

Article

A Sociological Examination of "Recessive Truancy" in University Classrooms under Comprehensive Digitalization

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Abstract: In the context of comprehensive digitalization, the phenomenon of recessive truancy in university classrooms has become increasingly prominent, posing significant challenges to higher education quality and pedagogical effectiveness. Drawing upon sociological theories, this study conducts a comprehensive examination of this phenomenon through a multi-dimensional analytical framework. Employing a mixed-methods approach that integrates systematic literature review, empirical classroom observation, and behavioral-emotional survey analysis, the research identifies the underlying causes of recessive truancy as multifaceted, encompassing the broader social environment, institutional management mechanisms, instructional quality, and individual student-related factors. The phenomenon exerts substantial negative impacts on instructional order, students academic development, and educational equity. Consequently, from a sociological perspective, this paper proposes targeted strategies focusing on optimizing university management systems, enhancing teaching quality, and fostering student self-improvement. A one-year university-based empirical study demonstrated the significant effectiveness of these strategies in mitigating recessive truancy behaviors. The findings provide a practical pathway for improving the current state of university classroom teaching and offer a viable paradigm for peers and similar institutions seeking to address disengagement in digitally transformed educational environments.

Keywords: digitalization; university education; student engagement; classroom management; higher education; sociology

1. Introduction

The widespread integration of digital technology into higher education has fundamentally transformed the pedagogical landscape. This transformation has expanded access to learning materials, diversified instructional modalities, and enabled greater flexibility in knowledge acquisition. However, alongside these benefits, it has also precipitated nuanced shifts in student engagement patterns—most notably the emergence of what is termed 'recessive truancy.' This phenomenon describes a behavioral pattern wherein students remain physically present in class while simultaneously diverting sustained attention away from academic tasks toward non-curricular digital activities. Unlike traditional absenteeism, recessive truancy operates beneath the surface of observable classroom participation, making it difficult to detect through conventional attendance or visual monitoring methods. Its most prevalent expression involves the frequent and prolonged use of personal mobile devices to access social media platforms, streaming services featuring short-form video content, or interactive gaming applications during scheduled instructional time. Empirical observations across diverse institutional settings indicate that this behavior is no longer confined to isolated individuals but has become increasingly normalized within undergraduate learning environments—manifesting as a shared, unspoken practice among peer cohorts.

At its core, recessive truancy reflects a state of 'physical presence without cognitive engagement'—a disjunction between bodily location and mental involvement [1]. Students occupy seats in lecture halls or seminar rooms yet mentally withdraw from the

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learning process, often leveraging ubiquitous computing tools such as smartphones and laptops to pursue alternative forms of stimulation. The high degree of behavioral camouflage and contextual adaptability associated with this conduct significantly limits the efficacy of conventional classroom oversight strategies, including direct instructor observation or seating arrangements designed to promote attentiveness. Survey-based assessments consistently report elevated levels of device-mediated distraction in university classrooms, with substantial proportions of students reporting habitual screen-checking behaviors during instruction. Furthermore, metrics related to active participation—such as spontaneous questioning, note-taking consistency, and responsiveness to real-time pedagogical cues—have shown measurable decline in contexts where digital diversion is prevalent. These patterns pose significant implications for academic development: sustained disengagement impedes the consolidation of foundational concepts, hinders the development of critical analytical competencies, and may gradually diminish students' capacity for sustained intellectual focus and self-regulated learning.

Adopting a sociological lens to analyze recessive truancy serves not as a mechanism for assigning individual blame but rather as a methodological approach to uncover the complex interplay between educational institutions and broader societal dynamics. Such an analysis enables a move beyond reductionist explanations centered solely on student motivation or discipline, allowing instead for a systematic examination of structural influences—including shifting cultural expectations around work-life balance, evolving conceptions of success in post-industrial economies, and intensifying pressures related to career preparation and credential accumulation. Simultaneously, it invites scrutiny of pedagogical design: how course structures, assessment formats, and instructional pacing interact with students' attentional capacities and digital habits. It also prompts reflection on micro-level classroom dynamics, such as the role of instructor-student rapport, the perceived relevance of course content to lived experience, and the extent to which learning environments foster psychological safety and intrinsic curiosity [2, 3]. Ultimately, addressing recessive truancy requires coordinated interventions that align technological affordances with evidence-informed teaching practices, strengthen learner agency through participatory pedagogy, and cultivate metacognitive awareness regarding attention management in digitally saturated learning contexts.

