DATA LITERACY LEVEL OF SENIOR HIGH SCHOOL TEACHERS IN SELECTED PRIVATE SCHOOLS IN LAS PIÑAS CITY

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Abstract

This study determined the data literacy level of senior high school (SHS) teachers in seven selected private schools in Las Piñas City during School Year 2025–2026 and proposed a professional development program based on the findings. Using a quantitative-descriptive, correlational, and developmental research design, the study gathered survey responses from all 128 SHS teachers and seven school heads. Two questionnaires assessed teacher profiles and data literacy in data collection, data analysis, and data visualization, interpretation, and representation. Frequency counts, percentages, weighted means, the chi-square test of independence, and the t-test were used. Most teachers (70%) held a bachelor's degree, 70% had 1–10 years of teaching experience, and 68% had not attended literacy-related training in the preceding five years. Teachers rated their overall data literacy as high (overall weighted mean [OWM] = 4.00), whereas school heads rated it as moderate (OWM = 2.84). Significant relationships were reported between literacy level and educational attainment ($\chi^2 = 6.85$, $p = 0.01$), teaching experience ($\chi^2 = 6.20$, $p = 0.01$), and relevant training attendance ($\chi^2 = 7.20$, $p = 0.01$). The difference between teacher and school-head perceptions was significant ($p = 0.00$). The study proposed a three-session, school-based professional development program covering data collection, data analysis, and data visualization, interpretation, and representation. The findings support the recommendation to implement and evaluate the proposed program.

Keywords: data literacy, senior high school teachers, private schools, professional development, data-driven decision-making

1. Introduction

Data literacy has become increasingly important as educational institutions rely on information to support planning, assessment, and decision-making. In education, teachers are expected not only to gather data but also to analyze and interpret it and use the resulting information to guide instructional practices. The thesis frames data literacy as the capacity to interpret data critically, draw meaningful conclusions, recognize patterns, and apply analytical results appropriately. It also notes that teachers' pedagogical beliefs, assessment literacy, and prior experiences influence how they use data in their work (Lee et al., 2024; McDowall et al., 2021).

Within the Philippine context, the Philippine Professional Standards for Teachers, particularly Domain 5 on Assessment and Reporting, expects teachers to use assessment data to improve teaching and learning practices and programs. Data literacy can therefore support teachers in identifying students' learning needs, planning instruction, communicating with stakeholders, and recognizing areas for professional growth.

The study was conducted in response to the need to determine how well SHS teachers in selected private schools in Las Piñas City perceived their ability to collect, analyze, visualize, interpret, and represent data. It also examined how school heads assessed teachers' data literacy and whether literacy level was related to teachers' educational attainment, teaching experience, and participation in literacy-related training. The study's main purpose was to propose a professional development program to enhance teachers' data literacy.

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Specifically, the study sought to: (1) describe the teachers' highest educational attainment, length of teaching experience, and relevant trainings attended during the previous five years; (2) determine teachers' data literacy as perceived by the teachers themselves and their school heads; (3) test the relationship between teacher profile variables and data literacy; (4) determine whether teachers' and school heads' perceptions differed significantly; and (5) propose a professional development program based on the findings.

The study was intended to benefit SHS teachers through opportunities to strengthen data collection, analysis, interpretation, and reporting skills; school heads through information that could guide school-based professional development; and future researchers through further inquiry into teachers' data literacy. The rationale and research gap are presented here only as described in the thesis; no additional external claims have been introduced.

2. Methods

Research Design

The study employed a quantitative-descriptive method to describe teachers' profile and data literacy. It also used a correlational approach to examine relationships between profile variables and literacy level and a comparative test to determine differences between teachers' and school heads' perceptions. A developmental method was used to formulate a proposed professional development program. The study adopted a positivist research paradigm.

Research Locale and Participants

The study was conducted during School Year 2025–2026 in seven selected private schools in Las Piñas City: South East-Asia Institute of Trade and Technology, Inc.; Movers International School, Inc.; Saint Francis of Assisi College; OB Montessori Center; Centro Escolar Las Piñas, Inc.; Don Carlo Cavina School; and Bloomfield Academy. All 128 SHS teachers and all seven school heads in these schools were included; the thesis states that no sampling was done.

