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Systematic Management of Character Education to Enhance Student Discipline Through School-Industry Collaboration

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Abstract
The Fourth Industrial Revolution demands vocational graduates possess strong discipline alongside technical competencies, yet 25% experience employment difficulties due to weak work ethic rather than skill deficiencies. This qualitative multiple case study examined character education management at SMKN 1 Pangandaran and SMKS Taruna Bangsa Ciamis through observations, interviews, and document analysis. Data were analyzed using Miles and Huberman's framework with triangulation for validity. Management functions operated systematically: planning established four discipline indicators (punctuality, SOP/safety compliance, task responsibility, professional communication); organizing created cross-functional coordination with clear role delineation; implementation combined school-based habituation through Teaching Factory with authentic industrial practice during internships; evaluation employed the CIPP model using rubrics, logbooks, and industry reports. Punctuality improved from 68% to 89%, and safety compliance increased from 72% to 94% during internships. Barriers including teacher preparation gaps, cultural differences, and short internship duration were addressed through professional development, graduated transitions, and standardized assessment instruments. Findings demonstrate that systematic management frameworks effectively bridge school-industry contexts for discipline formation. The study extends social learning and experiential learning theories into vocational character education, providing actionable practices for educators and policymakers while identifying needs for longitudinal research and exploration of higher-order professional competencies.

INTRODUCTION

The advent of the Fourth Industrial Revolution has fundamentally transformed workforce requirements, positioning character attributes as equally critical as technical competencies in determining employment success (Spöttl & Windelband, 2021). Contemporary labor markets increasingly emphasize soft skills, particularly discipline, integrity, and professional responsibility, as essential determinants of workplace performance and career sustainability (Borrageiro & Mennega, 2023; Mudzar et al., 2022; Saari et al., 2021; World Economic Forum, 2023). Research confirms that 57% of organizational leaders consider soft skills more important than technical skills, with discipline, work ethic, and time management ranking among the most critical competencies (Bühler et al., 2022). This paradigm shift presents significant implications for vocational education systems, which traditionally prioritized technical skill development while often relegating character formation to peripheral status. Evidence reveals concerning patterns: approximately 25% of vocational high school graduates experience employment difficulties attributed not to technical inadequacies but to deficiencies in discipline and work ethic (Hora, 2017). Studies confirm that work ethic, rooted in the habituation of discipline, responsibility, and punctuality, fundamentally affects employment performance and career sustainability (Azizah et al., 2021; Javed et al., 2021). This empirical reality underscores an urgent need to reconceptualize vocational education frameworks to systematically integrate character development with technical training.

Indonesian education policy has increasingly recognized this imperative through legislative and programmatic interventions. Law No. 20/2003 on the National Education System established the foundational mandate for holistic education encompassing character formation. The Ministry of Education and Culture's Character Education Strengthening program (2018) operationalized this mandate by requiring formal educational institutions to implement structured character development initiatives. More recently, the Merdeka Curriculum and Pancasila Student Profile framework explicitly mandate that learning processes cultivate positive work habits and professional attitudes alongside technical competencies. The link and match 8+ initiative (Ministry of Education, Culture, Research, and Technology, 2022) further strengthened school-industry collaboration mechanisms through curriculum synchronization, Teaching Factory (TEFA) implementation, competency certification, and industrial internships (Praktik Kerja Lapangan/PKL), thereby creating opportunities for character education to occur within authentic workplace contexts (Yoto et al., 2024b; Wu & Ji, 2022).

Despite these policy advances, significant implementation gaps persist in vocational education practice. First, existing research indicates that character education programs frequently remain ceremonial or incidental activities rather than comprehensively managed systems integrated into core pedagogical processes (Prastyo, 2012; Supadi & Fauzi, 2024). This superficial implementation limits the systematic habituation necessary for durable character formation. Second, disciplinary evaluation instruments lack standardization across skill programs and partner industries, resulting in inconsistent assessment practices and unreliable feedback mechanisms (Pambudi & Harjanto, 2020; Stasz et al., 2004; Supriyantoko et al., 2020; Yoto et al., 2024a). Third, teacher professional development predominantly emphasizes technical instruction while providing insufficient preparation in work ethics pedagogy and workplace culture transmission (Siliņa-Jasjukeviča et al., 2025; Zhou et al., 2022; World Bank, 2024). Fourth, partnerships with the Business and Industrial World (Dunia Usaha dan Dunia Industri/DUDI) typically focus on work placement logistics without establishing explicit character development indicators or structured feedback protocols (Dwiyanti & Ridwan, 2024; Hiim, 2023; Pillay et al., 2013). These implementation deficiencies collectively undermine the effectiveness of character education initiatives and perpetuate the discipline-related employment challenges facing vocational graduates.

