

Research Article

Adaptive Educational Management through PDIA to Enhance Psychological Resilience among Vocational Students

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Abstract: This study aimed to analyze the application of education governance using the Problem-Driven Iterative Adaptation (PDIA) method to reinforce psychological endurance among vocational secondary school learners. The focus centered on identifying how institutional governance practices respond to learning demands, psychological exposure, and post-pandemic transition barriers within vocational education contexts. The research employed a qualitative case research pattern implemented in three state vocational secondary schools located in East Java, Indonesia. Participants included headmasters, educators, counseling personnel, and learners. Information acquisition was conducted through semi-structured dialogues, instructional monitoring, and file review. Data processing applied thematic interpretation supported by numerical tabulation to capture patterns across institutional practices and learner responses. Results: The findings showed that PDIA-oriented governance enabled institutions to recognize context-based psychological issues, formulate stepwise actions, and repeatedly adjust policies. Learners demonstrated growth in emotion control, personal assurance, coping capacity, and learning participation following the implementation of iterative governance practices within school management processes. Novelty: The originality of this research lies in merging PDIA previously implemented within public administration and educator supervision into institutional education governance. This integration offers a structured governance pathway to methodically reinforce learner psychological endurance within vocational education environments, extending PDIA application beyond its conventional administrative scope.

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1. Introduction

Vocational high schools hold a position within education systems as an interface linking schooling with employment sectors. These institutions serve as channels that direct learners toward occupational fields through structured instruction focused on task execution, skill application, and workplace conduct. This function positions vocational education as an instrument addressing employment transition issues experienced by young populations. At the same time, this function introduces psychological load during phases of personal development. Learners encounter performance evaluation, technical assessment, skill demonstration, career selection while undergoing identity formation processes. Exposure to such demands places vocational learners within environments requiring psychological adjustment beyond academic counterparts enrolled in general education streams. Research outcomes document occurrences of anxiety, pressure responses, emotional disruption among vocational learners caused by task volume, evaluation frequency, employment uncertainty following completion of study programs. Sillviani et al. (2025) identified anxiety manifestations linked to instructional demands, occupational outlooks, self-perception during practice-based training. Psychological strain influences attention span, learning drive, belief

regarding vocational role formation. Without institutional response, psychological conditions interfere with educational output, professional transition capacity.

Psychological exposure among vocational learners requires interpretation through institutional dimensions rather than personal inadequacy. Educational scholarship situates psychological condition within organizational climate, social structure, governance mechanisms. Resilience literature frames resilience as an interaction outcome between individuals, systems, resources rather than isolated character attributes (Ungar, 2019). Schools shape resilience pathways through support provision, leadership behavior, learning system configuration. Vocational contexts amplify this interaction due to performance simulation aligned with employment conditions. Educational resilience appears as a process involving emotion control, efficacy belief, coping strategy use, learning engagement maintenance. Evidence indicates resilience supports task persistence, failure recovery, learning continuity. Nejad et al. (2021) reported associations between adaptability, meaning orientation, wellbeing outcomes during employment preparation phases. Mustika et al. (2026) reported intervention outcomes linking purpose recognition with learning engagement, psychological regulation. These findings indicate institutional responsibility toward resilience facilitation embedded within educational processes.

Vocational education requires learner adaptation toward shifting instructional formats, industry procedures, assessment systems. Gao (2024) explained adaptability formation through psychological readiness, academic integration, personal growth components requiring institutional mediation. Absence of system-level attention results in learning fragmentation, aspiration disconnection, confidence decline. Management approaches therefore demand responsiveness, contextual sensitivity, adjustment capacity aligned with learner needs progression. Despite recognition regarding psychological resilience relevance, vocational institutions frequently employ administrative frameworks emphasizing procedure adherence, rule compliance, performance scoring. Such frameworks support operational control yet fail addressing psychological complexity shaped by contextual diversity. Standard wellbeing initiatives applied uniformly lack alignment with learner circumstances, industry variation, institutional capacity differences.

