Jurnal Pendidikan dan Pembelajaran Indonesia (JPPI)
p-ISSN: 2797-2879, e-ISSN: 2797-2860
Volume 6, nomor 3, 2026, hal. 2563-2575
Doi: https://doi.org/10.53299/jppi.v6i3.4665

Garden-Mind: A Community Based Non-Formal Education Model through Hydroponic Therapeutic Gardening for Student Development at LPKA Bandung

Hendriano Meggy[1]*, Nita Nitiya Intan Tanbrin[2], Selfiyani Lestari[3], Kholifatul Novita Ningsih[4], Kayla Athaya Kaerunnisa[5], Intan Nuurul Azkiya[6], Widya Annisa Sari[7], Khairunnisa Kamilah[8]
[1,2,5,6,7,8]Pendidikan Khusus, Universitas Pendidikan Indonesia, Bandung, Indonesia
[3]Psikologi, Universitas Pendidikan Indonesia, Bandung, Indonesia
[4]Pendidikan Khusus, Universitas Negeri Jakarta, Jakarta, Indonesia

*Coresponding Author: hendrianomeggy@upi.edu
Dikirim: 03-06-2026; Direvisi: 05-07-2026; Diterima: 08-07-2026

Abstract: Student affairs services in non-formal education, particularly in Indonesian juvenile correctional institutions (Lembaga Pembinaan Khusus Anak, LPKA), have yet to fully integrate a community-based education approach, leading to fragmented and reactive service delivery. This study aimed to design, implement, and evaluate the Garden-Mind program as a community-based management model of student affairs that integrates hydroponic-based therapeutic gardening with group guidance and counseling at the Class II Juvenile Correctional Institution of Bandung. Employing a participatory action research approach with a pre–post intervention design, the program ran for eight weeks (16 ninety-minute sessions) involving 15 purposively selected juvenile residents. Data were collected through the Zung Self-Rating Anxiety Scale (ZUNG-SAS), the Perceived Stress Scale (PSS-10), learner journals, structured observation, and focus group discussions, and were analysed using the Wilcoxon signed-rank test (with effect-size r) and six-phase thematic analysis. Findings indicate a significant reduction in anxiety scores (28.4%; $r = 0.87$, large effect) and stress scores (31.7%; $r = 0.89$, large effect), with $p < 0.001$. Qualitative analysis identified four themes of transformation: learner ownership, cohesive learning community, contextual life skills, and positive future orientation. The study theoretically contributes the Model of Community-Based Student Affairs Service Development (MPLSBC) as an integrative managerial framework and practically recommends repositioning LPKA student affairs services from a reactive stance toward a measurable, replicable, and equitable community-based framework that may be standardized across juvenile correctional institutions in Indonesia.

Keywords: Community-based education; therapeutic gardening; hydroponics; juvenile correctional institution; participatory action research.

Abstrak: Layanan kemahasiswaan dalam pendidikan non-formal, khususnya di lembaga pembinaan khusus anak (LPKA) di Indonesia, belum sepenuhnya mengintegrasikan pendekatan pendidikan berbasis komunitas, sehingga menyebabkan pemberian layanan yang terfragmentasi dan bersifat reaktif. Penelitian ini bertujuan untuk merancang, mengimplementasikan, dan mengevaluasi program Garden-Mind sebagai model manajemen layanan kemahasiswaan berbasis komunitas yang mengintegrasikan berkebun terapeutik berbasis hidroponik dengan bimbingan dan konseling kelompok di Lembaga Pembinaan Khusus Anak (LPKA) Kelas II Bandung. Dengan menggunakan pendekatan penelitian tindakan partisipatif (*participatory action research*) dan desain intervensi pra–pascates, program ini berlangsung selama delapan minggu (16 sesi dengan durasi masing-masing 90 menit) yang melibatkan 15 orang siswa binaan anak yang dipilih secara purposif. Data dikumpulkan melalui Skala Kecemasan Penilaian Diri Zung (*Zung Self-Rating Anxiety Scale*/ZUNG-SAS), Skala Stres yang Dirasakan (*Perceived Stress Scale*/PSS-10), jurnal

belajar, observasi terstruktur, dan diskusi kelompok terfokus, serta dianalisis menggunakan uji peringkat bertanda Wilcoxon (dengan ukuran efek *r*) dan analisis tematik enam fase. Hasil penelitian menunjukkan penurunan yang signifikan pada skor kecemasan (28,4%; r = 0,87, efek besar) dan skor stres (31,7%; r = 0,89, efek besar), dengan nilai $p < 0{,}001$. Analisis kualitatif mengidentifikasi empat tema transformasi, yaitu: kepemilikan belajar (*learner ownership*), komunitas belajar yang kohesif, kecakapan hidup kontekstual, dan orientasi masa depan yang positif. Penelitian ini menyumbang Model Pengembangan Layanan Kemahasiswaan Berbasis Komunitas (MPLSBC) sebagai kerangka manajerial integratif dan merekomendasikan reposisi layanan kemahasiswaan LPKA dari pendekatan reaktif menuju kerangka berbasis komunitas yang terukur, dapat direplikasi, dan berpotensi distandarisasi secara nasional.

