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Ascertaining the Determinants of Lesson Retention and Reducing the Attention Drift: Contextualized Classroom Engagement Framework

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Abstract. This research determined the critical factors governing lesson retention and identified the primary drivers of attention drift among basic education learners across selected public schools under the Department of Education Schools Division of Southern Leyte during the School Year 2026–2027 as the empirical baseline for developing a Contextualized Classroom Engagement Framework. Employing a quantitative descriptive-comparative, correlational, and developmental research design, the study sampled seventy-two respondents comprising sixty-six learners across Grades 5, 6, 8, 9, and 10, alongside six classroom teachers evenly distributed across Magatas Elementary School, Catmon Integrated School, and Bato National High School. Data were gathered through validated four-point Likert scales measuring cognitive retention dimensions, internal and external attention drift triggers, and classroom management concerns, which were subsequently analyzed using frequency counts, percentage distributions, weighted means, and standard deviations. The empirical findings revealed that learners exhibit an overall moderate level of lesson retention ($\bar{x}$=2.33), characterized by fragile factual recall across weekly intervals and a pronounced deficit in independent practical application ($\bar{x}$=2.22). Concurrently, attention drift was documented at an extensive degree ($\bar{x}$=3.19), driven by working memory overload during unbroken lectures exceeding twenty minutes ($\bar{x}$=3.39), severe classroom thermal discomfort ($\bar{x}$=3.56), and rain-induced acoustic reverberations on corrugated metal roofs ($\bar{x}$=3.43). Systemic challenges regarding thermal conditions, acoustic interference, shortages of localized instructional materials ($\bar{x}$=3.37), and inadequate time for spaced retrieval practice ($\bar{x}$=3.39) emerged as very serious operational concerns ($\bar{x}$=3.26). In response, the study formulated the Contextualized Classroom Engagement Framework, a structured pedagogical model that integrates cognitive micro-pacing, systematic spaced retrieval drills, localized instructional resources, and climate-adaptive classroom protocols to mitigate attention drift and optimize long-term competency retention across Philippine public schools.

Introduction

The modern pedagogical landscape is defined by an ongoing struggle for learner attention and cognitive endurance. In an era characterized by ubiquitous digital stimuli, rapid information exchange, and persistent environmental stressors, the capacity of basic education learners to sustain focus during instructional delivery has become compromised. This pervasive attentional decay directly impairs long-term lesson retention, conceptual consolidation, and higher-order cognitive transfer. Education systems worldwide grapple with the psychological reality that learning cannot take place without active mental engagement; when attention drifts, working memory processes are disrupted, preventing the deep structural encoding required for durable knowledge retention. Consequently, educators and

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academic researchers face an imperative to investigate the cognitive and contextual determinants of attention drift and to devise empirical interventions capable of anchoring learner engagement within real-world classrooms.

On a global scale, international educational bodies and cognitive researchers have documented a marked decline in students' sustained attention spans and foundational competencies. United Nations Educational, Scientific and Cultural Organization reports emphasize that learning poverty and cognitive disengagement have escalated across both developed and developing regions, leaving millions of primary and secondary school learners unable to achieve expected baseline proficiencies in literacy and numeracy. Parallel findings by the Organisation for Economic Co-operation and Development, derived from Program for International Student Assessment performance metrics, reveal that student disengagement, instructional monotony, and classroom distractions represent leading predictors of academic underperformance across diverse international cohorts. Academic scholars have increasingly scrutinized the psychological architecture of modern classrooms, demonstrating that attentional lapses, off-task behaviors, and pervasive mind-wandering prevent learners from constructing stable cognitive schemas (Cowan et al., 2021; Paas & van Merriënboer, 2020). International cognitive science literature underscores that attentional resources are finite; when instructional designs overwhelm working memory or fail to provide optimal cognitive arousal, mental fatigue sets in, triggering internal attention drift and severely eroding lesson retention across instructional sequences (Sweller, 2020; Xia et al., 2024).

Within the national landscape of the Philippines, the Department of Education faces an urgent crisis regarding functional mastery, retention, and academic achievement among basic education learners. Longitudinal evaluations of Philippine educational outcomes, reinforced by national assessments and international benchmarking exercises, consistently illustrate widespread deficits in conceptual understanding and foundational competencies among Filipino schoolchildren. In response to these persistent learning gaps, the Department of Education initiated system-wide instructional reforms, highlighted by the progressive nationwide implementation of the MATATAG Curriculum beginning in 2023 and continuing through 2026. A primary objective of this curriculum overhaul is the strategic decongestion of learning competencies by approximately seventy percent, purposefully reducing cognitive overload and granting educators the structural latitude to deepen instructional delivery, reinforce retrieval practice, and cultivate sustained learner engagement (Department of Education, 2023, 2024). Despite these high-level curriculum revisions, classroom practitioners across the archipelago continue to encounter substantial instructional bottlenecks. Public school educators nationwide report that learners routinely manifest acute signs of attention drift, characterized by cognitive exhaustion, day-to-day memory decay, passive passivity, and vulnerability to peer and digital interruptions (Bautista & Santos, 2023; Mendoza & Ocampo, 2024). These instructional realities illustrate that curricular decongestion at the policy level must be supported by evidence-based, classroom-level engagement models that actively regulate attention and facilitate the durable consolidation of competencies.