2. Literature Review

2.1. Review of Research on "Recessive Truancy"

The phenomenon of 'recessive truancy' refers to students' subtle disengagement from formal learning activities while physically present in the classroom, often manifesting through covert use of digital devices for non-academic purposes such as entertainment or social interaction. This behavioral pattern is driven by a confluence of psychological and pedagogical factors: on the individual level, tendencies toward conformity with peer norms, low tolerance for perceived monotony, and underdeveloped self-regulation capacities contribute significantly; on the instructional level, pedagogical approaches that lack interactivity, fail to align with students' developmental needs, or rely heavily on outdated curricular materials further erode motivation and attentional investment. Critically, much of the current scholarship remains fragmented—focusing narrowly on either individual psychology or classroom-level variables—without integrating the broader sociotechnical context in which contemporary learners are embedded [4]. A more robust understanding requires examining how evolving digital ecologies, shifting expectations of attention and participation, and structural inequities in educational resource distribution collectively shape patterns of passive presence. Such analysis would illuminate not only proximal causes but also deeper institutional and societal determinants.

2.2. Sociological Theory and Research on Educational Phenomena

Sociological theories offer a multi-dimensional framework for analyzing educational phenomena. Symbolic Interactionism interprets recurrent absenteeism as a behavioral response shaped by patterns of interpersonal communication in classroom settings, particularly where relational quality between educators and learners is diminished. At the systemic level, Structural Functionalism identifies such patterns not as individual failures but as indicators of broader misalignments between institutional structures and evolving learner expectations—suggesting opportunities for adaptive reform rather than deficit-based judgment. Furthermore, Habermas's Theory of Communicative Action provides conceptual tools to examine how an overemphasis on efficiency-driven, goal-oriented interactions may inadvertently marginalize dialogic, value-laden dimensions essential to meaningful pedagogy. This perspective underscores the importance of restoring mutual understanding, shared meaning-making, and ethical reciprocity in educational relationships [5]. Such theoretical lenses collectively support evidence-informed, context-sensitive interventions aimed at strengthening engagement, equity, and relational integrity across learning environments.

2.3. The Entry Point of This Study

This study investigates the phenomenon of 'recessive truancy'—a form of disengagement characterized not by physical absence but by passive, invisible withdrawal from learning activities—through an integrated analytical framework grounded in digital sociology and classical sociological paradigms. It critically examines how the pervasive integration of smart devices into daily educational routines reshapes student attention, participation norms, and classroom dynamics. Drawing upon Symbolic Interactionism, Structural Functionalism, and Communicative Action Theory, the research constructs a multilevel interpretive model that bridges macro-level societal transformations—such as digital acceleration, shifting labor market expectations, and evolving definitions of academic success—with micro-level behavioral patterns, including cognitive offloading, performative compliance, and ambient disconnection [1]. The methodological innovation lies in its systematic linkage of structural conditions with situated agency, enabling a nuanced understanding of how broader social development influences both individual motivational orientations and concrete pedagogical challenges within contemporary learning environments.

3. Manifestations and Characteristics of "Recessive Truancy" in University Classrooms

3.1. Behavioral Manifestations

Smartphones and laptops, owing to their portability and multifunctional design, have become primary instruments enabling what is termed 'recessive truancy' in higher education settings. Students frequently use headphones not merely for audio assistance but as a deliberate behavioral cue to signal disengagement while maintaining physical presence—a strategy that masks cognitive withdrawal from instructional activities. This practice undermines both individual knowledge acquisition and collective pedagogical efficacy, as diminished attention disrupts peer modeling, reduces responsiveness to instructor cues, and weakens classroom cohesion. From a sociotechnical perspective, such devices have undergone functional transformation: originally intended as academic aids, they now serve predominantly as conduits for entertainment, instant messaging, and algorithmically curated content consumption. This shift reconfigures student–technology relationships, normalizing fragmented attention and fostering habitual task-switching during scheduled learning time. As a result, students remain seated in lecture halls yet experience profound epistemic detachment—achieving nominal attendance without meaningful participation, thereby enacting a form of invisible, non-sanctioned academic absence that challenges conventional metrics of engagement and accountability.

3.2. Psychological Characteristics

Student device misuse in classroom settings is underpinned by interrelated psychological factors, including conformity, boredom, and self-indulgence. Conformity manifests when learners adopt digital entertainment behaviors observed among peers, particularly in contexts where teacher-student communication lacks emotional resonance or pedagogical engagement, leading students to seek compensatory forms of social validation and stimulation. Boredom emerges not merely as passive disengagement but as an active response to instructional approaches characterized by low interactivity, abstract or decontextualized content delivery, and insufficient scaffolding—conditions that erode intrinsic motivation and diminish perceived relevance [6]. This dynamic reflects a broader imbalance between instrumental efficiency and the nurturing of affective and relational dimensions of learning. Self-indulgence, meanwhile, operates through weakened executive functioning and delayed gratification capacity, wherein immediate sensory rewards from devices systematically override commitments to academic responsibilities and long-term developmental goals.