Kata Kunci: Pendidikan berbasis komunitas; berkebun terapeutik; hidroponik; lembaga pembinaan khusus anak; penelitian tindakan partisipatif.

INTRODUCTION

Student affairs management constitutes one of the functional pillars of educational management responsible for the holistic development of learners beyond formal instruction, including academic, psychosocial, character, and life-skill domains (Evans et al., 2009; Long, 2012; Renn & Reason, 2023). Renn & Reason (2023) argue that this function can no longer be regarded as merely supportive; it is a strategic function that determines the quality of the student experience. In contemporary educational management, the function follows the classical *planning–organizing–actuating–controlling* (POAC) cycle applied across four service domains: academic guidance, mental health, character development, and life skills (Bush, 2020; Hoy & Miskel, 2012; Robbins et al., 2020; Tim Dosen Administrasi Pendidikan UPI, 2020). Hoy & Miskel (2012) situate student affairs within *integrated educational leadership*, emphasising coherence between institutional vision, service structure, and learner experience.

In non-formal education particularly in juvenile correctional institutions (Lembaga Pembinaan Khusus Anak, LPKA) the student affairs function faces distinctive challenges. Pursuant to Law No. 11 of 2012 on the Juvenile Criminal Justice System (Republic of Indonesia, 2012), an LPKA is not merely a place of punishment but an institution that secures education, rehabilitation, and social reintegration rights for children in conflict with the law. This mandate places LPKAs in the realm of non-formal education, requiring student-affairs governance that is at least equivalent to and often more complex than that of mainstream schools (Mukhtar & Zulkifli, 2020). The population is distinctive: aged 12–18 years, with complex psychosocial backgrounds, high prevalence of emotional disorders, and post-release stigma (UNICEF, 2021; (Underwood & Washington, 2016). These conditions demand services that are trauma-informed, equitable, and oriented toward rebuilding learners' social and educational capital (Wiyono et al., 2021; Pratama & Wijaya, 2022). Yet most of these studies document the vulnerabilities of LPKA learners descriptively and stop short of examining how the student-affairs function itself should be redesigned to meet them; they treat anxiety and stress as clinical problems to be managed rather than as governance indicators that a service model should be accountable for. This leaves a gap between the well-evidenced needs of LPKA learners and the managerial frameworks available to address them, the gap this study sets out to close.

The Indonesian Directorate General of Corrections reports that the prevalence of emotional disorders among LPKA juvenile residents ranges between 40–65%, with anxiety and stress as the most frequently reported complaints (Ministry of Law and Human Rights of the Republic of Indonesia, 2022). This figure is consistent with global findings on the psychosocial vulnerability of children in justice systems (UNICEF, 2021). From an educational management perspective, such prevalence is not merely a clinical issue at the individual level but a marker of weak student-affairs governance that should enable early detection, preventive intervention, and sustained support (Mulyasa, 2022; Sagala, 2017). Empirical work shows that field practice remains dominated by discipline and routine, with limited innovation in capacity-building dimensions (Lampert et al., 2021; Pratama & Wijaya, 2022).

Community-based education (CBE) offers a framework that can address these limitations. Rooted in Dewey's (2007) progressive pedagogy of learning from experience and Freire's (1970/2000) pedagogy of the oppressed, CBE positions community as the context, the source, and the purpose of learning (Bringle & Hatcher, 2002; Owens & Valesky, 2014). Schultz (2018) and Boyle-Baise & McIntyre (2008) extend CBE into service-learning, community-engaged scholarship, and place-based education. For educational management, CBE is salient because it satisfies three criteria simultaneously: contextual responsive to community dynamics; participatory positioning learners as active subjects; and transformative oriented toward capacity-building (Noddings, 2015). In juvenile rehabilitation settings, CBE allows student affairs services to move from a reactive paradigm to a proactive one that uses the resident community itself as a learning ecosystem.