The scholarly literature on vocational character education reveals several critical knowledge gaps. While substantial research examines curriculum design and pedagogical strategies for technical skill development, far less attention has been devoted to systematic character education management within vocational contexts (Kwartawaty et al., 2024). Existing studies on school-industry collaboration predominantly analyze technical competency alignment and employment outcomes, with limited investigation of how partnership mechanisms can be leveraged specifically for character formation (Hiim, 2023; Watters et al., 2013). Furthermore, research documenting integrated management approaches that systematically address planning, organizing, implementing, and evaluating character development across both school and industry settings remains scarce (Narindro et al., 2020; Santoso et al., 2021). This gap is particularly significant given that effective character formation requires coordinated efforts across multiple stakeholder groups operating in distinct organizational cultures (Rahdiyanta et al., 2017; Wahjusaputri et al., 2024).

This study addresses these knowledge gaps by examining character education management processes specifically designed to enhance student discipline through structured school-industry collaboration. The research employs a managerial functions framework (Nurhikmah, 2024)—planning, organizing, implementing, and evaluating—to systematically trace how discipline indicators (punctuality, compliance with standard operating procedures and occupational health and safety protocols, task responsibility, and professional communication) are designed, operationalized, monitored, and refined through partnership mechanisms. By focusing on discipline as a core character attribute with direct workplace relevance, this investigation provides empirical insights into practical implementation strategies while illuminating the organizational and pedagogical conditions necessary for effective character development.

The primary objective of this research is to describe and analyze the implementation of character education management systems at SMKN 1 Pangandaran and SMKS Taruna Bangsa Ciamis, with particular emphasis on discipline formation through DUDI collaboration. The study seeks to identify effective practices in integrating character development across school-based learning, TEFA environments, and industrial internship experiences, while documenting challenges encountered and solutions implemented. The significance of this research lies in its potential to inform evidence-based improvements in vocational education practice. By presenting replicable school-industry collaboration models and demonstrating practical assessment instruments and feedback mechanisms, this study contributes actionable knowledge for vocational educators, policymakers, and industry partners seeking to systematically foster discipline and other essential character attributes (Rowe et al., 2023). Furthermore, the findings advance theoretical understanding of how managerial processes can be strategically deployed to bridge institutional contexts and organizational cultures in service of comprehensive vocational education outcomes that integrate both technical competence and professional character.

METHODS

This study employed a descriptive qualitative approach with a multiple case study design to examine character education management practices at SMKN 1 Pangandaran and SMKS Taruna Bangsa Ciamis. This methodological choice enabled in-depth exploration of management functions, disciplinary practices, and school-industry collaboration mechanisms within their authentic organizational contexts. The multiple case study design facilitated cross-site comparison to identify both convergent patterns and contextual variations in governance structures, institutional cultures, and partnership configurations between two equivalent vocational institutions (Yin, 2018). This comparative approach enhanced the transferability of findings and generated richer insights into the conditions under which character education management effectively fosters student discipline.

Research participants were selected through purposive sampling based on their direct involvement in character education planning, implementation, and evaluation processes. The participant pool comprised school principals, curriculum vice-principals, productive skills teachers, guidance counselors, homeroom teachers, students currently engaged in or recently completed industrial internships (PKL), and industry supervisors serving as workplace mentors. This multi-stakeholder sampling strategy ensured comprehensive representation of perspectives across the entire character education ecosystem, from policy formulation through authentic workplace application. Participant selection prioritized individuals with sustained engagement in DUDI partnership activities and demonstrable knowledge of disciplinary practices in both school and industrial settings.

Data collection employed three complementary methods to achieve methodological triangulation. First, structured observations were conducted in classroom settings, TEFA laboratories, and industrial internship sites to directly capture disciplinary practices including punctuality behaviors, compliance with standard operating procedures and occupational health and safety protocols, task execution quality, and professional communication patterns. Observation protocols systematically documented interactions, behavioral routines, and environmental conditions influencing discipline formation. Second, semi-structured in-depth interviews explored stakeholders' experiences, perceptions, and interpretations regarding management functions (planning, organizing, implementing, evaluating) and disciplinary development processes. Interview protocols addressed program objectives, role divisions, pedagogical strategies, assessment practices, challenges encountered, and solutions implemented. Third, document analysis examined curricular materials, lesson plans, partnership memoranda of understanding, pre-internship preparation modules, student logbooks, industry mentor evaluation reports, and school assessment rubrics to corroborate interview and observation data while revealing formal structures governing character education practices.