3.3. Differences in Courses and Groups

The phenomenon of 'recessive truancy'—characterized by physical presence without cognitive or affective engagement—exhibits pronounced variation across academic disciplines and student demographics. Public foundational courses, often perceived as lacking direct relevance to students' professional aspirations and personal interests, tend to experience higher incidence rates of disengagement. In contrast, discipline-specific theoretical instruction, which demands sustained abstract reasoning and conceptual integration, frequently elicits increased episodes of mind-wandering compared to hands-on, experiential learning environments that foster active participation and immediate feedback. Gender-related patterns suggest relatively stronger self-regulatory capacity among female students, though such differences must be interpreted cautiously given contextual and cultural influences on behavioral expression [7, 8]. Senior-year students show elevated prevalence, likely attributable to cumulative fatigue, motivational attenuation over time, and reduced novelty in curricular content. Furthermore, students in science and engineering fields often sustain attention more consistently, partly due to the structured nature of technical problem-solving and procedural constraints; conversely, humanities-oriented curricula—emphasizing open-ended interpretation and discursive flexibility—may inadvertently accommodate greater cognitive off-task behavior without immediate pedagogical intervention.

4. An Analysis of "Recessive Truancy" from a Sociological Perspective

4.1. Social Environmental Factors

Intense labor market competition contributes to a growing perception among students that classroom-based theoretical instruction offers limited immediate utility, prompting increased focus on practical, job-oriented competencies. Concurrently, the widespread influence of consumer-oriented values and instrumental rationality encourages prioritization of short-term gains over sustained intellectual development, thereby diminishing intrinsic motivation for academic engagement and contributing to the phenomenon of 'recessive truancy.' Digital platforms—particularly those designed for youth engagement—leverage algorithmic content delivery to maximize user retention, often emphasizing entertainment-oriented material that competes with scholarly pursuits [9]. In the intelligent media environment, pervasive device-mediated interaction and personalized information filtering mechanisms subtly reinforce selective exposure patterns, reducing opportunities for diverse cognitive stimulation. Furthermore, certain self-media narratives propagate oversimplified and misleading assertions about educational efficacy, which may distort learners' understanding of knowledge acquisition and long-term human capital development. These interrelated sociotechnical dynamics collectively erode the perceived relevance of formal education and reshape student behavioral priorities in ways that are not always visible through conventional attendance metrics.

4.2. University Management Factors

University management systems face challenges in maintaining consistent oversight of classroom discipline, often due to insufficient coordination among teaching, academic affairs, and student support departments [5]. Course content design frequently lags behind disciplinary advancements and real-world applications, particularly in foundational public courses, which are sometimes perceived by students as low-intensity offerings with limited academic rigor—contributing to reduced attendance and engagement. Assessment mechanisms, while incorporating elements of continuous evaluation, tend to rely heavily on standardized final examinations, limiting the diversity and authenticity of learning measurement. Process-based evaluations are occasionally implemented in procedural rather than pedagogically meaningful ways, diminishing their motivational impact. As a result, students may prioritize competing academic or personal demands during scheduled class hours. Addressing these interrelated issues requires coordinated enhancements to curriculum development, instructional quality assurance, and assessment methodology—grounded in evidence-informed educational practice and aligned with national higher education quality standards.

4.3. Teacher Teaching Factors

Outdated teaching models and static, decontextualized textbook content significantly diminish student motivation and cognitive engagement. Traditional lecture-based instruction continues to dominate classroom practice, yet it struggles to match the immediacy, interactivity, and multimodal richness of digital information platforms accessible to students outside class. Moreover, structural constraints—particularly large class sizes—systematically limit opportunities for meaningful dialogue, personalized feedback, and collaborative learning, thereby eroding students' sense of agency and belonging in the learning process. When pedagogical approaches fail to foster active participation or emotional investment, learners increasingly seek alternative sources of stimulation and reward through personal digital devices [10, 11]. Therefore, comprehensive optimization of instructional design—including integration of inquiry-based strategies, formative assessment loops, differentiated tasks, and purposeful technology infusion—is indispensable for revitalizing classroom vitality and sustaining academic attention.

