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Signals before the exit: Understanding student attrition through academic, socioeconomic, psychosocial, and institutional factors

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Abstract

Aim: This study aimed to examine the contributors and early warning signals of student attrition at the Polytechnic University of the Philippines (PUP), the largest state university in the Philippines, with particular attention to the gap between expanded access to public higher education through the Free Education Law and students' continued participation and completion. It also sought to develop a context-sensitive student retention framework for public higher education institutions.

Methodology: The study employed a convergent parallel mixed-method case study design integrating quantitative and qualitative approaches. Quantitative survey data from 399 students across 23 PUP campuses were analyzed using descriptive statistics, including frequencies and percentages to summarize respondents' demographic characteristics and weighted means to describe their perceptions and experiences across academic, socioeconomic, institutional, and psychosocial domains. Qualitative data were gathered through semi-structured interviews with students at risk of attrition or who had discontinued their studies and analyzed using Braun and Clarke's six-phase thematic analysis to explore their lived experiences. Quantitative and qualitative findings were integrated through triangulation, with institutional enrollment and graduation records providing contextual support, to identify patterns, contributing factors, and potential early warning signals associated with student attrition.

Results: Survey findings from 399 respondents showed varying weighted means across academic (WM = 3.64), socioeconomic (WM = 3.10), institutional (WM = 3.43), and psychosocial (WM = 3.80) domains. Given the mix of positive and negative items, these means were descriptive rather than direct measures of attrition risk. Among the 399 respondents, health concerns (25%), financial difficulties (17%), and mental health challenges (14%) were identified as factors that could influence their decision to take a leave of absence from their studies. Interviews revealed interconnected challenges involving academic overload, indirect educational costs, institutional inflexibility, emotional exhaustion, declining task submission, and social withdrawal. These findings suggest that student attrition develops gradually, highlighting the need for proactive identification and timely institutional support.

Conclusion: The study concluded that expanding access to higher education through the Free Education Law needs to be complemented by retention-focused institutional strategies to ensure that increased access translates into persistence and completion. A context-sensitive student retention framework was proposed, integrating early warning indicators with targeted institutional interventions. The framework has implications for higher education policy, institutional management, student support, and social equity by providing a proactive approach to identifying and addressing the interconnected conditions associated with student attrition, particularly among socioeconomically disadvantaged learners in public higher education.

Keywords: *Student attrition; early warning signals; student retention; retention framework; public higher education*

INTRODUCTION

Education is recognized as a human right and a foundation for social development. Article 26 of the Universal Declaration of Human Rights affirms the right to education (United Nations, 1948). Nevertheless, entry into education

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and the resources needed to complete it remain unequally distributed. The World Bank (2022) identifies disparities in access to tertiary education and unequal returns to educational attainment among contributors to persistent inequality in the Philippines. In higher education, a student's admission should therefore be distinguished from continuing participation and degree completion.

The 1987 Philippine Constitution recognizes the right to quality education (Republic of the Philippines, 1987). Policy reforms include the Pantawid Pamilyang Pilipino Program (4Ps), a conditional cash-transfer program linked primarily to health and basic education, and Republic Act No. 10931, the Universal Access to Quality Tertiary Education Act, which establishes free tuition and other school fees for eligible students in public institutions and related aid mechanisms (Republic Act No. 11310, 2019; Republic Act No. 10931, 2017). These measures expand opportunity but cannot establish degree completion on their own. In its Year Two reporting, the Second Congressional Commission on Education highlighted a reported 39% national higher-education attrition figure; its definition and reference period should not be conflated with an institution-specific rate (Second Congressional Commission on Education [EDCOM II], 2025).

Student attrition in higher education is an interdisciplinary problem because it involves interconnected conditions that extend beyond academic performance. A systematic review by De la Cruz-Campos et al. (2023) identified low academic performance, insufficient social support, low socioeconomic status, pessimism, and lack of motivation among the factors associated with university dropout. Understanding these conditions requires the integration of several disciplinary perspectives. Education examines academic readiness, engagement, belonging, curriculum, and teaching and learning; psychology addresses motivation, emotional well-being, stress, adjustment, and decision-making; sociology considers family and peer relationships, social integration, and inequality; and economics examines household income, employment demands, financial barriers, and the opportunity costs of continued study. Institutional management and governance address student services, administrative processes, and institutional responsiveness, while public policy examines how educational reforms support equitable access, retention, and completion. Integrating these perspectives enables the study to examine how difficulties across different domains combine to influence students' educational participation.

This interdisciplinary perspective is particularly relevant when government interventions seek to reduce financial barriers to higher education. In a Philippine evaluation of the Tertiary Education Subsidy program, Bayudan-Dacuycuy et al. (2024) identified implementation challenges involving beneficiary selection, fund disbursement, and monitoring. These findings indicate that financial assistance must be considered alongside the institutional processes through which students receive support. Psychological experiences also warrant attention: in a cross-sectional study of 295 university students in Chile, Cobo-Rendón et al. (2023) examined the relationships among academic emotions, adjustment to university life, and dropout intention. Although dropout intention does not establish that actual withdrawal will occur, its examination provides a basis for considering students' experiences before they formally discontinue their studies. Together, these studies support an approach that connects financial conditions, academic experiences, psychological adjustment, and institutional support.

The Polytechnic University of the Philippines (PUP) provides an important multi-campus setting for this access–retention question. In a December 2023 response published on the Philippine government's Freedom of Information portal, PUP reported 87,469 enrolled students for academic year 2023–2024 (Polytechnic University of the Philippines, 2023). This dated figure describes a particular academic year, not the study's sampling population, and should not be equated with the 23 campuses from which the present 399 survey responses were reported. Within PUP, students' academic experiences, livelihood demands, psychosocial well-being, and interactions with institutional systems warrant examination together.

Although previous research has examined multiple dimensions of student attrition, the present study focused on connecting these dimensions with early warning signs of disengagement within PUP's institutional context. International evidence provides a foundation for understanding attrition, but its application requires attention to the circumstances of students and the organization of support in Philippine public higher education. The research problem therefore concerned how academic, socioeconomic, psychosocial, and institutional factors relate to disengagement, how emerging difficulties can be identified before formal withdrawal, and how these indicators can inform coordinated retention strategies. This focus links the explanation of student attrition with the practical development of timely and contextually appropriate support.

Thus, this study examined how financial constraints, emotional well-being, academic readiness, and institutional support were related to students' decisions to persist or leave. Specifically, it investigated the factors contributing to student attrition and the early warning signs of disengagement among students at PUP, anchored in three interrelated

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theoretical models. The study examined demographic characteristics, academic experiences, socioeconomic status, institutional and systemic conditions, and psychosocial circumstances. It also examined the early warning signs of disengagement experienced by at-risk students in relation to academic, institutional, socioeconomic, and psychosocial factors. Drawing on these findings, the study integrated the identified contributors to attrition and warning signs of disengagement into a comprehensive and strategic student retention framework for public higher education. The framework connected student attrition risk factors with measurable indicators and targeted academic, psychosocial, financial, and institutional interventions, providing a structured basis for the early identification of at-risk students and the implementation of appropriate retention strategies.

