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Estructuras curriculares regionales y acceso por grado en la educación básica filipina **Regional curricular structures and grade-level access in Philippine basic education**

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Resumen

La organización territorial de las escuelas condiciona la forma en que el alumnado accede a los distintos grados de la educación básica. Este estudio describió las estructuras regionales de oferta curricular en la red filipina de educación básica y examinó su relación con la carga regional de matrícula. Se analizaron datos públicos de DepEd Data Bits sobre escuelas, matrícula y recuentos históricos de los años escolares 2017-2018 a 2021-2022. Las comparaciones regionales incluyeron 17 regiones nacionales y utilizaron porcentajes de composición, proporción de escuelas integradas, proporción de escuelas que ofrecen secundaria superior, estudiantes por escuela y análisis de correlación con comprobaciones de sensibilidad. En 2021-2022, las escuelas exclusivamente de primaria representaron 43.090 de 60.429 escuelas, equivalente al 71,3% del total nacional. Region VIII y BARMM mostraron la mayor dependencia de escuelas exclusivamente de primaria, mientras que la Región de la Capital Nacional registró la mayor proporción de escuelas integradas y la mayor carga de estudiantes por escuela. La proporción de escuelas integradas se asoció fuertemente con estudiantes por escuela. Los resultados indican que las clasificaciones de oferta curricular son indicadores útiles para planificar acceso por grado, continuidad educativa y capacidad institucional diferenciada por región.

Palabras clave: Educación básica, red escolar, calidad educativa, acceso regional, oferta curricular.

Abstract

The territorial organization of schools affects how learners gain access to different grade levels in basic education. This study described regional curricular-offering structures in the Philippine basic education school network and examined their relationship with regional enrollment burden. Public DepEd Data Bits records on schools, enrollment, and historical school counts from school year 2017-2018 to 2021-2022 were analyzed. Regional comparisons covered 17 domestic regions and used compositional percentages, integrated-school share, senior-high-school-serving share, learners per school, and correlation analysis with sensitivity checks. In school year 2021-2022, purely elementary schools accounted for 43,090 of 60,429 schools, or 71.3% of the national total. Region VIII and BARMM showed the strongest dependence on purely elementary schools, while the National Capital Region had the highest integrated-school share and the highest learners-per-school burden. Integrated-school share was strongly associated with learners per school. The findings indicate that curricular-offering classifications are useful indicators for planning grade-level access, educational continuity, and regionally differentiated institutional capacity.

Keywords: Basic education, school network, educational quality, regional access, curricular offerings.



Introduction

The quality of an education system depends not only on curriculum, teaching, assessment, and school leadership, but also on the territorial organization through which learners encounter schooling opportunities. International education agendas frame quality education as an inclusive public commitment in which access, participation, progression, and learning conditions are examined together (UNESCO, 2016, 2021, 2023a, 2024). Comparative policy work likewise treats the organization of school systems, learning resources, and institutional capacity as part of educational quality because learners experience quality through the institutions available in their communities (OECD, 2021, 2022, 2023, 2024, 2025; World Bank, 2018, 2022, 2024, 2025; Woessmann, 2016). In this sense, the composition of a school network is not a neutral administrative detail. It shapes whether grade levels are available nearby, whether transitions require transfer to another institution, and whether regions rely on separated or integrated forms of service delivery.

School location and school mapping have long been recognized as instruments of educational planning. Hallak (1977) argued that the spatial distribution of schools diagnoses disparities in educational opportunity and supports plans to reduce those disparities. Caillods (1983) located school mapping within micro-planning by linking facilities, population distribution, and local demand. More recent spatial research also emphasizes that educational access is shaped by distance, transport, hazards, and the uneven distribution of facilities (Sakti et al., 2022; Sharma & Patil, 2022). Evidence from school construction and school availability studies reinforces the relevance of supply-side access. Duflo (2001) showed that school construction in Indonesia had long-term educational and labor-market effects, Filmer (2007) found that school availability is connected with enrollment across poor countries, and Burde and Linden (2013) demonstrated that village-based schools can improve access for girls in Afghanistan. These studies support a central proposition of the present research: where grade offerings are placed matters for equitable access. Recent evidence on educational system consolidation also shows that school closure and reorganization can affect access and attainment when learners must travel farther or shift to more centralized institutions (Hannum et al., 2021).