Adaptive education management introduces a framework centered on responsiveness, learning cycles, system feedback. This orientation views schools as environments characterized by uncertainty, interaction complexity, evolving challenges. Management practice involves issue identification, solution testing, evaluation cycles, practice refinement. Stakeholders participate in diagnosing conditions, adjusting interventions, monitoring outcomes. Problem-Driven Iterative Adaptation emerged as a framework originating within public governance reform domains. PDIA emphasizes issue definition derived from local experience rather than solution transfer from external contexts. The approach employs experimentation sequences, collective reflection, stakeholder participation. Change occurs through incremental modification evaluated continuously rather than comprehensive reform packages. Educational implementation of PDIA demonstrates capacity addressing entrenched institutional conditions. Nursalim et al. (2025) documented PDIA application reducing teacher absence within geographically remote areas through collaborative problem analysis, action testing, review cycles. Participants identified causal mechanisms overlooked by centralized regulation approaches. Findings indicate PDIA strengthens institutional alignment with contextual reality, accountability mechanisms.

Existing PDIA literature prioritizes governance performance, leadership oversight, staffing management. Student psychological outcome dimensions receive limited empirical examination. This omission presents a research gap within vocational education where learner psychological regulation intersects with learning continuity, employment readiness. Conceptual discussion exists linking adaptive management with school improvement, empirical validation remains limited regarding PDIA influence on student psychological resilience. PDIA integration into vocational management enables structured response toward learner psychological conditions. Institutions identify student-experienced issues including training anxiety, confidence erosion, disengagement patterns. Interventions emerge through iterative testing involving counseling modification, instructional design alteration, support channel development. Feedback from learners, instructors informs subsequent adjustment cycles. Stakeholder participation reflects vocational education structure incorporating industry actors, families, community representatives.

PDIA relevance increases within Indonesian vocational education conditions. Institutions operate across diverse socio-economic settings, cultural environments, resource availability levels. Regional disparities affect industry linkage, counseling access, teacher

capacity. Instructional personnel often perform dual instructional, psychosocial functions without specialist support. Uniform wellbeing programs under such conditions fail addressing localized learner requirements. Adaptive management frameworks such as PDIA allow institutions to operate within constraint boundaries while improving support structures incrementally. Internal resource mobilization, capacity development, practice-based learning replace dependency on external program models. This orientation corresponds with resilience theory emphasizing adaptive system functionality supporting individual regulation during adversity exposure (Ungar, 2019). Adaptive institutions generate learning climates enabling emotional regulation, efficacy belief formation, engagement continuity.

Vocational learners encounter task conditions resembling employment performance contexts. Psychological resilience development contributes toward employment transition readiness. Learners equipped with coping strategies, confidence capacity manage workplace stressors, skill update demands, career mobility processes. Psychological resilience strengthening through education management contributes toward educational outcomes, labor market integration. Research examining adaptive education management implementation through PDIA within vocational institutions remains limited. Empirical analysis exploring mechanism pathways linking PDIA-informed management with learner psychological resilience offers contribution toward education governance scholarship. Evidence supports policy formulation, leadership decision-making, system design oriented toward learner wellbeing sustainability. This study analyzes adaptive education management implementation employing Problem-Driven Iterative Adaptation within vocational high schools, examining contribution toward learner psychological resilience development. Focus addresses school management processes, learner psychological outcomes. The study expands PDIA application within education research, offering guidance for resilience-focused vocational education management.

2. Research Method

This research was designed to examine the implementation of adaptive education management using the Problem-Driven Iterative Adaptation (PDIA) framework in vocational high school contexts. The study departs from the understanding that educational institutions operate within dynamic environments that require continuous problem identification, adjustment, and learning. Management practices in vocational education demand contextual responsiveness due to diverse student characteristics, practice oriented curricula, and psychological challenges faced by learners. A qualitative case study approach was adopted as the overarching methodological orientation to capture managerial processes, institutional responses, and stakeholder experiences as they occurred in real educational settings. The PDIA framework emphasizes iterative problem solving, local experimentation, and reflective learning. Such characteristics necessitate a methodological design that prioritizes process tracing, interaction analysis, and contextual interpretation rather than outcome measurement alone. Therefore, this research positions qualitative inquiry as the primary means to understand how adaptive management practices operate and how they relate to student psychological resilience within vocational schools. This general methodological orientation serves as the foundation for the selection of participants, data collection instruments, procedural steps, and analytical strategies employed in the study.

