

Work Engagement, Technology Adoption Propensity and Student Academic Performance: A Convergent Design

Norberto Jr. O. Pore., Bryan L. Cancio

Department of Education, Holy Cross of Davao College

DOI: <https://doi.org/10.51584/IJRIAS.2026.11060215>

Received: 24 June 2026; Accepted: 29 June 2026; Published: 10 July 2026

ABSTRACT

Academic performance is disconcerting. Using mixed method design, the significance and value of work engagement and technology adoption propensity of school heads on academic outcomes was explored. Data from 336 samples and 6 study participants were analyzed using multiple linear regression and thematic analysis respectively. It was found that while quantitative evidence only partially supports Expectancy-Value Theory by showing no direct effect of work engagement on academic performance, qualitative insights fully substantiate the theory by taking in the role of teachers and the learning environment; conversely, both strands converge in demonstrating that technology-driven leadership directly enhances academic performance. Exploring teacher and learning environment as mediators in school heads' work engagement and technology adoption in shaping academic performance, and qualitative design may help evoke appropriate understanding on these elements are endorsed.

Keywords: Work engagement, technology adoption propensity, student academic performance, convergent design

INTRODUCTION

In this section, the problem and its setting are presented, along with the study's significance, the statement of the problem, the theoretical lens and framework, and the assumptions.

The Problem and Its Setting

Recent assessments indicate a widespread decline in student academic performance in most learning areas (PISA, 2022). Moreover, as shown by Karaca et al. (2023), students consistently perform at low levels. It is concerning that low student performance is more pronounced among students from low socioeconomic backgrounds, further widening existing SES achievement gaps, according to Lam & Zhou (2021).

This recurring phenomenon is observed worldwide and has significant consequences across regions. In Jordan, for instance, low performance in the Programme for International Student Assessment (PISA) highlighted significant gaps in educational outcomes according to Al Ali & Wardat (2024). Additionally, low academic achievement in subjects like math, science, and reading was particularly evident among students from ten Asian countries, as presented by Caglayan-Akay & Oskonbaeva (2024), with Malaysian students standing out as a clear illustration of this trend, reflecting wider trends of poor academic performance across Asia, according to Govindarajoo et al. (2022). Furthermore, East Asian students in U.S. law and business schools demonstrate consistent underperformance, a situation linked to challenges in communication and participation due to cultural differences, rather than issues of academic motivation or language proficiency, as affirmed by Lu et al. (2022).

Meanwhile, in the Philippines, low student performance remains a chronic issue. For instance, Filipino students' performance revealed significant gaps in reading literacy at the individual, class, and school levels according to Sandoval-Hernández et al. (2023). This persistent underperformance underscores the need for evidence-based interventions to improve scientific literacy and overall educational outcomes, as confirmed by Cabural (2024). According to the PISA 2018 results, Filipino students consistently struggle on global science literacy

assessments, ranking second-to-last among 78 participating countries. According to Acido and Navales (2024), Alinsunurin (2021), and Bernardo et al. (2023), the outcome refers to the substantial challenges in science education, calling for targeted reforms to address these educational shortcomings.

Despite the need for students to acquire essential skills to succeed academically, findings indicate consistent underperformance across various regions. Despite these issues, there remains a gap in research regarding the specific interventions needed to address, particularly in developing evidence-based strategies to improve academic performance. Thus, the researcher urgently conducted this study to address a timely gap in understanding how work engagement and technology adoption propensity can influence academic performance.

Significance of the Study

This study is significant as it advances efforts toward SDG 4: Quality Education, which calls for inclusive, equitable, and transformative learning environments that enhance academic achievement and learner readiness. This study informs institutional initiatives aimed at improving learning conditions, digital competencies, and student support services, as core requirements of SDG 4's aim to ensure effective learning outcomes for all, by identifying work engagement and technology adoption propensity as key contributors to student academic performance. Likewise, the findings directly support the HCDC VMG, particularly its commitment to fostering holistic, competent, and technologically adaptive learners who can actively participate in a rapidly evolving educational landscape. Through empirical evidence, the study strengthens the institution's pursuit of academic excellence, responsive pedagogy, and learner-centred formation aligned with its mission to produce socially engaged and future-ready graduates.

Statement of the Problem

This study determined the influence of work engagement and technology adoption propensity on general student academic performance as perceived by selected teachers. Particularly, this study pursued the following objectives and sought answers to the following questions:

1. To determine the levels of work engagement in terms of vigour, dedication and absorption; technology adoption propensity in terms of optimism, proficiency, dependence and vulnerability; and general student academic performance in terms of student group performance.
2. To determine the significance of the correlation between work engagement and technology adoption propensity, and the general student academic performance.
3. To ascertain the significance of the individual and collective influence of work engagement and technology adoption propensity on general student academic performance.
4. What are the perceptions of the teachers on the value of the school head's work engagement on the general student academic performance?
5. What are teachers' perceptions of the value of the school head's technology adoption propensity on the general student academic performance?

Hypotheses:

The study tested the following hypotheses at the 0.05 level of significance:

Ho1: Work engagement and technology adoption propensity do not correlate with general student academic performance

Ho2: Work engagement does not significantly influence general student academic performance

Ho3: Technology adoption propensity does not significantly influence general student academic performance

Ho4: Work engagement and technology adoption propensity combined do not significantly influence general student academic performance

Assumptions

In conducting this study, the researcher assumed that the work engagement and technology adoption propensity of school heads, as described by the teachers, matter for general student academic performance. Likewise, the value of these characteristics of the school head is not solely a source of the general student academic performance. Other educational aspects, such as teaching performance and community support, may boost them. Thereby, modifying the Expectancy – Value theory. Finally, I assume that the quantitative and qualitative outcomes are consistent with each other.

Theoretical Lens

The study is anchored in the expectancy value theory by John William Atkinson in the 1950s. This framework posits that achievement-related choices are motivated by individuals' expectations for success and the subjective value they assign to tasks, including components such as attainment value, intrinsic value, utility value, and cost. This theory operationalised how competence-related beliefs and task values influence motivation and achievement outcomes.

In this study, competence-related beliefs are operationalised as work engagement, as indicated by vigour, dedication and absorption as proposed by Mugizi et al. (2020), while task values are represented by technology adoption propensity, as indicated by optimism, proficiency, dependence, and vulnerability as suggested by Ratchford & Bamhart (2011). The researcher assessed how these constructs relate to achievement outcomes. In this study, achievement outcomes are defined as students' general academic performance, based on their class performance as perceived by the subject teacher, according to Jabir & Farooq (2022).