Review of Related Literature and Studies

This section reviews literature and studies on student attrition, emphasizing the interconnected academic, socioeconomic, psychosocial, and institutional conditions associated with disengagement and persistence. Organized thematically, the review draws on international and Philippine research to examine access and equity, early warning indicators, and institutional support within the context of public higher education. The synthesis identifies gaps that inform the present study at the Polytechnic University of the Philippines and the development of a context-sensitive student retention framework.

Student attrition as a global higher education challenge

Student attrition remains a concern for higher education institutions because admission does not necessarily lead to sustained participation or completion. Attrition refers to departure before completion within a defined observation period, but studies differ in whether they count program transfer, institutional transfer, temporary interruption, or departure from higher education altogether. Realinho et al. (2022) note that reported dropout proportions depend on definitions, data sources, and calculation methods. Consequently, percentages from different countries should not be treated as directly comparable without examining their underlying measures.

International reviews collectively describe attrition as a multidimensional process involving academic experiences, financial resources, motivation, social relationships, and institutional conditions (De la Cruz-Campos et al., 2023; Lorenzo-Quiles et al., 2023; Rahmani et al., 2024). Across the settings they examine, recurring patterns include academic difficulties, limited support, competing responsibilities, and problems adjusting to university life. These patterns indicate that participation depends on the relationship between students' circumstances and their educational environments. Their relative importance varies by population, program, and institutional setting.

Recent research also connects persistence with digital participation and the identification of emerging difficulties. Rahmani et al. (2024) synthesize evidence from online higher education, while Bergdahl et al. (2024) examine how learning analytics captures engagement. Together, these reviews extend the discussion beyond final dropout counts to the conditions and behaviors that may precede departure. The international research problem is therefore not only how many students leave, but how institutions can interpret disengagement and provide timely, appropriate support.

Access, equity, persistence, and completion

Access, persistence, and completion represent related but distinct educational outcomes. Access concerns entry opportunities; persistence concerns continued participation; and completion concerns attainment of the intended qualification. Equity requires attention to differences in the conditions under which students achieve these outcomes. Expanding enrollment or removing tuition fees may address an entry barrier without resolving learning costs, employment demands, adjustment difficulties, or unequal access to support. In the Philippines, Republic Act No. 10931 establishes tuition relief and additional financial assistance mechanisms; its provisions should be distinguished from empirical evidence that students subsequently complete their degrees.

Research at a broad-access university illustrates why expanded participation must be accompanied by attention to students' experiences. Murphy et al. (2020) examined belonging among first-generation and racial-ethnic minority students, showing the relevance of social and academic fit to persistence in an institution designed to widen access. Philippine evidence likewise connects family income and digital resources with belonging to university spaces (Clamor & Saloma, 2023). Together, these studies suggest that equitable participation involves both material resources and opportunities for inclusion. They do not establish identical mechanisms across countries, but provide complementary perspectives on the gap between entering and remaining in higher education.

The consequences of attrition also operate at several levels. Lorenzo-Quiles et al. (2023) discuss implications for students, institutions, and society. Noncompletion may interrupt qualification plans, delay expected occupational

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opportunities, and leave some educational investments without the intended credential. Institutions may need to reassess support provision and the use of educational resources. These are potential consequences whose extent depends on whether students transfer, return, work, or pursue another pathway. A departure rate alone does not establish permanent harm to individual development, financial instability, or institutional reputation.

Educational attainment also has relevance to population health, but this relationship should not be presented as a direct consequence of college withdrawal. Barrass et al. (2025), using a Filipino birth cohort, found associations between lower educational attainment and depressive symptoms and psychological distress at age 35. Downward educational mobility was associated with depressive symptoms, with limited evidence for other measured outcomes. The study concerns attainment and intergenerational mobility rather than a specific college attrition event. It therefore supports an interdisciplinary connection among education, inequality, and mental health without establishing that attrition causes illness, criminal activity, or increased public expenditure.

Academic and learning-related factors

Academic-related factors include preparedness, performance, learning strategies, engagement, workload, curriculum experiences, and learning modalities. Recent reviews associate dropout with academic difficulties while also identifying motivation, instructional quality, and support as relevant conditions (De la Cruz-Campos et al., 2023; Rahmani et al., 2024). Together, these findings support examining academic performance together with the environment in which students learn. Low grades can indicate difficulty, but do not identify whether it arises from preparation, workload, financial pressures, instructional conditions, or adjustment.

Academic and social integration provide a theoretical connection between learning and institutional participation. Franz and Paetsch (2023) discuss Tinto's student integration model and examine integration using German panel data. Their findings show differences in peer and faculty integration across programs. The complementary model of nontraditional student attrition developed by Bean and Metzner is among the approaches discussed by Ifenthaler and Yau (2020). These perspectives support considering both campus experiences and circumstances outside the institution. They are retained as theoretical orientations, while the relationships relevant to PUP require contextual examination.

Changes in learning modalities make resource and instructional conditions particularly important. Rahmani et al. (2024) identify preparation, course quality, technological limitations, and support among considerations in online higher education. Clamor and Saloma (2023) connect digital capital with university belonging in the Philippines, although their study does not directly measure dropout. Read together, these findings suggest that difficulties in technology-mediated participation may involve both learning resources and social inclusion. Evidence collected during the pandemic should inform questions about present conditions rather than be treated as a direct description of current students.

For the present study, academic indicators include progression, assessment participation, engagement, and experiences of curriculum and teaching. Course scheduling, availability, and access to academic guidance are conditions to investigate locally. Individualized counseling or tutorial assistance may be appropriate responses to identified needs, but their effectiveness should be evaluated in relation to the difficulties students experience and subsequent participation.

Socioeconomic and financial factors

Socioeconomic circumstances include household income, parental education and occupation, living arrangements, financial assistance, employment, and family responsibilities. An economic perspective examines direct educational costs, access to aid, and the opportunity cost of study: the earnings or other activities forgone when time is devoted to education. A sociological perspective examines how family obligations, social position, and unequal resources shape participation. Integrating these perspectives helps explain why tuition relief and continued financial difficulty can coexist, without assuming that low-income students will necessarily leave.

Financial limitations and time availability recur in the online higher education literature (Rahmani et al., 2024), while work incompatibility appears among factors discussed in the review by De la Cruz-Campos et al. (2023). Together, these findings support examining the conditions of employment rather than treating working status as a uniform risk. Employment can provide essential resources, while long hours or incompatible schedules may coincide with reduced participation. The relationship depends on workload, commuting, flexibility, and the availability of institutional assistance.

Family circumstances connect financial pressures with social responsibilities. Valencia-Arias et al. (2023) examined a Colombian model incorporating family background, peer support, social integration, and dropout intention, finding

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an association between family background and the decision to leave. In a Chilean cross-sectional study, deteriorated socioeconomic circumstances during the pandemic were associated with dropout risk (Martínez-Líbano & Yeomans-Cabrera, 2023). These findings support investigating household financial shocks, such as reduced income or unexpected expenses, alongside caregiving and employment demands. They do not establish that a particular shock caused an individual student's subsequent withdrawal.

The social-mobility significance of higher education also needs careful interpretation. Families may regard a qualification as an opportunity for improved employment and income, while current needs require immediate earnings or caregiving. For PUP, the research question is how students negotiate these competing expectations and resources. Financial aid should therefore be examined in terms of availability, adequacy, and timing together with household obligations. The potential interaction between material disadvantage and participation is an analytical proposition to investigate, rather than a causal finding assumed in advance.