The research instruments underwent rigorous development and validation processes. Observation guidelines, interview protocols, and document analysis frameworks were constructed

based on discipline indicators derived from literature and aligned with the POAC (Planning, Organizing, Actuating, Controlling) management framework. Instrument validity was established through expert review by educational management specialists and vocational education practitioners, ensuring content relevance and construct appropriateness. Pilot testing at comparable vocational institutions refined item clarity and protocol feasibility. Data collection procedures included initial program mapping, systematic field observations and interviews at both research sites, member checking sessions with key informants to verify interpretation accuracy, and cross-site data consolidation to identify patterns and variations.

Data analysis followed the iterative procedures outlined by Miles and Huberman (1994), consisting of three concurrent flows of activity. Data reduction involved systematic coding and thematic categorization within predetermined domains: planning processes, organizational structures, implementation strategies, evaluation mechanisms, and obstacle-solution dynamics. Data display utilized comparison matrices to systematically contrast findings across the two case sites, facilitating pattern recognition and divergence identification. Conclusion drawing and verification integrated coded data, identified emergent themes, and constructed explanatory frameworks linking management functions to disciplinary outcomes. Data trustworthiness was strengthened through multiple validity strategies: triangulation of data sources (documents, interviews, observations) and methods, peer debriefing sessions with fellow researchers to examine analytical interpretations, and member checking procedures whereby key informants reviewed and validated preliminary findings to ensure accurate representation of their experiences and institutional practices.

RESULTS AND DISCUSSION

Results

This study examined character education management systems at two Indonesian vocational high schools—SMKN 1 Pangandaran and SMKS Taruna Bangsa Ciamis—with particular focus on discipline formation through school-industry collaboration. The findings are organized according to management functions: planning, organizing, implementing, and evaluating, followed by identification of barriers and solutions.

Planning Function

Both institutions demonstrated systematic approaches to character education planning aligned with graduate competency profiles and industry requirements. Data from curriculum meeting documentation and partnership memoranda revealed that planning processes commenced with comprehensive needs analysis conducted collaboratively between school leadership, productive teachers, and industry partners. As articulated by the curriculum vice-principal at SMKN 1 Pangandaran: "We held joint meetings with our DUDI partners to identify the specific behavioral competencies they value most in workplace settings. This ensures our discipline indicators aren't arbitrary but genuinely reflect industry expectations."

The planning phase yielded four operational discipline indicators consistently implemented across both sites: (1) punctuality, encompassing attendance regularity and work readiness; (2) compliance with standard operating procedures and occupational health and safety protocols, including proper use of personal protective equipment, tool management, and housekeeping practices; (3) responsibility for task completion, quality standards, and reporting obligations; and (4) professional communication, comprising appropriate workplace language and reporting ethics. These indicators align with recent findings that effective character education requires explicit, measurable behavioral specifications rather than vague aspirational statements (Zurqoni et al., 2018).

Supporting instructional materials developed during planning included pre-internship preparation modules addressing work ethics, time management, and occupational safety; behavioral observation rubrics with specific performance criteria; daily logbooks structured to capture discipline-related behaviors; and weekly checkpoint formats enabling systematic progress monitoring. An unexpected finding emerged regarding indicator selection: both schools prioritized compliance-oriented behaviors

(punctuality, SOP adherence) over more complex professional attributes such as initiative or creative problem-solving. When probed about this emphasis, school administrators acknowledged that "industries consistently report that basic discipline issues—arriving late, ignoring safety protocols—remain the most frequent problems with interns, so we must ensure these fundamentals are solid before addressing higher-order competencies." This pragmatic approach, while understandable given industry feedback, potentially underemphasizes the development of adaptive capacities increasingly valued in dynamic workplace environments (Tushar & Sooraksa, 2023).

Organizing Function

Analysis of organizational documents and interview data revealed well-defined governance structures implementing cross-functional coordination mechanisms. At both institutions, responsibility matrices clearly delineated stakeholder roles: school principals and curriculum vice-principals provided policy direction and facilitated resource allocation; PKL coordinators managed partnership relationships and internship logistics; productive teachers integrated character development into daily instruction; guidance counselors conducted attitude assessment and behavioral counseling; homeroom teachers monitored attendance patterns and maintained parent communication; and industry supervisors provided workplace mentorship and performance evaluation.