Conceptual Framework

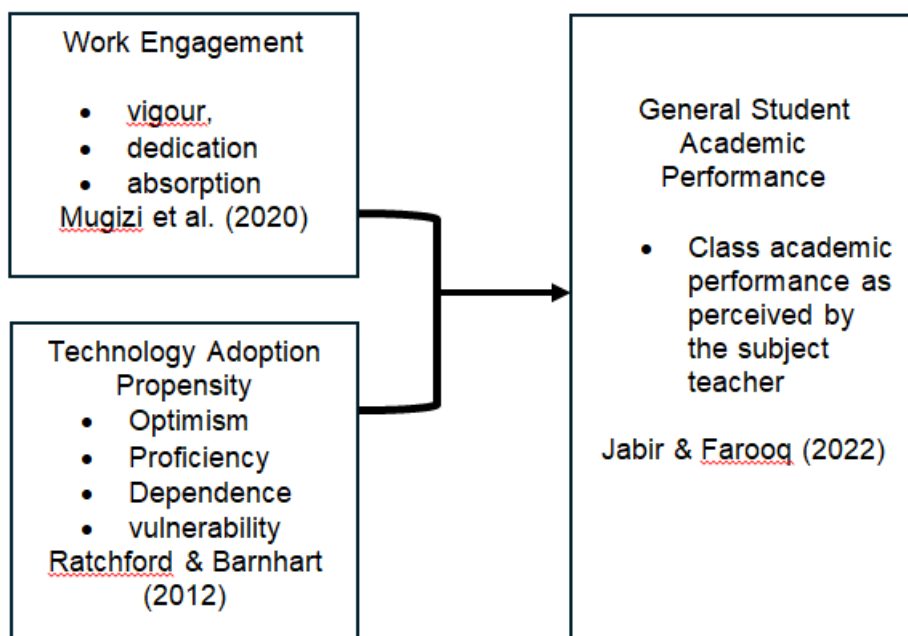


Figure 1. Conceptual Framework of the Study

METHODS

In this chapter, the author systematically presented the research design, study locale, sample and sampling techniques, data gathering techniques, data analysis techniques, and ethical considerations to provide a comprehensive overview of the study framework.

Research Design

This study employed a convergent mixed-methods research design. This study used this design to obtain and assess data from both qualitative and quantitative sources as proposed by Creswell (2018). Further, a mixed-method research design is employed to answer the research questions by collecting quantitative and qualitative data concurrently but separately, with the results kept independent of one another as stated by Doyle et al. (2016). Therefore, this research utilised this design to study a problem across its entire dimension through two parallel phases as suggested by Almeida (2018).

The quantitative phase employed a diagnostic research design. This research design focuses on diagnosing the causes of a problem instead of simply describing or predicting outcomes. By uncovering the underlying causes of an issue, researchers and organisations can develop targeted interventions. Additionally, this study used this approach to analyse learning difficulties, curriculum gaps, or institutional challenges (Velu & G.S.K., 2023).

The qualitative phase employed a qualitative descriptive approach. Qualitative descriptive research design is a flexible approach that focuses on providing straightforward, detailed descriptions of phenomena without heavy theoretical interpretation. It is often used in the social sciences and education to capture participants' perceptions in their own words. Its advantages include accessibility, clarity, and practical relevance, making it particularly useful for applied fields (Ayton, D., 2023).

Locale of the Study

The researcher conducted this study across all secondary schools in Davao Occidental. Since its creation as a regular province, the Department of Education, Division of Davao Occidental, was separated from its parent division, the Division of Davao del Sur. It was formally launched on March 27, 2017, by RO XI. The five municipalities: Sta. Maria, Malita, Don Marcelino, Jose Abad Santos and Sarangani are the seats of the 10 Schools District Offices: Sta. Maria East and West Districts, Malita North, South, East and West Districts, Don Marcelino District, Jose Abad Santos 1 and 2 Districts, and Sarangani District. These comprised the SDO, as these municipalities have been achieving the Seal of Good Governance. Consequently, its newfangled DepEd Division Office is also driving and promoting promising governance. With its birth, the three functional divisions in the SDO are now operational and gearing up for full operation. Individually, each component performs a different function, but together they work for the common good to provide the best service to their clientele.

Sample and Sampling Technique

The respondents for the quantitative part were 336 teachers from different secondary schools; they must have at least one year of teaching experience, be teaching Grades 7-12, and serve within the division in the school year 2024 - 2025. The study participants for the qualitative part were 6 teachers from various schools.

Both the samples for the quantitative part and the study participants for the qualitative part were selected using convenience sampling, a non-random method in which participants are selected based on accessibility and availability. This approach is practical for the area, given the geographic challenges, such as hard-to-reach mountainous and coastal locations, where limited transportation makes random sampling difficult. This sample size corresponds to a 5% margin of error and a 95% confidence level, ensuring that the results represent the population reliably.

At the same time, the researcher utilised purposive sampling to select 6 participants for the qualitative phase, all of whom took part in face-to-face in-depth interviews (IDI). According to Torres (2024), this method is appropriate when the researcher has a clear idea of the characteristics or attributes they are interested in studying and want to select a sample representative of those characteristics. Participants will be selected from the 336 teacher-respondents in the quantitative phase, using the same inclusion criteria to ensure consistency across phases.

Data Gathering Technique

A survey questionnaire, a structured tool used to collect numerical data from respondents, is typically applied when researchers need standardised, measurable, and comparable information across a large sample. This method is most often used in the social sciences and education to quantify attitudes, behaviours, or other measurable characteristics. Its main advantages are efficiency in data collection, cost-effectiveness, scalability, and the capacity to produce statistically analysable results (Murphy L., 2023).

An in-depth interview in qualitative research is a one-on-one, open-ended conversation designed to explore participants' experiences, perspectives, and emotions in detail. It is applied when researchers aim to understand complex behaviours, motivations, or social dynamics beyond surface-level data. Its main advantages include depth of insight, flexibility, and the ability to uncover authentic meanings behind participants' responses (Gibbons, C., 2023).

Data Analysis Technique

The study employed three data analysis techniques: descriptive analysis, correlation analysis, and multiple linear regression.

Descriptive analysis is a method used to systematically describe characteristics of a population, phenomenon, or dataset without manipulating variables. It is typically applied in early stages of research to provide a clear snapshot of "what is", and researchers regard it as valuable for its ability to identify trends, patterns, and relationships. Its main advantages include simplicity, clarity, and the ability to generate foundational knowledge for further analytical or experimental studies. The researcher used the mean to describe the central tendency of the data and the standard deviation to capture the variability, thereby providing a clearer understanding of the distribution of responses (Deckert, J. L., & Wilson, M., 2023).

