PEDAGOGIKA
Volume 17 (Nomor 02) 2026
HaL. 232-246

Literacy Practices and Integration of Library Technology in Elementary Schools and Madrasah Ibtidaiyah in Gorontalo

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ABSTRAK

Perpustakaan sekolah mendukung pengembangan praktik literasi melalui penyediaan bahan bacaan, kegiatan membaca, dan keterlibatan guru. Namun, praktik literasi dan digitalisasi layanan perpustakaan dapat menunjukkan profil yang berbeda. Penelitian ini bertujuan mendeskripsikan praktik literasi dan integrasi teknologi perpustakaan serta membandingkan profilnya pada sepuluh satuan pendidikan dasar di Gorontalo. Penelitian menggunakan desain multikasus komparatif dengan analisis sekunder kuantitatif dan kualitatif terhadap skor observasi terstruktur dan dokumentasi wawancara dalam lima laporan kelompok, yang mencakup enam sekolah negeri dan empat sekolah atau madrasah swasta berbasis Islam. Analisis difokuskan pada empat indikator kegiatan literasi dan empat indikator integrasi teknologi. Data kuantitatif dianalisis secara deskriptif, sedangkan dokumentasi wawancara ditelaah secara tematik dan dibandingkan dengan catatan observasi. Berdasarkan skor yang tercatat, rata-rata kegiatan literasi mencapai 14,10 dari 16, sedangkan integrasi teknologi mencapai 5,30 dari 16. Dokumentasi wawancara menggambarkan kegiatan membaca terjadwal, keterlibatan guru, dan pemanfaatan ruang baca alternatif, disertai keterbatasan perangkat, tenaga pengelola, serta keberlanjutan layanan digital. Beberapa keterangan wawancara tidak sepenuhnya konsisten dengan skor observasi. Temuan menggambarkan profil kegiatan literasi dan integrasi teknologi yang berbeda pada kasus yang diteliti. Interpretasinya dibatasi oleh jumlah kasus, keterbatasan rubrik, ketidaksesuaian sebagian dokumentasi, dan karakteristik kelompok yang tidak sebanding. Pengembangan perpustakaan perlu mempertimbangkan praktik literasi, kapasitas pengelolaan, dan kebutuhan masing-masing institusi.

Kata Kunci: Budaya Literasi; Digitalisasi Perpustakaan; Perpustakaan Sekolah; Sekolah Dasar; Madrasah Ibtidaiyah.

ABSTRACT

School libraries support literacy practices through reading materials, reading activities, and teacher involvement. However, literacy practices and library digitalization may exhibit different profiles. This study describes literacy practices and library technology integration and compares their profiles across ten primary education institutions in Gorontalo. A comparative multiple-case study integrating quantitative and qualitative secondary data examined structured observation scores and documented interview accounts in five group reports covering six public elementary schools and four private Islamic schools or madrasas. The analysis focused on four literacy activity indicators and four technology integration indicators. Quantitative data were analyzed descriptively, while interview documentation was examined thematically and compared with observation records. Based on the recorded scores, mean literacy activities reached 14.10 out of 16, whereas technology integration reached 5.30 out of 16. Interview documentation described scheduled reading, teacher involvement, and alternative reading spaces alongside constraints involving equipment, staffing, and the continuity of digital services. Some interview accounts were inconsistent with observation scores. The findings describe contrasting profiles of literacy activities and technology integration within the cases examined.

Interpretation is limited by the number of cases, scoring rubric limitations, inconsistencies in parts of the documentation, and differences in group composition. Library development should consider existing literacy practices, management capacity, and institution-specific needs.

Keywords: *Literacy Practices; Technology Integration; School Libraries; Elementary Schools; Madrasas.*

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INTRODUCTION

School libraries provide an institutional setting in which access to reading materials can be connected with reading opportunities, teacher support, and everyday learning activities. Their contribution to literacy involves more than the presence of a room or collection. In a study involving teacher librarians from 30 Western Australian schools, Merga and Mason (2019) identified school leadership and other enabling conditions as relevant to a supportive reading culture. Their findings highlight the importance of examining how reading is supported through school practices rather than assessing library provision solely through physical resources.