Psychosocial and social factors

Psychosocial factors include motivation, academic emotions, perceived stress, adjustment, isolation, and interpersonal support. These constructs should be distinguished from clinical diagnoses. A report of stress describes a perceived experience; a questionnaire score may indicate symptom severity; and a diagnosed condition requires appropriate clinical assessment. Difficulties in relationships or belonging are also not interchangeable with depression or anxiety disorders. Interpretation therefore depends on the population studied and the measures used, with screening outcomes distinguished from confirmed diagnoses.

Academic emotions and adjustment are linked in university research. Cobo-Rendón et al. (2023), in a cross-sectional study of 295 Chilean students, examined associations among emotions, university adjustment, and dropout intention. Martínez-Líbano and Yeomans-Cabrera (2023) used self-report measures, including the Depression, Anxiety and Stress Scale, in a sample of 655 higher education students and found depressive symptoms and low parental support among variables associated with dropout risk. Their symptom measurements do not establish clinical diagnoses. Taken together, the studies connect emotional experiences and relationships with disengagement risk, while their observational designs do not establish that these factors caused withdrawal.

Belonging links psychological experiences to the social organization of learning. Franz and Paetsch (2023) examine peer and faculty integration, while Murphy et al. (2020) evaluate an intervention addressing belonging concerns. In the latter randomized study, a locally adapted intervention increased continuous enrollment among socially disadvantaged students over two academic years. This offers evidence of an intervention effect in a particular context, rather than simply an association between belonging and persistence. It supports investigating supportive relationships and locally meaningful inclusion without assuming that the same intervention will work unchanged at PUP.

The collective implication is that well-being and social participation are connected with academic and financial circumstances. Family or peer relationships may provide support, but can also involve competing expectations or responsibilities. These distinctions inform the examination of distress, motivation, and support at PUP: students' reported experiences, screening outcomes, and any documented diagnoses represent different forms of evidence. The interpretation of psychosocial circumstances therefore depends on what the study actually measures.

Institutional and governance factors

Institutional factors encompass teaching conditions, curriculum arrangements, administrative processes, student services, communication, and institutional culture. Governance concerns how responsibilities, resources, and policies are coordinated. Martínez Rojas et al. (2025), studying 190 engineering students at a Colombian private university, identified academic and emotional support and institutional commitment as relevant to retention decisions. Valencia-Arias et al. (2023) also highlight communication among managers, teachers, and students in their discussion of retention. These studies jointly support attention to organizational responsiveness, while their observational designs support interpretation of the findings as associations without establishing institutional shortcomings as causes of dropout.

Institutional support also intersects with the other dimensions of attrition. A student experiencing academic difficulty may need tutoring, but an employment conflict may require scheduling assistance, and reported emotional distress may warrant counseling or referral. The interdisciplinary implication is that services should respond to the combination of difficulties a student experiences. Whether services are available, accessible, and coordinated is an institutional question distinct from whether a student has an identified need. Policies on paper therefore require examination alongside implementation and students' experiences of seeking assistance.

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Administrative accessibility includes enrollment processing, timely release of information, and communication about student requests. These conditions may vary across institutions and require local investigation before they can be linked to attrition. Institutional culture can likewise be examined through perceived inclusion, opportunities to provide feedback, and responsiveness to concerns. This approach permits analysis of conditions that may contribute to disengagement risk while preserving the distinction between student perceptions, documented processes, and causal evidence.

Early-warning systems and proactive retention

Early-warning approaches identify emerging difficulties before confirmed withdrawal. Potential indicators include disrupted academic progression, missed assessments, reduced participation, and expressed intentions to leave. Such indicators warrant follow-up rather than establish that departure will occur. Bergdahl et al. (2024), reviewing 159 studies, found that higher education learning analytics predominantly measured observable behavior, with fewer studies capturing multiple dimensions of engagement. This supports combining participation records with accounts of students' emotions, motivation, resources, and responsibilities.

Data integration can assist this process. Realinho et al. (2022) describe a Portuguese dataset combining academic, demographic, socioeconomic, and macroeconomic information to support estimation of dropout and academic failure risk. The contribution is the connection of institutional records with potential tutoring decisions. Predictors must nevertheless be available when an alert is generated, and models require validation in the population where they will be applied. A model that distinguishes past outcomes does not, by itself, demonstrate successful prevention of future withdrawal.

Proactive retention connects identification with support and evaluation. Ifenthaler and Yau (2020) found promising learning analytics approaches but limited rigorous, large-scale evidence of effectiveness. Institutional responses should therefore include a process for reviewing alerts, communicating with students, assessing needs, offering relevant assistance, and examining subsequent participation and persistence. Interpreting low digital activity requires particular care because access barriers or alternative study practices may account for it. Data protection and responsible interpretation are part of the organizational conditions for useful monitoring.

An early-warning framework should specify the risk condition, the observable indicator, the available response, and the unit responsible for follow-up. Academic, financial, psychosocial, and administrative responses can then be coordinated according to assessed needs. This represents a practical orientation toward intervention before withdrawal, rather than a claim that all existing interventions are reactive. Its effectiveness requires subsequent assessment; development of a framework is not equivalent to proof that it improves retention.

Philippine higher education policy and PUP context

Philippine policy provides an important setting for examining access and retention. Republic Act No. 10931 establishes free tuition and other school fees in eligible public higher education institutions, together with additional financial assistance mechanisms. Republic Act No. 7722 assigns CHED responsibilities for policy, standards, and monitoring. These provisions establish the legislative context for access and institutional quality, while evidence about persistence requires examination of student experiences and actual outcomes. Tuition relief should not be equated with the elimination of all costs associated with continued study.

Monitoring and evaluation serve different purposes across educational sectors. For tertiary education, the Commission on Higher Education (CHED) has a mandate under Republic Act No. 7722, whereas campus-level early-support procedures depend on each higher education institution's data governance and service capacity. A campus retention framework should therefore identify what signals can be observed locally, which office may respond, and how privacy and effectiveness will be assessed (Republic Act No. 7722, 1994; Ifenthaler & Yau, 2020).

Public higher education institutions such as PUP operate where access policy meets students' lived conditions. The present study examines demographic characteristics, academic experiences, household circumstances, psychosocial conditions, and institutional practices in relation to perceived attrition risk and disengagement. Institution-specific dropout estimates require cohort-based definitions, observation periods, and verified institutional records; they are not derived here from the national figure reported by EDCOM II (2025).

The present study distinguishes voluntary attrition from potential attrition. Voluntary attrition refers to a decision to discontinue studies, although the available choices may be constrained by students' circumstances. Potential attrition denotes risk or disengagement among enrolled students rather than confirmed departure. The distinction permits

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analysis of experiences preceding withdrawal while requiring clear operational criteria in the study's methods. Findings about enrolled students' intentions should not be reported as the institution's actual dropout rate.

Synthesis and interdisciplinary research gap

The reviewed literature identifies connected patterns across international settings: academic difficulties, financial pressures, competing obligations, adjustment and belonging, and institutional responsiveness. Their relationships matter more than an isolated list of factors. Economic pressures may coincide with reduced study time; social relationships may influence the support available during academic difficulty; and institutional practices may affect

whether students can obtain assistance. Digital participation adds a resource and engagement dimension. These relationships provide propositions for contextual investigation rather than a uniform causal sequence.