Partnership standard operating procedures codified communication protocols, role assignments, evaluation formats, and progress review schedules. As documented in the partnership agreement between SMKN 1 Pangandaran and a manufacturing partner: "The school commits to pre-internship preparation including safety training and professional conduct orientation. The industry partner commits to designated supervision, structured feedback mechanisms, and participation in quarterly evaluation meetings." Two-way communication channels, including digital coordination groups and structured issue reporting systems, enabled rapid problem identification and response. The PKL coordinator at SMKS Taruna Bangsa noted: "When a student encounters difficulty meeting punctuality expectations due to transportation challenges, our communication system allows us to quickly involve the homeroom teacher, parents, and industry supervisor to develop appropriate support strategies."

An interesting organizational innovation observed at SMKS Taruna Bangsa involved the establishment of a student peer mentoring system wherein senior students who had successfully completed internships provided guidance to incoming interns. This peer support mechanism, while not formally documented in official organizational charts, appeared to enhance student preparedness and reduce anxiety about workplace behavioral expectations. The homeroom teacher explained: "Students often relate better to peers who recently experienced the same challenges. This informal mentoring supplements our formal preparation but emerged organically rather than through deliberate planning." This finding suggests that effective character education systems benefit from both formal organizational structures and emergent informal support networks (Smith & Kouchaki, 2021).

Implementation Function

School-Based Implementation

Classroom and Teaching Factory observations revealed that discipline habituation commenced immediately upon students' arrival at school. Daily routines incorporated multiple discipline-reinforcing practices: morning briefings establishing daily objectives and behavioral expectations; time-stamped attendance systems documenting punctuality patterns; systematic occupational safety inspections before practical work commenced; and explicit target-setting for daily task completion. Pedagogical approaches deliberately integrated discipline development with technical skill acquisition. Project-based learning modules required students to adhere to production schedules, meet quality specifications, and demonstrate effective teamwork—simultaneously developing technical competencies and professional behaviors.

Teacher modeling proved particularly significant in implementation effectiveness. Observation data documented that productive teachers consistently demonstrated punctuality in lesson commencement and conclusion, arrived with prepared materials and functional equipment, and

provided structured progress reports on student development. As one student remarked: "When teachers always arrive on time and come prepared, it feels wrong for us to be late or unprepared. They set the standard." Teachers employed assessment rubrics to provide immediate, specific feedback on behavioral performance. For instance, following a practical session, a teacher might state: "Your technical execution was excellent, but I observed three instances of improper tool placement that violated housekeeping protocols. Let's review the correct procedures." This immediate, behaviorally-specific feedback proved more effective than general exhortations to "be more disciplined" (Maruanaya et al., 2021; Fatmawati et al., 2023).

Teaching Factory environments at both schools functioned as intermediate zones bridging classroom instruction and authentic industrial practice. TEFA facilities replicated industrial conditions including production equipment, workspace organization systems, and quality control protocols. Students engaged in production-based learning generating actual goods or services for external customers, necessitating adherence to commercial standards for punctuality, quality, and professional conduct. The TEFA coordinator at SMKN 1 Pangandaran explained: "In TEFA, consequences become real. If a team arrives late, production schedules are disrupted. If safety protocols are ignored, accidents can occur. These authentic consequences reinforce discipline more powerfully than any lecture." This observation aligns with experiential learning theory emphasizing that behaviors internalized through authentic practice transfer more reliably to real-world contexts than those learned through abstract instruction (Diwangkoro & Soenarto, 2020; Kolb, 1984).

Industry-Based Implementation

Industrial internship observations revealed systematic induction processes preceding workplace integration. Upon arrival at industry sites, students participated in comprehensive orientation covering safety regulations, standard operating procedures, workplace culture norms, and working hour expectations. Industry supervisors then assigned students to specific operational units based on their technical competencies and learning objectives. One industry mentor described the placement strategy: "We don't simply assign students to any available position. We consider their school training and place them where they can apply and extend their competencies while learning our specific workplace practices."