In Indonesia, Gerakan Literasi Sekolah provides a national educational context for examining these practices. The elementary school implementation guide describes literacy development as a school-wide effort involving students, teachers, parents, and the wider community (Setiawan et al., 2019). Kartikasari and Nuryasana (2022) also examine the movement through a review of its implementation in Indonesian elementary schools. In this study, routine programs, library use, teacher involvement, and reading activities outside the main library room represent selected institutional practices rather than a comprehensive assessment of literacy culture or reading achievement.

The national assessment context also distinguishes literacy attainment from institutional activity. An official Ministry report states that the proportion of students reaching minimum literacy competence increased from 59.49% in 2022 to 70.03% in 2024, with uneven achievement across districts (Direktorat Guru Pendidikan Dasar, 2025). These are national contextual figures, not scores for the ten institutions in this study. They do not establish a relationship between library provision and achievement in the present cases.

Library development also has an institutional basis. Regulation Number 4 of 2024 establishes Indonesian national standards for school and madrasa libraries, including elementary schools and madrasah ibtidaiyah. The standards encompass collections, facilities,

services, personnel, administration, and management, while considering information and communication technology and curriculum integration (Perpustakaan Nasional Republik Indonesia, 2024). Technology can therefore be examined alongside the organizational and service conditions in which it is used. The regulation provides context for the present interpretation; the observation instrument is not presented as a comprehensive compliance assessment.

Research on digital school libraries in Indonesia identifies practical constraints relevant to this distinction. Devi et al. (2024), in a systematic review of nine selected articles, reported limitations involving budgets, competent personnel, infrastructure, and digital library networking. Their review addressed implementation and its obstacles. It provides a basis for investigating whether available technologies are incorporated into everyday services rather than treating equipment procurement as sufficient evidence of operational digitalization.

Automation research further specifies the operational functions involved. Fani and Rukmana (2022) reviewed eight studies of SLiMS-based collection processing, with much of their reviewed work concerning university and public libraries. In Indonesian elementary education, Azhari and Ramadan (2022) examined library visits as an indicator of reading interest. These studies address different units and constructs: collection processing, library use, and reading interest should not be treated as interchangeable outcomes.

Library digitalization should also be distinguished from the digital divide. Van Deursen and van Dijk (2019) differentiate physical access from material conditions such as device diversity and the continuing resources needed to maintain access. In Ghanaian basic schools, Quaicoe and Pata (2020) examined teachers' digital literacy and digital activities, illustrating dimensions beyond equipment availability. Van de Werfhorst et al. (2022) likewise examined digital readiness at student and school levels in the context of online education. These studies inform conceptual distinctions; their populations and settings differ from the school library cases examined here.

The present dataset does not comprehensively measure access inequalities, digital skills, or benefits obtained from technology. It records digital catalogs, computers or laptops, digital learning resources, and technology use for literacy activities. Library digitalization is therefore used to describe this restricted indicator set. The literacy domain likewise records activities and participation arrangements rather than a comprehensive measure of literacy culture.

A related Indonesian study already examines digital and physical literacy provision together. Sa'adiah et al. (2025) studied SLiMS automation alongside reading spaces at SMPN 15 Mataram. Consequently, the present contribution is not the first joint consideration of technology and literacy. It is a descriptive comparison across ten primary-level institutions, combining recorded activity and technology profiles with accounts of operational constraints and discrepant evidence. The question is how these profiles coexist and vary across the documented cases, not whether digitalization causes literacy development. Loh's (2016) socio-spatial analysis of school libraries and Merga's (2020) discussion of barriers to their educational role also support attention to space, services, and personnel without establishing effects in the present sample.

