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The PjBL-DEDEn Model for Supporting the Development of Early Childhood Graduate Profile Dimensions

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Abstract

Early childhood education requires concrete, contextual learning experiences that are able to support children's holistic development. This study aims to analyze the process of implementing the Project-Based Learning (PjBL) model with the Design, Explain, Development, and Evaluation (PjBL-DEDEn) stages and examine how the eight Graduate Profile Dimensions (GPD) were manifested across the project stages through the pakcoy plant cultivation project. This study used a descriptive qualitative design at a Kindergarten in Makassar, involving 15 children aged 5–6 years from Group B. Data collection was conducted for seven weeks through structured participant observation, semi-structured interviews with class teachers, and documentation of the learning process and children's work. The findings show that the prominent GPD dimensions vary across the DEDEn stages. The Design stage provided opportunities for creativity, critical reasoning, independence, and faith and piety; the Explain stage supports communication and critical reasoning skills; Development stage strengthens independence, health, collaboration, and creativity; while the Evaluation stage provides an opportunity to develop citizenship attitudes and communication skills. The results of the study indicate that PjBL-DEDEn offers a contextual and structured framework for integrating various Graduate Profile Dimensions into project-based learning for early childhood.

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INTRODUCTION

Early childhood education (ECE) serves as a foundational phase that establishes a comprehensive basis for all developmental aspects, preparing an adaptive generation for future complexities. Grounded in John Dewey's (1897) philosophical framework of experiential learning, the early childhood instructional process must orient toward concrete actions where children acquire knowledge through direct experience (learning by doing) (Dewey, 1897). The active, curious, and exploratory nature of children demands a reconstruction of classroom learning models capable of shifting the paradigm from passive information reception to independent knowledge construction. This alignment corresponds with the Principles of Developmentally Appropriate Practice (DAP), which stipulate that stimulation must be concrete, meaningful, and contextualized within the child's immediate environment (Bredekamp & Copple, 1997). In the era of modern curriculum transformation in Indonesia, ECE orientation increasingly emphasizes not only isolated cognitive or motor milestones but also the development of holistic character and competencies reflected in the eight Graduate Profile Dimensions: faith and piety to God Almighty, citizenship, critical reasoning, creativity, collaboration, independence, health, and communication (Peraturan Menteri Pendidikan Dasar Dan Menengah Standar Kompetensi Lulusan Pada Pendidikan Anak Usia Dini Jenjang Pendidikan Dasar Dan Jenjang Pendidikan Menengah, 2025).

Project-Based Learning (PjBL) has been increasingly examined as an approach compatible with these curricular demands by actively engaging children in solving contextual problems (Jacobs, 2000; Katz & Chard, 2000; Sadaruddin et al., 2023). However, the implementation of PjBL at the preschool level frequently encounters pedagogical friction, where educators remain constrained by rigid and abstract project designs that mismatch the developmental reasoning of young children (Sadaruddin et al., 2023; Sánchez-García & Reyes-de-Cózar, 2025). Previous research in ECE contexts in Makassar has indicated that selected projects may not always intersect with children's natural realities, potentially allowing teacher-dominated practices to re-emerge (Sadaruddin, Syamsuardi, Usman, & Hasmawaty, 2024). To bridge this instructional gap, TK Al-Azhar Makassar introduced a contextual learning innovation by modifying the PjBL syntax into a structured framework of Design, Explain, Development, and Evaluation (PjBL-DEDEn) (Sadaruddin, Syamsuardi, Usman, Hasmawaty, et al., 2024), integrated with an agricultural project involving pakcoy (Brassica rapa L.) cultivation. Pakcoy was deliberately selected due to its short life cycle and rapid, visible morphological changes, making it highly compatible with the attention span of early childhood (Balqis et al., 2025).

Theoretically, integrating an agricultural project into the PjBL-DEDEn framework provides a robust foundation for the simultaneous reinforcement of children's GPD. As children manipulate physical objects during each project phase, they construct new cognitive structures through mechanisms of assimilation and accommodation (Piaget & Inhelder, 1969), while receiving scaffolding within their Zone of Proximal Development (ZPD) through rich sociocultural interactions (Vygotsky & Cole, 1978). Through the disciplined execution of the PjBL-DEDEn syntax, each instructional phase is specifically designed to elicit authentic behavioral indicators of the GPD. Sadaruddin,

Nasaruddin, et al. propose that modifying nature-based group projects within PjBL can foster children's authentic collaboration skills and train the delegation of responsibility, while simultaneously stimulating divergent thinking and creativity during the project design and evaluation stages (Sadaruddin, Nasaruddin, et al., 2025). Various recent studies show that Project-Based Learning (PjBL) research in the field of Early Childhood Education (PAUD) increasingly emphasizes learning activities, child agency, collaboration, reflection, and teacher support; However, the alignment between specific instructional sequences and the realization of various developmental dimensions has not yet been adequately described. This study addresses this gap by mapping the chronological manifestation of GPD dimensions along the DEDEn continuum.