School network design also raises questions about scale, integration, and continuity. Research on infrastructure emphasizes that school facilities affect learning environments and should be considered with staffing, governance, and resource management (Barrett et al., 2019; Rivkin et al., 2005). Research on school size and consolidation shows mixed but important evidence. Economies of scale may occur, but consolidation can also produce disruption, longer travel, community effects, and uneven outcomes (Andrews et al., 2002; Bard et al., 2006; Beuchert et al., 2018; Duncombe & Yinger, 2007; Eacott & Freeborn, 2020; Howley et al., 2011). Monk (1987) further showed that secondary school size is linked to curriculum comprehensiveness, which is relevant when higher-grade offerings are concentrated in fewer schools. In the Philippines, the Enhanced Basic Education Act established a basic education sequence extending from Kindergarten through Grade 12 (Republic Act No. 10533, 2013). DepEd policy further defines the organization and implementation of the K to 12 program, which remains subject to policy adjustment and implementation review (Department of Education, 2019, 2024). Public education discussions in the country have increasingly emphasized access, quality, learning recovery, infrastructure, and governance (Department of Education, 2023; EDCOM II, 2024, 2026; UNESCO, 2023b; UNICEF et al., 2022; World Bank, 2024, 2025). The Philippine setting also contains metropolitan, archipelagic, mountainous, and rural contexts, making regional school-network composition important for educational-quality planning.

Curricular-offering classifications are therefore meaningful indicators of educational organization. Purely elementary schools may support early-grade proximity, but regions with high dependence on these schools may require learners to transfer for junior high school or senior high school. Junior high schools with senior high school, K to 10 schools, and K to 12 schools can provide greater grade-level continuity, although they may also concentrate learners in larger institutions. The objective of this study was to describe national and regional patterns in curricular-offering classifications in the Philippine basic education school network, examine historical changes in school counts, and relate regional school-type composition to enrollment burden measured by learners per school.

The study treats school network composition as a structural condition of basic education delivery. The purpose is not to rank regions by a single desirable model, since metropolitan,



rural, island, and geographically dispersed areas may require different arrangements. Instead, the analysis identifies how regional school systems combine separated and integrated configurations and how those configurations relate to enrollment burden. The research question guiding the study was: How do curricular-offering classifications vary across Philippine regions, and what do these patterns indicate about grade-level access, educational quality, and evidence-based planning for basic education delivery?

Methodology

A descriptive quantitative design was used. The study analyzed publicly available DepEd Data Bits data released by the Department of Education through the Philippine Open Data Portal. The dataset is listed as DepEd Data Bits, ID: plimfvv8-51m1-75rj-tzrw-2zbf8xj96las, and was retrieved from the Philippine Open Data Portal. The DepEd Data Bits were originally retrieved from the Department of Education Facts and Figures datasets page on 03 January 2023. The analysis used school counts and enrollment resources for school year 2021-2022 and historical school counts from school year 2017-2018 to 2021-2022 (Department of Education, 2022a, 2022b). The unit of analysis for regional comparisons was the DepEd administrative region. The main variables were school counts by curricular-offering classification: Purely ES, Purely JHS, Purely SHS, JHS with SHS, K to 10, and K to 12. The study also used regional enrollment totals to calculate learners per school. Table no. 1 defines the variables and derived indicators used in the analysis. The Philippine Schools Overseas row and the Grand Total row were excluded from regional statistical analyses because they are not domestic regions. The Grand Total row was used only for national summary.

Variable	Definition
Region	DepEd administrative region used as the unit of domestic regional comparison.
Purely ES	Schools classified as offering elementary schooling only.
Purely JHS	Schools classified as offering junior high school only.
Purely SHS	Schools classified as offering senior high school only.
JHS with SHS	Schools classified as offering junior high school and senior high school without elementary grades.
K to 10	Schools classified as offering Kindergarten to Grade 10 but not senior high school.
K to 12	Schools classified as offering the full Kindergarten to Grade 12 sequence.
Integrated share (%)	Combined percentage of JHS with SHS, K to 10, and K to 12 schools.
SHS-serving share (%)	Combined percentage of Purely SHS, JHS with SHS, and K to 12 schools.
Learners per school	Total regional enrollment, including Alternative Learning System enrollment, divided by the number of schools in the region.