This study addresses the question through secondary analysis of observations and documented interview accounts from ten primary education institutions in Gorontalo. It aims to describe the two domains, compare their profiles across cases and institutional groups, and examine accounts that contextualize the recorded scores. Public or private status is treated as contextual information because the groups also differ in religious orientation and institutional type. The intended contribution is a contextual account of literacy practices, technological provision, and operational constraints within the same cases. Cross-classification is an exploratory descriptive tool, rather than a formal configurational analysis or a basis for causal inference.

METHOD

Design and source materials

This study used a comparative multiple-case design integrating quantitative and qualitative secondary data. Each school or madrasa was bounded as an institutional case. Observation scores provided descriptive profiles, while documented interview accounts and associated forms provided contextual and discrepant evidence within and across cases. Integration occurred by comparing scores and accounts for the same institution rather than by combining two unrelated datasets. The design draws on the integration of case study and mixed methods discussed by Guetterman and Fetters (2018), while secondary analysis and document appraisal are informed by Johnston (2014) and Bowen (2009). It is a retrospective analysis and does not imply that the original student fieldwork was prospectively designed as a fully specified mixed-methods study.

The report-to-case mapping was: Group 1, SDN 14 Kota Barat and MIT Al-Ishlah; Group 2, SDN 90 Sipatana and SDN 3 Tapa; Group 3, SD Islam Al-Hijrah and SDN 17

Limboto; Group 4, SDN 11 Limboto and SDIT Lukman Hakim; and Group 5, SDN 4 Bulango Selatan and MI Al-Hidayah. Interview documentation included accounts attributed to principals or their representatives, teachers, library managers, and students. Coverage and reporting detail varied by case. These role categories were not assumed to represent separate unique individuals in every institution.

The five reports are designated R1–R5 in the evidence register in Appendix B. Their covers identify student compilation teams of five, five, five, six, and five members, respectively. These roster sizes describe report contributors, not verified numbers of independent raters. Some scanned observation forms name a particular observer or a group; no paired ratings establish inter-observer reliability. R2 forms record 6 May 2026 for SDN 90 Sipatana and 4 May 2026 for SDN 3 Tapa. The MIT Al-Ishlah form in R1 records 8 May 2026. R3 reports activities on 6–7 May 2026, while R5 reports 4 and 7 May 2026. Date coverage and attribution remain incomplete for the entire dataset.

The scanned R5 interview instrument contains five common questions about current management, frequency of student use, management obstacles, technology use, and development needs (Appendix C). The R5 attachments document three named interview records for SDN 4 Bulango Selatan and four for MI Al-Hidayah; the first set includes a combined teacher/library-manager role and an ambiguously checked role box. These are minimum documented records, not a verified sample total or an assumption of one participant per role across all schools.

Cases and comparative scope

The documentary corpus comprised all five reports and all ten institutional records supplied for this secondary analysis: six public elementary schools and four private Islamic primary schools or madrasas in Gorontalo City, Gorontalo Regency, and Bone Bolango Regency. Inclusion required an identifiable institution and recorded scores for the eight focal indicators; all ten records met these documentary conditions. No institution in this supplied corpus was excluded. These are criteria for the present secondary analysis, not a reconstruction of the original fieldwork sampling rationale. The corpus is bounded and non-probabilistic. All private cases were Islamic schools or madrasas and all public cases were public elementary schools, so status, religious orientation, and administrative arrangements could not be separated analytically.

Indicators and scoring

The original observation framework contained five domains with four indicators each: facilities and spatial arrangements, collections and learning resources, library management, literacy activities, and technology integration. The present analysis focused on literacy and technology; other domains informed case context. Appendix A lists the eight focal indicators and recorded scores.