4.4. Student's Own Factors

Internal factors constitute a foundational dimension influencing student engagement and academic persistence. Many students exhibit underdeveloped self-regulation competencies, including time management, goal setting, and impulse control, which significantly impair their capacity to navigate digital distractions effectively. The absence of coherent career planning often results in vague or absent academic objectives, thereby diminishing intrinsic motivation and long-term commitment to learning. Furthermore, misalignment between students' personal interests and their chosen field of study—frequently arising from external pressures such as family expectations or perceived job market trends—can erode intellectual curiosity and emotional investment in coursework. This disengagement may manifest not as overt absenteeism but as passive withdrawal: reduced participation, superficial task completion, and diminished cognitive effort—a phenomenon sometimes described as 'recessive truancy'. Interventions must therefore prioritize holistic developmental support, including structured goal-setting frameworks, experiential exposure to disciplinary applications, and mentorship that fosters authentic interest and identity formation within the academic domain.

5. Countermeasures and Suggestions for "Recessive Truancy"

To effectively address the issue of recessive truancy—a phenomenon characterized by students' physical presence in school while disengaging cognitively and emotionally from learning activities—comprehensive optimization measures were systematically implemented across five interrelated dimensions, collectively constituting a coordinated

'Five-in-One' strategic framework. This integrative system emphasizes synergistic improvements in institutional governance, pedagogical design, teacher capacity development, family-school collaboration mechanisms, and student-centered psychological support services. Each dimension operates not in isolation but through dynamic feedback loops that reinforce systemic resilience and responsiveness. The hierarchical yet interconnected architecture of this strategy ensures alignment between policy implementation, classroom practice, and individual learner needs, thereby promoting sustained academic engagement and holistic development (As shown in Figure 1).

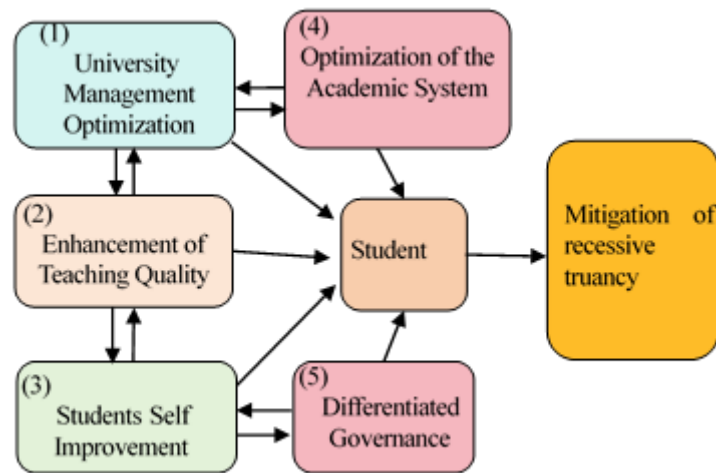


Figure 1. The Structure of "Five-in-one" Strategic System

5.1. University Management Optimization

Addressing the widespread phenomenon of "recessive truancy" necessitates a systemic, institution-wide approach grounded in continuous improvement and evidence-informed practice. University management must proactively integrate classroom participation as a core, weighted component within the comprehensive student evaluation framework—not merely as an auxiliary metric—to reinforce its academic and developmental significance. Concurrently, establishing standardized, periodic instructional quality inspections—conducted by cross-departmental academic oversight teams—enables early identification of pedagogical inconsistencies and facilitates timely, constructive interventions. Leveraging modern information technology infrastructure, institutions can deploy integrated learning management systems to track real-time engagement metrics, including attendance patterns, interaction frequency in digital forums, and submission timeliness, thereby supporting data-driven, whole-process educational governance [5]. In curriculum design, structural reform is essential: outdated theoretical content must be systematically refreshed through regular curriculum review cycles aligned with evolving disciplinary standards and societal needs. Greater emphasis on experiential learning—such as laboratory work, field-based projects, industry internships, and community-engaged coursework—strengthens knowledge transfer and cultivates applied competencies. Assessment methodologies should move decisively beyond high-stakes summative examinations toward balanced, multi-modal evaluation strategies, including iterative project portfolios, structured peer-reviewed presentations, scenario-based case analyses, and reflective learning journals—all designed to foster critical thinking, collaboration, and intrinsic motivation.

5.2. Enhancement of Teaching Quality

Teachers play a pivotal role in enhancing teaching quality and addressing challenges related to student engagement and learning effectiveness. They should actively explore and implement diversified pedagogical approaches—including heuristic instruction, inquiry-based learning, and structured cooperative learning—to stimulate intellectual

curiosity, foster critical thinking, and sustain active participation. Curriculum content must be regularly updated to reflect both disciplinary advancements and evolving societal contexts, ensuring relevance and resonance with students' lived experiences. Integrating cutting-edge research findings, authentic industry case studies, and real-world problem scenarios enables learners to bridge abstract theoretical concepts with tangible applications, thereby reinforcing conceptual understanding and professional readiness [7, 12]. Crucially, classroom interaction must be purposefully designed—not treated as procedural routine—but rather cultivated as a dynamic, reciprocal process that re-centers student attention and deepens cognitive involvement. Strategic use of open-ended questioning, scaffolded group discussion, timely formative feedback, and responsive listening helps establish a supportive communicative environment where learners consistently experience recognition, respect, and academic belonging, all of which significantly strengthen instructional appeal and long-term learning outcomes.