Selected private school	SHS teachers	Percentage
South East-Asia Institute of Trade and Technology, Inc.	47	37%
Movers International School, Inc.	12	9%
Saint Francis of Assisi College	19	15%
OB Montessori Center	9	7%
Centro Escolar Las Piñas, Inc.	16	13%
Don Carlo Cavina School	11	8%
Bloomfield Academy	14	11%
Total	128	100%

Research Instruments and Data Collection

Data were collected through two survey questionnaires: one for SHS teachers and another for school heads. The teacher questionnaire included profile information and items assessing data literacy. The school-head questionnaire assessed the same literacy dimensions using items corresponding to the second part of the teacher questionnaire. The literacy items were based on Ramos (2022), as reported in the thesis, and were treated by the researcher as not requiring further validation.

The researcher personally administered the questionnaires and gave participants two weeks to complete them. Permission was secured from school heads before data collection, and informed consent was obtained from teachers and school heads. The thesis states that responses were treated confidentially and used only for the study, in accordance with the Philippine Data Privacy Act.

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Data Analysis

Frequency counts and percentages described teachers' profile. Weighted means summarized perceived data literacy, using the thesis's scale: very low (1.00–1.49), low (1.50–2.49), moderate (2.50–3.49), high (3.50–4.49), and very high (4.50–5.00). The chi-square test of independence examined relationships between profile variables and literacy level. The t-test compared teachers' and school heads' perceptions. The level of significance was set at .05.

The thesis reports chi-square values, p values, and a t-test p value, but does not provide all associated degrees of freedom, effect sizes, or confidence intervals in the reported summary tables. These statistics are therefore not added here.

3. Results

Teacher Profile

Of the 128 SHS teachers, 90 (70%) held a bachelor's degree, 27 (21%) had completed the academic requirements for a master's degree, and 11 (9%) held a master's degree. None had completed doctorate academic requirements or held a doctorate degree.

Profile variable	Category	Frequency	Percentage
Highest educational attainment	Bachelor's degree	90	70%
	Completed master's academic requirements	27	21%
	Master's degree	11	9%
	Doctorate academic requirements / doctorate degree	0	0%
Teaching experience	1–5 years	37	29%
	6–10 years	52	41%
	11–15 years	23	18%
	16–20 years	11	8%
	>20 years	5	4%
Relevant literacy training in past 5 years	None	87	68%
	Not more than three trainings	41	32%
	More than three trainings	0	0%

The largest group had 6–10 years of teaching experience (52; 41%). Taken together, 89 teachers (70%) were in the 1–10-year experience categories. Most respondents (87; 68%) had not attended literacy-related training during the preceding five years; the remaining 41 (32%) had attended not more than three trainings.

Perceived Data Literacy Levels

Teachers rated their data literacy as high across all three assessed areas. School heads rated teachers' literacy as moderate in each area. The combined results are presented in Table 2.

Data literacy area	Teachers' area weighted mean	Interpretation	School heads' area weighted mean	Interpretation
Data collection	3.99	High	2.84	Moderate
Data analysis	4.01	High	2.86	Moderate
Data visualization, interpretation, and representation	3.99	High	2.83	Moderate
Overall	4.00	High	2.84	Moderate

For teachers' self-assessment, data analysis received the highest area weighted mean (4.01), while data collection and data visualization, interpretation, and representation each received 3.99. School heads' ratings

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ranged from 2.83 to 2.86, with data analysis rated 2.86, data collection 2.84, and visualization, interpretation, and representation 2.83. The overall difference between the two groups' ratings was 1.16 points (4.00 versus 2.84); this subtraction is descriptive and is not presented as a separate inferential statistic.

Relationship Between Profile Variables and Data Literacy

The chi-square test of independence indicated statistically significant relationships between each of the three profile variables and teachers' data literacy at the .05 significance level, as reported in Table 3.

Profile variable	p value	Computed χ^2	Critical χ^2	Thesis-reported result
Highest educational attainment	0.01	6.85	5.99	Significant
Length of teaching experience	0.01	6.20	3.84	Significant
Number of relevant trainings attended	0.01	7.20	3.84	Significant

For educational attainment, the computed chi-square value of 6.85 exceeded the critical value of 5.99, with $p = 0.01$. For teaching experience, $\chi^2 = 6.20$ exceeded the critical value of 3.84, with $p = 0.01$. For relevant training attendance, $\chi^2 = 7.20$ exceeded the critical value of 3.84, with $p = 0.01$. The thesis therefore rejected the corresponding null hypotheses and reported significant relationships for all three variables. The reported results establish association, not causation.

