documented improvement in performance reports; sustained mastery levels

This intervention plan is intended to specifically target the achievement gap found in the study. Structured remediation and enrichment strategies will benefit regular learners, and contextualized support will be offered for the specialization of the SPA learners and SPS learners, balancing their specialization with academic mastery. Peer mentoring builds on the success of high-performing programs (STE, SPJ) to lift the underperforming programs, and teacher training will ensure ongoing instructional improvements. The holistic workshops acknowledge the specific needs of students who are also involved in the arts or sporting activities.

The plan supports the DepEd's focus on contextualized, equitable, and learner-centered interventions in the context of the Enhanced K-12 curriculum reforms and the Academic Recovery and Accessible Learning (ARAL) Program, which institutionalizes tutorial and intervention systems across the country for learning gaps in reading, mathematics, and science (Republic Act No. 12028, 2024). Contextualized and differentiated instruction is also found to have a positive effect on engagement and mastery of learners, especially in specialized programs (Abrigo et al., 2025; Cerezo et al., 2025).

Knowledge Contribution

This study makes three types of contributions to education research: empirical, methodological, and practical/policy.

Empirical Contribution

The study showed evidence of the impact of a differentiated curriculum program, such as STE, SPA, SPJ, and SPS, on learner achievement versus the Regular track. These results indicated that STE learners consistently outperformed other learners, and learners in SPA, SPJ, and SPS gradually improved closer to STE learners over time. The graphs showed that there are persistent gaps between the performance levels of Regular learners, who do not perform as well as higher-performing learners. These results contribute to the literature by providing a description of performance trends in 1225 learners across the four quarters measured in terms of Mean Percentage Scores (MPS), showing the association in performance of curriculum differentiation, and revealing the presence of gaps that need to be addressed.

Methodological Contribution

The study extends the application of comparative analysis in the Philippine education context by using Welch's ANOVA for unequal variance and Kruskal-Wallis for both normality and variance assumptions that were violated. Additional post hoc analyses (Games-Howell and Dwass-Steel-Critchlow-Fligner) revealed specific group differences. This stringent statistical procedure has enhanced the validity of the results despite unequal sample size (such as a small group of students from the SPJ program) and presented a replicable model for subsequent studies of program performance differences. The use of MPS as a standardized measure for comparison between subjects and quarters which had been a missing link in previous literature that was descriptive and not quantitative.



Practical/Policy Contribution

The study showed the poor performance of Regular learners and an appeal for interventions such as, but not limited to, remedial classes, peer mentoring, contextualized modules, and capacity building for teachers. The recommendations were aligned with the ARAL Program (Republic Act No. 12028, 2024) and UNESCO's (2023) push for inclusive education under United Nations Sustainable Development Goal 4. The study connects empirical results to usable methods to inform school leaders, curriculum planners, and policymakers about the design of enhancement programs that can close achievement gaps and maintain mastery-level performance in all tracks.

Overall, the study provides empirical evidence for differentiated programs, an effective analytical method to examine performance disparities, and policy recommendations to promote equity and inclusiveness in the Philippine K–12 education system.

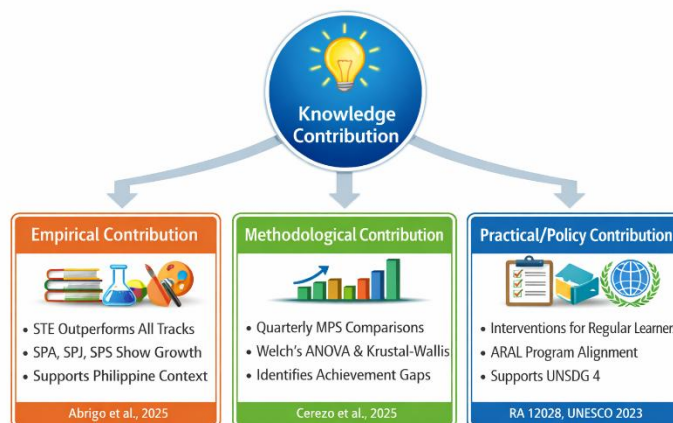


Figure 2. Knowledge Contribution Framework of Specialized Curricular Program

Conclusion

The study found a significant difference in academic performance between the special programs in each of the four quarters. STE learners consistently obtained the highest MPS across all four quarters, while Regular Program learners recorded the lowest performance and reached 'Moving Towards Mastery' only in the fourth quarter. These differences were validated by statistical analyses, which were performed using Welch's ANOVA for Q1–Q3 and Kruskal-Wallis for Q4 because of violations of one or more of the assumptions of normality and homogeneity. In post hoc comparisons, learners from the STE program are significantly better than other groups in subsequent quarters, with the SPJ and SPS groups performing similarly.

The results highlighted the benefits of a targeted curricular program in improving student performance and addressing equity issues for Regular program students who were persistently underperforming. The findings validated the notion that a differentiated curriculum that is based on learners' interests and strengths is associated with positive academic results, and that differentiated interventions were needed to ensure access and achievement in all programs. The study also highlights that MPS is an appropriate indicator of academic performance, but should be viewed in the context of understanding learner achievement as a whole.

Recommendations

Based on the findings, the following enhancement and intervention programs are recommended:

1. Academic Enrichment for Regular Learners
 - Use structured remedial and tutorial time in core subjects (Math, Science, English).
 - Deliver periodic diagnostic evaluations and subsequent intervention.
2. Contextualized Support for SPA/SPS Programs



- Create arts and sports academic integrated modules.
- Mix specialization and academic reinforcement via blended learning strategies.
- 3. Peer Coaching and Collaborative Learning
 - Implement peer tutoring opportunities for the STE and SPJ students to serve as mentors for Regular and SPS students.
 - Promote interdisciplinary work to motivate and facilitate the sharing of knowledge.
- 4. Teacher Professional Development
 - Provide training in the areas of formative assessment, differentiated instruction, and specialization-integrated pedagogy.
 - Improve teachers' ability to meet the needs of all learners.
- 5. Holistic Learner Support
 - Provide study skills, time management, and wellness programs for SPA and SPS learners.
 - Offer counseling and guidance services to enable learners to balance their academics and specialization.
- 6. Monitoring and Evaluation
 - Utilize performance dashboards and feedback mechanisms for tracking learner progress.
 - Select interventions quarterly according to data analysis.
- 7. Future Research Directions
 - Use ANCOVA or other appropriate statistical analysis to determine program effects after controlling for baseline ability (e.g., prior grades, baseline exam scores).
 - Implement multi-school replication to confirm results across contexts and to increase generalizability.
 - Adopt longitudinal tracking to investigate trends in sustained performance and the lasting effect of specialized programs on learner outcomes.

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