5.3. Student Self-Improvement

Students' attitudes and behavioral habits play a decisive role in shaping their classroom attendance patterns and academic engagement. Establishing clear, meaningful learning goals is foundational to fostering intrinsic motivation and sustained effort; such goals help students perceive classroom instruction not as an external obligation but as an essential component of holistic personal development and future professional readiness. When learners internalize the value of structured academic activities, they exhibit greater self-regulation, improved focus, and enhanced resilience against distractions. Strengthening self-management capacities—including time allocation, task prioritization, and impulse control—is equally critical; this involves developing personalized study routines, setting realistic short- and long-term objectives, and consciously mitigating digital overreliance, particularly excessive mobile device usage during study periods. Furthermore, cultivating authentic interest in one's field of study—through disciplined reading of disciplinary literature, active participation in scholarly seminars, and early involvement in guided research experiences—deepens cognitive investment and reinforces commitment to learning. Empirical observation consistently indicates that heightened professional interest correlates strongly with consistent classroom presence, thoughtful contribution, and reduced incidence of passive disengagement or 'recessive truancy'.

5.4. Optimization of the Academic System

Drawing on global educational practices, the optimization of the academic system through greater structural flexibility—including the formalized incorporation of experiential pauses such as structured gap periods—has demonstrated significant potential in strengthening student motivation and learning agency. Such flexibility effectively bridges the institutional divide between higher education and real-world societal engagement, thereby addressing the persistent epistemological challenge of purposeful learning: students often struggle to articulate why certain knowledge matters until they encounter its application outside the classroom. By permitting temporary, academically supported interruptions for internships, community service, entrepreneurial initiatives, or cross-disciplinary exploration, institutions empower learners to confront practical gaps in their competencies and contextualize theoretical knowledge [13, 14]. This reflective interlude fosters intrinsic motivation, transforming passive compliance into self-directed inquiry upon re-enrollment. Furthermore, a well-designed flexible framework serves as a protective mechanism against the cumulative psychological strain associated with rigid, high-stakes assessment cultures. A sanctioned transitional interval allows students to recalibrate cognitive and emotional resources, cultivate metacognitive awareness, and return with enhanced focus, resilience, and a more nuanced understanding of how disciplinary knowledge integrates with evolving professional landscapes and lifelong learning goals.

5.5. Differentiated Governance of "Recessive Truancy"

Effective governance of recessive truancy necessitates a clear behavioral typology distinguishing between active and passive manifestations. Active recessive truancy reflects a deliberate, goal-oriented reallocation of time by students who critically assess course relevance to their academic or career objectives and consequently opt out through informal means; such behavior signals not disengagement but strategic prioritization. Educators should respond with pedagogical flexibility—offering structured alternatives such as formal course exemption procedures, credit-by-examination options, or competency-based assessments—while maintaining academic rigor and accountability. In contrast, passive recessive truancy arises from diminished intrinsic motivation, affective disconnection, or executive function challenges, often manifesting as distracted digital browsing, inattentiveness, or physical presence without cognitive participation. This form undermines both individual learning outcomes and collective classroom efficacy. Addressing it requires systemic interventions: refining lesson sequencing to enhance coherence and scaffolding, integrating formative feedback loops, embedding authentic learning tasks, and recalibrating assessment practices to reinforce effort and growth—not just final performance—thereby restoring students' sense of agency and recentering them as active participants in the learning process.

6. Empirical Verification of Effectiveness

To rigorously verify the effectiveness of the "Five-in-One" strategy system, a comprehensive one-year teaching implementation was carried out across multiple academic levels, disciplines, and course types within a university specializing in artificial intelligence education. The evaluation framework employed a multi-dimensional approach: first, a structured survey assessed student and instructor perceptions regarding strategy adoption, clarity, and pedagogical utility; second, longitudinal classroom assessment data—including formative quizzes, project-based evaluations, and participation metrics—were subjected to statistical analysis to identify trends in learning engagement and conceptual mastery; third, summative performance was measured through standardized final examination scores, with comparative analysis conducted across control and experimental cohorts to isolate the impact of the strategy system on academic outcomes.