As an operational medium for CBE, therapeutic gardening has been empirically shown to improve psychological well-being, social cohesion, and future orientation across a range of populations (Gonzalez et al., 2010; Maller et al., 2006; Soga et al., 2017). Spano et al. (2020) meta-analysis of 15 studies concluded that garden-based interventions yield medium-to-large effect sizes on adolescent anxiety and stress, with additional gains in prosocial behaviour. Cipriani et al. (2017) further demonstrated that pairing horticulture with group support produces stronger learning retention. Educationally, gardening is a form of experiential learning integrating cognitive, affective, and psychomotor domains (Kolb, 2015). The choice of hydroponics is justified managerially on four grounds: it requires no large land area and fits limited spaces; it produces measurable results quickly, boosting motivation (Mukhtar & Zulkifli, 2020); operating costs are low and the system is easily replicable; and it functions as an economically valuable life skill upon release (Sari & Nugroho, 2021). Hydroponics is therefore not merely a technical choice but a strategic one from a service-management standpoint.

Group guidance and counseling lie at the core of student affairs services that target personal, social, and career development (Evans et al., 2009). Group counseling is effective in rehabilitation settings because it activates eleven therapeutic factors described by Yalom & Leszcz (2020), including universality, peer altruism, and interpersonal skill development. From a management perspective, integrating group counseling with therapeutic gardening is a form of integrated service delivery that is more efficient and sustainable than single-channel services (Bush, 2020; Sallis, 2014). The combination produces a therapeutic milieu, a learning environment that is at once therapeutic and educational (Cipriani et al., 2017).

Contemporary educational quality management situates key performance indicators (KPIs) as instruments of quality assurance (Sagala, 2017; Sallis, 2014). For student affairs, KPIs span process (participation, retention), output (learning achievement), and outcome (psychological well-being, learner satisfaction) (Kuh et al., 2011). In the LPKA context, two outcome indicators are especially salient: anxiety and stress, because both correlate directly with learning participation, social behaviors, and reintegration success (American Psychiatric Association, 2022) Lampert et al., 2021). Measuring these indicators with validated instruments such as the ZUNG-SAS (Zung, 1971) and PSS-10 (S. Cohen et al., 1983) provides an empirical foundation for data-driven managerial decisions.

The synthesis of the literature reveals two gaps that motivate this study. First, a theoretical gap: scholarship on student-affairs management in Indonesian non-formal education is limited and dominated by clinical–psychological perspectives, while managerial framings especially those that bring services into the CBE paradigm remain underdeveloped (Wiyono et al., 2021). Second, a practical gap: existing service models tend to be single-channel and reactive, failing to leverage the resident community as a learning ecosystem (Mukhtar & Zulkifli, 2020). On these grounds, the present study proposes and tests the Model of Community-Based Student Affairs Service Development (MPLSBC) as an integrative managerial framework that combines three layers: a foundational layer (POAC), a paradigmatic layer (CBE), and an operational layer (multi-component intervention integrating therapeutic gardening and group counseling).

The study addresses three research questions: (1) How is the Garden-Mind program designed and implemented as a community-based education model in the management of student-affairs services at the Class II LPKA of Bandung? (2) To what extent does the program reduce anxiety and stress as service-performance indicators? (3) What are the implications of the findings for policy on the management of student-affairs services in non-formal education?.

RESERACH METHOD

Approach and Design

The study employed a participatory action research (PAR) approach with a pre–post intervention design within a mixed-methods framework (Creswell & Poth, 2017; Kemmis et al., 2014). PAR was selected because it aligns with participatory paradigms in educational management that position learners and institutional managers as partners in cycles of planning, action, and reflection (Sagala, 2017).

Setting and Participants

The program was implemented at the Class II LPKA of Bandung between March and May 2024. Fifteen juvenile residents were purposively sampled with the following inclusion criteria: aged 13–17 years; not undergoing intensive psychiatric treatment; willingness to participate voluntarily with informed consent; and approval from the community supervisor.

Program Stages

The program was structured in three phases under the MPLSBC framework, delivered over eight weeks with 16 sessions of 90 minutes each (Table 1). Each

phase combined horticultural activities (planting, maintenance, monitoring) with reflective group counseling sessions led by a trained counselor.

Table 1. Structure of the Garden-Mind Program under the MPLSBC Framework

Phase	Period	Main Activities	Output
Phase 1: Orientation & Assessment (Planning)	Weeks 1–2	Group formation; baseline assessment (ZUNG-SAS & PSS-10); hydroponics orientation; co-created learning contract; community-needs mapping	Participant-needs profile; adaptive program design; baseline KPIs
Phase 2: Integrated Intervention (Organizing–Actuating)	Weeks 3–7	Therapeutic-gardening sessions; reflective group counseling on weekly themes; weekly learning journals; life-skill workshops; structured reflection	Change in anxiety & stress scores; learner portfolios; community cohesion
Phase 3: Evaluation & Reflection (Controlling)	Week 8	Post-intervention assessment; collective harvest (closing ritual); portfolio presentations; reflection FGD; sustainability planning	Impact report; policy recommendations; sustainability map

Data Collection Instruments

Anxiety was measured using the Zung Self-Rating Anxiety Scale (ZUNG-SAS, 20 items, range 20–80) (Zung, 1971); stress was measured with the Perceived Stress Scale (PSS-10) (S. Cohen et al., 1983). Both instruments have been adapted for Indonesian adolescents with satisfactory reliability (ZUNG-SAS $\alpha = 0.84$; PSS-10 $\alpha = 0.82$) (Lampert et al., 2021). Qualitative data were drawn from weekly learner journals, facilitator-completed structured-observation notes, and an end-of-program focus group discussion using a semi-structured guide reviewed by two educational-management experts for content validity.