The study described the level of the variables using the following interpretations:

Scale	Level			
		Work Engagement	Technology Adoption Propensity	Student Academic Performance
4.00-3.25	Very High	very good	very good	very good
3.24-2.50	High	good	good	good
2.49-1.75	Low	poor	poor	poor
1.74-1.00	Very Low	very poor	very poor	very poor

For the interpretation of standard deviation, the following percentage standard is followed (Sun et al, 2024):

% of Scores Covered	Interpretation Basis
≈ 68%	Scores are highly consistent
≈ 95%	Scores dispersed moderately
≈ 99.7%	Scores dispersed highly

Moreover, correlation analysis refers to the statistical relationship between two or more variables, indicating whether and how strongly they are related, with Pearson's r as a statistical measure. It is applied when researchers want to examine associations without manipulating variables, and its advantages include identifying patterns, predicting outcomes, and providing a foundation for further experimental studies (Sreekumar D., 2024).

For the interpretation scale of r-value, the study employed the following scheme as proposed by Guilford (1956):

Computed r	Descriptive Interpretation
+/- 1.00	Perfect Correlation
Between +/- 0.75 - +/- 0.99	High Correlation
Between +/- 0.51 - +/- 0.74	Moderately High Correlation
Between +/- 0.31 - +/- 0.50	Moderately Low Correlation
Between +/- 0.01 - +/- 0.30	Low Correlation
0.00	No Correlation

Multiple linear regression (MLR) is a statistical technique used to examine the relationship between one dependent variable and two or more independent variables. It is widely used in research to predict outcomes, assess the relative importance of predictors, or control for confounding variables. Its main advantages include the ability to handle multiple predictors simultaneously, improve explanatory power, and provide insights into complex relationships. The study utilised the standardised beta coefficient to measure the degree of influence exerted by the determinants (Sun, Wang, & Li, J., 2023).

In terms of the Scale of Beta (β) Coefficient Strength, the following scheme was used, as proposed by Kock and Haday (2018).

β Value Range	Strength of Influence
$\pm 0.00 - \pm 0.09$	Very Weak
$\pm 0.10 - \pm 0.29$	Weak
$\pm 0.30 - \pm 0.49$	Moderate
$\pm 0.50 - \pm 0.69$	Strong
± 0.70 and above	Very Strong

Concurrently, this research used thematic analysis to interpret the qualitative data as explained by Creswell (2017). Thematic analysis is a widely used qualitative research method for identifying and interpreting patterns of meaning (themes) in textual data. In this study, I followed Naeem, M., Khan, S., & Rafiq, M. 2023 six-step process where I read and re-read transcripts to be familiar with the data, I generated initial codes, I searched for themes – grouped codes into broader categories of meaning, reviewed themes – refined and checked coherence across the dataset, defining and named themes – clearly articulated what each theme represented and lastly, produced the report – the researcher wrote the findings with supporting evidence and interpretation. The structured six-step process is applied when researchers aim to explore experiences, perceptions, or values in depth. Its advantages include flexibility, accessibility, and the ability to generate rich insights (Naeem, M., Khan, S., & Rafiq, M., 2023).

Ethical Considerations

The ethical considerations of the study were ensured by demonstrating credibility, transferability, dependability, and confirmability, which, according to Shenton (2004) and Lincoln and Guba (1988), determine the quality and value of qualitative research. Extended engagement during in-depth interviews strengthened credibility by

triangulating data sources, incorporating peer debriefing, and employing member checking. This process allowed participants to verify their transcripts and confirm the accuracy of their insights. The researchers recorded all interviews verbatim to minimise misinterpretation and enhance transparency. Transferability was supported by providing clear, context-rich descriptions that enable readers to determine the applicability of findings to other settings. This process allows us to obtain meaningful insights into student academic performance and adapt them to similar contexts.

RESULTS

In this chapter, both the quantitative and qualitative results of the study are presented. This study also provides a summary of the key findings.

Descriptive Analysis

Table 1 presents the descriptive statistics. It contains the variables of the study, namely, work engagement, technology adoption propensity and student academic performance, with their respective indicators. It also includes the number of respondents, computed means and standard deviations, and the corresponding descriptive interpretations of these statistics.

Table 1. Descriptive Statistics

Variables	Sample Size	SD	Mean	Descriptive Level
Work Engagement	336	0.38	3.64	Very High
Vigour		0.44	3.71	Very High
Dedication		0.39	3.79	Very High
Absorption		0.52	3.42	Very High
Technology Adoption	336	0.51	3.38	Very High
Optimism		0.47	3.60	Very High
Proficiency		0.57	3.48	Very High
Dependence		0.93	2.91	Very High
Vulnerability		0.63	3.43	Very High
General Student Academic	336	0.57	3.34	Very High
Performance				

Work engagement had an overall mean of 3.64 (SD=0.38), indicating very high levels of engagement and highly consistent responses. The study described all of its indicators as very high. Moreover, technology adoption propensity has a mean score of 3.38 (SD=0.5), indicating very high adoption tendencies, with its indicators showing very high results. Furthermore, general student academic performance had an overall mean of 3.34, indicating very high performance and interpreted as very good, with SD=0.57, reflecting moderate dispersion.

Work engagement showed the highest consistency and strongest positive behaviours, while technology adoption propensity and student academic performance were also interpreted as very high, though with slightly greater variability. The result suggests that although all three variables reflect very good outcomes, engagement was the most stable, and adoption tendencies were moderately consistent. Academic performance showed the greatest dispersion across responses.

Correlation Analysis

Table 2 is the correlation table. It specifically includes the variables work engagement and technology adoption propensity. It also contains the criterion variable, which is the general student academic performance. Lastly, it contains the r-value, the p-value, and the decision regarding the hypotheses.

Table 2. Correlation Table ($N = 336$)

Variables	Student Academic Performance			
	r	p-value	Decision on H_0	Interpretation
Work Engagement	.304	.000	Reject	Moderately Low Positive, Significant Correlation
Technology Adoption Propensity	.472	.000	Reject	Moderately Low Positive, Significant Correlation

Level of Significance: 0.05

Decision Rule: Reject H_0 if $p < 0.05$

Table 2 explains the correlation between work engagement and technology adoption propensity on the general student academic performance. At the .05 significance level, this study found both factors to have significant positive associations with general student academic performance ($p\text{-value} = .000$); therefore, the study rejected the null hypotheses of no relationship in each case. Work engagement correlated $r = .304$, indicating a moderately low, significant positive correlation. In contrast, technology adoption propensity correlated $r = .472$, also indicating a moderately low, significant positive correlation.

The result indicates that higher levels of work engagement are modestly associated with better student performance, whereas stronger technology adoption propensity is more strongly associated with academic performance. In short, both variables matter; however, within this sample, technology adoption propensity shows a stronger relationship with student academic performance.