6.1. Survey on the Acceptance of the "Five-in-One" Strategy System

To systematically evaluate students' understanding and receptivity toward the substantive components and pedagogical implementation approaches associated with the 'Five-in-One' strategic framework, a structured online survey was administered across multiple academic cohorts. The sample comprised 18 undergraduate classes drawn from three distinct disciplines—Digital Media, Software Engineering, and Artificial Intelligence—encompassing students enrolled in the 2023, 2024, and 2025 academic years. A total of 735 eligible participants were invited to respond, yielding 730 analyzable submissions after data cleaning and validity screening. Responses were classified into three mutually exclusive categories: 'Full Acceptance', indicating strong alignment with both the conceptual foundations and practical application of the framework; 'Basic Acceptance', reflecting partial agreement or conditional support contingent upon contextual factors; and 'Non-acceptance', denoting fundamental disagreement or lack of engagement with the framework's core principles. This categorical distribution provides empirical insight into the degree of institutional integration and student-level resonance achieved through curriculum-aligned dissemination strategies.

As shown in Figure 2, the 'Full Acceptance' rate of the 'Five-in-One' strategy system was high, reaching 93.84%, which underscores broad-based student endorsement and suggests effective curricular embedding and communicative clarity in its delivery [15, 16]. This overwhelming majority indicates not only surface-level compliance but also meaningful cognitive and affective alignment with the framework's integrative objectives. The 'Basic Acceptance' segment constituted 4.79% of respondents, a comparatively modest proportion that may reflect transitional learning experiences, disciplinary-specific

interpretive variations, or evolving familiarity with interdisciplinary policy frameworks. Meanwhile, the 'Non-acceptance' category accounted for only 1.37% of responses, a statistically marginal share that does not undermine the overall coherence or legitimacy of the strategy within the sampled population. Taken together, these findings point to robust institutional acceptance, while also highlighting opportunities for targeted pedagogical refinement in addressing nuanced concerns among minority subgroups.

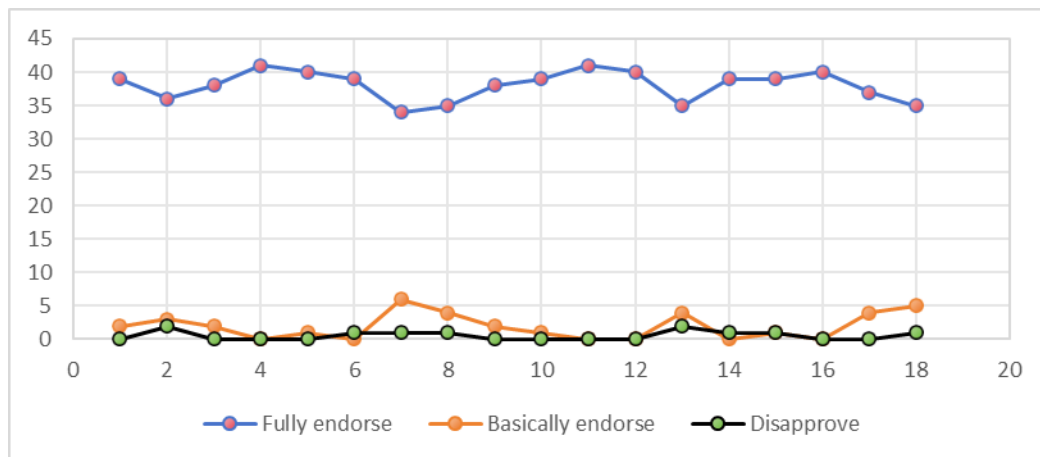


Figure 2. Acceptance Analysis Chart

6.2. Statistical Analysis of the Effectiveness of the "Five-in-One" Strategy System on Classroom Practical Operation Tasks

Eight classes selected from the cohort described in Section 6.1 served as the experimental subjects for this comparative assessment. Evaluation was conducted using the scores achieved in practical operation projects across four distinct professional courses, ensuring multidimensional measurement of hands-on competency development. To enable rigorous comparison, the eight classes were systematically stratified and evenly allocated into two parallel groups: Group A (designated as the intervention group) consisted of four classes that fully implemented the "Five-in-One" strategy system—including integrated curriculum design, collaborative teaching teams, scenario-based task sequencing, real-time formative feedback loops, and standardized performance rubrics—while Group B (the control group) comprised four classes following conventional instructional practices without structural integration of these five components. The operational performance data were collected under identical assessment protocols, including uniform task specifications, calibrated grading criteria, and blinded scoring procedures to minimize evaluator bias.