Data Analysis

Distribution was tested with Shapiro–Wilk; given non-normality, pre–post comparisons used the Wilcoxon signed-rank test (SPSS 26). Effect-size r was computed as $r = Z/\sqrt{N}$ with J. Cohen (2013) thresholds: small 0.10; medium 0.30; large 0.50. Qualitative data were analyzed using Braun & Clarke (2006) six-phase thematic procedure. Source triangulation, analyst triangulation (inter-coder reliability Cohen's $\kappa = 0.82$), and Lincoln & Guba's (1985) four trustworthiness criteria (credibility, transferability, dependability, confirmability) were applied to safeguard the rigour of the findings.

RESULT AND DISCUSSION

Participant Characteristics and Baseline Assessment

Table 2 summarises the characteristics of the 15 juvenile participants. Mean age was 15.3 years (SD = 1.2; range 13–17), with the majority (66.7%) having undergone 6–12 months of rehabilitation and formal schooling typically interrupted at the junior-high level.

Table 2. Participant Characteristics (n = 15)

Characteristic	**Value**
Age (mean ± SD)	15.3 ± 1.2 years
Age range	13–17 years
Length of stay: < 6 months	4 (26.7%)
Length of stay: 6–12 months	10 (66.7%)
Length of stay: > 12 months	1 (6.7%)

Last formal education: primary school	5 (33.3%)
Last formal education: junior high school	10 (66.7%)

Baseline assessment indicated that all participants exhibited anxiety symptoms in the mild-to-moderate (86.7%) or severe (13.3%) range and stress scores in the moderate-to-high range. Needs assessment further identified three governance gaps in LPKA student-affairs services: scarcity of meaningful activity-based learning programs; absence of a structured learning-community platform; and lack of guidance services that integrate psychological and life-skills dimensions. These findings are consistent with prior work (Mukhtar & Zulkifli, 2020; Pratama & Wijaya, 2022) and provided the empirical anchor for the Garden-Mind design.

Program Effectiveness: Quantitative Findings

The Wilcoxon signed-rank test indicated statistically significant reductions on both indicators (Table 3). ZUNG-SAS scores fell from 54.2 (SD = 7.3) to 38.8 (SD = 6.1), a 28.4% reduction ($Z = -3.38$; $p < 0.001$) with effect-size $r = 0.87$ (large). PSS-10 scores fell from 27.6 (SD = 5.8) to 18.8 (SD = 4.9), a 31.7% reduction ($Z = -3.46$; $p < 0.001$) with $r = 0.89$ (large). All 15 participants showed negative change (decreasing scores) with no ties, indicating that no participant experienced stagnation or score increase. Beyond statistical significance, the magnitude of these effects carries practical meaning: effect sizes near 0.9 sit well above Cohen's threshold for a large effect, and the uniform direction of change across every participant indicates that the program benefited the whole group rather than a responsive subset. In service-management terms, this consistency is what distinguishes a dependable intervention from one that works only for selected learners, and it is the property that makes the model a candidate for institutional adoption rather than a one-off success.

Table 3. Wilcoxon Signed-Rank Test Results for ZUNG-SAS and PSS-10

Variable	Pre Mean (SD)	Post Mean (SD)	Reduction (%)	Z	p-value	Effect size (r)
Anxiety (ZUNG-SAS)	54.2 (7.3)	38.8 (6.1)	28.4%	−3.38	< 0.001	0.87 (large)
Stress (PSS-10)	27.6 (5.8)	18.8 (4.9)	31.7%	−3.46	< 0.001	0.89 (large)

Note. Effect size r computed as $r = Z/\sqrt{N}$. J. Cohen (2013) thresholds: small (0.10), medium (0.30), large (0.50).

Item-level analysis revealed patterns consistent with the intervention design. On ZUNG-SAS, the largest reductions were on Item 5 (restlessness; −1.87 points), Item 12 (sleep difficulty; −1.73 points), and Item 18 (muscle tension; −1.60 points) the somatic dimensions of anxiety, theoretically the most responsive to attention restoration and light physical activity (Maller et al., 2006; Soga et al., 2017). On PSS-10, Item 7 (feeling unable to control important things; −1.53 points) and Item 10 (difficulties piling up; −1.47 points) showed the largest reductions. Both items represent the perceived control dimension, conceptually shaped by the self-efficacy experiences embedded in regular plant care and harvest rituals.