Discipline practices during internships encompassed multiple dimensions: rigorous shift timekeeping systems documenting arrival, departure, and break times; immediate compliance with supervisor instructions and standard operating procedures; structured task handover protocols ensuring continuity across shifts; and systematic anomaly reporting when deviations from normal operations occurred. Daily logbooks and weekly checkpoint meetings provided structured mechanisms for documenting behavioral performance and discussing progress with both industry and school mentors. An industry supervisor noted: "The logbook isn't just paperwork. It's a communication tool. When we review it together, students reflect on their performance, we provide feedback, and school coordinators stay informed about their development."

Both positive reinforcement and corrective action mechanisms operated systematically. Students demonstrating consistent punctuality and safety compliance received public recognition during team meetings and positive notation in evaluation reports. Conversely, behavioral violations triggered progressive responses: initial incidents prompted counseling conversations between student and supervisor; repeated violations resulted in formal learning contracts specifying behavioral expectations and consequences; and persistent difficulties led to guidance counselor intervention and intensive mentoring. The proportional, educative approach to behavioral correction distinguished effective programs from punitive systems focused primarily on sanctions (Imran et al., 2024).

Evaluation Function

Evaluation processes employed the Context, Input, Process, Product (CIPP) model enabling comprehensive, multilayered assessment. Context evaluation examined the alignment between character education objectives and authentic industry requirements. Interviews with industry partners

and analysis of workplace competency frameworks confirmed that the four discipline indicators—punctuality, SOP/safety compliance, task responsibility, and professional communication—corresponded closely with employers' priority behavioral competencies. Input evaluation assessed resource adequacy including TEFA equipment quality and currency, teacher preparedness for character-infused instruction, and partnership infrastructure supporting sustained school-industry collaboration.

Process evaluation monitored discipline habit consistency during both school-based instruction and industrial internships. Multiple data sources informed process evaluation: behavioral observation rubrics completed by teachers and industry supervisors; daily logbooks documenting attendance, task completion, and behavioral incidents; weekly checkpoint discussions identifying progress and persistent challenges; and student self-reflection journals capturing their perceptions of behavioral development. The curriculum vice-principal at SMKS Taruna Bangsa explained: "We don't rely on a single evaluation method. Triangulating multiple data sources provides a more accurate, comprehensive picture of each student's discipline development."

Product evaluation measured the achievement of discipline indicators through quantitative rubric scores and qualitative narrative assessments. Analysis of evaluation data across both schools revealed several patterns. Punctuality indicators demonstrated marked improvement trajectories: average attendance punctuality increased from 68% in pre-internship baseline to 89% by internship conclusion. Occupational safety compliance showed similar positive trends, with proper PPE usage increasing from 72% to 94% over the internship period. However, consistency in task documentation and handover protocols proved more challenging to establish, with achievement rates reaching only 76% by internship conclusion. One industry supervisor observed: "Students quickly adapt to visible, immediate requirements like arriving on time and wearing safety equipment. More abstract responsibilities like thorough documentation require sustained reinforcement because the consequences of poor documentation aren't immediately apparent."

Student self-reflection data provided valuable insights into discipline development processes. Representative comments included: "Before internship, I didn't understand why punctuality mattered so much. Now I see how one person being late affects the entire production team"; "Learning to follow safety protocols felt restrictive at first, but after seeing a near-accident, I understand these rules protect us"; and "The daily logbook seemed like extra work initially, but reviewing it with my supervisor helped me see my progress and areas needing improvement." These reflections suggest that experiential learning in authentic workplace contexts facilitates deeper understanding of discipline's functional value beyond mere rule compliance (Rowe et al., 2023).

Formal evaluation reports synthesized multiple data sources and included both quantitative performance indicators and qualitative behavioral narratives. Industry supervisors' final assessments informed school records and provided actionable feedback for program refinement. Notably, both schools conducted end-of-cycle after-action reviews involving school leadership, teachers, industry partners, and student representatives to identify successes, challenges, and improvement opportunities—exemplifying the continuous improvement orientation characteristic of effective program evaluation (Zhang et al., 2011).

Barriers and Solutions

Implementation encountered several significant barriers requiring adaptive responses. First, variations in teachers' conceptual understanding of character integration in productive instruction created inconsistency across learning experiences. Some teachers explicitly connected technical content with behavioral expectations, while others addressed character development only superficially. Solution: The schools implemented systematic teacher professional development addressing character-infused instruction, including modeling by exemplary practitioners, collaborative lesson planning emphasizing behavioral integration, and peer observation with structured feedback. These capacity-building efforts align with research emphasizing that effective character education requires

explicit teacher preparation rather than assuming teachers intuitively possess relevant pedagogical competencies (Siliņa-Jasjukeviča et al., 2025; Zhou et al., 2022).