Table 1. School network variables and definitions



Data cleaning consisted of verifying region labels, numeric fields, classification subtotals, enrollment subtotals, and historical totals. For each domestic region, the six classification columns were summed and compared with the reported school sub-total. For enrollment, Kindergarten, Elementary, Junior High School, Senior High School, and Alternative Learning System counts were summed and compared with the reported regional sub-total. The same verification was applied to the historical school-count table. All relevant subtotals and totals matched the source fields.

Regional composition was calculated by dividing each school-type count by the regional school sub-total and multiplying by 100. Integrated share was calculated as the combined percentage of JHS with SHS, K to 10, and K to 12 schools. Senior-high-school-serving share was calculated as the combined percentage of Purely SHS, JHS with SHS, and K to 12 schools. Learners per school was calculated as total regional enrollment, including Alternative Learning System enrollment, divided by the regional number of schools.

The association between learners per school and integrated-school share was summarized using Pearson correlation. A Spearman rank correlation was added as a robustness check because the regional sample was small and the National Capital Region was a high-burden outlier. A leave-one-region sensitivity check excluding the National Capital Region was also computed. Because the study had only 17 domestic regional units, multivariate regression was not used; adding several contextual controls to such a small aggregate sample would produce unstable estimates and would exceed the descriptive purpose of the study.

Ethical compliance and good practices were observed through the exclusive use of publicly available, aggregated institutional data. The study did not collect individual-level data, did not involve direct contact with learners, teachers, or schools, and did not use names, identifiers, or personally identifiable information. The analysis reports regional patterns and does not rank individual schools or identify individual learners. The study also uses inclusive and non-sexist language by referring to learners, students, teachers, personnel, and regions in neutral terms.

Results

Table no. 2 shows the national distribution of schools by curricular-offering classification. The national school network in school year 2021-2022 contained 60,429 schools.

Purely elementary schools formed the dominant category, with 43,090 schools, or 71.3% of the national total. The next largest category was JHS with SHS, which accounted for 7,570 schools, or 12.5%. K to 12 schools accounted for 3,547 schools, or 5.9%, while K to 10 schools accounted for 3,110 schools, or 5.1%. Purely JHS and Purely SHS schools were smaller categories at 2.9% and 2.2%, respectively.

Classification	Schools	Share (%)
Purely ES	43,090	71.3
Purely JHS	1,755	2.9
Purely SHS	1,357	2.2
JHS with SHS	7,570	12.5
K to 10	3,110	5.1
K to 12	3,547	5.9

Table 2. National school counts by curricular-offering classification

Table no. 3 and Figure no. 1 show regional variation in school-network composition. Purely elementary schools were the largest classification in every domestic region, but their share varied widely. Region VIII had the highest purely elementary share at 82.8%, followed by BARMM at 81.3%, Region IX at 78.6%, Region II at 77.3%, and Region IV-B at 76.5%. The National Capital Region had the lowest purely elementary share at 50.4% and the highest integrated-school share at 37.3%. Other regions with relatively high integrated shares were Region VII, Region IV-A, Region III, and Region XI.

Region	Purely ES (%)	Integrated (%)	SHS-serving (%)	Learners/school
I	72.5	25.6	23.5	389.8
II	77.3	21.0	17.0	326.8
III	66.0	27.9	23.9	578.6
IV-A	61.7	28.3	23.7	640.3
IV-B	76.5	15.1	14.8	352.3
V	75.6	20.8	21.7	418.7
VI	75.7	22.0	18.2	422.9
VII	67.6	28.8	24.7	467.1
VIII	82.8	13.8	12.7	298.0
IX	78.6	17.4	17.6	386.2
X	69.7	26.8	20.0	446.6
XI	66.8	27.4	22.6	535.6
XII	67.2	26.5	22.1	483.9
CARAGA	74.6	22.7	20.5	350.8
BARMM	81.3	12.5	11.8	359.7
CAR	75.5	19.5	16.8	219.1
NCR	50.4	37.3	34.3	985.5

Table 3. Regional composition and derived indicators

The heatmap in Figure no. 1 clarifies that regions differ not only in total school volume but also in the balance between separated and integrated grade offerings. The darkest pattern appears in the purely elementary column because this classification dominates most regions. The figure also shows that JHS with SHS is the most prominent secondary-integrated category in many regions, especially Region VII, CARAGA, Region V, Region XI, Region I, Region XII, Region IX, and Region VI. The National Capital Region stands out because its K to 12 share of 17.4% and K to 10 share of 12.1% are considerably higher than most regions.