A trajectory of change analysis based on weekly journal reflections revealed three patterns. Weeks 1–2 were dominated by negative affective tone (worry, distrust toward the program), weeks 3–5 marked a transition with the emergence of ownership language ("my plant", "our team"); and weeks 6–8 were characterized by narratives of achievement and future plans. The non-linear, accumulative nature of the change implies that the minimum effective intervention period is around six weeks a finding relevant for service-management planning (Spano et al., 2020).

Four Themes of Learning Transformation

Six-phase thematic analysis produced four interrelated themes, each readable as an indicator of CBE success in student-affairs management. Initial coding generated 142 meaning units, condensed into 18 categories, then 4 themes. The distribution of meaning units is reported for each theme.

Theme 1: Learner ownership, 47 meaning units. The theme captures participants' shift from passive recipients to active subjects. Ownership language emerged from week 3 onward and intensified through week 8: "my plant", "my turn to take care of it", "I won't let my plant wilt". Participant P7 wrote in week 4:

"I started thinking, if a plant needs daily care to grow, why shouldn't I? If I'm too lazy to check the pH, the plant could die. Same as life: if I'm too lazy to fix myself, nothing changes." (P7, journal entry, week 4)**.**

This shift is reinforced by P5 in the closing FGD:

"At first I thought this was just an activity to keep us occupied. Over time I realized it was actually teaching me responsibility, something I had never really had for anything." (P5, closing FGD)

From a student-affairs management standpoint, this theme indicates that service designs treating learners as active subjects produce deeper engagement (Kuh et al., 2011; Renn & Reason, 2023). It is consistent with experiential learning (Dewey, 2007; Kolb, 2015) but adds a contextual nuance in LPKA settings, ownership emerges not only through physical experience but also through collective meaning-making facilitated by group counseling (Yalom & Leszcz, 2020).

Theme 2: Cohesive learning community, 38 meaning units. Group counseling integrated with gardening organically produced a cohesive learning community. Week-5 observation notes documented 23 episodes of spontaneous prosocial interaction lending tools, reminding peers about fertilising schedules, accompanying conflicting peers, and sharing harvest. One participant observed in the FGD:

"We used to fight in the cell block, but now we meet at the greenhouse every morning and talk about plants and harvest schedules. It feels like we have a team." (P3, closing FGD)

By week 7, participants spontaneously formed a "water committee" and a "harvest committee" without prompting. This pattern manifests CBE principles (Bringle & Hatcher, 2002) and Yalom & Leszcz (2020) therapeutic factors universality, altruism, and group cohesiveness. Managerially, social cohesion may be read as program-level social capital that strengthens sustainability an aspect frequently overlooked in conventional individual-outcome evaluations of student affairs (Sallis, 2014). The finding adds evidence that CBE is not merely a method but a strategy for cultivating learners' social capital.

Theme 3: Contextual life skills, 31 meaning units. Hydroponics knowledge proved directly relevant as post-release preparation. In the FGD, five participants expressed interest in starting small hydroponics businesses after release, two planned to share skills with family members, and two were interested in external follow-up training. Participant P9 explained:

"If I can sell hydroponic kangkung in my village, at least I won't be unemployed. The starting capital isn't huge; I've calculated it in my notebook." (P9, closing FGD)

The theme demonstrates that the program is not only therapeutic but also vocational (Mukhtar & Zulkifli, 2020). Managerially, it reflects a service-value

diversification strategy one intervention delivering multiple outputs aligned with reintegration goals (Tim Dosen Administrasi Pendidikan UPI, 2020). Prior work has rarely reported vocational dimensions as outcomes of therapeutic interventions (Cipriani et al., 2017) this study extends the literature by showing that thoughtful managerial design can convert a therapeutic intervention into an economic opportunity.

Theme 4: Enhanced future orientation, 26 meaning units. The harvest ritual, designed as a symbol of achievement, effectively built hope and positive future orientation. Longitudinal analysis of journal entries showed a thematic shift from past-regret narratives (weeks 1–2) to future-plan narratives (weeks 7–8). P12 wrote in the final week:

"I used to think when I leave this place I'll have nothing. Now my head is full of ideas: hydroponics in front of my house, selling to neighbours. I've even sketched the layout." (P12, journal entry, week 8)

This shift, a precondition of successful social reintegration (Lampert et al., 2021; (Noddings, 2015), indicates a transformation that goes beyond symptom reduction. From a rehabilitation-management standpoint, future orientation is highly relevant as a long-term outcome indicator for LPKA programs, complementing the more reactive clinical indicators (ZUNG-SAS, PSS-10).