An interdisciplinary interpretation connects education's concern with preparedness and learning, psychology's attention to emotions and motivation, sociology's examination of relationships and inequality, economics' analysis of costs and competing demands, and governance and public policy's focus on support delivery and equity. The evidence also differs in strength: cross-sectional associations identify relationships, longitudinal evidence follows outcomes over time, randomized intervention studies can estimate intervention effects under specified conditions, and predictive models classify risk. These forms of evidence should not be treated as interchangeable.

The present study addresses the integration of academic, socioeconomic, psychosocial, and institutional conditions with early warning signs of disengagement at PUP. Its contribution is to connect multidimensional explanations with student experiences and support practices in a public university serving marginalized communities. The proposed framework links risk conditions and measurable indicators with coordinated academic, financial, psychosocial, and institutional responses, providing a basis for early identification and appropriate action.

Theoretical Framework

Three theoretical frameworks of this study are based upon: (1) Tinto's Longitudinal Model of Student Integration (1975, 1993), which explains student retention and attrition through pre-entry attributes, goals and commitments, and institutional experiences, particularly academic and social integration. It emphasizes that students are more likely to persist when they perform well academically, develop positive relationships, participate in institutional activities, and experience a sense of belonging. (2) Bean and Metzner's Student Attrition Model (1985), which extends Tinto's framework by focusing on non-traditional and at-risk students and emphasizing the influence of academic, environmental, psychological, and background factors on dropout decisions. This model is particularly relevant to PUP students who may experience financial difficulties, employment, family responsibilities, and other external pressures that compete with academic demands. (3) Bronfenbrenner's Ecological Systems Theory (1977), which views student attrition as the result of interactions between students and multiple environmental systems, including family, peers, school, community, societal structures, and changes over time. The integration of these three theories provides a comprehensive framework for examining the why, when, how, and contextual conditions associated with student disengagement and dropout. Tinto's model provides the foundation for understanding academic and social integration, Bean and Metzner's model explains the effects of external and psychological factors on at-risk students, while Bronfenbrenner's theory broadens the analysis by situating student experiences within interconnected social, institutional, economic, and historical environments. Together, these frameworks guide the study in identifying early indicators of student attrition and in developing evidence-based retention strategies that are responsive to the experiences and needs of students at the Polytechnic University of the Philippines (PUP).

This study draws on three complementary orientations rather than treating them as competing causal models. First, Tinto's student integration perspective highlights academic and social belonging and the relationship between student and institution; contemporary empirical discussion appears in Franz and Paetsch (2023). Second, Bean and Metzner's nontraditional-student attrition perspective directs attention to external, background, and psychological pressures, including employment and family responsibilities, alongside academic experience (Ifenthaler & Yau, 2020). Third, Bronfenbrenner's ecological systems perspective situates student experience within interactions among family, peers, institution, community, and broader structures; Renn and Smith (2023) discuss applications and limitations of ecological approaches in higher education. Together, these orientations locate academic experiences and integration, external socioeconomic demands, and psychosocial and institutional relationships within the same analysis. In this study, the four measured domains—academic, socioeconomic, institutional, and psychosocial—provide a descriptive organization; interview narratives supply possible warning signals; and these findings inform proposed, not yet

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evaluated, institutional responses. Demographic variables describe participants and potential variation but were not tested as independent predictors of actual withdrawal.

Table 1
Conceptual pathway connecting conditions, emerging signals, support, and outcomes

Conceptual stage	Connection to study and theory
Student context	Demographic characteristics and circumstances across the PUP campuses (ecological orientation)
Interacting conditions	Academic integration; household and work demands; institutional access; psychosocial experience (Tinto, Bean–Metzner, ecological perspectives)
Potential signals	Missed tasks or classes, reduced participation, expressed distress, isolation, or difficulty obtaining support (interview narratives)
Proposed support response	Voluntary check-in, academic advising, assistance with indirect costs, administrative guidance, counseling/referral
Outcome to evaluate	Subsequent engagement, persistence, and progression; effectiveness to be tested with longitudinal data

Table 1 links student context and interacting academic, socioeconomic, institutional, and psychosocial conditions with potential signs of disengagement and proposed support responses. These connections guide interpretation rather than establish a fixed sequence or causal relationship. The effectiveness of the proposed responses in supporting engagement, persistence, and progression requires longitudinal evaluation.

Statement of the Problem

Despite expanded access to Philippine higher education through government policies supporting free and affordable tertiary education, student attrition remains a persistent concern in public higher education institutions. Existing research has identified academic, demographic, socioeconomic, psychosocial, institutional, and systemic factors associated with students' decisions to discontinue their studies. However, these dimensions are frequently examined separately, resulting in limited understanding of how multiple conditions interact and manifest as early warning signals before formal withdrawal or prolonged disengagement. This fragmentation may constrain the development of timely, targeted, and context-sensitive retention interventions.

Student attrition is therefore not solely an academic concern but an interdisciplinary issue involving educational experiences, socioeconomic conditions, psychological and social circumstances, institutional practices, and broader systemic environments. Understanding these interacting dimensions is particularly important in public higher education institutions that serve diverse student populations and are expected to translate expanded access into meaningful persistence and degree completion.

Within this context, there is a need to examine the factors contributing to student attrition and identify observable early warning signs of disengagement among students at risk of attrition. There is also a need to integrate these dimensions into a practical framework that can support the early identification of students at risk and guide appropriate institutional retention interventions. Thus, this study examined the multidimensional factors contributing to student attrition at the Polytechnic University of the Philippines (PUP), identified early warning signs of disengagement, and integrated the findings into a context-sensitive student retention framework for public higher education.

Research Objectives

To examine the multidimensional factors and early warning signals associated with student attrition at the Polytechnic University of the Philippines (PUP) and develop a context-sensitive student retention framework for public higher education.

Specifically, the study sought:

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1. to examine the factors contributing to student attrition at the Polytechnic University of the Philippines in terms of demographic characteristics, academic experiences, socioeconomic conditions, institutional and systemic conditions, and psychosocial circumstances.
2. to identify the early warning signs of disengagement among students at risk of attrition in relation to academic, institutional, socioeconomic, and psychosocial factors.
3. to integrate the identified contributors to student attrition and early warning signs of disengagement into a context-sensitive student retention framework that connects measurable risk indicators with appropriate institutional interventions.

Research Questions

1. What factors contribute to student attrition at the Polytechnic University of the Philippines in terms of demographic characteristics, academic experiences, socioeconomic conditions, institutional and systemic conditions, and psychosocial circumstances?
2. What early warning signs of disengagement are evident among students at risk of attrition in relation to academic, institutional, socioeconomic, and psychosocial factors?
3. How can the identified contributors to student attrition and early warning signs of disengagement be integrated into a context-sensitive student retention framework that connects measurable risk indicators with appropriate institutional interventions?

METHODOLOGY

Research Design

The study employed a convergent parallel mixed-methods design within a case study of the Polytechnic University of the Philippines (PUP). This approach combined quantitative descriptions of student experiences with qualitative accounts of disengagement and attrition within the university's multicampus context. The two strands were conducted during overlapping periods, analyzed separately, and integrated during interpretation.

The quantitative strand used a descriptive survey to examine academic experiences, socioeconomic circumstances, institutional environment, and psychosocial factors. The qualitative strand used semi-structured interviews, informed by a phenomenological perspective, to explore students' lived experiences of disengagement and attrition, supplemented by a guidance counselor's perspective. Following separate analyses, the findings were compared across the four domains to identify convergence, complementarity, and divergence. This integration provided a contextual understanding of potential warning signals and informed the proposed student retention framework. The design did not establish causal relationships or test the framework's predictive accuracy or effectiveness.