Figure 1. Heatmap of regional school-type composition

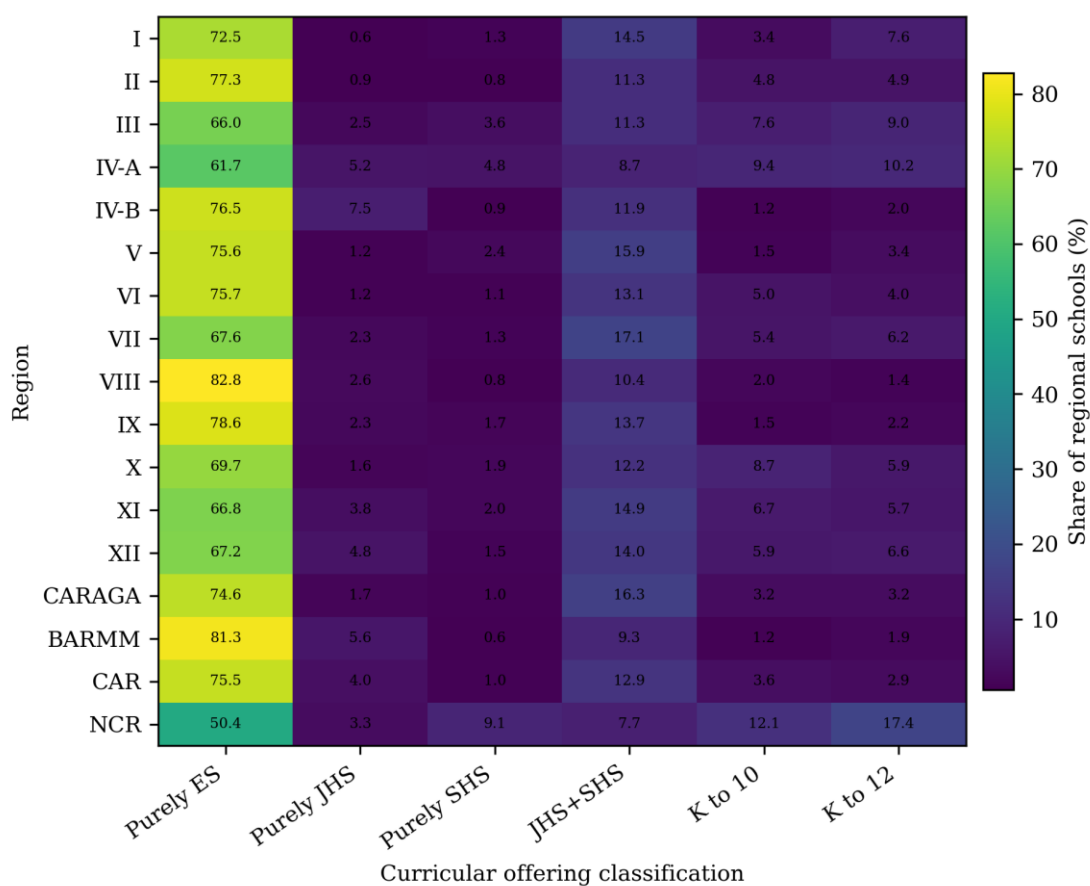


Figure no. 2 describes historical changes in national school counts by classification from school year 2017-2018 to school year 2021-2022. Total schools declined from 61,563 to 60,429, a decrease of 1,134 schools over the period. The decline was concentrated in purely elementary schools, which fell from 45,490 to 43,090, and in purely JHS schools, which fell from 2,158 to 1,755. Purely SHS schools remained comparatively stable, moving from 1,351 to 1,357. In

contrast, JHS with SHS increased from 6,907 to 7,570, K to 10 increased from 2,588 to 3,110, and K to 12 increased from 3,069 to 3,547.