Cross-Theme Synthesis: How the Four Themes Reinforce One Another

The four themes do not stand alone; they form a self-reinforcing transformation cycle. Learner ownership (Theme 1) is a precondition for the cohesive learning community (Theme 2): participants who feel ownership are more inclined to share and support each other. The cohesive community then becomes a safe space for life-skill experimentation (Theme 3), and the accumulated successes in life skills build future orientation (Theme 4). Theoretically, this can be read as an upward developmental spiral, the inverse of the downward spiral that often traps juvenile residents (Underwood & Washington, 2016). The managerial implication is clear: service designs intended to produce sustained transformation must address all four dimensions sequentially and connectedly, not in isolation.

Mechanism: Why the Program Worked

Synthesising the quantitative and qualitative findings reveals four mechanisms behind the program's effectiveness. First, biophilic exposure. Direct contact with plants and natural elements in the hydroponic space activates attention restoration responses that reduce cognitive load (Maller et al., 2006; Soga et al., 2017). This explains the reduction in somatic anxiety items observed in the item-level analysis. Second, structured peer support. Scheduled group counseling on weekly themes creates safe sharing spaces, activating group therapeutic factors Yalom & Leszcz (2020). This explains the emergence of the cohesive learning community (Theme 2). Third, meaningful achievement. The harvest ritual as a measurable accomplishment provides self-efficacy experiences seldom available in rehabilitation settings (Bandura, 1997). This explains the increases in perceived control (the PSS-10 items with the largest reductions). Fourth, vocational meaning-making. Translating hydroponics skills into post-release economic plans adds a new layer of meaning (Mukhtar & Zulkifli, 2020). This explains the emergence of contextual life skills (Theme 3) and future orientation (Theme 4). The four mechanisms operate

synergistically, an outcome difficult to achieve through single-channel services and a key distinguishing feature of the Garden-Mind multi-component model.

Comparison with Prior Studies

Table 4 presents a systematic comparison of the present study with three key reference studies. The comparison shows that this study is consistent with the literature while extending it on three fronts: an explicit managerial framing, integrated quantitative–qualitative evidence, and a non-formal-education policy dimension specific to Indonesia.

Table 4. Comparison of Garden-Mind with Reference Studies

Aspect	Mukhtar & Zulkifli (2020)	Spano et al. (2020) meta-analysis	This study (Garden-Mind)
Theoretical framing	Nature-based character education	Therapeutic horticulture (clinical)	Community-based student-affairs management (MPLSBC)
Setting	LPKA Bandung	Multi-context international	Class II LPKA Bandung
Outcome indicators	Character (qualitative)	Anxiety/stress (medium-large effect size)	Anxiety + stress (r = 0.87 & 0.89) + 4 qualitative themes
Implications emphasised	Character education	Clinical–psychological	Educational management + student-affairs service policy

Mukhtar and Zulkifli (2020) at the same site found benefits from nature-based activities but did not frame them within a managerial framework for student affairs and did not report quantitative effect sizes. The Spano et al. (2020) meta-analysis reports comparable effect sizes (r = 0.7–0.9) but in non-Indonesian contexts and without an educational policy discussion. Lampert et al. (2021) concluded that nature-based interventions are effective via a systematic review but did not address governance. The participant profile reported here (predominantly mid-adolescents with schooling interrupted at the junior-high level and 6–12 months of rehabilitation) also mirrors the national LPKA population described by Lampert et al. (2021) and the Ministry of Law and Human Rights of the Republic of Indonesia (2022), suggesting that the findings are likely transferable to comparable institutions. The unique contribution of the present study is positioning the intervention as a component of a community-based service-management model (MPLSBC), so that psychological outcomes are interpreted as service-level KPIs rather than isolated clinical results (Bush, 2020; Sallis, 2014).

Theoretical Contribution: Initial Validation of MPLSBC

The findings provide initial validation of the proposed MPLSBC framework. Its three layers foundational (POAC), paradigmatic (CBE), and operational (multi-component intervention) proved operational in the LPKA setting. The POAC layer was visible in the planning cycle (needs assessment), organising (group formation and scheduling), actuating (the three program phases), and controlling (instrument-based evaluation). The CBE layer was manifest through the four qualitative themes that show a shift toward community orientation. The operational layer is supported by the large-effect quantitative results.