Research Instruments

A structured online questionnaire was used to collect demographic information and responses concerning academic experiences, socioeconomic circumstances, institutional environment, and psychosocial factors. Items in the four domains used a five-point Likert response scale.

A semi-structured interview guide supported the qualitative strand by allowing participants to describe their experiences and circumstances surrounding disengagement or discontinuation of studies. The interview format allowed follow-up questions to clarify participants' accounts.

Participants and Sampling

The survey target population comprised 84,897 PUP undergraduates. Slovin's formula (5% assumed margin of error) yielded a target of approximately 399; 399 valid responses were obtained from enrolled students in the second semester of AY 2024–2025 across 23 campuses. Respondents were distributed as follows (n): Alfonso 3; Bansud 3; Bataan 8; Biñan 6; Cabiao 3; Calauan 3; General Luna 3; Lopez 16; Maragondon 8; Mulanay 6; Parañaque 6; Pulilan 3; Quezon City 9; Ragay 6; Sablayan 3; San Juan 9; San Pedro 7; Sta. Maria 13; Sta. Rosa 17; Sta. Mesa 245; Sto. Tomas 11; Taguig 8; and Unisan 3 (total = 399). Sta. Mesa accounted for 61.4% (245/399). The respondent profile included 387 aged 18–22; 264 male, 128 female, and 7 who preferred not to disclose sex; and 386 regular and 13 irregular students. Year-level counts were 155 first-year, 47 second-year, 114 third-year, 82 fourth-year, and 1 graduating student. Although stratified random sampling was described, recruitment was voluntary and campus representation was non-proportional; random selection was not demonstrated. The qualitative strand used purposive

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criterion sampling of 12 at-risk or former students (P1–P12) and one guidance counselor (GC-1), for 13 interviewees. Student criteria included PUP enrollment from 2021 onward and experiences of prolonged absence/AWOL, leave of absence for at least one academic year, transfer, irregular enrollment/disengagement, or permanent withdrawal. Participant-level campus and attrition-category counts were not reported.

Data Collection Procedure

The online survey was disseminated from April to November 2025 through institutional emails and campus social-media groups, with coordination from the Office of the Vice President for Campuses and campus directors. Incomplete or invalid submissions were excluded from the analysis.

Qualitative recruitment was reported to have occurred concurrently through PUP-related Facebook and Reddit communities, followed by private-message contact with potential participants. Following informed consent, individual interviews were conducted through Zoom or Google Meet. Interview recordings were transcribed, and identifying information was removed before analysis.

An approved request sought first-year enrollment records for AY 2020–2021 and graduating-student records for AY 2023–2024 as supplementary contextual materials. However, receipt and analysis of these records were not documented; consequently, they were not treated as a completed source of corroborating evidence or as longitudinal records linked to individual participants.

Quantitative Data Analysis

Frequencies and percentages summarized demographic and other categorical responses, and weighted means and standard deviations summarized five-point Likert items across the four domains. The interpretation bands were 1.00–1.80 (strongly disagree), 1.81–2.60 (disagree), 2.61–3.40 (neutral), 3.41–4.20 (agree), and 4.21–5.00 (strongly agree). The study documented descriptive analyses only; no inferential tests, statistical significance levels, or predictive models were reported. Consequently, associations and patterns were not interpreted as causal effects.

Qualitative Data Analysis

Qualitative interview data were analyzed using Braun and Clarke's (2006) thematic analysis. The analysis involved familiarization with the transcripts, generation of initial codes, development of candidate themes, review of themes, definition and naming of themes, and production of the final report. NVivo was used to facilitate data organization and coding.

Repeated review of coded materials and member checking were used, where applicable, to enhance the credibility of the qualitative interpretations.

Integration of Quantitative and Qualitative Findings

Following separate analysis, the quantitative and qualitative findings were integrated through systematic comparison of the two strands. Quantitative patterns were compared with themes emerging from participants' narratives to identify areas of convergence, complementarity, and divergence. Institutional records were used to further contextualize or corroborate the findings.

The integrated evidence was used to identify major attrition-related domains, early warning indicators, and corresponding institutional interventions. These integrated findings served as the empirical basis for developing the proposed Student Retention Framework.

Development of the Student Retention Framework

The proposed Student Retention Framework was developed through an interpretive synthesis of the integrated findings. The synthesis organized the evidence into contributing conditions, potential academic and behavioral signals, proposed voluntary support responses and responsible institutional units, and outcomes for future evaluation.

The Context–Input–Process–Product (CIPP) labels served as an organizational guide: Context described student circumstances and institutional conditions; Input concerned available support capacity; Process covered possible institutional responses; and Product identified intended outcomes and monitoring feedback. This organization did not constitute a formal CIPP evaluation. Stakeholder appraisal was proposed, but completed expert validation, prospective testing, and evaluation of effectiveness were not documented.

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Ethical Considerations

The study received ethics approval from the University Research and Ethics Committee (UREC) of the Polytechnic University of the Philippines.

The study complied with the Data Privacy Act of 2012 (Republic Act No. 10173). Participation was voluntary, and written informed consent was obtained before participation in the survey or interview. Participants were informed of their right to withdraw without penalty. Appropriate measures were implemented to protect the confidentiality of participant information. Interview participants were assigned codes or pseudonyms, and identifying information was removed from transcripts and research reports.

Digital recordings and research files were stored in password-protected and encrypted storage accessible only to authorized research personnel. Where participants experienced distress during interviews, appropriate psychological support or referral procedures were made available in accordance with the approved research protocol.

RESULTS AND DISCUSSION

Results are organized by characteristics and four survey domains, potential warning signals in interviews, integration into a proposed retention framework and the Proposed Retention Model for Higher Education. The survey and interview strands describe different forms of evidence; their juxtaposition does not demonstrate that a particular factor caused withdrawal.

Demographic Profile of Respondents

The survey sample (N = 399) was described as 97% aged 18–22, 66% male, 99% single, and 79% living with immediate family. First-year students comprised 39%, third-year students 29%, and regular students 97%. In a question about possible reasons for taking a leave of absence (LOA), health reasons were selected by 25%, financial problems by 17%, and mental-health concerns by 14%. These sample descriptions are not campus-wide prevalence or an observed attrition rate.

Table 2

Academic factors contributing to attrition: item means and standard deviations (N = 399)

Indicators	Weighted Mean	Verbal Interpretation	SD
I understand the academic requirements of my course	4.56	Strongly Agree	0.65
I regularly attend my classes	4.86	Strongly Agree	0.51
I can keep up with the workload of my courses	4.18	Agree	0.82
I have received timely feedback from my instructors	3.53	Agree	0.98
I feel confident about passing my course	3.83	Agree	0.96
I have failed one or more course in the past	1.51	Disagree	1.10
I find it hard to manage academic deadlines	2.99	Neutral	1.14
Average Weighted Mean	**3.64**	**Agree**	**0.88**

Table 2 reports academic experiences mean of 3.64 (source interpretation: Agree). Attendance had the highest item mean (4.86), followed by understanding course requirements (4.56); difficulty managing academic deadlines was rated 2.99 (Neutral). Because the questionnaire contains both positively and negatively worded statements (including having failed a course), the unadjusted domain average does not establish low or high dropout risk. Interview themes below add experiences not captured by a single average.