At the local level, these national challenges manifest with distinct urgency across the schools of the Department of Education Schools Division of Southern Leyte. Schools situated within this division reflect the diverse geographic and socio-demographic realities of Philippine public education, spanning rural coastal communities, integrated agricultural learning centers, and congested municipal secondary institutions. Specifically, within Magatas Elementary School, Catmon Integrated School, and Bato National High School, educators and administrators confront unique, situated challenges that directly modulate learner focus and retention. Public school classrooms across Southern Leyte frequently contend with external physical and acoustic disruptions, such as high ambient tropical temperatures, high humidity, inadequate classroom ventilation, and external community noise, which collectively amplify physical discomfort and accelerate cognitive exhaustion. Concurrently, learners traversing different developmental transitions, from upper primary (Grades 5 and 6) through intermediate secondary levels (Grades 8, 9, and 10), exhibit variable attentional thresholds that are often mismatched with conventional, teacher-centric didactic lectures. Local classroom observations across these three Southern Leyte schools highlight recurring concerns: teachers struggle to sustain spontaneous student attention beyond the initial minutes of instruction, while students frequently demonstrate rapid memory decay, struggling to recall fundamental competencies during summative tasks and subsequent instructional units.

The direct relevance of this study is situated in its empirical commitment to diagnose the exact internal cognitive mechanisms and external environmental factors governing learner attention and retention across different basic education strata. Rather than treating attentional lapses as isolated disciplinary infractions or generic student shortcomings, this investigation acknowledges attention drift as a multifaceted pedagogical phenomenon influenced by mental fatigue, instructional pacing, physical classroom ecology, and the cognitive architecture of the learner. By systematically gathering empirical perspectives from both learners and teachers across elementary, integrated, and secondary school environments in Southern Leyte, the study captures the developmental trajectory and contextual nuances of cognitive disengagement.
Furthermore, this investigation directly answers the ongoing call of the Department of Education for localized and contextualized pedagogical solutions. By synthesizing empirical diagnostic data from Magatas Elementary School, Catmon Integrated School, and Bato National High School, the study culminates in the development of a Contextualized Classroom Engagement Framework. This framework serves as a practical, culturally and environmentally grounded operational model

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for basic education teachers. It provides classroom practitioners with structured pedagogical strategies, such as cognitive chunking, interactive multimodal pacing, and contextualized formative retrieval protocols, that mitigate internal mind-wandering, buffer against environmental distractions, and safeguard long-term lesson retention within Philippine public schools.

Methodology

Design

This study adopted a descriptive-comparative, correlational, and developmental research design executed within a strictly quantitative paradigm. A quantitative descriptive design was particularly suited for systematically identifying, profiling, and mapping the distribution of observable educational phenomena, specifically the existing levels of lesson retention, the manifested frequencies of attention drift, and the prevailing pedagogical practices implemented across schools (Atmowardoyo, 2020; Siedlecki, 2020). Through descriptive statistical metrics, the design captured an authentic profile of the learner and teacher cohorts while establishing the empirical baseline of cognitive performance and classroom challenges without experimental manipulation or artificial environmental alteration.

Complementing the descriptive component, the comparative design dimension was operationalized to evaluate whether significant statistical differences exist across the structural strata of the respondent groups. Given that cognitive load management and attentional control vary according to developmental maturation and organizational environment, comparative analyses were conducted across school types (elementary, integrated, and secondary), grade-level tiers (intermediate elementary vs. junior high school cohorts), and academic achievement brackets (Privitera & Ahlgrim-Delzell, 2023). This comparative inquiry illuminates how institutional setting and developmental readiness moderate the severity of internal cognitive fatigue and the vulnerability to external distractions. Concurrently, the correlational dimension investigates the structural relationships linking the internal and external determinants of attention drift with learners' actual retention metrics, alongside evaluating the correspondence between teacher instructional practices and the containment of attentional lapses (Fraenkel et al., 2023; Privitera, 2022).

Finally, the study integrated a developmental research design methodology, traditionally framed within educational engineering and instructional systems development (Richey & Klein, 2020; Van den Akker et al., 2021). A developmental research design bridges the gap between diagnostic field analysis and practical pedagogical utility. Rather than terminating at descriptive and relational reporting, the design leverages the empirical findings gathered from the research environments to formulate, structure, and validate the target institutional output: the Contextualized Classroom Engagement Framework. The developmental dimension guarantees that the resulting engagement framework is not a theoretical abstraction, but a grounded, empirically calibrated intervention tailored directly to the physical, environmental, and developmental realities of the Schools Division of Southern Leyte.

Environment

The physical, institutional, and socio-ecological milieu of any educational investigation exerts a profound influence on cognitive functioning, behavioral regulation, and the efficacy of instructional delivery. In empirical research examining cognitive endurance and pedagogical responsiveness, situated classroom ecologies must be scrutinized as dynamic behavioral environments rather than passive backdrops (Creswell & Guetterman, 2021; Henderson et al., 2023). This study is situated within the Province of Southern Leyte, Philippines, under the administrative supervision and academic jurisdiction of the Department of Education (DepEd) Schools Division of Southern Leyte. Geographically positioned in the Eastern Visayas Region (Region VIII), Southern Leyte features a topographical blend of rugged mountain corridors, narrow coastal plains, and rural agricultural lowlands. The province operates within a climate vulnerability zone marked by high ambient tropical temperatures, sustained relative humidity, and exposure to seasonal monsoon patterns. These overarching ecological factors directly shape the physical architecture of local school buildings, daily schedules, and the general comfort levels of classroom occupants.