Both work engagement and technology adoption propensity showed a positive link to student academic performance, but the strength of their influence varied. Work engagement showed a modest association, while technology adoption propensity demonstrated a stronger relationship, suggesting that students' openness to using technology plays a more decisive role in academic success.

Regression Results

Table 3 presents the regression results and includes the variables, namely, work engagement and technology adoption propensity. It also includes the criterion variable, student academic performance. It also displays the β coefficients, t-values, p-values, the decisions on the hypotheses, and the corresponding interpretations.

Table 3. Regression Table ($N = 336$)

	Student Academic Performance						
	Unstandardised Coefficients		Standardised Coefficients				
Variables	B	Std.	Beta	t	p-	Decision	Interpretation

		Error			value	on Ho	
(Constant)	1.301	.270		4.818	.000	-	-
Work Engagement	.157	.081	.105	1.927	.055	Fail to Reject	No Significant Influence
Technology Adoption Propensity	.465	.060	.423	7.775	.000	Reject	Positive Significant Influence

Model Summary:

$$R = 0.481 \mid R^2 = 0.232 \mid F(2,333) = 50.190 \mid p = 0.000$$

Level of Significance: 0.05

As shown in Table 3, work engagement had a standardised coefficient of $\beta = 0.105$, indicating that it exerts a 0.105-level of influence on student academic performance. However, this effect is not significant, as indicated by the p-value of 0.055, which is greater than the 0.05 level of significance; therefore, the study does not reject the null hypothesis for work engagement. In contrast, technology adoption propensity obtained a standardised coefficient $\beta = 0.423$, indicating a 0.423 influence on student academic performance. This degree of influence is significant, with a p-value = 0.000, which is less than 0.05; hence, the null hypothesis is rejected for technology adoption propensity, showing a positive and significant influence.

Work engagement exerted only a weak, non-significant effect on student academic performance, whereas technology adoption propensity exerted a much stronger, statistically significant positive effect. When combined, both variables formed a significant explanatory model ($R^2 = 0.232$), with technology adoption propensity emerging as the dominant contributor to performance outcomes.

Summary of Findings for Quantitative Results

1. Work engagement and technology adoption propensity significantly correlate with general student academic performance
2. Work engagement does not significantly influence general student academic performance.
3. Technology adoption propensity does not significantly influence general student academic performance
- 4: Collectively, work engagement and technology adoption propensity have a weak ($R^2 = 0.232$) but significant influence on general student academic performance.

Qualitative Part

The following narratives are the qualitative results from the actual conversations with the study participants. The Engagement and Technology boosting the Academic Performance emerged as the central topic of the conversation, with the following themes: Engaged Leadership Improves Teaching and Learning, Engaged School Heads Create Supportive Learning Environments, Technology Use Improves Student Outcomes, and Technology-Driven Leadership Enhances Teaching and Learning.

Engagement and Technology Boost Academic Performance.

The qualitative findings reveal that both work engagement and technology adoption propensity act as key catalysts in enhancing students' overall academic performance. Participants emphasised that engaged leadership improves teaching and learning, and that engaged school heads create supportive learning environments, both themes extracted from work engagement findings. In parallel, findings show that technology adoption propensity strengthens student academic performance through technology-driven leadership, enhances teaching and learning, and technology use improves student outcomes. Together, these themes highlight how work engagement and technology orientation jointly contribute to improved students' general academic performance.

Engaged Leadership Improves Teaching and Learning. From the researcher's perspective, teachers consistently reported that engaged leadership directly enhances teaching and learning, thereby improving students' academic performance. They shared that when their school head is actively engaged, they feel guided, accountable, and supported, especially through regular instructional monitoring, timely feedback, and clear expectations that strengthen instructional leadership and accountability. Teachers perceived this engagement not as surveillance but as shared responsibility for learning outcomes. Equally significant, teachers emphasised that their school head's visible dedication motivates and empowers them, particularly when their efforts are recognised. When challenges are understood, they feel more confident and committed to their work. This sense of encouragement fosters collaboration, innovation, and sustained effort in the classroom, leading to more effective teaching practices and, ultimately, improved academic performance. This theme was evident in the following narratives:

"When a school head is active, dedicated, and involved in school activities, teachers feel more supported and are encouraged to perform better in their work." (P1-IDI-L1-3)

"Because of this, students become more engaged in their learning and perform better academically." (P1-IDI-L4-5)

"The work engagement of a school head significantly affects students' academic performance by promoting strong instructional leadership and boosting teacher morale." (P3-IDI-L1-2)

Engaged School Heads Create Supportive Learning Environments. Also, teachers described that engaged school heads create supportive learning environments that directly influence students' academic performance. They shared that when the school head is genuinely engaged, our school becomes a space where collaboration, trust, and shared purpose thrive. Engaged school heads were perceived to intentionally foster positive, collaborative environments by encouraging open communication, teamwork, and mutual support among teachers, thereby strengthening instructional practices and student learning. Teachers also emphasised that engagement becomes especially vital in resource-limited contexts, noting that when resources are scarce, the school head's commitment, visibility, and creativity sustain their motivation. Through problem-solving, prioritising learners' needs, and mobilising available support, engaged school leaders enable teachers to overcome challenges and sustain high-quality instruction. This strong sense of support and collective responsibility motivates teachers to persist and adapt, ultimately creating learning environments that enable students to perform better academically despite existing challenges. This finding was evident in the following narratives:

"When our school head is active, present, and supportive, we feel more motivated to do our best, and because of that, our students learn better and perform well. (P2-IDI-L1-4)

"In our situation, where resources are already limited, having an engaged school head helps us stay strong and focused, which directly helps our students succeed. (P2-IDI-L5)

"The school head's dedication and active involvement motivate both teachers and students, and his high work engagement fosters a culture of accountability and learning excellence." (P4-IDI-L1-3)

"The school head's active work ethics and modelling create collaboration, cooperation, and an open avenue for learning." (P6-IDI-L1-3)

Technology Use Improves Student Outcomes. Further, teachers clearly articulated that technology-driven leadership enhances teaching and learning by positively influencing both instructional practices and student

academic performance. They conveyed that when their school head models effective technology use, teaching becomes more organised, engaging, and responsive to students' needs. Teachers perceived that technology-driven instructional leadership, such as the use of digital tools for lesson planning, monitoring learning progress, and communication, supports more efficient instruction and helps improve student outcomes. At the same time, teachers shared an emotional response to their school heads' use of technology, noting that when their school heads confidently use and promote it, they feel inspired and motivated to integrate it into their own teaching. This leadership approach boosts teachers' confidence, promotes innovation, and fosters a shared commitment to modern, learner-centred instruction, ultimately driving to improved academic performance. The result was evident in the following narratives:

"When school leaders encourage and promote the use of digital tools, teaching becomes more engaging, resources are easier to access, and teachers can monitor student progress better." (P1-IDI-L1-3)

"A school head's use of technology strengthens instructional support, improves communication, and enables data-driven decision-making." (P3-IDI-L1-2)

"Our school head uses technology for monitoring lessons and communicating with learners, and for integrating digital technology in the delivery of instruction." (P4-IDI-L1-2)

"The school head's expertise in using and manipulating technology devices greatly impacts teaching because teachers need to integrate technology into our daily lessons." (P6-IDI-L1-2)

Technology-Driven Leadership Enhances Teaching and Learning. Furthermore, teachers stated that technology enhances student outcomes only when school heads implement it in contextually responsive ways that prioritise learners' needs. They stated that when the school head uses technology adaptively, taking into account our students' capabilities, access, and learning conditions, lessons become more relevant and effective. Teachers perceived that thoughtful, context-responsive use of technology supports learning by enabling flexible instruction, timely feedback, and varied learning activities. More importantly, teachers emphasised that when technology integration is supported and learner-centered, they can design lessons that actively engage students and address diverse learning needs. With guidance, encouragement, and appropriate tools from school heads, teachers felt empowered to integrate technology meaningfully, leading to improved understanding, engagement, and ultimately better academic performance. It was evident in the following narratives:

"Teachers generally see the school head's use of technology as helpful in improving student performance." (P1-IDI-L1)

"When our school head finds ways like using offline materials and simple communication tools, students understand lessons more and perform better." (P2-IDI-L4-5)

"Integrating digital technology enhances students' engagement and understanding, which positively reflects on their academic performance." (P4-IDI-L3)

"A technologically competent school head creates an innovative and supportive school system that contributes to better student outcomes." (P3-IDI-L3)

Modified Paradigm Reflecting Teachers' Role In Shaping Students' Expectations For Academic Performance

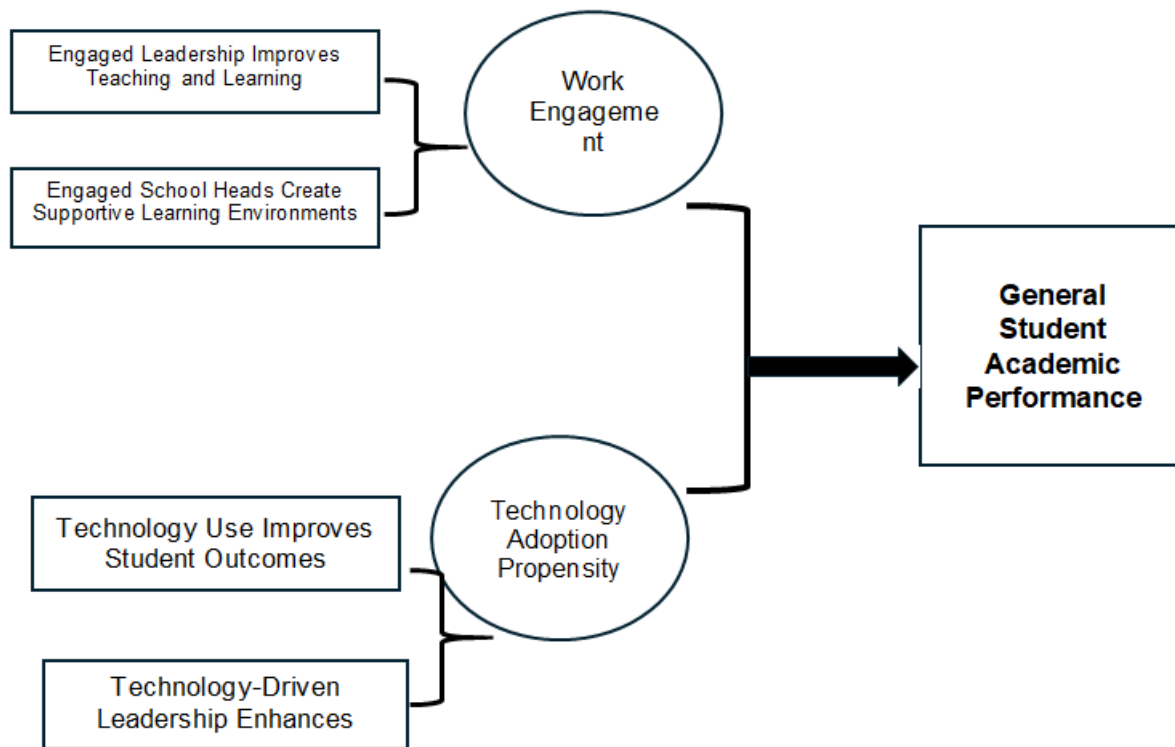


Figure 2. A Schematic Diagram of the Themes of Student Academic Performance

Joint Display of Quantitative and Qualitative Results

Table 4 presents a joint display of the quantitative and qualitative results examining the relationship between work engagement, technology adoption propensity, and general student academic performance. Regarding work engagement, the quantitative findings indicate no significant influence on student academic performance; however, the qualitative results reveal that teachers clearly perceive engaged leadership as critical in improving teaching and learning and creating supportive learning environments. This contrast highlights a merging–diverging integration: teachers’ narratives emphasise the instructional and emotional impact of engaged school heads, even though these effects were not statistically significant in the quantitative analysis. The divergence suggests that the influence of work engagement may be shaped by fine-grained, indirect, or mediated by contextual and environmental factors, which qualitative insights capture more effectively. Below are two clearly contradicting statements between the quantitative work engagement indicators and the qualitative narratives as perceived by teachers:

Table 4: Joint Display of Quantitative and Qualitative Results

Research Area	Quantitative Results	Qualitative Results	Nature of Integration
Work Engagement and General Student Academic Performance	No Significant Influence	- Engaged leadership improves teaching and learning. - Engaged school heads create supportive learning environments.	<i>Merging-diverging</i>
Technology Adoption Propensity and General Student Academic Performance	Positive Significant Influence	- Technology use improves student outcomes. - Technology-driven leadership	<i>Merging-converging</i>

		enhances teaching and learning.	
--	--	---------------------------------	--

Survey items indicate that school heads demonstrate perseverance, strength, vigour, energy, resilience, and the ability to work for long periods, suggesting high levels of visible work engagement. Despite these high ratings, some teachers expressed that the school head's energy and perseverance did not always translate into instructional support that directly impacts classroom teaching or student learning.