Difference Between Teachers' and School Heads' Perceptions

The t-test comparing teachers' and school heads' perceptions yielded a p value of 0.00 at the .05 level of significance. The thesis classified the difference as significant and rejected the null hypothesis that the two groups' perceptions did not differ. The reported summary table does not include a t statistic, degrees of freedom, or confidence interval.

Proposed Professional Development Program

Based on the limited recent training participation and the difference between teachers' and school heads' ratings, the thesis proposed a school-based, three-session professional development program. Each session is designed to last one day. School heads are identified as the program implementers, SHS teachers as the target personnel, and school funds as the funding source. Delivery is intended to be interactive, collaborative, and participatory, with lecture-discussion activities comprising no more than 30% of each session.

Session	Focus	Key content reported in the thesis	Duration
1	Data collection	Selecting search terms and sources; downloading and synthesizing information; evaluating dataset quality; sampling and sample size; ethical considerations; formulating hypotheses.	1 day
2	Data analysis	Selecting and using statistical tools; testing statistical hypotheses; sorting data; labeling variables; choosing suitable analysis methods for different data sources.	1 day
3	Data visualization, interpretation, and representation	Creating tables and graphical representations; presenting information in tables, charts, bars, and graphs; interpreting results; developing findings and conclusions; discussing and reporting results professionally; using data ethically.	1 day

4. Discussion

The results show a consistent difference between teachers' self-assessments and school heads' assessments. Teachers perceived their overall data literacy as high (OWM = 4.00), while school heads assessed it as moderate (OWM = 2.84). This difference appeared in each dimension measured, not only in the overall score. The significant t-test result ($p = 0.00$, as reported in the thesis) supports the conclusion that the two groups'

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perceptions differed. Because the data were perception-based, the findings should be understood as ratings by the respondents rather than as a direct performance test of teachers' data literacy.

The profile findings also indicate a need to strengthen access to relevant professional learning. More than two-thirds of the teachers had not attended literacy-related training during the previous five years. The chi-square results show significant relationships between data literacy and educational attainment, teaching experience, and relevant training attendance. These findings support attention to professional development, although the correlational results do not demonstrate that any one profile characteristic directly caused a particular literacy level.

The three-session program directly addresses the study's three assessed areas: data collection; data analysis; and data visualization, interpretation, and representation. Its interactive and collaborative design is consistent with the thesis's emphasis on practical development rather than relying mainly on lecture-discussion. Implementation and evaluation would be necessary to determine whether the proposed program actually improves teachers' data literacy; the thesis proposes the program but does not report an evaluation of its effectiveness.

The study is limited to 128 SHS teachers and seven school heads from seven selected private schools in Las Piñas City during School Year 2025–2026. The literacy measures are based on survey perceptions. The findings should therefore not automatically be generalized to public schools, other cities, or all SHS teachers. The thesis does not report additional validation statistics, effect sizes, or confidence intervals for the main comparisons and relationships.

Conclusion and Recommendations

The study concluded that the typical respondent was a bachelor's degree holder, had 1–10 years of teaching experience, and had not attended literacy-related training in the previous five years. Teachers rated their data literacy as high, while school heads rated it as moderate. Significant relationships were reported between literacy level and all three profile variables, and a significant difference was found between teacher and school-head perceptions.

Consistent with the thesis, the proposed professional development program should be implemented in the selected private schools and its implementation monitored and evaluated. Similar studies may be conducted by other researchers to examine and validate the findings. As the program has not yet been evaluated in the thesis, its effectiveness should be established through implementation and subsequent assessment rather than assumed.

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Editorial note: This paper was condensed from the uploaded thesis. Numerical values and reported statistical results above follow the thesis. The thesis reports $p = 0.00$ for the t-test; this value is reproduced as reported rather than recalculated or converted. Full journal-style bibliographic details were not supplied for every source in the thesis, so the references above include only sources cited in this condensed paper and are limited to the bibliographic details available in the thesis.

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