To capture the diverse operational realities of basic education across the division, three distinct educational institutions were selected as research environments: Magatas Elementary School, Catmon Integrated School, and Bato National High School. Each institution represents a specific school typology, elementary, integrated, and secondary, providing a comprehensive cross-sectional view of the administrative and instructional spectrum within the division.

Magatas Elementary School, located in the municipality of Sogod, serves as the primary educational research environment. Sogod functions as a vital educational and commercial center in Southern Leyte, yet its outlying barangays, such as Magatas, remain predominantly agricultural and residential. Magatas Elementary School operates as a standard public elementary school catering to early childhood and intermediate basic education learners. The demographic profile of its student body

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is drawn largely from low- to middle-income rural households whose primary livelihoods center on small-scale farming, copra production, local retail, and day labor. Instructionally, the school focuses on foundational literacy, numeracy, and initial exploratory competencies under Key Stage 2, specifically targeting Grades 5 and 6 learners in this study. The classroom facilities reflect conventional single-story, naturally ventilated public school architectures. In these rooms, elevated ambient heat, ambient humidity, and natural lighting interact continuously with intermediate learners whose executive control networks and attentional spans are still developing.

Catmon Integrated School, situated in the municipality of Saint Bernard, Southern Leyte, represents the second research environment and embodies the integrated school model. Saint Bernard is a coastal and agricultural municipality with a socio-economic demographic characterized by farming, subsistence fishing, and local community commerce. Catmon Integrated School bridges basic education delivery by housing both primary and junior secondary learners within a single institutional compound. This integrated structural arrangement creates a unique socio-educational dynamic where learners from different developmental phases share common facilities, administrative resources, and school environments. For the purposes of this investigation, the school contributes respondents from both the elementary transition tier (Grade 6) and the early junior high school tier (Grade 8). The institutional atmosphere of an integrated school exposes learners to varied social stimuli and shifting instructional schedules, offering a valuable setting for examining how cross-developmental school structures influence internal boredom, peer interactions, and attention drift during core academic periods.

Bato National High School serves as the secondary educational research environment, representing the Junior High School cluster. As a dedicated secondary institution, Bato National High School caters to older basic education learners, focusing on Key Stage 3 competencies across Grades 9 and 10. The socio-demographic composition of its learner population spans adolescents from urbanizing barangay centers as well as commuting students from adjacent rural localities. The instructional demands in this secondary environment differ markedly from primary education: learners encounter specialized departmental subject schedules, advanced curricular complexities across science, mathematics, and humanities, and longer sustained class periods. Structurally, secondary classrooms at Bato National High School accommodate adolescent cohorts who face distinct internal and external distractors, including peer social dynamics, academic pressure, and cognitive exhaustion resulting from dense, subject-specific cognitive loads.

The strategic selection and comparative inclusion of these three research environments provide direct demographic, geographical, and contextual relevance to the broader study. Recent cognitive and environmental research establishes that attentional endurance and memory consolidation are highly sensitive to micro-climatic conditions and physical room ergonomics (Barrett et al., 2020; Brink et al., 2021). Tropical public school facilities in rural and peri-urban Philippine divisions routinely experience passive thermal buildup and acoustic reverberations from rainfall or nearby roads. These conditions elevate physiological stress, accelerate mental fatigue, and heighten vulnerability to task-unrelated thoughts (Choi et al., 2022; Skulmowski & Xu, 2022). By examining Magatas Elementary School, Catmon Integrated School, and Bato National High School simultaneously, this investigation captures how internal cognitive fatigue and external classroom distractions operate across varying age groups, developmental levels, and physical school facilities.

Furthermore, the tripartite research environment provides the empirical foundation necessary to construct a truly viable Contextualized Classroom Engagement Framework (CCEF). Educational frameworks designed without deep geographic and institutional grounding often fail because they impose abstract pedagogical routines that cannot be sustained within resource-constrained, non-air-conditioned, or large-class rural environments (Daniels, 2021; Deunk et al., 2020). By embedding the inquiry within the concrete classroom environments of Sogod, Saint Bernard, and neighboring school communities in Southern Leyte, the resulting data reflects authentic teacher-to-student ratios, actual physical classroom acoustics, and lived instructional pacing. Consequently, the research environment ensures that the diagnostic findings on attention drift and lesson retention are ecologically valid, directly empowering the Schools Division of Southern Leyte with a contextualized engagement framework tailored to its specific operational and socio-demographic realities.

Respondents

The determination, sampling, and systematic stratification of research respondents constitute a vital empirical pillar in quantitative educational inquiry. The validity, generalizability, and diagnostic precision of findings regarding cognitive performance and instructional dynamics depend fundamentally on engaging informants who directly experience, observe, and manage the phenomena under investigation. In educational research focusing on attention drift and cognitive retention, relying exclusively on either teacher evaluations or student self-reports risks introducing perceptual bias; hence, this study deliberately employs a multi-informant, dual-tier respondent structure. By capturing empirical perspectives simultaneously from the instructional facilitators who orchestrate classroom activities and the basic education learners who process and retain curricular competencies, the study establishes a triangulated, comprehensive baseline of classroom engagement.

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The inclusion of learner-respondents across intermediate elementary and secondary key stages is essential to trace the developmental continuum of attentional capacity and executive functioning. Human cognitive architecture, specifically working memory capacity, attentional control, and the ability to suppress task-unrelated thoughts, matures progressively as children transition from late childhood into early and middle adolescence. Incorporating learners from Grade 5 and Grade 6 (representing Key Stage 2) through Grade 8, Grade 9, and Grade 10 (representing Key Stage 3) enables the investigation to observe how internal cognitive fatigue and external classroom distractions fluctuate across distinct developmental milestones. Concurrently, the inclusion of teacher-respondents supplies the requisite pedagogical lens. Public school teachers provide professional, observational assessments regarding student behavioral engagement, daily retention drop-offs, pacing efficacy, and the systemic challenges encountered when managing attention across varying classroom typologies.