Figure 2. Historical trend in school counts by classification

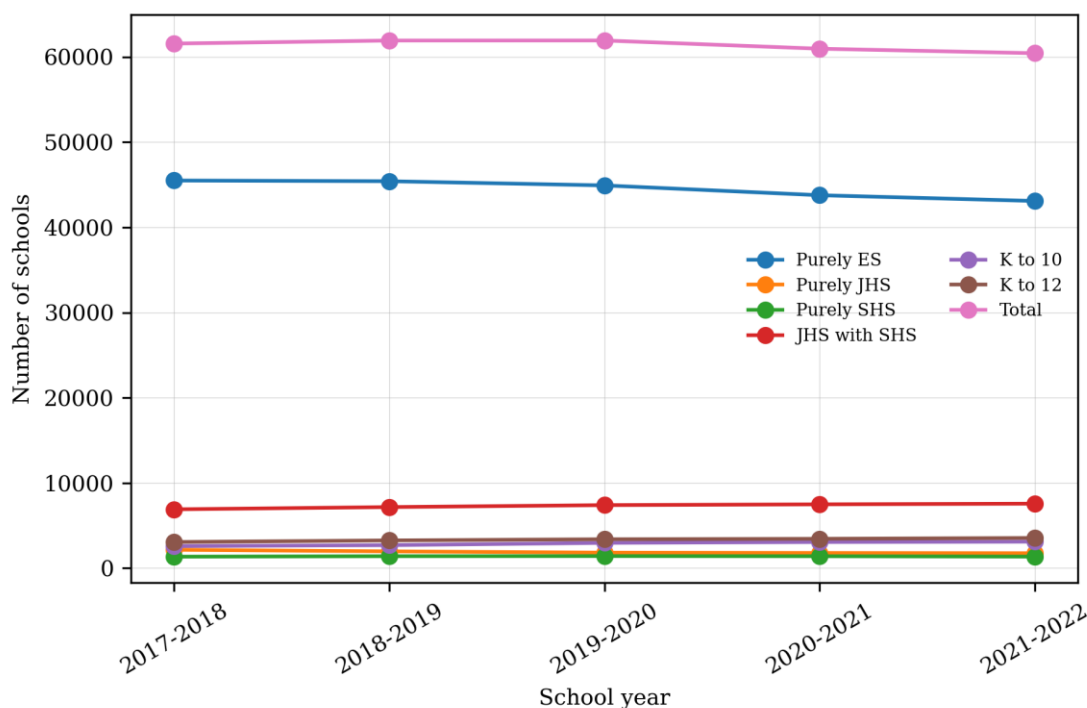
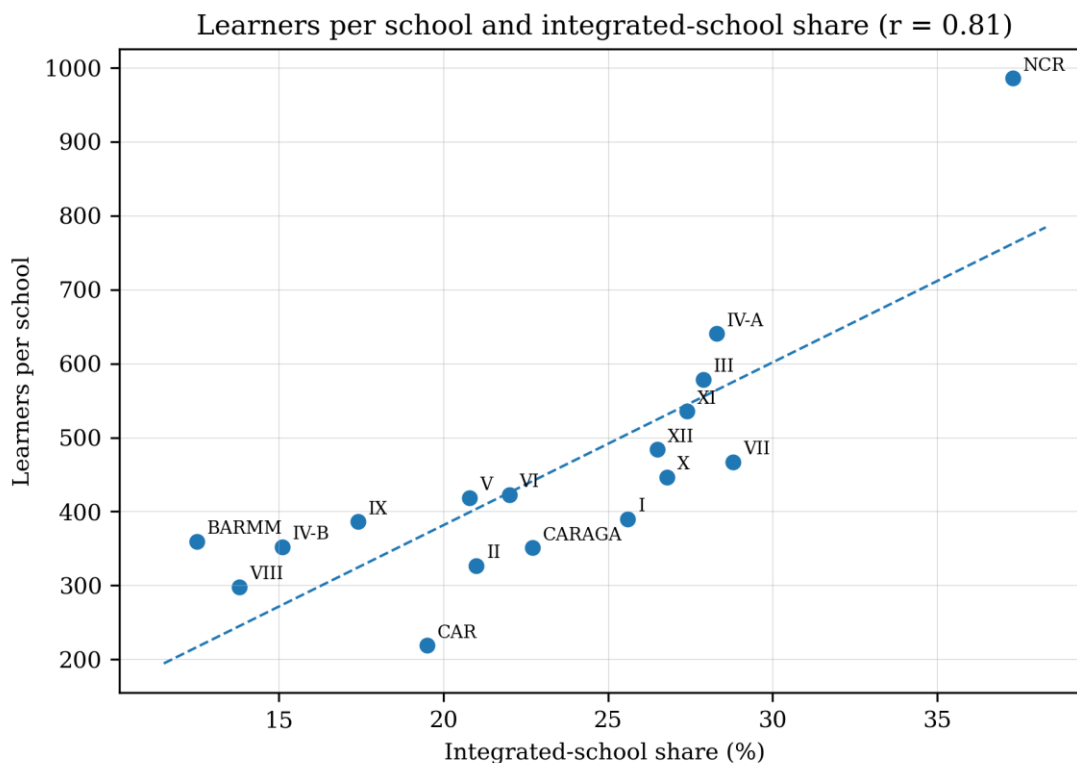