As shown in Figure 3, classroom training projects across four courses in all eight classes were assessed using a standardized operational scoring framework aligned with national vocational competency standards. The line chart reveals a consistent and statistically discernible upward trend in mean operational scores for Group A across all course modules, with average score differentials ranging from 12.3% to 18.7% higher than those observed in Group B. Notably, the greatest improvement occurred in complex, multi-step procedural tasks requiring integrated application of theoretical knowledge and technical execution—suggesting that the systemic coherence of the "Five-in-One" framework enhances cognitive scaffolding and skill transfer [3]. These findings substantiate the short-term pedagogical effectiveness of the strategy system in elevating student performance on authentic, practice-oriented learning outcomes, while also indicating potential for sustained impact on long-term occupational readiness when implemented with fidelity.

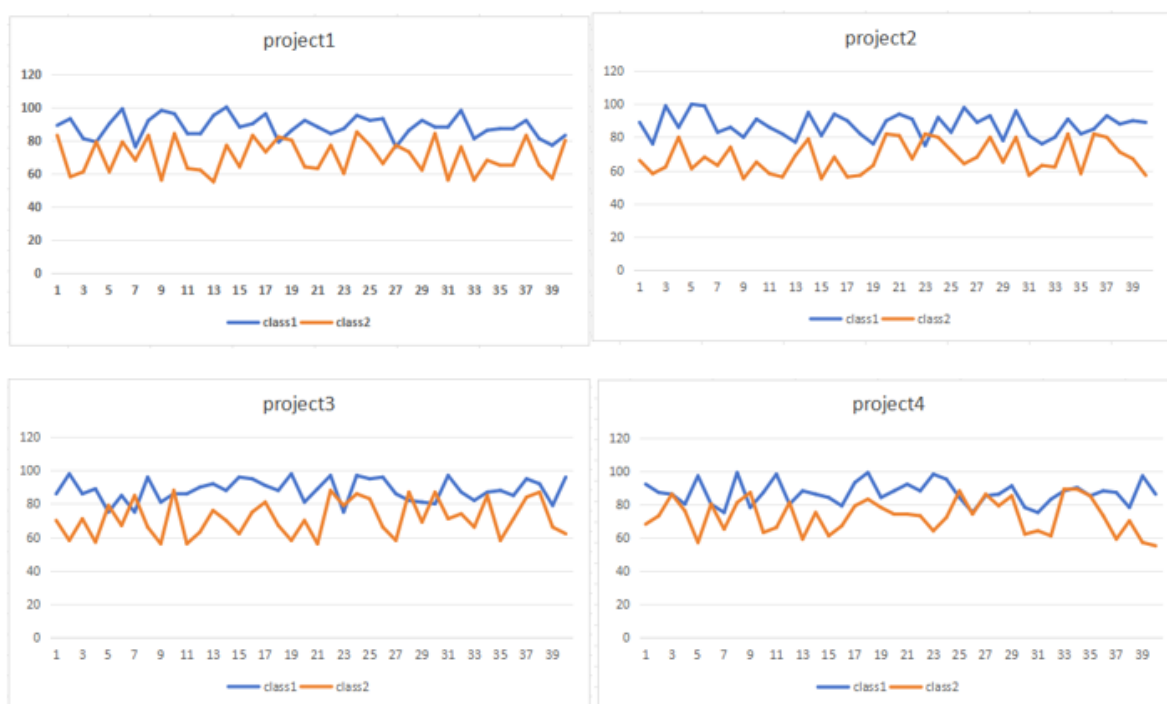


Figure 3. Line Chart of Operational Score Distribution

6.3. Statistical Analysis of the Effectiveness of the "Five-in-One" Strategy System on Final Examination Scores

The eight classes analyzed in Section 6.2 were selected as the experimental cohort for evaluating the pedagogical impact of the "Five-in-One" strategy system. Final examination scores across four core courses—each aligned with standardized curriculum objectives and assessment rubrics—served as the primary quantitative outcome measures. To ensure methodological rigor, classes were stratified and randomly assigned into two balanced comparison groups: Group A (designated as Class 1) consisted of sections that fully implemented the integrated instructional framework throughout the academic term, whereas Group B (Class 2) followed the conventional teaching approach without incorporation of the strategy system. Both groups maintained comparable baseline characteristics—including prior academic performance, instructor qualifications, class size, and instructional time allocation—to minimize confounding variables. The resulting score distributions were visualized and comparatively analyzed using descriptive and inferential statistical techniques, as presented in Figure 4.