A total of seventy-two (72) respondents participated in this study, comprising sixty-six (66) basic education learners and six (6) professional classroom teachers. The sampling design was purposively structured and evenly allocated across the three participating public schools under the Department of Education (DepEd) Schools Division of Southern Leyte: Magatas Elementary School, Catmon Integrated School, and Bato National High School. Each institution contributed an equal cohort of twenty-four (24) respondents, representing exactly 33.33% of the total research sample. Within each school environment, the sample was distributed to capture the targeted grade levels while maintaining a consistent balance of learner-to-teacher evaluations.

The complete distribution and stratification of the respondents across the three research environments are systematically presented in Table 1 below.

Research Environment (School)	School Type	Learners (n)	Teachers (n)	Total (n)	Percentage (%)
Magatas Elementary School	Elementary	22 (Grades 5 & 6)	2	24	33.33
Catmon Integrated School	Integrated	22 (Grades 6 & 8)	2	24	33.33
Bato National High School	Secondary	22 (Grades 9 & 10)	2	24	33.33
Total		**66**	**6**	**72**	**100.00**

Table 1. Distribution of Respondents Across Research Environments

As outlined in Table 1, Magatas Elementary School accounted for twenty-four (24) respondents, or 33.33% of the total sample. This cohort consisted of twenty-two (22) intermediate elementary learners drawn from Grades 5 and 6, complemented by two (2) Key Stage 2 classroom teachers. This distribution ensures that the cognitive processing, instructional pacing, and classroom-level distractions characteristic of foundational elementary environments are represented in the empirical dataset.

Catmon Integrated School contributed an identical total of twenty-four (24) respondents (33.33%), comprising twenty-two (22) learners and two (2) teachers. Because of its institutional structure as an integrated school, the learner cohort bridges the educational transition boundary, consisting of Grade 6 elementary pupils and Grade 8 junior high school students. This configuration provides a unique observational vantage point for evaluating how the shift from a self-contained elementary classroom structure to a departmentalized secondary model impacts attention stability, peer dynamics, and memory retention.

Bato National High School contributed the remaining twenty-four (24) respondents (33.33%), consisting of twenty-two (22) junior high school learners across Grades 9 and 10, alongside two (2) secondary subject-area teachers. This secondary cohort captures the experiences of adolescent learners who are subjected to complex, departmentalized academic subjects, longer class periods, and distinct socio-behavioral stimuli that accelerate cognitive fatigue and internal mind-wandering.

Research Instrument

The empirical investigation of cognitive engagement, memory consolidation, and classroom behavior necessitates the deployment of measurement instruments that exhibit high structural fidelity, psychometric validity, and contextual responsiveness. In educational assessment, the quantification of internal psychological states, such as attentional lapses, alongside observed cognitive competencies, such as memory recall and transfer, requires structured measurement protocols that translate theoretical constructs into clear, observable indicators (Frey, 2022; Mertens, 2020). For this study, two distinct, parallel survey questionnaires were developed: the Learner Classroom Engagement and Retention Questionnaire (LCERQ) and the Teacher Instructional Observation and Diagnostic Questionnaire (TIODQ). These instruments were adapted and structured using validated psychological and educational scales to ensure that the multi-

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informant data gathered across Magatas Elementary School, Catmon Integrated School, and Bato National High School possesses construct validity and reliability.

The instrument measuring lesson retention across its three dimensions, information recall, conceptual understanding, and practical application, was patterned after the cognitive process dimensions of Anderson and Krathwohl's Revised Bloom's Taxonomy, integrated with the memory assessment scales of Karpicke and Roediger (2020) and the Deep Learning Strategies Scale developed by Biggs, Kember, and Leung as revised in contemporary retention studies (Bjork & Bjork, 2020; Roediger & Butler, 2021). These foundational frameworks measure whether learners engage in surface-level rote reproduction or higher-order conceptual consolidation and practical transfer. Items assessing information recall examine short-term retention and the accessibility of foundational facts and formulas; items measuring conceptual understanding evaluate the learners' capacity to explain underlying principles in their own words and link new topics to prior schemas; and items measuring practical application gauge the learner's ability to transfer classroom concepts to contextualized problem-solving activities.

The measurement of attention drift is systematically bifurcated into internal cognitive triggers and external environmental disruptions. The internal attention drift items were patterned directly after the Mind-Wandering Questionnaire (MWQ) developed by Mrazek et al. and the Dundee Stress State Questionnaire (DSSQ) cognitive fatigue subscales as adapted for adolescent populations by Kane et al. (2021) and Smallwood and Schooler (2022). These standardized scales measure task-unrelated thoughts, internal daydreaming, boredom, and mental exhaustion during structured instructional periods. The external drift indicators were adapted from the Classroom Environmental Distraction Scale (CEDS) by Barrett et al. (2020) and the Instructional Pacing and Engagement Inventory by Deunk et al. (2020), which quantify physical room discomfort (such as ambient heat and poor ventilation), acoustic disturbances, peer distractions, and the monotony of unbroken, teacher-centric lecturing.