Second, cultural differences between school and industry environments created adaptation challenges for students. Industrial workplaces operated at faster tempos, maintained more stringent quality standards, and enforced time discipline more rigorously than school settings. Students accustomed to more flexible school environments sometimes struggled with industrial rigor. Solution: Schools enhanced pre-internship preparation emphasizing workplace culture differences, established graduated transition processes beginning with highly structured school-based simulations before industrial placement, and provided intensive mentoring during initial internship weeks when cultural adjustment challenges peaked. The PKL coordinator noted: "We learned that simply sending students to industry without systematic cultural preparation sets them up for difficulty. Now we explicitly teach workplace cultural expectations before internship begins."

Third, relatively short internship durations (typically three months) limited the depth of discipline habituation achievable. Research on habit formation suggests that sustained, consistent practice over extended periods enables behavioral automaticity (Duhigg, 2012; Lally et al., 2010). Three-month internships, while valuable, may provide insufficient duration for deep behavioral internalization. Solution: Schools extended character development efforts across the entire educational program rather than concentrating them solely during internship periods. TEFA facilities served as intermediate training grounds where workplace-equivalent discipline expectations operated throughout students' enrollment, creating cumulative habituation opportunities extending well beyond formal internship periods.

Fourth, inconsistent documentation and assessment practices across multiple industry partners complicated systematic evaluation and comparison. Different companies employed varying evaluation formats, terminology, and performance standards, making cross-site comparison difficult. Solution: Schools developed standardized assessment instruments—including common rubrics, logbook formats, and report templates—implemented across all partner organizations. This standardization required sustained negotiation with industry partners but ultimately enabled more reliable, comparable evaluation data. Additionally, schools provided training sessions for industry supervisors on using standardized instruments, ensuring shared understanding of assessment criteria and procedures. This finding underscores the importance of assessment infrastructure in school-industry partnerships, an aspect often overlooked in favor of focusing primarily on placement logistics (Hiim, 2023; Pillay et al., 2013).

Discussion

This study demonstrates that systematic character education management leveraging school-industry collaboration can effectively enhance discipline among vocational students. The integration of planning, organizing, implementing, and evaluating functions created coherent systems wherein discipline development occurred through intentional design rather than incidental processes. These findings contribute to ongoing scholarly discourse regarding vocational character education by providing empirical evidence of how management frameworks can be deployed to bridge institutional contexts and organizational cultures in service of integrated competency development.

The findings strongly support management theory's proposition that systematic application of planning, organizing, implementing, and evaluating functions enhances organizational effectiveness (Fayol, 1949; Robbins & Coulter, 2005). Both case sites demonstrated that when management functions operated in integrated fashion—with planning establishing clear objectives and indicators, organizing defining roles and coordination mechanisms, implementation executing designed strategies, and evaluation providing feedback for continuous improvement—character development occurred more consistently and effectively than in systems lacking such systematic approaches. This pattern corroborates recent research demonstrating that structured management processes improve educational program outcomes across diverse contexts (Narindro et al., 2020; Santoso et al., 2021).

Social learning theory (Bandura, 1977) receives substantial empirical support from the implementation findings. Teacher modeling, peer mentoring, and industry supervisor demonstrations all functioned as vicarious learning mechanisms through which students acquired behavioral standards. Particularly notable was the power of authentic workplace environments to shape behavior through observational learning and environmental contingencies. Students reported that witnessing experienced workers' disciplined practices and observing consequences of behavioral choices (both positive and negative) influenced their own behavior more powerfully than abstract instruction. This finding extends social learning theory into vocational education contexts, demonstrating its applicability to professional behavior development beyond the psychological domains where it originated (Schunk & DiBenedetto, 2020).

Experiential learning theory (Kolb, 1984) provides additional explanatory power for understanding why Teaching Factory and industrial internship experiences proved so influential in discipline development. The concrete experience of practicing discipline in authentic contexts, combined with reflective observation captured in logbooks and checkpoint discussions, facilitated conceptual understanding of discipline's functional value. Students progressed from viewing discipline as externally-imposed compliance to understanding it as functional competency enabling workplace effectiveness. This developmental progression—from concrete experience through reflective observation to abstract conceptualization—exemplifies the experiential learning cycle operating in workplace-based character development (Agwa-Ejon & Pradhan, 2017; Dwijayanthi & Rijanto, 2022).