The research employed a qualitative case study design with embedded descriptive quantification. The case study design enabled an in-depth examination of adaptive management implementation within bounded institutional contexts. Rather than pursuing statistical generalization, the study sought analytical generalization through detailed exploration of processes, decision patterns, and stakeholder interpretations. The research method consisted of four main components: participants, instruments and procedures, data collection process, and data analysis. These components were structured to ensure methodological coherence and transparency, allowing other researchers to understand the logic of the study and replicate its procedural steps within comparable contexts.

The participants were selected using purposive sampling to ensure relevance to the research objectives. The study involved three public vocational high schools located in East Java, Indonesia. School selection was based on institutional engagement with school-based management practices, availability of student support mechanisms, and leadership willingness to participate in reflective problem-solving processes. Participants included three school principals, nine vocational subject teachers, three guidance and counseling teachers, and eighteen students. Principals represented the strategic management level responsible for

policy adaptation and resource allocation. Vocational subject teachers represented the instructional level where adaptive practices were implemented directly within learning activities. Guidance and counseling teachers represented the student support level focused on psychological wellbeing. Students were included to provide experiential perspectives on resilience development and perceived changes resulting from adaptive management practices. This participant composition enabled multi-perspective analysis and supported data triangulation across institutional roles.

Data collection instruments consisted of semi-structured interview guides, observation checklists, and document review protocols. Interview guides were developed based on PDIA principles, covering problem identification, decision iteration, collaboration processes, and perceived outcomes related to student resilience. Observation checklists focused on behavioral indicators associated with psychological resilience, including participation, emotional regulation, and response to learning challenges. Data collection procedures followed a sequential process. Semi-structured interviews were conducted with each participant group to obtain narrative accounts of adaptive management practices. Observations were carried out in classrooms, mentoring sessions, and counseling activities to capture naturally occurring interactions. Document analysis was conducted to examine institutional records such as school development plans, evaluation reports, counseling records, and meeting minutes. All interviews were audio-recorded with participant consent and transcribed verbatim. Observational data were recorded systematically using field notes. Documents were reviewed to support verification and contextual interpretation.

Data analysis was conducted using thematic analysis aligned with PDIA iterative cycles. The analysis began with open coding to identify meaningful units of information from interview transcripts, observation notes, and documents. Codes were generated inductively based on participant expressions and observed practices. Axial coding was then applied to group related codes into categories representing key dimensions of adaptive education management, including problem diagnosis, experimentation, feedback utilization, stakeholder engagement, and reflective learning. These categories were examined in relation to indicators of psychological resilience such as coping strategies, confidence expression, emotional regulation, and learning engagement. To enhance analytical clarity, simple descriptive quantification was applied. Frequencies and percentages were calculated from observation checklists and counseling records to illustrate the occurrence of resilience-related behaviors. This quantification functioned as supportive evidence for qualitative interpretation rather than as a basis for statistical inference.

Methodological rigor was ensured through triangulation across data sources, participant groups, and collection methods. Member checking was conducted by sharing preliminary interpretations with selected participants to confirm accuracy. Peer discussion was used to review coding consistency and theme development. Ethical principles guided all research activities. Participation was voluntary, informed consent was obtained, and confidentiality was maintained through anonymization. Student participation was conducted with assurance that involvement would not affect academic evaluation.

3. Results and Discussion

Research results indicate observable variation in student psychological endurance following the implementation of PDIA-oriented adaptive education governance within vocational secondary institutions. Research results reveal changes in emotional regulation capacity, self-belief orientation, coping response utilization, learning participation frequency. Research results originate from structured observation records, counseling documentation, instructional monitoring conducted after intervention cycles. Research results reflect institutional-level response effectiveness rather than individual trait modification. Research results demonstrate distribution patterns across measured indicators, providing numeric confirmation of outcome tendencies. Research results emphasize process-driven adaptation impact within educational management settings. Research results remain limited to the dataset collected within the intervention context.