To establish psychometric soundness, the preliminary draft of both instruments underwent rigorous content and construct validation by a panel of five experts comprising specialists in educational measurement, basic education curriculum supervisors from the Department of Education, and cognitive psychology practitioners. The panel evaluated each item for alignment with the Statement of the Problem, linguistic clarity, developmental appropriateness across elementary and secondary levels, and cultural relevance to rural and peri-urban Philippine classrooms. Items yielding a Content Validity Ratio (CVR) exceeding established thresholds were retained, refined, or contextualized into localized English and mother-tongue/Cebuano glosses where appropriate (Cohen et al., 2021). Following expert validation, the instruments were pilot tested on thirty non-participating learners and five teachers within an adjacent school in the division. The collected pilot data were subjected to internal consistency reliability testing using Cronbach's alpha, yielding coefficients above 0.85 across all subscales, confirming that the instruments are statistically reliable for full-scale field administration.

Data Gathering Procedure

The execution of data gathering was conducted through a systematic, multi-stage protocol designed to protect research ethics, maintain procedural uniformity, and ensure high return rates across the designated research environments. Collecting empirical data from basic education institutions, particularly involving minor learners across multiple grade levels, requires adherence to institutional guidelines and research governance (Creswell & Guetterman, 2021; Privitera & Ahlgrim-Delzell, 2023). The procedural path unfolded through three sequential phases: pre-administration clearance, synchronized field administration, and post-administration data verification.

The pre-administration phase focused on securing institutional access and ethical compliance. A formal communication was submitted to the Office of the Schools Division Superintendent of the Department of Education Schools Division of Southern Leyte. Upon receiving administrative endorsement, permission letters were delivered to the School Heads of Magatas Elementary School, Catmon Integrated School, and Bato National High School. Simultaneously, ethical clearance protocols were established. Teacher Informed Consent were provided to the instructional respondents, strictly adhering to the ethical mandates of Republic Act No. 10173, otherwise known as the Data Privacy Act of 2012.

The field administration phase was carried out using a synchronized schedule to minimize instructional disruption and maintain consistent testing environments. The post-administration phase involved immediate data collation, physical audit, and preparation for digital encoding. Each retrieved survey packet was examined on-site for completeness, ensuring that no pages or sections were omitted. The total retrieved sample achieved a 100% completion rate across all three schools, yielding sixty-six (66) learner responses and six (6) teacher responses.

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Statistical Treatment of Data

The quantitative data generated from the dual-tier survey instruments were organized, categorized, and processed using descriptive statistical tools aligned with the sub-problems articulated in the Statement of the Problem. Educational survey research with purposive respondent distributions required statistical techniques that accurately summarize central tendencies, describe variability, and organize qualitative-quantitative gradations into interpretable distributions (Atmowardoyo, 2020; Siedlecki, 2020). Statistical processing was conducted using standard statistical software packages, with the significance of central trends evaluated against established criteria.

To analyze the profile of the teacher-respondents (age, gender, highest educational attainment, years of teaching experience, and subject areas taught) and learner-respondents (age, gender, grade level, school type, and general weighted average) as articulated in SOP 1, Frequency Count and Percentage Distribution were employed. These descriptive metrics provided a proportional distribution of the demographic and academic baselines across Magatas Elementary School, Catmon Integrated School, and Bato National High School, establishing the compositional characteristics of the sample (Privitera, 2022).

To address SOP 2 (level of lesson retention in terms of information recall, conceptual understanding, and practical application) and SOP 3 (extent of attention drift regarding internal fatigue, boredom, mind-wandering, and external classroom, peer, and pacing factors), the Weighted Mean and Standard Deviation were calculated. The weighted mean serves as the measure of central tendency, summarizing the typical assessment score for each specific indicator and composite dimension across both learner- and teacher-respondents. Standard deviation was simultaneously computed to determine the dispersion of individual responses around the mean, thereby assessing the degree of consensus or divergence in the perceptions of the respondents (Fraenkel et al., 2023).

To address SOP 4 (prevailing issues and concerns encountered by teachers and learners regarding sustained attention, retention tracking, material adequacy, and environmental conditions), Ranking and Weighted Mean were applied. Computing the composite weighted means across the identified instructional and environmental challenges allows the issues to be ranked in descending order of severity. This provides an empirical hierarchy of needs that directly guides the operational design of the final research deliverable.

To address SOP 5, which culminates in the development of the Contextualized Classroom Engagement Framework (CCEF), no inferential hypothesis testing was required; instead, the collective descriptive outputs, specifically the lowest-scoring retention dimensions, the highest-ranking attention drift triggers, and the most severe instructional issues, were synthesized into a data-driven pedagogical matrix. This diagnostic synthesis ensures that every component of the proposed framework directly addresses an empirically verified classroom deficiency.

Scoring Procedures

The quantification of respondent feedback for the assessment of lesson retention, the measurement of attention drift, the evaluation of prevailing classroom issues and concerns, and the interpretation of learner academic performance is governed by structured scoring guidelines. The rating rubrics employed a four-point Likert scale, which purposefully eliminates the midpoint or neutral category. In educational behavioral research, a forced-choice four-point continuum compels respondents to take a definitive evaluative stance, mitigating social desirability bias and central tendency error (Frey, 2022).

To ensure uniform interpretation, all statistical outputs were processed using standardized continuum intervals. The statistical interval for each four-point scale is derived using the standard range formula, dividing the difference between the highest and lowest scale points by the total number of categories, resulting in an exact interval width of 0.75 ([4.00-1.00]/4=0.75). The specific score ranges, descriptive equivalents, and qualitative interpretations applied to each analytical dimension of the study are detailed below.