These findings both converge with and extend existing research on vocational character education. The emphasis on explicit, measurable discipline indicators aligns with contemporary character education scholarship emphasizing that effective programs operationalize character as specific, observable behaviors rather than vague aspirational constructs (Lickona, 1991; Zubaedi, 2011). However, this study extends that literature by demonstrating how indicator specification can emerge collaboratively through school-industry dialogue, ensuring workplace relevance while maintaining educational integrity. This collaborative specification process addresses a common criticism of character education—that predetermined character frameworks may not align with actual workplace requirements (Dwiyanti & Ridwan, 2024; Yoto et al., 2024b).

The critical role of Teaching Factory environments as intermediate learning spaces represents an important contribution to understanding how schools can prepare students for workplace behavioral expectations. While substantial literature documents TEFA's effectiveness for technical skill development (Maruanaya et al., 2021; Fatmawati et al., 2023; Yoto et al., 2024a), less attention has been devoted to TEFA's function in character formation. This study demonstrates that properly designed TEFA environments serve as "practice fields" where students can develop workplace-appropriate behaviors under supportive conditions before encountering the higher-stakes demands of actual industrial employment. The graduated transition from classroom to TEFA to industry provides scaffolding enabling students to progressively develop behavioral competencies—a finding with significant implications for vocational program design (Hiim, 2023).

The barriers identified—particularly teacher preparation gaps and school-industry cultural differences—corroborate challenges documented in international vocational education literature. Research in diverse national contexts consistently identifies teacher capacity for character integration and institutional culture gaps as implementation obstacles (Siliņa-Jasjukeviča et al., 2025; Zhou et al., 2022; World Bank, 2024). However, the solutions implemented—systematic professional development, graduated transitions, and assessment standardization—provide actionable strategies adaptable to other contexts. These solutions move beyond problem identification to demonstrate feasible improvement pathways, addressing a significant gap in the literature which often documents challenges without equally thorough attention to remediation (Hiim, 2023).

While the findings demonstrate positive outcomes, several considerations warrant critical examination. First, the three-month internship duration, though longer than some programs, remains relatively brief for achieving deep behavioral internalization. Habit formation research suggests that

behavioral automaticity requires sustained, consistent practice over extended periods—often several months (Lally et al., 2010). The positive trends observed may represent initial behavioral compliance motivated by evaluation awareness rather than fully internalized dispositions. Longitudinal follow-up tracking whether discipline improvements persist post-graduation would strengthen understanding of program impact durability.

Second, the emphasis on compliance-oriented discipline indicators (punctuality, SOP adherence) may inadequately address higher-order professional capacities increasingly critical in dynamic workplace environments. While fundamental discipline remains essential, contemporary workplaces increasingly value adaptive capacities including initiative, creative problem-solving, and self-directed learning (Borrageiro & Mennega, 2023). Future iterations of character education programs might productively expand beyond compliance-oriented behaviors to encompass these more complex professional dispositions, perhaps through graduated developmental trajectories beginning with fundamental discipline and progressing toward adaptive competencies.

Third, the study's case study methodology, while enabling rich contextual understanding, limits generalizability. Both research sites were well-established vocational schools with relatively strong industry partnerships and adequate resources. Implementation feasibility and outcomes may differ substantially in under-resourced schools or regions with weaker industry networks. Additionally, both schools served relatively similar geographic and socioeconomic contexts. Research examining character education management in more diverse settings—urban versus rural, well-resourced versus under-resourced, strong versus weak industry ecosystems—would illuminate contextual factors shaping implementation effectiveness.

Fourth, evaluation relied primarily on behavioral observation and stakeholder perceptions rather than objective outcome measures such as employment rates, workplace performance ratings, or long-term career progression. While behavioral indicators provide valuable process data, linking character development to ultimate vocational outcomes would strengthen the empirical case for systematic character education. Future research incorporating post-graduation employment tracking, employer satisfaction ratings, and workplace performance assessments would demonstrate whether discipline developed during training translates into sustained workplace success.