"I see my school head very busy and hardworking, but most of the time, that energy is spent on paperwork and meetings. In the classroom, I still feel alone dealing with instructional challenges." (P3-IDI-L12-15)

Results show that school heads are deeply immersed in their work, often forgetting everything else around them, feeling happy at work, and finding it difficult to detach from school responsibilities. Teachers noted that this deep absorption is sometimes experienced as unavailability or emotional distance, limiting collaboration and support needed to improve teaching and learning.

"My school head is always focused and immersed in work, but because of that, it is hard to approach them. Sometimes, we need guidance, but they seem too occupied." (P7-FGD-L21-24)

In contrast, the findings for technology adoption propensity show strong alignment between quantitative and qualitative results, indicating a merging–converging integration. Quantitatively, technology adoption propensity has a positive and significant influence on student academic performance. The qualitative themes reinforce this finding, showing that technology use improves student outcomes and that technology-driven leadership enhances teaching and learning. Teachers consistently perceived that effective and supported use of technology facilitates more engaging instruction and better learning experiences, directly contributing to improved academic outcomes. This convergence underscores the robustness of technology adoption propensity as a key driver of academic performance, as evidenced by both empirical data and teachers' perceptions. Below are two converging statements that demonstrate alignment between the quantitative work engagement indicators and the qualitative narratives as expressed by teachers.

Survey items indicate that school heads demonstrate perseverance even when things do not go well, sustained energy at work, mental resilience, and the capacity to work for long periods, reflecting high levels of vigour. Converging qualitative narrative: Teachers affirmed these indicators by describing school heads who consistently show persistence and resilience, especially during challenging school situations.

"Even when there are many problems in the school, my school head keeps going and does not lose energy. Seeing that perseverance motivates us to also stay strong for our students." (P4-IDI-L10-13)

Moreover, results show that school heads are enthusiastic, inspired, proud of their role, deeply immersed in their work, and emotionally attached to school responsibilities, indicating strong dedication and absorption. Teachers similarly perceived school heads as passionate and fully invested in school work, which they felt positively influenced teaching and learning.

"My school head is very passionate about the school. He/she is always focused, happy to be at work, and truly committed, which inspires us to give our best in teaching." (P9-FGD-L18-21)

Summary of Findings

1. The teachers perceived that engaged school leadership enhances instructional quality and their morale, which in turn leads to improved academic performance of their students; and that engaged school heads foster supportive and collaborative learning environments, enabling effective teaching practices and sustained student success even in resource-limited contexts.
2. The teachers believe that when school heads integrate technology adaptively and model its effective use, they foster learner-centred environments that enhance student engagement and academic performance.

DISCUSSIONS

Presented in this chapter are the convergence and divergence results of the quantitative and qualitative parts of the study.

Ultimately, the study confirms that the quantitative and qualitative results diverge regarding the link between work engagement and academic performance, but converge regarding the connection between technology adoption propensity and academic performance.

While quantitative results indicate that work engagement does not directly influence academic performance, qualitative narratives reveal that teachers perceive engaged leadership as vital in shaping academic performance. This divergence highlights the latent roles of teachers and the learning environment, suggesting that school heads' influence student outcomes indirectly - through teacher engagement and classroom dynamics - rather than through direct interaction with students.

This finding supports the study of Pilcher & Cortazzi (2023), which argues that quantitative and qualitative approaches often diverge in educational research, with qualitative narratives uncovering relational and contextual dynamics overlooked by quantitative measures. Similarly, this finding aligns with the study by Hornstra, Stroet, Rubie-Davies, and Flint (2023), which reveals a divergence between theoretical and quantitative claims on one hand and qualitative classroom perceptions on the other, particularly with respect to work engagement, technology adoption propensity, and academic performance.

Conversely, both quantitative and qualitative findings converge on the impact of technology adoption, with evidence showing that technology-driven leadership directly enhances instructional efficiency and student outcomes. This convergence demonstrates that when school heads model and promote technology use, their influence extends more directly to learners, fostering improved engagement and academic performance.

The results confirm the study of Dexter (2023), which found that leaders using digital tools for data collection and analysis were able to make informed decisions, track progress, and enhance teaching effectiveness—directly impacting student outcomes. Additionally, such current findings corroborate Acebuche's (2023) assertion that digital leadership is integral to modern school management and directly contributes to improved student performance.

CONCLUSIONS

Based on the findings, quantitative evidence suggests that work engagement does not directly influence academic performance. In contrast, qualitative evidence highlights teachers' perceptions of engaged leadership as crucial in shaping instructional practices and learning outcomes through mediated roles. In contrast, both strands of evidence converge on the role of technology adoption, showing that technology-driven leadership directly enhances instructional efficiency and student engagement, thereby improving academic performance. Hence, the Expectancy-Value Theory received partial support from the quantitative data, but the qualitative findings fully substantiated it.

Recommendations

Based on the conclusion, two key recommendations emerge: first, conducting a qualitative study on the role of teachers and learning environment in mediating the strength of work engagement and the propensity to adopt technology among school heads in shaping academic performance. Understanding the role of teacher and learning environment in the school head – academic outcome connection using an exploratory design.