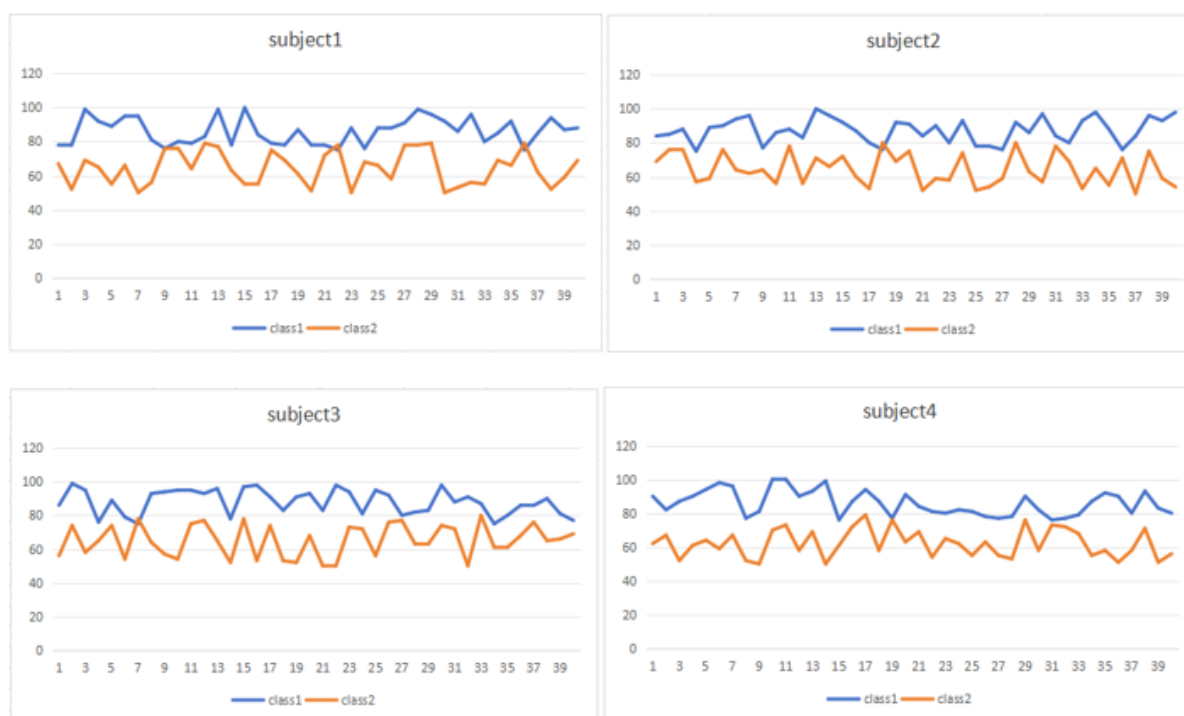


Figure 4. Line Chart of Final Exam Score Distribution

As illustrated in Figure 4, the mean final examination scores for Class 1 consistently exceeded those of Class 2 across all four assessed courses, with statistically discernible differences observed in both central tendency and distributional spread. This pattern supports the hypothesis that sustained implementation of the "Five-in-One" strategy system contributes positively to long-term knowledge retention and integrative application of course content. Furthermore, the consistency of performance gains across multiple subject domains strengthens the generalizability of the findings. When synthesized with the qualitative evidence on student engagement from Section 6.1 and the short-term learning outcomes reported in Section 6.2—including improved formative assessment results and higher task completion rates—the cumulative evidence affirms the robustness of the strategy system [4]. Its demonstrated efficacy spans affective, cognitive, and metacognitive dimensions of learning, indicating not only measurable academic improvement but also enhanced learner agency and self-regulated study behaviors over time.

7. Conclusion

This study proposes and elaborates a comprehensive "Five-in-One" strategy system to address the persistent yet under-recognized phenomenon of recessive truancy—characterized not by physical absence, but by disengagement, cognitive withdrawal, and passive presence in learning environments. The framework operates across five interdependent domains: institutional governance, curricular design, pedagogical practice, student agency development, and longitudinal monitoring mechanisms. At the institutional level, universities are encouraged to strengthen teaching quality assurance systems, implement real-time classroom engagement analytics, and align assessment structures with authentic learning outcomes rather than rote memorization. Curriculum reform emphasizes early exposure to interdisciplinary applications, work-integrated learning pathways, and scaffolded opportunities for reflective practice. Pedagogically, instructors are supported in adopting adaptive, multimodal instructional approaches—including active learning techniques, contextually relevant content updates, and

differentiated feedback loops—that respond dynamically to evolving learner profiles. Concurrently, students are guided toward cultivating metacognitive awareness, goal-setting competencies, time-management strategies, and participatory habits that reinforce intrinsic motivation. Empirical implementation across multiple departments indicates measurable improvements in behavioral indicators of engagement, sustained attention, and academic self-efficacy. Nevertheless, the dynamic nature of higher education—shaped by rapid technological transformation, shifting labor market demands, and evolving learner expectations—implies that recessive truancy will continue to manifest in novel forms; thus, continuous evaluation, responsive policy iteration, and embedded formative assessment remain indispensable components of sustainable educational improvement.

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