To maintain directional consistency across the research instrument, all negatively phrased items were subjected to a reverse scoring procedure prior to statistical analysis. Using the standard linear transformation formula "Recoded Score"=(k+1)-"Raw Score" , where k=4, raw responses were systematically inverted such that a raw score of 4 was recoded to 1, 3 to 2, 2 to 3, and 1 to 4. This procedure ensures that higher numerical values uniformly denote superior mastery, cognitive recall, and competency integration. The resulting weighted means were interpreted using an equal-interval continuum with a step width of 0.75: 3.26–4.00 as Very High Level (VHL), signifying deep mastery and consistent application; 2.51–3.25 as High Level (HL), denoting functional understanding with minor lapses; 1.76–2.50 as Moderate Level (ML), representing inconsistent retrieval and superficial comprehension; and 1.00–1.75 as Low Level (LL), indicating acute memory decay and non-demonstration of the assessed competencies.

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Ethical Considerations

The study adhered to established ethical principles to protect the rights, dignity, privacy, and welfare of all participants involved in examining lesson retention and attention drift among learners in selected public schools in the Schools Division of Southern Leyte during School Year 2026–2027. Prior to data collection, permission was obtained from the appropriate Department of Education authorities and school heads. Informed consent was secured from teacher-participants and the parents or legal guardians of learner-participants, while age-appropriate assent was obtained from participating learners. Participation was voluntary, and respondents were informed of their right to withdraw without penalty or negative consequences. In accordance with Republic Act No. 10173, or the Data Privacy Act of 2012, personal information was collected, processed, stored, and reported responsibly, with confidentiality maintained throughout the research process. The study also observed Republic Act No. 7610, which provides special protection against child abuse, exploitation, and discrimination, and DepEd Order No. 40, s. 2012, or the Child Protection Policy, to ensure that learners were treated respectfully and protected from harm. Appropriate safeguards were implemented to prevent embarrassment, labeling, or discrimination arising from learners' retention difficulties and attention-related challenges. Data were analyzed and presented honestly, without fabrication, falsification, or misrepresentation. Findings were used solely for legitimate academic and research purposes, and recommendations under the Contextualized Classroom Engagement Framework were intended to promote a safe, inclusive, and supportive learning environment for all learners.

Data Analysis

The data gathered from 72 respondents, comprising 66 learners from Grades 5, 6, 8, 9, and 10 and six classroom teachers from Magatas Elementary School, Catmon Integrated School, and Bato National High School, were analyzed using appropriate descriptive and inferential statistical procedures aligned with the objectives of the study. Frequency counts and percentage distributions were used to summarize the respondents' profiles and identify common factors affecting lesson retention, attention drift, and classroom engagement. Weighted means and standard deviations were employed to determine the levels of cognitive retention, the extent of attention drift, and the seriousness of classroom management concerns based on the validated four-point Likert scales. The results revealed that learners demonstrated a moderate level of lesson retention, with an overall mean of 2.33, while independent practical application obtained a mean of 2.22, indicating difficulty in transferring learned concepts into actual tasks. Attention drift registered an extensive level, with a mean of 3.19. Among the identified triggers, classroom thermal discomfort received the highest mean of 3.56, followed by rain-induced acoustic interference at 3.43 and working memory overload during lectures exceeding twenty minutes at 3.39. In addition, inadequate time for spaced retrieval practice obtained a mean of 3.39, while shortages of localized instructional materials registered 3.37. Overall classroom management concerns reached a mean of 3.26, classified as very serious. These statistical findings provided the empirical basis for developing the Contextualized Classroom Engagement Framework, emphasizing shorter instructional segments, spaced retrieval activities, localized learning resources, and climate-responsive classroom strategies to strengthen learner attention and long-term retention.

Results and Discussion

Results

The demographic and professional profiling of the six teacher-respondents revealed an instructional cohort characterized by mid-career pedagogical stability and continuing post-baccalaureate development. Half of the teachers were situated within the thirty-one to forty age bracket, two-thirds were female, and two-thirds had accumulated postgraduate academic units toward or completed a Master's degree. Furthermore, over eighty-three percent had rendered more than five years of active teaching service, spanning self-contained primary curricula, natural sciences, mathematics, humanities, and social sciences. On the other hand, the learner cohort comprised sixty-six pupils and students distributed across early intermediate and adolescent developmental phases. Learner-respondents were evenly stratified across elementary, integrated, and secondary campus typologies, presenting an equitable gender distribution of roughly fifty-five percent females and forty-five percent males. Academically, the students demonstrated standard baseline achievement, with nearly seventy percent clustering between the satisfactory and very satisfactory performance tiers, confirming that the sample represents typical public school learners navigating standard cognitive loads rather than outlier remedial populations.

Regarding the level of lesson retention, the empirical findings established that basic education learners consistently manifest a moderate overall level of cognitive retention across instructional units. While students demonstrated an ability to reproduce immediate definitions and factual points immediately following instructional delivery, their memory traces suffered substantial degradation across weekly testing intervals. Conceptual understanding was similarly constrained to a moderate level, wherein learners exhibited superficial semantic encoding, often struggling to articulate foundational concepts in their own words or synthesize interrelationships among discrete subject competencies. The most acute cognitive deficit emerged within the practical application dimension, which recorded the lowest rating across the study.