Each indicator was scored from 1 to 4. The common descriptors were 1, unavailable or very poor; 2, available but not optimal; 3, reasonably good; and 4, very good or optimal. Four-item domain totals ranged from 4 to 16. Domain means were obtained by dividing totals by four. The materials provided indicator labels, general descriptors, and case-specific notes, but did not establish a complete indicator-specific scoring manual or inter-observer reliability. The scores were treated as ordered descriptive assessments. Means were retained to summarize the source data, with medians and ranges provided to support interpretation. In this secondary study, the values are analyzed as recorded documentary assessments, not independently verified ratings of current school performance.

Literacy indicators represented activities and involvement, not student literacy attainment. Technology indicators represented documented resources and uses, not a comprehensive measure of digital competence or digital inequality. Equal numerical ranges did not demonstrate equivalence between domains. Their totals were interpreted separately, and no difference score was used as a standardized measure of a digital divide.

Quantitative analysis

Indicator-level values were summed and checked against domain and school totals. Analysis used means, medians, ranges, and public/private group summaries without inferential tests. For exploratory cross-classification, domain means of at least 2.50 were labeled relatively high and means below 2.50 relatively low. This midpoint was an analytical convention rather than a validated standard. The four possible profiles were high literacy–high technology, high literacy–low technology, low literacy–high technology, and low literacy–low technology. The compiled numerical dataset was retained following confirmation by the responsible author during revision. Differences between scores and interview accounts were reported and their interpretation restricted. No score was corrected merely to match a preferred account, and uncertain availability or service operation was not inferred from a high aggregate total.

Threshold sensitivity was examined at 2.25 and 2.75. Selected group means were also recalculated after temporarily omitting one influential case to show their dependence on

individual institutions. These were descriptive sensitivity checks, not grounds for deleting cases. All ten institutions remained in the primary analysis. Temporal or causal relationships were not estimated.

Qualitative document analysis and comparison

The qualitative material comprised report summaries and passages presented as attributed interview quotations. It was treated as documented interview material, not as complete independently verified transcripts. Relevant passages were examined by institution and reported informant role, distinguishing report authors' summaries from direct quotations. The initial categories were library management, staffing, user activities, literacy support, collection-related constraints, digital readiness, institutional factors, and development priorities.

Comparison of relevant passages supported four descriptive themes: literacy routines and teacher involvement; equipment availability and operational use; staffing and continuity of digital services; and context-specific development needs. Passages were compared with observation records for agreement, complementary detail, and contradiction. Divergent accounts were retained. This retrospective comparison of sources did not establish that a formal triangulation procedure had been implemented during the original fieldwork. No claims of coding saturation, independent double coding, or participant validation were made. Quotations reproduced in English were translated from Indonesian passages in the reports, with speaker roles retained and personal names omitted.

Ethical reporting and participant information

No additional participant contact was undertaken for this secondary analysis. Personal names were omitted from quotations and publicly presented source registers. R5 includes institutional letters requesting observation at SDN 4 Bulango Selatan, dated 30 April 2026, and MIS Al-Hidayah, dated 6 May 2026. These are requests for observation, not evidence of approval by the schools, ethics committee review, parental permission, child assent, or permission for publication and secondary reuse. Such permissions are not inferred from the existence of photographs, named forms, or an administrative request. The assembled materials do not establish the complete consent and secondary-use arrangements; no approval, consent, or exemption is asserted. Institution names remain potentially identifying case labels.

RESULTS AND DISCUSSION

Result

Recorded domain profiles

Literacy totals ranged from 8 to 16, with a mean of 14.10 and a median of 14.50. Technology totals ranged from 4 to 10, with a mean of 5.30 and a median of 5.00. Four institutions received the maximum literacy total of 16, and four received the minimum technology total of 4. These endpoint concentrations limited differentiation within the domains. They did not establish universal student participation or the complete absence of all technology-related activity.