REFERENCES

1. Acido, J. V., & Caballes, D. G. (2024). Assessing educational progress: A comparative analysis of PISA results (2018 vs. 2022) and HDI correlation in the Philippines. *World Journal Of Advanced Research and Reviews*. <https://doi.org/10.30574/wjarr.2024.21.1.0020>.
2. Al-Hamdan, Z., & Bani Issa, H. (2022). The role of organizational support and self-efficacy on work engagement among registered nurses in Jordan: A descriptive study. *Journal of Nursing Management*, 30(7), 2154-2164. <https://doi.org/10.1111/jonm.13456>
3. AlAli, R., & Wardat, Y. (2024). Low PISA Performance Students: Factors, Perceptions, and Improvement Strategies. *International Journal of Religion*, 5(9), 334–348. <https://doi.org/10.61707/nve8gj33>.
4. Almeida, F. (2018). Strategies to perform a mixed methods study. *European Journal of Education Studies*, Volume 5, Issue 1, 2018. doi: 10.5281/zenodo.1406214.
5. Asadpour, M., Bakhshi, M. H., Mirzapour, P., & Shahabi, M. (2025). The motivational role of teachers: A systematic review of key factors influencing students' academic motivation. *European Journal of Psychology of Education*, 40(4), 133.
6. Azam, Q. S., Siddiqui, M. Z., & Yosufzai, S. (2023). Financial technology adoption and organizational competitive performance: mediating role of employee engagement. *Journal of Social Research Development*. <https://doi.org/10.53664/jsrd/04-04-2023-07-729-737>.
7. Berényi, L., & Deutsch, N. (2023). Technology adoption among higher education students. *Vezetéstudomány/Budapest Management Review*, 54(11), 28-39.
8. Bernardo, A. B. I., Cordel, M. O., Calleja, M. O., Teves, J. M. M., Yap, S. A., & Chua, U. (2023). Profiling low-proficiency science students in the Philippines using machine learning. *Humanities & Social Sciences Communications*, 10(1). <https://doi.org/10.1057/s41599-023-01705-y>
9. Cabural, A. B. (2024). Beyond Benchmarking: A Diagnostic Inquiry into the Underlying Determinants of Low Performance in Philippine PISA Science. *Journal of Tertiary Education and Learning*, 2(3), 46–57. <https://doi.org/10.54536/jtel.v2i3.3063>.
10. Caglayan-Akay, E., & Oskonbaeva, Z. (2024). Investigating the factors affecting the PISA-based test performance of Asian students. *Jurnal Ekonomi Pembangunan*. <https://doi.org/10.20885/ejem.vol16.iss1.art4>.
11. Çali, M., Lazimi, L., & Ippoliti, B. M. L. (2024). Relationship between student engagement and academic performance. *International Journal of Evaluation and Research in Education*, 13(4), 2210-2217.
12. Çali, M., Lazimi, L., & Ippoliti, B. M. L. (2024). Relationship between student engagement and academic performance. *International Journal of Evaluation and Research in Education*, 13(4), 2210-2217.
13. Creswell, J. & Creswell, J.D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. 5th Edition. SAGE Publications, Inc, 20171127.
14. Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (Fifth edition). SAGE.
15. Creswell, J. W. (2012). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: Sage
16. Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches*. 4th ed. Thousand Oaks, California: SAGE Publications.
17. Day, C. T. (2020). Expectancy Value Theory as a Tool to Explore Teacher Beliefs and Motivations in Elementary Mathematics Instruction. *International Electronic Journal of Elementary Education*, 13(2), 169-182.
18. Dirik, H. F., Seren Intepeler, S., & Hewison, A. (2024). A New Adaptation of the Authentic Leadership Questionnaire in Turkish: Evidence From Nursing. *Nursing & Health Sciences*, 26(4), e13178. <https://doi.org/10.1111/nhs.13178>.
19. Doyle, L., Brady, A. M., & Byrne, G. (2016). An overview of mixed methods research—revisited. *Journal of research in nursing*, 21(8), 623-635.
20. Embalsado, J. V. M., Balilu, B. C., Montoya, M. A. J. T., Tulabut, O. A. P., Mangalus, R. S., De Ala, C. L. M., Gonzales, A. B., & De Leon, J. R. (2023). Role of Work Engagement, Autonomy Support, Psychological Capital, and Economic Factors to Educator and Staff Well-being in the

- Philippines. *Psychocentrum Review*, 5(1), 1–18. <https://doi.org/10.26539/pcr.511307>.
21. Falguera, C. C. (2022). Relationship of Work Engagement with Nurse-work and Patient Outcomes among Nurses in Central Philippines. *Acta Medica Philippina*. <https://doi.org/10.47895/amp.vi0.4426>.
22. Farrokhi, F., & Mahmoudi-Hamidabad, A. (2012). Rethinking Convenience Sampling: Defining Quality Criteria. *Theory and Practice in Language Studies*, 2(4), 784–792. <https://doi.org/10.4304/TPLS.2.4.784-792>.
23. Fuentes, R. P., & LaBad, R. B. (2025). Impact of Digital Learning Tools on Student Engagement and Academic Achievement in Higher Education: A Systematic Review. *Ennoia Advances in Social Science, Technology and Education*, 1(02), 53-73.
24. Govindarajoo, M. V., Selvarajoo, N. D., & Ali, M. S. (2022). Factors Contributing to Poor Academic Achievement Among Low Performing Pupils: A Case Study. *Asian Journal of University Education*, 18(4), 981–997. <https://doi.org/10.24191/ajue.v18i4.20008>.
25. Guilford, J. P. (1961). Psychological measurement a hundred and twenty-five years later. *Psychometrika*, 26(1), 109-127.
26. Gutiérrez-de-Rozas, B., López-Martín, E., & Carpintero Molina, E. (2022, August). Defining the profile of students with low academic achievement: A cross-country analysis through PISA 2018 data. In *Frontiers in Education* (Vol. 7, p. 910039). Frontiers Media SA.
27. Gutiérrez-de-Rozas, B., Lopez-Martin, E., & Carpintero, E. (2022). Defining the profile of students with low academic achievement: A cross-country analysis through PISA 2018 data. *Frontiers in Education*, 7. <https://doi.org/10.3389/feduc.2022.910039>.
28. Hu, J., & Qian, S. (2025). Correlations and comparisons of teacher expectations achievement motivation academic achievement and creativity. *Frontiers in Psychology*, 16, 1516405.
29. Jabir, M. S., & Farooq, M. S. (2022). Development and Validation of Students’.
30. Jenaro, C., Flores, N., Orgaz, M. B., & Cruz, M. (2011). Vigour and dedication in nursing professionals: towards a better understanding of work engagement. *Journal of advanced nursing*, 67(4), 865-875. <https://doi.org/10.1111/j.1365-2648.2010.05526.x>
31. Johnston, O., Wildy, H., & Shand, J. (2021). ‘Believe in me, and I will too’: A study of how teachers’ expectations instilled confidence in Grade 10 students. *Social Psychology of Education*, 24(6), 1535-1556.
32. Karaca, M., Geraci, L., Kurpad, N., Lithander, M. P. G., & Balsis, S. (2023). Low-Performing Students Confidently Overpredict Their Grade Performance throughout the Semester. *Journal of Intelligence*, 11. <https://doi.org/10.3390/jintelligence11100188>.
33. Kennedy-Clark, S. (2013). Research by Design: Design-Based Research and the Higher Degree Research student. *Journal of Learning Design*, 6(2), 26-32.
34. Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information systems journal*, 28(1), 227-261.
35. Kokkonos, A., Travlos, A., Antonopoulou, P., & Korre, M. P. (2025). Questionnaire for digital technologies and leadership practices: the validity and reliability study. *Int J Eval & Res Educ*, 14(1), 133-145. DOI: 10.11591/ijere.v14i1.29885.
36. Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice*, 24(1), 120-124.
37. Kuzminykh, I., Ghita, B., & Xiao, H. (2021, August). The relationship between student engagement and academic performance in online education. In *2021 5th international conference on E-society, E-education and E-technology* (pp. 97-101).
38. Lam, S. M., & Zhou, Y. (2021). SES-Achievement Gaps in East Asia: Evidence from PISA 2003–2018. *Asia-Pacific Education Researcher*, 1–20. <https://doi.org/10.1007/S40299-021-00620-7>.
39. Lee, S. W. (2022). Regression analysis for continuous independent variables in medical research: statistical standard and guideline of Life Cycle Committee. *Life cycle*, 2.
40. Lincoln, Y. S., & Guba, E. G. (1988). Criteria for Assessing Naturalistic Inquiries as Reports.
41. Loyola-Carrillo, P., Vega-Muñoz, A., Salazar-Sepúlveda, G., Gil-Marín, M., & Adsuar-Sala, J. (2025). Studying engagement in educational settings: A mapping review on high-impact academic engagement research. *Frontiers in Psychology*, 16, 1519509.
42. Lu, J. G., Nisbett, R. E., & Morris, M. W. (2022). The surprising underperformance of East Asians in