MPLSBC contributes theoretically along three lines. First, it fills a gap in the literature on student-affairs management in Indonesian non-formal education, an area dominated by clinical perspectives. Second, it bridges Western managerial

frameworks (Bush, 2020; Robbins et al., 2020) with Indonesian educational-management practice (Mulyasa, 2022; Sagala, 2017) in vulnerable institutional contexts. Third, it positions therapeutic gardening as a legitimate medium of learning within a non-formal-education framework, complementing accounts that have largely framed it as a clinical intervention (Sari & Nugroho, 2021). MPLSBC is thus not a final model but a working framework that invites further testing and refinement across non-formal education contexts in Indonesia.

Managerial Implications at Three Levels

The Garden-Mind findings have implications at three levels of educational management. Institutional level (LPKA), service planning must rest on community-needs assessment rather than managerial assumption, multi-component designs outperform single-channel services, modest resources can yield substantial impact when the design is contextual, service evaluation should blend quantitative and qualitative indicators to capture the complexity of learner experience (Bush, 2020). Policy level (Directorate General of Corrections): a national standardisation of LPKA student-affairs KPIs that incorporates psychological well-being is needed as part of the quality-assurance system; replication protocols for multi-component models should be simple, documented, and auditable; and sustainable funding schemes are required so programs do not depend on ad hoc initiatives (Sagala, 2017). Academic level (Educational Management programs): curricula should strengthen students' competencies in managing student-affairs services in non-formal/vulnerable contexts; the research agenda should be expanded into Indonesian non-formal education, which remains under-documented (Wiyono et al., 2021; Pratama & Wijaya, 2022).

CONCLUSION

The Garden-Mind program integrating hydroponic-based therapeutic gardening with group guidance and counseling proved effective as a community-based education model in the management of student-affairs services at the Class II LPKA of Bandung. The program significantly reduced anxiety (28.4%; r = 0.87) and stress (31.7%; r = 0.89) among juvenile residents while fostering four mutually reinforcing dimensions of transformation: learner ownership, cohesive learning community, contextual life skills, and positive future orientation. The proposed MPLSBC framework combining POAC, CBE, and a multi-component intervention received initial validation as an integrative managerial model contextually fit for Indonesian non-formal education. These conclusions should be read considering the study's main limitations: a single-site pre–post design without a control group, a small purposive sample (n = 15), and the absence of a follow-up period; multi-site trials with longer-term follow-up are therefore needed to confirm and extend the findings. Five recommendations follow. First, for the Class II LPKA of Bandung: institutionalise Garden-Mind as a regular student-affairs program with a dedicated budget. Second, for the Directorate General of Corrections: replicate the model across other LPKAs as part of a national standard for student-affairs services in juvenile correctional institutions. Third, for formal schools serving at-risk learners: adapt the Garden-Mind framework as a preventive innovation against emotional and behavioral disorders. Fourth, for researchers: undertake multi-site RCTs with long-

term follow-up and develop more comprehensive service-performance instruments. Fifth, for educational-management policymakers: prioritise the development of national KPIs for student-affairs services in non-formal education as part of a quality-assurance system on a par with the formal sector.

ACKNOWLEDGEMENTS

The authors thank the Head and staff of the Class II LPKA of Bandung, the community supervisors, and all juvenile participants for their openness and engagement. This research was funded through the BIMA Research and Community Service Grant Scheme, Directorate of Research, Technology, and Community Service (DRTPM), under Contract/Decree No. 102/UN40.F7/AM.02.01/2026, 2026.

REFERENCES

American Psychiatric Association. (2022). *Diagnostic and Statistical Manual of Mental Disorders*. American Psychiatric Association Publishing. https://doi.org/10.1176/appi.books.9780890425787

Bandura, A. (1997). *Self-efficacy: The exercise of control* (Vol. 11). Freeman.

Boyle-Baise, M., & McIntyre, D. J. (2008). What kind of experience?: Preparing teachers in PDS or community settings. In *Handbook of research on teacher education* (pp. 307–329). Routledge.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

Bringle, R. G., & Hatcher, J. A. (2002). Campus–Community Partnerships: The Terms of Engagement. *Journal of Social Issues*, *58*(3), 503–516. https://doi.org/10.1111/1540-4560.00273

Bush, T. (2020). *Theories of Educational Leadership and Management*. SAGE Publications. https://books.google.co.id/books?id=gLjZDwAAQBAJ

Cipriani, J., Benz, A., Holmgren, A., Kinter, D., McGarry, J., & Rufino, G. (2017). A Systematic Review of the Effects of Horticultural Therapy on Persons with Mental Health Conditions. *Occupational Therapy in Mental Health*, *33*(1), 47–69. https://doi.org/10.1080/0164212X.2016.1231602

Cohen, J. (2013). *Statistical Power Analysis for the Behavioral Sciences*. Routledge. https://doi.org/10.4324/9780203771587

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, *24*(4), 385. https://doi.org/10.2307/2136404