Table 1. Recorded domain scores by institution

Education Unit	Status	Literacy total	Literacy mean	Technology total	Technology mean
SDN 4 Bulango Selatan	State	8	2.00	5	1.25
SDN 14 West City	State	13	3.25	7	1.75
SDN 17 Limboto	State	16	4.00	4	1.00
SDN 11 Limboto	State	16	4.00	4	1.00
SDN 90 Sipatana	State	15	3.75	5	1.25
SDN 3 Tapa	State	13	3.25	5	1.25
MI Al-Hidayah	Private	14	3.50	4	1.00
MIT Al-Ishlah	Private	16	4.00	10	2.50
SD Islam Al-Hijrah	Private	16	4.00	5	1.25
SDIT Lukman Hakim	Private	14	3.50	4	1.00

Note. Totals range from 4 to 16; means range from 1.00 to 4.00. Scores reproduce the consolidated dataset. Inconsistencies with interview documentation are reported below; values were not altered without a documented basis.

Table 2. Summary of Public and Private Comparison

Groups	n	Literacy mean total	Literacy median	Technology mean total	Technology median	Literacy mean total
Negeri	6	13.50	14.00	5.00	5.00	13.50
Private	4	15.00	15.00	5.75	4.50	15.00
Overall	10	14.10	14.50	5.30	5.00	14.10

The private group had higher recorded means in both domains, but its technology median was lower. Temporarily omitting SDN 4 Bulango Selatan raised the public literacy mean from 13.50 to 14.60. Temporarily omitting MIT Al-Ishlah reduced the private technology mean from 5.75 to 4.33. Thus, individual cases materially influenced the comparison. These observations did not establish a consistent advantage associated with public or private status.

Table 3. Sensitivity of exploratory profiles to the threshold

Threshold	High L / high T	High L / low T	Low L / high T	Low L / low T
≥2.25	1	8	0	1
≥2.50	1	8	0	1
≥2.75	0	9	0	1

Note. L denotes the literacy domain and T the technology domain. The threshold is applied to each domain mean. Profile counts are conditional on the recorded scores.

High literacy–low technology was the most frequent profile at all three thresholds. MIT Al-Ishlah changed from high in both domains to high literacy–low technology at 2.75. Its classification was therefore threshold-dependent. At 2.50, only one institution was low in literacy and only one was high in technology. The empty low literacy–high technology cell did not provide strong evidence of a relationship or a developmental sequence.

Literacy routines and teacher involvement

Documented accounts described organized opportunities to use library books. At SDN 11 Limboto, a passage attributed to the library manager stated: "The literacy schedule runs every Tuesday sometimes teachers tell stories using library books, and sometimes students tell stories in front of the class" (Group 4 report, translated excerpt). At SDIT Lukman Hakim, accounts described teachers directing students to library materials for tasks involving stories and main ideas. At SD Islam Al-Hijrah, the principal's account described scheduled visits and reading corners as responses to limited library space.

These accounts support the presence of literacy activities but do not establish their reach across all students. At SDN 11 Limboto, another reported statement indicated that fewer than half of students actively visited the library, despite a maximum activity score. The records did not establish whether this difference concerned independent visits, scheduled participation, or another distinction. At MI Al-Hidayah, reported visit frequencies also differed among informants. Such variation was retained rather than combined into a claim of complete agreement.

Equipment availability and operational use

At SDN 3 Tapa, the report attributed the following statement to the library manager: "There is a computer, but it is not used … library management is still carried out in the usual way" (Group 2 report, translated excerpt). Its observation table, however, recorded the computer/laptop indicator at the minimum and described equipment as unavailable. Both accounts indicated limited integration into services, but they did not give a consistent account of availability.

At SDN 11 Limboto, the report distinguished school-owned devices from the absence of a dedicated library computer. This distinction may help interpret the equipment score, although the general indicator label did not explicitly define ownership, location, or operational readiness. At SDN 90 Sipatana, accounts described manual borrowing records and occasional digital information use. At SDN 4 Bulango Selatan, interview summaries described smartboard use and plans for barcode-based reading access. These observations distinguish equipment, occasional activities, operational library systems, and future plans, while also exposing limitations in the scoring framework.