Figure no. 3 relates school network structure to enrollment burden. Learners per school ranged from 219.1 in CAR to 985.5 in the National Capital Region. The highest values were in the National Capital Region, Region IV-A, Region III, Region XI, and Region XII. The scatter plot shows a strong positive association between learners per school and integrated-school share across domestic regions, with Pearson $r = 0.81$. The result was similar using Spearman rank correlation ($\rho = 0.83$). When the National Capital Region was excluded as a high-burden outlier, the Pearson correlation remained positive and substantial ($r = 0.73$). These sensitivity checks support the descriptive pattern while avoiding a causal interpretation of the association.

Figure 3. Scatter plot of learners per school versus share of integrated school types



Discussion

The findings show that the Philippine basic education school network has a broad elementary base and a smaller but strategically important secondary and integrated layer. This structure is consistent with the access logic of early schooling: younger learners require institutions that are close to households, particularly in geographically dispersed communities (Caillods, 1983; Filmer, 2007; Sakti et al., 2022; Sharma & Patil, 2022). At the same time, the smaller proportion of secondary-serving and integrated institutions signals that transitions into junior high school and senior high school may require institutional movement. In planning terms, the school network supports access through two mechanisms: broad dispersal of elementary schools and selected integration of grade levels in institutions that serve older learners.

The regional results demonstrate why national totals alone are insufficient for educational-quality planning. A national share of 71.3% purely elementary schools conceals sharp regional differences. Region VIII and BARM have more than four-fifths of their



schools in purely elementary configurations, while the National Capital Region has only about half. These contrasts suggest different planning problems. Regions with very high purely elementary dependence may need careful attention to transition pathways, secondary school placement, learner travel, and continuity from Grade 6 to Grade 7 and from Grade 10 to Grade 11. Regions with high integrated shares may face different challenges related to school size, institutional workload, facility adequacy, and learner density.

The historical trend is also important. The total number of schools declined modestly, while JHS with SHS, K to 10, and K to 12 configurations increased. This pattern does not by itself establish consolidation, merger, or closure dynamics, but it does indicate a gradual rebalancing of the network toward more integrated grade offerings. The international literature on school consolidation and scale cautions that such changes can have both benefits and risks. Larger or more integrated schools may support broader curriculum offerings and more continuous grade pathways, but they may also increase institutional complexity or travel burdens if local access is reduced (Andrews et al., 2002; Bard et al., 2006; Beuchert et al., 2018; Duncombe & Yinger, 2007; Eacott & Freeborn, 2020; Howley et al., 2011; Monk, 1987). For the Philippines, the policy value of the present analysis is that it identifies where monitoring should be region-specific rather than uniform.