Creswell, J. W., & Poth, C. N. (2017). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. SAGE Publications. https://books.google.co.id/books?id=gX1ZDwAAQBAJ

Dewey, J. (2007). *Experience And Education*. Free Press. https://books.google.co.id/books?id=JhjPK4FKpCcC

Evans, N. J., Forney, D. S., Guido, F. M., Patton, L. D., & Renn, K. A. (2009). *Student Development in College: Theory, Research, and Practice*. Wiley. https://books.google.co.id/books?id=t638CdSikz0C

Freire, P. (1970). *Pedagogy of the Oppressed*. Herder and Herder. https://books.google.co.id/books?id=8pxQAAAAMAAJ

Gonzalez, M. T., Hartig, T., Patil, G. G., Martinsen, E. W., & Kirkevold, M. (2010). Therapeutic horticulture in clinical depression: a prospective study of active components. *Journal of Advanced Nursing*, *66*(9), 2002–2013. https://doi.org/10.1111/j.1365-2648.2010.05383.x

Hoy, W. K., & Miskel, C. G. (2012). *Educational Administration: Theory, Research, and Practice*. McGraw-Hill Education. https://books.google.co.id/books?id=xbV2pwAACAAJ

Kemmis, S., McTaggart, R., & Nixon, R. (2014). *The Action Research Planner*. Springer Singapore. https://doi.org/10.1007/978-981-4560-67-2

Kolb, D. A. (2015). *Experiential Learning: Experience as the Source of Learning and Development*. Pearson Education, Incorporated. https://books.google.co.id/books?id=o6DfBQAAQBAJ

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2011). *Student Success in College: Creating Conditions That Matter*. Wiley. https://books.google.co.id/books?id=2FHkRGTGsQYC

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. SAGE Publications. https://books.google.co.id/books?id=2oA9aWlNeooC

Long, D. (2012). *The Foundations of Student Affairs: A Guide to the Profession*. https://api.semanticscholar.org/CorpusID:153272649

Maller, C., Townsend, M., Pryor, A., Brown, P., & St Leger, L. (2006). Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations. *Health Promotion International*, *21*(1), 45–54. https://doi.org/10.1093/heapro/dai032

Mulyasa, M. (2022). *Manajemen dan Kepemimpinan Kepala Sekolah*. Bumi Aksara. https://books.google.co.id/books?id=IRpvEAAAQBAJ

Noddings, N. (2015). *The Challenge to Care in Schools*. Teachers College Press. https://books.google.co.id/books?id=LaRDAwAAQBAJ

Owens, R. E., & Valesky, T. C. (2014). *Organizational Behavior in Education: Leadership and School Reform*. Pearson Education. https://books.google.co.id/books?id=C65GAwAAQBAJ

Renn, K. A., & Reason, R. D. (2023). *College Students in the United States: Characteristics, Experiences, and Outcomes*. Taylor & Francis. https://books.google.co.id/books?id=SA_JEAAAQBAJ

Robbins, S. P., Coulter, M., Coulter, M. K., & Randel, A. (2020). *Management*. Pearson. https://books.google.co.id/books?id=RqpPzQEACAAJ

Sagala, S. (2017). *Manajemen Strategik dalam Peningkatan Mutu Pendidikan*. CV Alfabeta.

Sallis, E. (2014). *Total Quality Management in Education*. Routledge. https://doi.org/10.4324/9780203417010

Soga, M., Gaston, K. J., & Yamaura, Y. (2017). Gardening is beneficial for health: A meta-analysis. *Preventive Medicine Reports*, *5*, 92–99. https://doi.org/10.1016/j.pmedr.2016.11.007

Spano, G., D'Este, M., Giannico, V., Carrus, G., Elia, M., Lafortezza, R., Panno, A., & Sanesi, G. (2020). Are Community Gardening and Horticultural Interventions Beneficial for Psychosocial Well-Being? A Meta-Analysis. *International Journal of Environmental Research and Public Health*, *17*(10), 3584. https://doi.org/10.3390/ijerph17103584

Tim Dosen Administrasi Pendidikan UPI. (2020). *Manajemen Pendidikan* . CV Alfabeta.

Undang-Undang Nomor 11 Tahun 2012 Tentang Sistem Peradilan Pidana Anak, BPK RI (2012).

Underwood, L., & Washington, A. (2016). Mental Illness and Juvenile Offenders. *International Journal of Environmental Research and Public Health*, *13*(2), 228. https://doi.org/10.3390/ijerph13020228

Yalom, I. D., & Leszcz, M. (2020). *The theory and practice of group psychotherapy*. Hachette UK.

Zung, W. W. K. (1971). A Rating Instrument For Anxiety Disorders. *Psychosomatics*, *12*(6), 371–379. https://doi.org/10.1016/S0033-3182(71)71479-0