The qualitative interviews presented five recurring academic experiences that may help explain why some participants disengaged despite positive average survey responses:

(1) Modality-related Barriers and Technological Constraints: *The shift to online learning was described as disrupting academic participation. Participants cited poor internet connectivity, cognitive overload from digital tools, and lack of adequate hardware. As P1 noted, "Mas mahirap pa pag-online… kailangan mo mag-provide ng magandang internet, kailangan may laptop ka."* [It's harder when we're online…you are forced to have a good internet connectivity; you are even forced to have a laptop.]

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(2) Overwhelming Academic Workload and Academic Fatigue: *Students in research-heavy programs described competing academic demands. P8 shared, "4 to 5 research subjects… I had to change my study habits every hour just to keep up... Pero I failed to keep up."*

(3) Poor Instructional Support and Inconsistent Faculty Practices: *Participants reported feeling unguided, citing erratic posting of assignments and lack of pedagogical structure. P5 described distress after repeated failures under the same professor: "3 times na-tag as course instructor, 3 times kong dinrop… then I stopped na*." [She was tagged as our course instructor three times, and so I drooped it all three times as well… then I just had the urge to stop.]

(4) Academic Misalignment and Skill Gaps: *Several students reported difficulty because they were placed in programs they did not choose or desire (as reported by these participants). P6 stated, "My program po kasi… hindi po talaga siya yung nasa puso ko… I hate that program po talaga."* [It was my program, honestly… it's not really what my heart is desiring to have… I really hate that program.]

(5) Deteriorating Academic Engagement: Participants described reduced contribution to class activities and weakening academic confidence, a pattern consistent with scholarship distinguishing observable learning engagement from deeper cognitive and emotional participation (Bergdahl et al., 2024).

Table 3
Socioeconomic factors: item means and standard deviations (N = 399)

Indicators	Weighted Mean	Verbal Interpretation	SD
I have enough financial resources to sustain my education	3.35	Neutral	0.99
I receive financial support for my education from my family	4.18	Agree	1.07
I receive support from my scholarship or financial aid	2.59	Neutral	1.54
I have to work part-time or full-time while studying	2.18	Disagree	1.47
I find transportation and daily expenses manageable	3.35	Neutral	1.08
I struggle to focus on my schoolwork due to financial pressure	2.94	Neutral	1.22
Average Weighted Mean	**3.10**	**Neutral**	**1.23**

Table 3 summarizes socioeconomic responses (unadjusted mean = 3.10, Neutral). Family financial support was relatively highly rated (4.18), while adequacy of financial resources (3.35) and scholarship/aid support (2.59) received neutral ratings. These descriptive results may coexist with acute indirect-cost difficulties reported by individual interviewees; they do not quantify the proportion of students who left because of financial problems.

Interviewees described several practical expenses and competing responsibilities that remain relevant even where tuition is waived under Republic Act No. 10931 (2017):

(1) *Financial Instability and Indirect Costs:* Students struggled to finance thesis projects, internet data, and daily subsistence. P1 remarked, *"Yung thesis ko almost 5k… paano yun hindi talaga kaya?"* [My thesis, it almost costs 5k… whatever I do, I really cannot afford it.]

(2) *Transportation and Mobility Constraints: Geographic inequity placed heavy daily burdens on commuters. P10 noted that commuting cost roughly ₱200 daily, which this participant described as difficult to meet.*

(3) *Work-Study Conflict:* To survive, many engaged in labor that directly interfered with schooling. P3 recounted, *"Nagwork ako sa BPO… nightshift… tapos travel pa from Cavite to Manila,"* [I tried working in a BPO… nightshift… then I need to travel from Cavite to Manila everyday] demonstrating an unsustainable physiological load.

(4) *Role Overload and Caregiving: Some participants described unpaid caregiving responsibilities. P4, a mother of two, shared, "Minsan 12 a.m., tulog na sila ako gising pa para lang tapusin,"* [Sometimes, 12 a.m., my kids are already sleeping, yet here I am still doing my assignments] illustrating how family duties compete with academic survival (Bean & Metzner, 1985).

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(5) *Shifting Priorities:* Some interviewees described considering immediate income-generating activities when household demands competed with the longer-term benefits of completing a degree.

Table 4
Institutional environment: item means and standard deviations (N = 399)

Indicators	Weighted Mean	Verbal Interpretation	SD
I feel a sense of belonging in PUP	3.91	Agree	0.9203216
I find administrative processes like enrollment and grade submissions efficient	3.46	Neutral	1.0599467
I receive adequate academic advising and guidance from the school	3.27	Neutral	0.9984497
I can easily access student support services when needed	3.43	Neutral	0.992421
I feel that my concerns are heard by the administration	3.12	Neutral	1.0641447
I am aware of programs that support students at-risk of dropping out	3.14	Neutral	1.2190063
I feel that my professors care about my well-being and success	3.65	Agree	1.00034
Average Weighted Mean	**3.43**	**Neutral**	**1.04**

Table 4 reports an institutional-environment mean of 3.43 (Neutral). Belonging (3.91) and perceived faculty care (3.65) were comparatively favorable; administrative efficiency (3.46), adequate advising (3.27), and awareness of at-risk support programs (3.14) were neutral. These self-reports indicate perceptions of access and support, not documented proof of institutional policy failures.

Qualitative participants reported difficulties with follow-up, procedures, and service visibility; these accounts identify issues for institutional examination rather than demonstrate that they affected all PUP campuses:

(1) Lack of Proactive Monitoring and Follow-Up: *Some interviewees described an absence of institutional outreach when attendance declined. P4 noted, "Walang nag-reach out… sana may service yung school na kakamustahin nila yung student."* [Nobody reached out, even a single one… I wish the school had a service where they would check in on students and ask how they're doing.]

(2) Inflexible Institutional Policies: *Rigid rules surrounding LOAs, section shifting, and academic probation were described by some participants as barriers to continuation. P8 was blocked from an emergency medical LOA and advised simply to withdraw: "Hindi po ako makapag-LOA… bawal daw po… my Chairperson suggested na i-withdraw ko na lang."* [I couldn't take aleave of absence (LOA)… they said it wasn't allowed. My Chairperson suggested that I just withdraw instead.]

(3) Insufficient Awareness of Support Services: Even when services like counseling existed, students lacked "institutional literacy." P2 stated, *"Hindi ko alam may psychological services… ang alam ko lang yung sa ngipin."* [I didn't know there were psychological services… all I knew about was the dental service].

(4) Administrative Hurdles: Navigating bureaucracy was cited as exhausting and demotivating. This was corroborated by the Guidance Counselor (GC-1), who cited massive manpower shortages: *"Under-serviced po talaga tayo. Manpower po talaga ang problema… ang RGC lang po talaga [natin] apat [for tens of thousands of students]."* [We're really under-serviced. The main problem is manpower… we only have four RGCs for tens of thousands of students.]