The relationship between learners per school and integrated-school share further suggests that integration is partly connected with enrollment pressure. Regions with larger learner loads per institution, especially the National Capital Region, Region IV-A, and Region III, had relatively high integrated-school shares. This association does not mean that integration causes high learners per school. It indicates that dense or high-demand regions tend to organize a larger share of their school network through institutions carrying more than one grade band. In metropolitan and high-growth regions, such configurations may improve grade-level continuity within a constrained land and facility environment. They may also intensify demands on school leadership, classroom allocation, laboratories, specialized senior high school facilities, and student services.

The results also clarify why curricular-offering classifications should not be read as direct indicators of learning quality. The dataset does not include learning outcomes, dropout, transition rates, household distance to school, teacher deployment, infrastructure adequacy, or



senior high school strand availability. For this reason, the analysis treats curricular offerings as structural access indicators rather than as measures of school effectiveness. This distinction strengthens the interpretation of the results: the findings show how educational opportunities are institutionally organized across regions, while learning quality and progression outcomes require additional datasets.

The findings align with recent Philippine and international policy concerns about moving from access expansion to quality improvement. The K to 12 system requires continuity across educational stages, but continuity is implemented through regionally diverse institutional structures (Department of Education, 2019, 2024; Republic Act No. 10533, 2013). Recent Philippine assessments identify persistent challenges in learning outcomes, infrastructure, resource allocation, and education governance (Department of Education, 2023; EDCOM II, 2024, 2026; World Bank, 2024, 2025). International reports also emphasize learning recovery, leadership, system management, and equitable conditions of schooling after major disruptions (OECD, 2025; UNESCO, 2024; UNICEF et al., 2022; World Bank, 2022). The present study adds a structural indicator to these discussions by showing how grade offerings are distributed across the school network.

From an educational-quality perspective, curricular-offering classification can be used as an early planning signal. A region with high purely elementary dependence should examine whether junior high school and senior high school access are geographically sufficient and whether learners face transition barriers. A region with high K to 12 or K to 10 shares should examine whether integrated schools have adequate facilities, staffing, and leadership capacity to serve multiple grade levels. A region with high learners per school should examine whether enrollment burden is distributed fairly and whether large institutions have sufficient resources to maintain quality. These are not competing priorities. They are region-specific expressions of the broader goal of inclusive and equitable quality education.

Conclusions

The Philippine basic education school network in school year 2021-2022 was dominated by purely elementary schools, but regional patterns revealed meaningful differences in the balance between separated and integrated grade offerings. Purely elementary schools accounted for 71.3% of the national total, while JHS with SHS, K to 10, and K to 12 schools formed the



main integrated layer of the system. Region VIII and BARMM showed the strongest dependence on purely elementary schools, while the National Capital Region showed the highest integrated-school share and the greatest learners-per-school burden. Historical data from school year 2017-2018 to school year 2021-2022 showed a modest decline in total schools and a gradual increase in configurations that serve multiple grade bands.

The study indicates that curricular-offering classifications are useful for educational-quality planning because they reveal how grade-level access is organized across regions. They help identify where learners may experience more separated transition pathways and where schools may carry heavier integrated-service demands. Planning for basic education delivery should therefore consider not only the number of schools but also the mix of grade offerings, the location of secondary-serving institutions, the capacity of integrated schools, and the enrollment burden placed on each region's school network.

Limitations of the study and proposals for improvement

The study is descriptive and uses aggregated regional data. It does not measure travel distance, school-level enrollment, facility capacity, classroom utilization, teacher deployment, learning outcomes, school performance, dropout, transition, household location, or specific senior high school curriculum offerings. It also does not determine whether historical changes resulted from openings, closures, reclassification, school conversion, or data-reporting changes. Regional aggregation can hide inequalities within provinces, cities, municipalities, islands, or rural communities.

The Pearson correlation between learners per school and integrated-school share should be interpreted as a descriptive association rather than a causal estimate. Future research can extend the analysis using geocoded school locations, school-level enrollment, facility indicators, transport accessibility, teacher deployment, senior high school strand availability, and learner progression data. Comparative work across multiple school years can also examine whether shifts toward integrated configurations improve grade-level continuity without increasing access barriers for learners in remote communities.



Data availability

The data used in this study are publicly available through the DepEd Data Bits dataset released by the Department of Education through the Philippine Open Data Portal. The dataset is listed as DepEd Data Bits, ID: plimfvv8-51m1-75rj-tzrw-2zbf8xj96las.

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