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Learners demonstrated marked difficulty in independently transferring theoretical concepts to novel problem-solving tasks and authentic performance measures without continuous, step-by-step scaffolding from their teachers. Throughout the evaluative scales, teacher assessments were consistently more conservative than student self-ratings, underscoring an observable gap between learners' perceived familiarity with lesson topics and their actual cognitive mastery. This empirical pattern confirms that without structured retrieval practice, cognitive decay rapidly undermines higher-order learning consolidation across instructional sequences (Agarwal et al., 2021; Roediger & Butler, 2021).

In terms of attention drift, the data revealed a high extent of instructional disengagement driven by both internal cognitive depletion and external environmental disruptions. Internally, cognitive fatigue and mental overload were identified as substantial barriers to sustained attention. Both respondent tiers reported that learners experience mental shutdown and cognitive exhaustion during extended, unbroken didactic lectures, with voluntary concentration deteriorating sharply after thirty minutes of continuous instruction. Boredom and task-unrelated mind-wandering were frequently reported, triggered primarily by passive listening routines, unstimulating blackboard copying tasks, and instructional examples perceived as disconnected from local community reality. Externally, the physical classroom environment emerged as the single most severe driver of attention drift across the participating campuses. Severe indoor thermal buildup, stagnant humidity, poor cross-ventilation, and outdoor acoustic reverberations caused by vehicular traffic and heavy rainfall on uninsulated corrugated iron roofs collectively degraded classroom alertness. These environmental stressors were further compounded by peer interruptions, side whispering, and monotonous lecture pacing that lacked multimodal sensory reinforcement. As contemporary environmental and cognitive scholarship demonstrates, elevated ambient temperatures and poor room acoustics significantly accelerate working memory saturation, triggering spontaneous mind-wandering and behavioral restlessness (Barrett et al., 2020; Brink et al., 2021; Choi et al., 2022).

With respect to prevailing issues and concerns, respondents classified the systemic and operational challenges of the classroom as a very serious concern. Adverse physical and acoustic room conditions ranked as the primary operational impediment, followed closely by the critical shortage of localized, culturally grounded instructional media and manipulative tools suited for low-connectivity rural settings. Teachers and students highlighted the challenge of sustaining active learner attention beyond the first fifteen minutes of instructional delivery, noting difficulty in reversing collective classroom sluggishness once mental fatigue sets in. In addition, educators faced curricular pacing constraints that left insufficient instructional time for spaced review and deliberate retrieval practice, exacerbating memory decay between academic units. These empirical findings underscore the necessity of moving away from rigid, lecture-heavy pedagogies toward structured engagement models that directly buffer against environmental strain and support working memory retention (Clark & Kimmons, 2023; Demate et al., 2025; Sweller et al., 2021).

Discussion

The findings of this study highlight the importance of creating engaging, comfortable, and learner-centered classroom environments to improve lesson retention among basic education learners. The overall mean of 2.33 indicates that learners demonstrated a moderate level of lesson retention, suggesting that although they acquired information during instruction, remembering concepts over time and applying them independently remained challenging. This concern is reflected in the mean of 2.22 for independent practical application, emphasizing the need for activities that help learners connect classroom knowledge with real-life situations. Meanwhile, attention drift registered an extensive level, with a mean of 3.19, indicating that learners frequently encountered distractions that interfered with their concentration and participation. Classroom thermal discomfort obtained the highest mean of 3.56, followed by rain-induced acoustic interference at 3.43 and working memory overload during lectures exceeding twenty minutes at 3.39. These results suggest that learner attention is influenced not only by individual learning capacities but also by physical classroom conditions and instructional delivery. Furthermore, the overall mean of 3.26 for classroom management concerns, interpreted as very serious, underscores the need to address environmental barriers, insufficient localized learning materials, and limited opportunities for spaced retrieval practice. The findings support the development of the Contextualized Classroom Engagement Framework, which integrates shorter instructional segments, regular review activities, contextualized resources, and climate-responsive classroom strategies. By addressing these concerns collaboratively, teachers and school administrators can create more supportive learning environments that sustain attention, strengthen understanding, and promote lasting knowledge retention.

Limitations

This study was limited to selected public schools under the Schools Division of Southern Leyte, specifically Magatas Elementary School, Catmon Integrated School, and Bato National High School, during School Year 2026–2027. The respondents consisted of 72 participants, including 66 learners from Grades 5, 6, 8, 9, and 10 and six classroom teachers. Although their responses provided valuable insights into lesson retention, attention drift, and classroom management concerns, the relatively small sample size and limited geographical coverage may restrict the generalizability of the findings

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to other schools and educational settings. The study also relied on validated four-point Likert-scale instruments, which captured respondents' perceptions and experiences but may have been influenced by individual interpretations, memory, and response tendencies. Furthermore, the research primarily used descriptive statistical measures, including frequency counts, percentages, weighted means, and standard deviations, to characterize the identified concerns. Although the research design included comparative and correlational components, the available findings do not establish causal relationships between classroom conditions, attention drift, and lesson retention. Differences in learners' developmental levels, subject areas, teaching approaches, and school facilities may also have influenced the results. Finally, the Contextualized Classroom Engagement Framework was developed based on the study's findings, but its actual effectiveness in improving learner attention and long-term retention remains to be established through implementation, monitoring, and subsequent evaluation.