Table 1. Improvement of Psychological Resilience Indicators among Students

Indicators	Frequency (n = 18)	Percentage (%)
Emotional regulation improvement	14	78%
Increased self-confidence	13	72%

Table 1 presents the distribution of psychological endurance indicators observed after PDIA-guided intervention implementation. Emotional regulation capacity shows the highest stabilization pattern during evaluative activities. Self-belief orientation appears within task

execution contexts requiring independent performance. Coping response utilization demonstrates moderate diffusion across participants, indicating gradual acquisition processes. Learning participation rate reflects the most frequent occurrence, suggesting alignment between affect management, instructional involvement. Numeric distribution supports consistency between observation documentation, counseling records.

Emotional Regulation Outcomes

Results demonstrate emotional regulation manifestation during assessment exposure, instructional persistence, post-failure recovery. Learners previously exhibiting withdrawal behaviors display engagement continuity. Regulation patterns appear through reduced task avoidance, sustained attentional control, response modulation during procedural difficulty. Outcome variation corresponds with institutional scheduling adaptation, reflective counseling exposure.

Self-Belief Outcomes

Results indicate self-belief orientation growth within technical execution activities. Learners initiate independent task handling, demonstration engagement, presentation delivery. Confidence manifestation appears through reduced hesitation, increased task ownership. Distribution patterns reflect assessment flexibility influence, feedback circulation structure.

Coping Response Outcomes

Results identify coping response utilization through assistance solicitation, peer interaction engagement, reflective task adjustment. Coping behaviors appear unevenly distributed across participants. Outcome distribution indicates temporal dependency within coping acquisition development. Documentation records show increased strategic response selection during instructional obstacles.

Learning Participation Outcomes

Results reveal learning participation escalation across instructional sessions. Attendance regularity, group task involvement, sustained effort frequency increase following intervention cycles. Participation indicators appear consistent across theoretical instruction, applied practice. Distribution dominance suggests interaction between affect regulation, instructional engagement.

Research results demonstrate structured outcome variation following PDIA-oriented adaptive education governance application. Research results remain focused on empirical observation outcomes without interpretive integration from external literature. Research results present indicator-specific distribution clarity, supporting data transparency. Results are presented in detail corresponding with measurement scope, documentation method, intervention context.

Discussion

The discussion section aims to interpret the results of this study by relating empirical findings to established theoretical perspectives and prior research. The results demonstrate that PDIA-oriented education management supports psychological resilience development among vocational high school students. Evidence from the research process indicates that institutional responses grounded in locally identified problems and iterative adjustment cycles correspond with measurable changes in emotional regulation and learning engagement. These outcomes align with resilience theory, which frames resilience as a process emerging from interactions between individuals and educational systems rather than as an internal attribute alone (Ungar, 2019).

Interpretation of the findings suggests that PDIA contributes to improved alignment between school management practices and student psychosocial conditions. Data collected through observation and reflective documentation show that schools were able to identify anxiety related to vocational practice, confidence fluctuation, and emotional control challenges. Such patterns correspond with findings reported in vocational education research identifying performance-oriented curricula and career uncertainty as sources of psychological strain (Sillvari et al., 2025). The PDIA approach allowed schools to respond through adaptive mechanisms rather than fixed intervention programs, indicating that contextual responsiveness plays a central role in resilience formation.

The findings further support accepted knowledge regarding the role of school leadership and learning climate in shaping student wellbeing. Previous studies indicate that emotional safety, participatory governance, and institutional responsiveness contribute to resilience outcomes within education systems (Ainsworth, 2020). Within this study, PDIA processes facilitated collaboration between administrators, teachers, and counseling personnel, creating conditions that supported shared problem analysis and collective action. Such organizational

interaction patterns explain observed improvements in student engagement and emotional management.

Interpretation of results also highlights the relevance of adaptability as a psychological resource. Incremental experimentation implemented through PDIA parallels research emphasizing adaptability and meaning construction as mechanisms enabling individuals to manage uncertainty (Nejad et al., 2021). Students engaged in mentoring, reflection, peer interaction, and project-based activities that enabled practice of coping strategies within everyday learning environments. This supports the conclusion that resilience development occurred through experiential processes embedded in institutional routines rather than through isolated psychological interventions.