This research advances theoretical understanding of vocational character education in several important respects. First, it demonstrates empirically how management functions provide an organizing framework for systematizing character development processes that might otherwise remain ad hoc or incidental. The POAC framework—often applied to organizational or instructional management—proves equally applicable to character education management, suggesting productive cross-domain theoretical transfer. Second, the study illuminates mechanisms through which school-industry collaboration influences character development, moving beyond simple assertions that partnerships matter to specifying how partnership elements (joint planning, coordinated implementation, shared evaluation) contribute to outcomes. Third, the research demonstrates that effective character education requires addressing both formal organizational structures (roles, procedures, evaluation systems) and informal support networks (peer mentoring, teacher modeling, workplace culture), suggesting that overly rationalist approaches neglecting informal dimensions may prove insufficient.

Practical implications for vocational educators, administrators, and policymakers include several actionable recommendations. Schools should integrate discipline indicators into comprehensive assessment systems rather than treating character as separate from academic and technical evaluation. This integration signals that character holds equivalent importance to technical competencies while enabling systematic tracking of behavioral development. Teacher professional development programs should allocate substantial attention to character-infused instruction pedagogies, moving beyond technical content expertise to encompass the relational and cultural competencies necessary for effective character development. Industry partnership agreements should

explicitly specify character development objectives, assessment mechanisms, and feedback protocols rather than focusing exclusively on technical skill development and placement logistics.

Policymakers should recognize that effective school-industry collaboration for character development requires sustained investment in partnership infrastructure including coordination mechanisms, assessment systems, and communication technologies. The relatively modest investments required for these enabling structures yield substantial returns through improved graduate workplace readiness and reduced employer training costs. Additionally, policies might productively incentivize extended internship durations or graduated industry engagement throughout students' educational programs rather than concentrating workplace experience in brief, terminal periods. Finally, systematic program evaluation should encompass behavioral development alongside technical competency assessment, ensuring that character education receives the serious attention rhetoric suggests it deserves.

Several productive research directions emerge from this study's findings and limitations. First, longitudinal research tracking discipline development from program enrollment through post-graduation employment would illuminate whether behaviors developed during training persist into professional practice and correlate with workplace success indicators. Second, comparative research examining character education management across diverse program types (different technical fields, various institution types, distinct regional contexts) would identify which findings represent universal principles versus context-specific adaptations. Third, experimental or quasi-experimental research comparing outcomes between systematic character education programs and conventional approaches would strengthen causal claims regarding management system effectiveness. Fourth, research examining student agency in discipline development—moving beyond viewing students as passive recipients of character formation to examining how students actively construct professional identities—would enrich understanding of developmental processes. Finally, research exploring how character education management might address more complex professional dispositions beyond compliance-oriented behaviors (adaptive expertise, ethical judgment, innovative thinking) would advance the field toward more comprehensive models of professional development.

This study demonstrates that when vocational schools systematically apply management functions to character education, leverage authentic workplace learning environments, and sustain productive industry partnerships, meaningful discipline development occurs. While implementation challenges exist, the strategies documented here provide actionable pathways toward more effective character education systems preparing students for both technical competence and professional conduct expected in contemporary workplaces.

CONCLUSION

This study demonstrates that systematic character education management through school-industry collaboration effectively enhances student discipline in vocational settings. The integration of management functions—planning with explicit behavioral indicators, organizing through cross-functional coordination, implementing via Teaching Factory and authentic workplace experiences, and evaluating using the CIPP model—creates coherent systems wherein discipline development occurs through intentional design rather than incidental processes. The research contributes theoretically by demonstrating how management frameworks can bridge institutional contexts and organizational cultures, extending social learning and experiential learning theories into vocational character education domains. Empirically, the study illuminates specific mechanisms through which school-industry partnerships influence behavioral development, moving beyond general assertions to specify actionable practices including collaborative indicator specification, graduated transitions from classroom to industry, peer mentoring systems, and standardized assessment protocols.

Practically, findings suggest that vocational educators should integrate discipline indicators into comprehensive assessment systems, that teacher professional development must address character-infused pedagogy alongside technical content, and that industry partnerships require explicit character

development objectives with structured feedback mechanisms. However, the study's limitations warrant acknowledgment: the relatively brief three-month internship duration may capture initial compliance rather than deep internalization; emphasis on compliance-oriented behaviors potentially underemphasizes adaptive capacities critical in dynamic workplaces; and case study methodology limits generalizability beyond well-resourced schools with strong industry networks. Future research should employ longitudinal designs tracking discipline persistence post-graduation, examine implementation across diverse contexts and resource conditions, and explore how character education management might address higher-order professional dispositions beyond fundamental discipline. Additionally, experimental studies comparing systematic management approaches with conventional practices would strengthen causal claims regarding program effectiveness.

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