Staffing and continuity of digital services

MIT Al-Ishlah's accounts described digital services that had been used and then discontinued. A passage attributed to the principal stated: "We previously implemented a digital system, including application-based book searches and barcode scanning for borrowing … because of limited staffing, we have now returned to a manual system" (Group 1 report, translated excerpt). Teacher and manager accounts also described discontinued systems and updating requirements. These were retrospective participant accounts, not longitudinal observations by the present analysis.

The same report attributed the statement "There is no computer in the library" to a student, whereas the consolidated observation data assigned the computer/laptop indicator a score of 4. The evidence therefore did not establish a consistent account of current device provision. The institution's high aggregate technology score cannot be equated with verified operation of digital services. At SDIT Lukman Hakim, the report described a change in the manager's assignment, interim responsibilities carried by teachers, and continued manual administration. At MI Al-Hidayah, interview summaries identified qualifications, funding, and collections as management concerns.

Context-specific development needs

SDN 14 Kota Barat's accounts emphasized flood-damaged collections and ongoing recovery. The library manager was quoted as saying: "Many books were damaged, so the collection is still being renewed" (Group 1 report, translated excerpt). At MIT Al-Ishlah, reported priorities included additional staff and repairs to an outdoor reading facility. MI Al-Hidayah's accounts described aging or damaged collections, restricted funding, and needs for management development. SDIT Lukman Hakim's accounts highlighted limited space shared with other functions. Development needs consequently varied across the cases.

The records also contained differences beyond the initial aggregate comparison. For example, SDN 14 Kota Barat's computer/laptop indicator received 4, whereas its interview documentation included descriptions of absent technology provision. Together with the differences at MIT Al-Ishlah and SDN 3 Tapa, this limits the precision with which device availability can be inferred from the recorded scores. Appendix A retains the original indicator values to make these differences traceable.

Table 4 Selected within-case integration of quantitative and qualitative evidence

Case and recorded scores	Documented account	Integrated interpretation
MIT Al-Ishlah L = 16; T = 10	R1 reports discontinued barcode/search systems; a student reports no library computer.	High recorded provision does not verify current operation. Device status remains unresolved.
SDN 3 Tapa L = 13; T = 5	R2 observation gives T2 = 1; manager account describes an unused computer.	Non-integration is supported, but availability is discordant.
SDN 11 Limboto L = 16; T = 4	R4 describes weekly literacy and fewer than half actively visiting.	Scheduled activities are documented; the reach implied by L2 = 4 is uncertain.

Discussion

Interpreting the two domains separately

The central descriptive finding is the coexistence of favorable recorded literacy activity assessments and limited recorded technology integration in most cases. It does not demonstrate that literacy achievement was high, that technology was unnecessary, or that the numerical distance between the domains represents a standardized inequality. The result is more defensibly interpreted as a difference in documented institutional practices, subject to the measurement limitations identified.

Reading routines, teacher participation, and alternative reading spaces are relevant to the supportive conditions discussed by Merga and Mason (2019). The present cases add contextual descriptions of how such activities are reported alongside limited digital services. Their coexistence suggests that evaluation should document literacy opportunities and technological operations separately. The study did not measure social or pedagogical capital and therefore does not establish that either compensated for missing technology.

Operational digitalization and organizational conditions

The distinction between owning devices and using them for services is consistent with the implementation concerns summarized by Devi et al. (2024). In the present material, some

devices were reported as unused, school-owned rather than dedicated to libraries, or associated with systems that no longer operated. These accounts support closer attention to staffing, task allocation, updating, and maintenance. They do not by themselves identify the relative contribution of each factor.

Digital divide research provides useful conceptual boundaries. Van Deursen and van Dijk (2019) show why access involves material conditions beyond a binary ownership measure. Quaicoe and Pata (2020) examine competencies and activities, while van de Werfhorst et al. (2022) consider school-level readiness. The current indicators cover only selected aspects of provision and use. A broader digital inequality assessment would require additional measures of access quality, skills, opportunities, and outcomes. The conceptual relevance of these studies should not be mistaken for equivalence between their measures and the present rubric.