The study additionally provides insight into the role of meaning orientation in vocational student resilience. Existing literature in counseling psychology suggests that purpose awareness supports motivation, persistence, and emotional stability among adolescents (Mustika et al., 2026). Reflection components integrated into PDIA cycles encouraged students to relate learning activities to vocational goals. This may explain increases in participation levels documented during the research process, reinforcing the interpretation that governance practices influence psychological outcomes indirectly through meaning-related processes.

From a theoretical standpoint, the findings extend PDIA literature by demonstrating applicability within student-centered educational management. Prior applications of PDIA in education largely emphasize organizational accountability and coordination outcomes (Nursalim et al., 2025). The present findings indicate that PDIA also influences student-level psychological outcomes, thereby expanding its conceptual scope. This deviation from earlier PDIA-focused studies highlights the importance of examining governance models beyond administrative indicators.

The results align with international findings on adaptability within vocational education. Research indicates that adaptability develops through interaction among academic, psychological, and personal dimensions requiring institutional support (Gao & Mohamad, 2024). PDIA allowed simultaneous adjustment across these dimensions, suggesting that integrated governance structures support resilience more effectively than fragmented support systems. This interpretation reinforces systemic resilience perspectives emphasizing institutional flexibility (Ungar, 2019).

Despite the contributions, several limitations should be considered. The qualitative orientation and limited institutional sample constrain generalization across contexts. However, triangulation through numerical tabulation supports credibility of observed changes. Future research may employ mixed-method designs or longitudinal approaches to assess sustainability of resilience outcomes. Comparative studies across educational levels and cultural settings may further clarify context-specific mechanisms influencing PDIA effectiveness.

Overall, this discussion supports the conclusion that PDIA-based adaptive education management provides a viable framework for strengthening psychological resilience among vocational high school students. Interpretation of results, supported by empirical evidence and accepted theoretical knowledge, indicates that locally grounded problem identification, iterative learning, and collaborative governance enable schools to respond to student psychosocial needs more effectively.

4. Conclusion

This study confirms that adaptive education management through the Problem-Driven Iterative Adaptation (PDIA) framework contributes meaningfully to the development of psychological resilience among vocational high school students. The findings emphasize that resilience formation is closely connected to institutional practices rather than individual capacity alone. Through iterative problem identification, reflective learning processes, and stakeholder involvement, PDIA enables schools to respond to psychological challenges arising from academic pressure, learning demands, and social contexts. The study reinforces the central thesis that adaptive management approaches allow vocational schools to align educational governance with students' psychological needs, resulting in improved emotional regulation, coping capacity, and engagement in learning activities.

The findings imply that vocational education institutions require management approaches that prioritize adaptability and learning-oriented leadership. School leaders and education policymakers may utilize PDIA as a governance framework to integrate counseling

services, mentoring systems, and reflective instructional practices into daily school routines. Such integration supports the creation of learning environments where psychological support becomes part of institutional culture rather than a supplementary program. The study highlights the relevance of PDIA for vocational schools operating under changing labor market conditions and socio-economic dynamics, where student resilience plays a key role in educational continuity and workforce readiness.

This study presents several limitations that need consideration. The research was conducted in three vocational high schools, which restricts the generalizability of the findings to broader educational contexts. The reliance on qualitative data supported by limited quantitative tabulation provides depth of understanding but limits statistical inference. In addition, the cross-sectional research design does not capture long-term changes in students' psychological resilience or evaluate the sustainability of PDIA-based management practices over extended periods.

Future studies are encouraged to adopt mixed-method research designs that combine qualitative exploration with quantitative measurement of psychological resilience indicators. Longitudinal research may provide deeper insight into how adaptive management through PDIA influences student resilience development throughout vocational education and during the transition into employment. Comparative research across regions, institutional types, and cultural contexts may further clarify the conditions under which PDIA functions most effectively. Expanding empirical evidence will strengthen the position of PDIA as a strategic framework for resilience-oriented education management.

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