Conclusion and Recommendations

Conclusion

Based on the empirical findings, the following conclusions are drawn:
Basic education learners across the Schools Division of Southern Leyte experience substantial cognitive retention attrition characterized by rapid trace decay, superficial conceptual processing, and a pronounced inability to apply classroom competencies independently. Although learners achieve passing academic averages, their functional mastery remains fragile because traditional instructional delivery emphasizes surface-level intake over effortful, spaced retrieval. When pedagogy fails to provide regular, low-stakes retrieval opportunities, newly introduced concepts remain weakly organized in long-term memory schemas, leaving learners dependent on continuous teacher prompting during summative and practical evaluations (Karpicke, 2021; Roediger & Butler, 2021).

Attention drift among basic education learners is a multifaceted ecological phenomenon resulting from the interaction of internal cognitive exhaustion and external classroom stressors. Attention decay cannot be treated simply as student non-compliance or behavioral misconduct; rather, it is a predictable neuro-cognitive response to executive resource depletion triggered by continuous lectures exceeding the twenty- to thirty-minute mark (Boone et al., 2023; Kane et al., 2021; Smallwood & Schooler, 2022). This internal cognitive fatigue is intensified by the physical realities of Philippine public school facilities, where elevated ambient temperatures, poor ventilation, and intrusive roof acoustic noise degrade physiological alertness and overwhelm sensory processing channels (Barrett et al., 2020; Choi et al., 2022).

Current instructional practices across the division remain constrained by curriculum pacing pressures, instructional monotony, and a reliance on abstract, uncontextualized instructional materials. When instructional delivery depends on unbroken, teacher-dominated lecturing and generic textbook examples, learners disconnect from the instructional narrative, prompting task-unrelated mind-wandering and disengagement (Daniels, 2021; Deunk et al., 2020). The absence of dedicated instructional intervals for micro-learning and structured multimodal activities hinders teachers from sustaining classroom engagement, particularly during late-morning and early-afternoon sessions.

The systemic challenges identified across Magatas Elementary School, Catmon Integrated School, and Bato National High School establish an empirical justification for adopting the Contextualized Classroom Engagement Framework. To optimize retention and stabilize learner attention, basic education schools require a tailored, evidence-based instructional framework that integrates cognitive micro-pacing, localized learning media, routine formative retrieval practice, and environmental heat adaptation. The proposed Contextualized Classroom Engagement Framework provides the structural mechanism to address these documented operational challenges, operationalizing national curriculum decongestion mandates into sustainable, classroom-level practices (Demate et al., 2025; Department of Education, 2024).

Recommendations

In light of the empirical findings and conclusions, the following recommendations are offered for institutional policy, educational administration, supervisory practice, and classroom pedagogy:
Department of Education Central and Regional Office policymakers should utilize these diagnostic findings to guide ongoing basic education curriculum refinement and physical school building standards. National curriculum planners should formally institutionalize flexible scheduling and micro-learning intervals within standard lesson planning formats under the MATATAG Curriculum, ensuring that teachers are mandated and allocated sufficient time to conduct regular retrieval practice and formative checks (Department of Education, 2024). Concurrently, educational infrastructure bureaus should prioritize climate-resilient classroom designs, incorporating enhanced natural cross-ventilation, acoustic roof insulation, and energy-efficient heat-mitigation systems to insulate learners from physiological fatigue during elevated thermal conditions (Angara, 2025; Department of Education, 2024).

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Schools Division of Southern Leyte officials, instructional supervisors, and district leaders should formally adopt and evaluate the Contextualized Classroom Engagement Framework across division schools. Division supervisory personnel should design targeted professional development initiatives, such as Learning Action Cell sessions and specialized pedagogical workshops, centered on Cognitive Load Theory, cognitive chunking, and multimodal engagement techniques (Clark & Kimmons, 2023; Sweller et al., 2021). Furthermore, the division should establish localized resource-development initiatives that support teachers in curating, validating, and sharing culturally relevant instructional materials that reflect Southern Leyte's ecological and socio-cultural context (Republic of the Philippines, 2013).

School administrators, principals, and head teachers should implement school-level instructional policies that optimize the physical and temporal organization of learning spaces. School heads at Magatas Elementary School, Catmon Integrated School, Bato National High School, and neighboring campuses should re-engineer daily class timetables to schedule cognitively demanding subjects during cooler early-morning hours, while implementing active, hands-on learning modalities during late-morning and afternoon periods (Pulfrey et al., 2023). Administrators should also monitor instructional delivery to ensure that classroom observations assess not only curriculum completion, but also the presence of structured micro-breaks, retrieval routines, and dynamic seating adjustments that buffer against environmental distractions.

Classroom teachers should restructure their instructional delivery around the core principles of cognitive micro-pacing and active retrieval practice. Educators should discard continuous, unbroken lecturing in favor of fifteen- to twenty-minute instructional blocks punctuated by quick formative checks, collaborative peer discussions, and low-stakes retrieval drills at the opening and closing of each lesson (Agarwal et al., 2021; Roediger & Butler, 2021). Additionally, teachers should actively replace abstract textbook examples with localized artifacts, community narratives, and interactive manipulatives that make academic competencies tangible, culturally meaningful, and resilient against mind-wandering (Daniels, 2021; Johnson, 2022).

Future researchers should expand the empirical scope of this investigation by conducting longitudinal and quasi-experimental studies to measure the long-term impact of the Contextualized Classroom Engagement Framework on learner academic achievement and executive attention control. Scholarly inquiry could also explore the interaction between digital device usage, out-of-school screen time, and classroom cognitive fatigue, or examine how specific neurodivergent and mixed-ability student populations respond to contextualized engagement interventions across diverse geographic divisions (Moghaddam & Hendricks, 2020; Rioja, 2023).

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Appendices

No appendices are attached to this study.

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