Institutional comparison and descriptive contribution

The public/private comparison is sensitive to individual cases and group composition. The slightly higher private mean does not establish greater effectiveness or institutional superiority. Because religious orientation and administrative arrangements are entangled with status, the observed differences cannot be attributed to public or private governance. Case characteristics offer contextual questions for further investigation rather than tested explanations.

In relation to existing work, the study extends the scale and documentary comparison rather than claiming conceptual priority for joining literacy and digitalization. Unlike the single junior-secondary case described by Sa'adiah et al. (2025), the present analysis compares ten primary-level cases, including schools and madrasas, and examines discrepancies between aggregate scores and reported operations. Its contribution remains descriptive. Cross-classification makes profiles visible, but depends on an unvalidated threshold and partly inconsistent records. Absence of a low literacy–high technology case is insufficient to argue that literacy precedes digitalization; alternative explanations include sampling, endpoint concentrations, scoring criteria, and the small number of cases.

Implications for library development

Development priorities can be informed by the practices and constraints documented within each institution. Where reading activities already operate, possible improvements include clearer borrowing records, manageable digital catalogs, access to suitable digital materials, and defined responsibilities for maintenance. These are proposed options, not interventions whose effectiveness was tested by the study. Where collections or space are

compromised, recovery of basic services may need attention alongside technological development.

Regulation Number 4 of 2024 provides a broader reference for considering collections, personnel, services, facilities, and management together (Perpustakaan Nasional Republik Indonesia, 2024). The present results do not establish compliance with that regulation. They instead suggest that a development assessment should distinguish planned, installed, operational, and discontinued technologies and examine how each supports library activities.

LIMITATIONS

The ten cases are not representative of Gorontalo's primary education institutions. The data provide a cross-sectional documentary account, while references to earlier digital systems are retrospective reports. Causal effects, temporal ordering, and population differences cannot be inferred. Public/private comparisons are confounded by religious orientation, institutional type, and potentially other unmeasured characteristics.

Measurement is also restricted. The domains use different indicators without demonstrated equivalence, complete indicator-specific descriptors, or reported inter-observer reliability. Four maximum literacy totals and four minimum technology totals constrain differentiation. The midpoint threshold is conventional, and one high-technology classification changes under an alternative threshold. Aggregate figures depend on recorded scores that include unresolved inconsistencies concerning devices, service operation, and student activity.

The qualitative evidence combines report summaries, attributed quotations, and selected scanned forms, not a complete verified transcript corpus. Variation in documentation limits comparability, and the source records reviewed do not establish the total number of unique informants, individual raters per case, all visit dates, the original case allocation rationale, or complete consent and secondary-use arrangements. Scanned attachments recover some dates, questions, and participant records, but do not resolve the outstanding fields. Independent coding reliability, saturation, and participant validation cannot be claimed. These limitations preclude inference about student learning gains or treating descriptive profiles as validated institutional performance ratings.

CONCLUSION

The ten institutional records in the analyzed corpus show different documented profiles of literacy practices and library technology integration. Reports describe reading routines, teacher involvement, alternative reading spaces, manual administration, equipment constraints,

and discontinued digital systems. Because some observation scores and interview accounts disagree, these findings characterize the assembled records and reported practices; they do not constitute independently validated ratings of the institutions or evidence of a causal relationship between literacy and digitalization.

Group means and exploratory profiles should be interpreted in light of influential cases, threshold dependence, differences in institutional composition, and inconsistencies between some observation scores and interview accounts. Public or private status cannot be isolated as the explanation for the observed variation. As practical considerations arising from the documented accounts, library development can consider existing reading practices together with collections, staffing, usable technology, and maintenance responsibilities. Future studies should use clearer indicator-specific rubrics, document device location and functionality, establish participant and observer procedures, and include broader and repeated observations before evaluating relationships or developmental sequences.

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