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Table 5
Psychosocial factors: item means and standard deviations (N = 399)

Indicators	Weighted Mean	Verbal Interpretation	SD
I feel motivated to finish my bachelor's degree	4.19	Agree	0.97
I often experience stress or anxiety about school	3.86	Agree	1.09
I have a strong support network (family, friends, peers, community)	3.86	Agree	1.05
I feel isolated or disconnected from my classmates	2.56	Neutral	1.20
I believe that completing my degree will lead to better opportunities	4.51	Strongly Agree	0.78
Average Weighted Mean	**3.80**	**Agree**	**1.02**

Table 5 reports the psychosocial-domain unadjusted mean of 3.80 (Agree), numerically the highest among the four tabulated raw means. High endorsement of degree benefits (4.51) and motivation to finish (4.19) coexisted with agreement that academic stress or anxiety was often experienced (3.86). Because positive and adverse statements were not reported as reverse-scored, this numerical ranking is not evidence that psychosocial experiences were the strongest causes of attrition.

The interviews described emotional strain and changes in social connection. The following themes represent participant accounts, not a clinical assessment of the full survey sample:

(1) Emotional Exhaustion and Burnout Experiences: Several participants described feeling depleted. P12 said, *"Demotivated ako… sobrang burnout. One day sabi ko hindi na ko papasok"* [I was demotivated and extremely burned out; one day I decided not to attend]. P10 recalled, *"Gumugol ako ng 2–3 years na lagi akong umiiyak sa jeep"* [I spent two to three years frequently crying during my commute]. These are experiences reported by the speakers, not clinical diagnoses.
(2) Reported Anxiety and Mental-Health Difficulty: P2 stated, *"Clinically diagnosed po ako… naging normalized yung kaba hanggang hindi ko ma-control"* [I received a clinical diagnosis; the nervousness became so familiar that I could no longer control it]. The study did not independently verify diagnoses, and the quotation is not used to diagnose other participants.
(3) Social Isolation and Loss of Belonging: P7 remarked, *"I felt na outsider po… wala akong close friendship"* [I felt like an outsider; I did not have a close friendship]. This quotation describes the participant's perceived isolation, not a measured prevalence of social disconnection.
(4) Declining Self-Worth: Academic setbacks and institutional difficulties were described alongside reduced confidence. P1 noted, *"Nababa 'yung self-esteem mo… na-demotivated ako."* [My self-esteem went down… I became demotivated.] GC-1 validated this, stating that the pressure of staying in a mismatched or unsupportive environment actively worsened students' mental health diagnoses.

Potential Early Warning Signals of Disengagement

Across the interview narratives, participants retrospectively described changes before or during educational disengagement. These patterns may provide useful signals for a supportive conversation, but this study did not prospectively validate their ability to predict withdrawal. Four categories recurred:

(1) Reduced Class Participation: P7 stated, *"I wasn't participating that much po… pakiramdam ko background lang"* [I was not participating very much; I felt that I was just in the background]. This describes a change in the participant's engagement.
(2) Accumulating Task Avoidance*: P1 reported, "Hindi na ko nakakapagpasa ng requirements"* [I could no longer submit course requirements]. Missed submissions may invite a voluntary follow-up but can have different causes.
(3) Emotional 'Auto-Mode' and Demotivation: P12 described, *"Tinatamad na kong pumasok… naka-automode na lang"* [I no longer felt motivated to attend; I was functioning on auto-mode]. This is a retrospective description, not a psychometric indicator.

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(4) Social Withdrawal from Peers: P3 said, *"Tinanggal ko na 'yung contact ko sakanila"* [I removed my contact with them]. Along with absence and declining task submission, this suggests observable changes that might justify sensitive outreach. Their timing, sensitivity, specificity, and prospective usefulness remain untested in this study.

Table 6

Mixed-methods joint display: reported patterns, potential signals, and proposed institutional responses

Domain	Survey description	Interview-reported concerns / possible signal	Proposed voluntary response
Academic	WM 3.64; attendance 4.86; deadlines 2.99	Workload, modality barriers, non-submissions, reduced participation	Check-in, advising, flexible academic planning, tutoring
Socioeconomic	WM 3.10; family support 4.18; scholarship aid 2.59	Indirect costs, commuting, competing paid/care work	Financial-aid review, referral, scheduling support
Institutional	WM 3.43; awareness of at-risk support 3.14	Service invisibility, procedural difficulties, lack of follow-up	Named case coordinator, clearer information, review of leave/return options
Psychosocial	WM 3.80 (mixed item polarity); stress/anxiety 3.86	Emotional exhaustion, isolation, lowered self-worth	Consent-based wellbeing check-in and counseling referral

Student attrition is best approached here as an interaction among educational circumstances, household resources, psychological experiences, social relationships, and institutional processes. The evidence supports descriptive patterns from the survey and retrospective accounts from interviews; it does not establish a uniform pathway, clinical causation, or the effect of any proposed retention intervention. Recent cross-context research similarly finds that academic engagement, material access, belonging, and institutional support interact, while warning against direct transfer of results across settings (Clamor & Saloma, 2023; Rahmani et al., 2024; Martínez Rojas et al., 2025).

Integrated Interpretation of Attrition Pathways (not a fixed temporal sequence)

Academic Strain: Some participants linked curricular demands, learning modalities, and program mismatch to declining participation. Although prior engagement research describes relationships between integration and persistence (Franz & Paetsch, 2023), the present descriptive survey cannot determine whether academic difficulty occurred first or caused subsequent withdrawal.

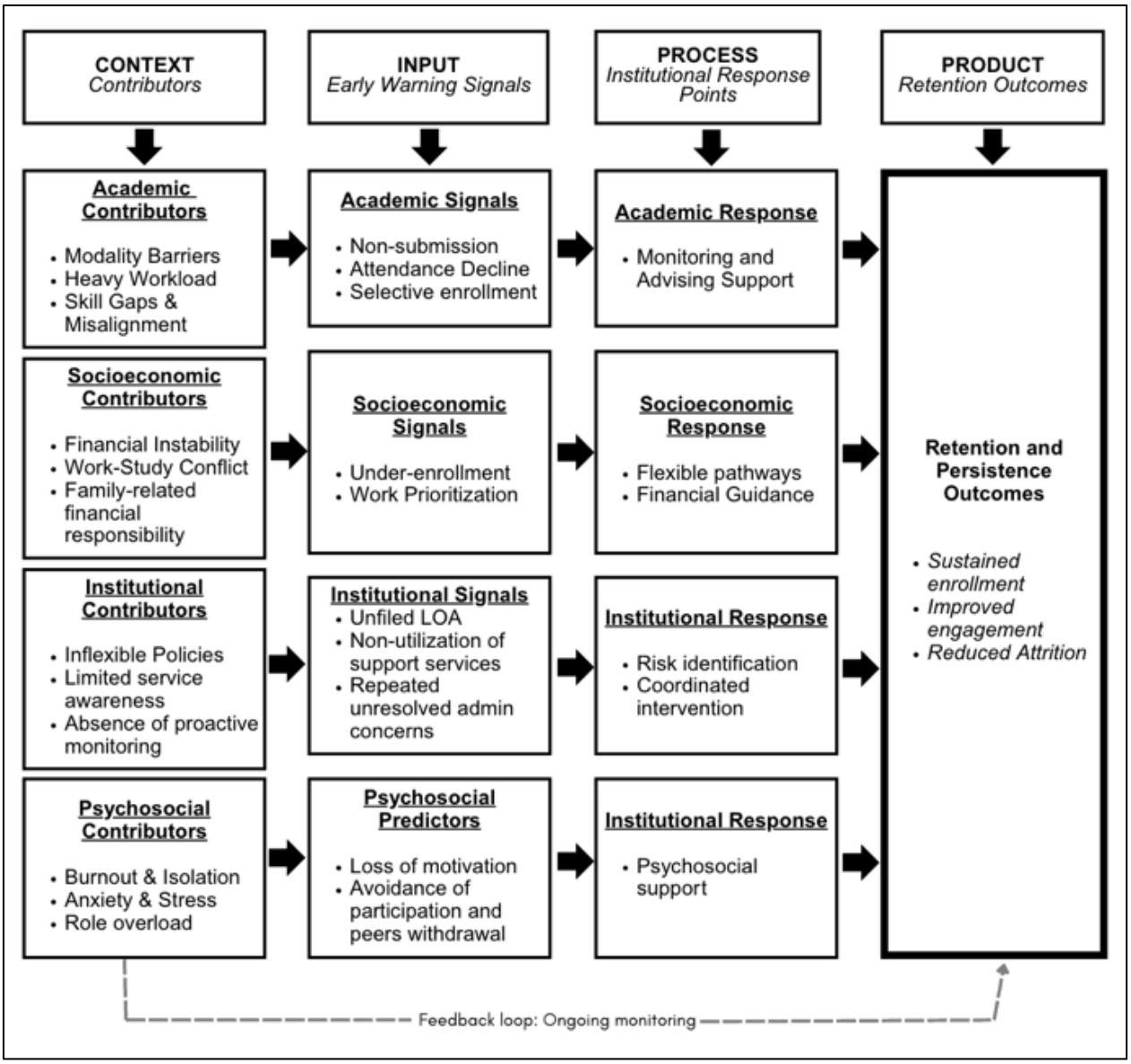
Socioeconomic Pressure: Indirect educational costs, employment, travel, and care responsibilities were described as constraints on study time and resources. Free tuition under Republic Act No. 10931 does not eliminate these expenses; the Philippine Tertiary Education Subsidy evaluation also identifies administrative challenges affecting access to aid (Bayudan-Dacuycuy et al., 2024). The current interview accounts do not establish a uniform effect across students.