- US law and business schools: The liability of low assertiveness and the ameliorative potential of online classrooms. *Proceedings of the National Academy of Sciences of the United States of America*, 119(13). <https://doi.org/10.1073/pnas.2118244119>.
43. Medina-Jerez, W., Middleton, K. V., & Orihuela-Rabaza, W. (2011). USING THE DAST-C TO EXPLORE COLOMBIAN AND BOLIVIAN STUDENTS' IMAGES OF SCIENTISTS. *International Journal of Science and Mathematics Education*, 9, 657-690.
 44. Mesurado, B., Cristina Richaud, M., & José Mateo, N. (2016). Engagement, flow, self-efficacy, and eustress of university students: A cross-national comparison between the Philippines and Argentina. *The Journal of psychology*, 150(3), 281-299. <https://doi.org/10.1080/00223980.2015.1024595>
 45. Mirza, I., & Jabeen, R. (2025). Impact of Teacher Expectations on Students' Behaviour and their Academic Performance. *Academy of Education and Social Sciences Review*, 5(1), 15-25.
 46. Mugizi, W., Dafiewhare, A. O., Manyange, M., & Zikanga, D. K. (2020). Talent development practices and work engagement of in-service teachers at a private university in Western Uganda. *Journal of Educational Research and Reviews*, 8(5), 57-66.
 47. Nowell, B., & Albrecht, K. (2019). A reviewer's guide to qualitative rigor. *Journal of Public Administration Research and Theory*, 29(2), 348-363.
 48. Prananto, K., Cahyadi, S., Lubis, F. Y., & Hinduan, Z. R. (2025). Perceived teacher support and student engagement among higher education students—a systematic literature review. *BMC psychology*, 13(1), 112.
 49. Ratchford, M., & Barnhart, M. (2012). Development and validation of the technology adoption propensity (TAP) index. *Journal of Business Research*, 65(8), 1209-1215.
 50. Reference:
 51. Sandoval-Hernández, A., Zhao, D., Chen, Z., & Eryilmaz, N. (2023). The Association Between Educational Systems and Reading Literacy Performance in PISA Across the Asia-Pacific Region and Countries (pp. 749–763). https://doi.org/10.1007/978-981-19-6887-7_26.
 52. Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for information*, 22(2), 63-75
 53. Skinner, C. (2018). Issues and challenges in census taking. *Annual Review of Statistics and Its Application*, 5(1), 49-63.
 54. Suescun, V. (2026). Understanding Leadership Dynamics in Relation to Employee Engagement in Contemporary Virtual Work Environments in Ireland (Doctoral dissertation, Dublin, National College of Ireland).
 55. Sujan, M., Smith-Frazer, C., Malamateniou, C., Connor, J., Gardner, A., Unsworth, H., & Husain, H. (2023). Validation framework for the use of AI in healthcare: overview of the new British standard BS30440. *BMJ health & care informatics*, 30(1), e100749.
 56. Sun, S., Hara, A., Johnstone, L., Hallmark, B., Watkins, J. C., Thomson, C. A., ... & Chilton, F. H. (2024). Optimal Pair Matching Combined with Machine Learning Predicts a Significant Reduction in Myocardial Infarction Risk in African Americans Following Omega-3 Fatty Acid Supplementation. *Nutrients*, 16(17), 2933.
 57. Tang, J. J., & Fisher, P. A. (2012). High achieving students and their experience of the pursuit of academic excellence. In 2012 ISEP International Symposium (pp. 475-499). ISEP.
 58. Torres, J. L. (2024). Uncovering Teachers' Challenges in Teaching Qualitative Research: Basis for Innovation and Training. *Journal of Interdisciplinary Perspectives*, 2(6), 1-1.
 59. van Herpen, S. G., Hilverda, F., & Vollmann, M. (2025). A longitudinal study on the impact of student-teacher and student-peer relationships on academic performance: the mediating effects of study effort and engagement. *European Journal of Higher Education*, 15(4), 599-618.
 60. Westover, J. (2024). What's Draining Your Workplace Energy and Joy? Identifying and Addressing Sources of Unhappiness to Boost Productivity and Morale. 14(2). <https://doi.org/10.70175/hclreview.2020.14.2.3>.
 61. Wolf, S., & Brown, A. (2023). Teacher beliefs and student learning. *Human Development*, 67(1), 37-54.
 62. Wollard, K. K. (2011). Quiet Desperation Another Perspective on Employee Engagement. *Advances in Developing Human Resources*, 13(4), 526–537. <https://doi.org/10.1177/1523422311430942>.
 63. Wu, L., Wang, Z., Luo, W., Lee, W. S., & Gao, X. THE DUAL IMPACT OF DIGITAL LEARNING

PLATFORMS AND STUDENT ENGAGEMENT ON ACADEMIC ACHIEVEMENT.

64. Yang, J. H., & Shim, D. C. (2023). Performance of Digital Transformation: Focusing on the Moderated Mediation Effect of Digital Leadership. *Korean Public Administration Review*, 57(2), 141–171. <https://doi.org/10.18333/kpar.57.2.141>.

Curriculum Vitae

Name:	NORBERTO JR. O. PORE
Address:	Biton II, Lawa, Don Marcelino, Davao Occidental
Contact No:	09175804904
Email Address:	norbertojr.pore@hcdc.edu.ph

Academic Background

Post-graduate Studies	Doctor of Education major in Educational Management Holy Cross of Davao College 2022 – Present Master of Arts in Education major in Educational Management
Graduate Studies:	Southern Philippines Agri-Business Marine and Aquatic School of Technology Malita, Davao Occidental 2012 – 2021
Bachelor's Degree:	Bachelor of Secondary Education Major in English
Secondary:	University of Southeastern Philippines 2006 – 2010
Elementary:	Lawa National High School 2002 – 2006 Lawa Central Elementary School 1996 – 2002

Current Employment

Present	Principal III
---------	---------------

	Lawa National High School Don Marcelino District Division Of Davao Occidental
Eligibility	Licensure Examination for Teachers