Institutional Responsiveness: Interviewees described difficulty navigating processes and accessing timely support. Work on institutional academic and emotional support likewise identifies their relevance to retention decisions (Martínez Rojas et al., 2025). These self-reports suggest topics for review, not a comprehensive audit of PUP governance.

Psychosocial Experiences: Participants described exhaustion, anxiety, isolation, and diminished self-confidence as part of their disengagement narratives. Independent observational research has associated academic stress with well-being and psychosocial factors with dropout risk, without establishing causal withdrawal pathways (Barbayannis et al., 2022; Martínez-Líbano & Yeomans-Cabrera, 2023). The study therefore does not claim that distress was always the final stage or that leaving was necessarily the only viable response.

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Figure 2
Proposed Integrated Early-Warning–Driven Student Retention Framework



An integrated early-warning-driven retention framework using the original model's four descriptive stages—contributing context, potential signals, support processes, and outcomes for future evaluation. The Context–Input–Process–Product (CIPP) labels provide an organizational heuristic also used in a Philippine tertiary education subsidy evaluation (Bayudan-Dacuycuy et al., 2024); they do not establish that the present study implemented or tested a formal CIPP evaluation as a fourth theoretical framework. The model translates multidimensional reports into possible points for sensitive institutional support.

Contributing Context: Academic, socioeconomic, institutional, and psychosocial circumstances may overlap. Potential Signals: Recurrent absence, missed submissions, expressed difficulty, sudden changes in participation, and peer withdrawal may warrant a confidential check-in, not automated labeling of a student as likely to drop out. Support

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Processes: With appropriate permissions and student choice, an identified office may coordinate academic advising, flexible course arrangements, review of applicable financial assistance, transparent leave/return guidance, and counseling or peer-support referral. Outcomes for Evaluation: Institutions may monitor subsequent engagement, credits completed, re-enrollment, timely referral, student satisfaction, and persistence using defined cohorts and privacy safeguards. These responses and outcomes are proposed, not demonstrated effects of the present study.

Study Limitations and Implications for Future Validation

The survey sample is not shown to be probability-based or proportionally distributed across campuses, and the interview count and data-collection period are not specified in the supplied manuscript. Cross-sectional self-report means do not measure actual attrition outcomes, while retrospective interviews may be affected by recall and selection bias. The domain scores combine positively and negatively worded items without a documented reverse-scoring process. Institutional records are described generally and have not been provided as linked longitudinal participant data. Qualitative accounts from a small or selective group cannot establish institution-wide prevalence. Consequently, this framework is a proposal for ethical, prospective assessment rather than a validated predictive or causal model. Future work may establish operational outcome definitions, test reliability and fairness across campus groups, and compare support recipients with appropriate reference groups.

Conclusion

The findings indicate that student attrition at the Polytechnic University of the Philippines (PUP) is associated with interconnected academic, socioeconomic, institutional, and psychosocial conditions. The quantitative findings showed generally positive reported academic engagement but also identified areas of concern involving academic deadline management, financial resources, access to support, and psychosocial stress. The qualitative findings provided further contextual evidence of technological constraints, academic workload, financial and family pressures, institutional barriers, limited awareness of support services, emotional exhaustion, and social withdrawal among participants who experienced or were at risk of discontinuing their studies.

The identified patterns suggest that disengagement may develop through a combination of conditions rather than through a single factor. The study therefore contributes an interdisciplinary perspective by integrating educational, socioeconomic, psychosocial, technological, and institutional dimensions of student attrition. The proposed Student Retention Framework provides an evidence-informed structure for connecting identified risk conditions and observable warning signals with possible institutional responses. However, the framework should be regarded as a context-specific model that requires further validation, particularly through prospective and longitudinal studies, before its predictive effectiveness can be established.

Recommendations

Based on the integrated findings, the following recommendations are directed toward higher education institutions and policymakers:

1. Student Retention Monitoring

   Higher education institutions may consider establishing or strengthening a centralized student retention mechanism responsible for monitoring relevant academic, behavioral, socioeconomic, and psychosocial indicators and coordinating appropriate interventions across offices.

2. Instructional Support

   Academic units may strengthen faculty development and instructional support initiatives focusing on transparent course requirements, workload management, timely feedback, consistent communication, and recognition of observable signs of student disengagement.

3. Assistance for Hidden Educational Costs

   Higher education institutions and relevant policymakers may explore targeted assistance mechanisms for indirect educational expenses, including transportation, internet connectivity, learning resources, and research or thesis-related costs, particularly for students experiencing demonstrated financial constraints.

4. Flexible Institutional Policies

   Universities may review existing policies concerning leaves of absence, academic probation, section transfers, and related administrative processes to determine whether appropriate flexibility and support mechanisms can be incorporated for students experiencing documented academic, health, financial, or family-related difficulties.

5. Psychosocial Support

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Higher education institutions may expand the accessibility and visibility of guidance, counseling, and peer-support services, including proactive outreach mechanisms for students displaying observable signs of disengagement, while maintaining appropriate confidentiality and informed-consent procedures.

6. Prospective Validation of the Framework

Future researchers may conduct longitudinal and prospective studies to determine whether the identified warning signals can reliably predict subsequent disengagement or attrition. Future research may also examine the effectiveness of specific interventions associated with the proposed framework.

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