The context of this study is situated at TK Al-Azhar Makassar, where the program was executed systematically over 7 weeks, blending 5 weeks of the Intracurricular phase with 2 weeks of the Cocurricular phase. Although research on nature-based PjBL is extensive (Kurniawati et al., 2024), a critical research gap persists regarding the processual alignment between specific instructional syntax and holistic character development. Prior studies have predominantly focused on measuring final developmental outcomes partially, thereby overlooking the chronological trajectory of how distinct DEDEn phases sequentially stimulate and integrate the eight GPD dimensions. Therefore, the scientific novelty of this study lies in its conceptual and methodological contribution: mapping the chronological trajectory of GPD attainment through the strict DEDEn syntax, offering a new framework for evaluating process-based character education rather than merely measuring terminal outcomes. Based on this background, the main objective of this study is to analyze the implementation flow of the PjBL-DEDEn model and examine how the eight Graduate Profile Dimensions (GPD) are realized in various stages of learning.

METHOD

This study employed a qualitative approach with a descriptive-analytical design to describe and analyze the implementation of the project-based learning model Design, Explain, Development, and Evaluation (PjBL-DEDEn) and track the chronological development of children's Graduate Profile Dimensions (GPD) during the seven-week pakcoy cultivation project. A descriptive qualitative approach was chosen because this study focuses on capturing authentic behavior, interactions, responses, and developmental trajectories of children in a natural learning context. To support systematic and consistent observations, researchers used a structured qualitative instrument in the form of an Authentic Behavior Observation Matrix. The instrument is not intended to establish cause-and-effect relationships or test statistical hypotheses, but rather serves as a systematic documentation framework for recording observable indicators of each GPD dimension across the various stages of DEDEn. This approach is in line with structured qualitative observation, where the instrument serves as a systematic analysis guide to document naturally occurring behavior (M. Miles et al., 2014).

The research was conducted at Al-Azhar Kindergarten Makassar in the 2024/2025 academic year. The school was selected purposively based on two

criteria: (1) availability of urban agricultural infrastructure to support nature-based project activities and (2) flexible school operational policies in implementing the PjBL-DEDEn model. The study participants consisted of 15 children in Group B, aged 5–6 years, who were selected using total sampling. Total sampling was used because the entire class could be involved in the study, thus allowing the researchers to document the developmental dynamics of all participating children. The classroom teachers act as primary learning informants.

The main research instrument was a non-test observation sheet developed by the researcher and referred to as the GPD Authentic Behavior Observation Matrix. This instrument was developed to operationalize the eight dimensions of GPD stipulated in the Regulation of the Minister of Primary and Secondary Education (Permendikdasmen) No. 10 of 2025 into observable and appropriate behavioral indicators for children aged 5–6 years. Each GPD dimension is described in two to three specific behavioral indicators that can be observed during the implementation of the PjBL-DEDEn syntax. The operationalization matrix also identifies the DEDEn stages at which each indicator is expected to be stimulated. The complete operationalization of the eight GPD dimensions is presented in Table 1.

The development of the GPD Authentic Behavior Observation Matrix follows a four-stage procedure. First, researchers compiled behavioral indicators by combining the normative definition in Permendikdasmen No. 10 of 2025 and the developmental characteristics of children aged 5–6 years. Second, the draft instrument underwent expert validation by three specialists (an ECE curriculum expert, a child development psychologist, and a measurement expert) using Aiken's V formula to assess content validity (Aiken, 1985). The evaluation yielded an average Aiken's V coefficient of 0.86, which exceeded the minimum threshold of 0.80, indicating satisfactory content validity. The validation process resulted in several revisions to improve clarity and developmental appropriateness. Third, the revised instrument was field tested on five children in other early childhood education institutions to test the readability and observability of the indicators. Fourth, prior to the main study, two trained observers independently coded the same video recordings to assess inter-rater reliability (inter-rater reliability). The Cohen's Kappa coefficient obtained was $\kappa = 0.82$, which indicates a high level of agreement among observers.

Child development behavior is classified using a four-level rubric that aligns with the early childhood assessment standards in Indonesia, namely Permendikbud No. 137 of 2014 and Permendikdasmen No. 10 of 2025. To describe developmental trajectories at the classroom level, this study also calculated the proportion of children who reached the expected developmental thresholds at each chronological phase. These descriptive percentages are used to describe the distribution of children achieving the BSH or BSB categories and are not treated as statistical measures of effect size or as evidence of causal effectiveness.

Data collection spanned seven weeks and employed three complementary techniques to ensure data richness and triangulation. Structured participant observation was conducted by the researchers who acted as co-facilitators or teaching assistants in the classroom. While the classroom teacher remained

the primary instructional practitioner executing the PjBL-DEDEn syntax, the researchers participated directly in the learning process to provide scaffolding when necessary, while systematically observing all 15 children using the observation matrix, focusing on peer interactions, task execution, initiative-taking, and emotional responses during each DEDEn phase, with daily field notes recorded as anecdotal records.

Semi-structured interviews were conducted weekly with class teachers to obtain reflective information about children's development. The interviews covered five main aspects: observable behavioral changes, the DEDEn stages that most strongly stimulated specific GPD dimensions, implementation challenges and solutions, differences in responses between individual children, and reflections on improved learning.

Documentation was collected to complement observation and interview data. The documentation includes audio-visual recordings of children's performances during the Explain stage, individual project portfolios (such as dream garden sketches, daily project journals, and ecoprint crafts), daily anecdotal notes, and school program documents, including weekly lesson plans and curriculum calendars.

Data analysis followed the interactive-inductive model proposed by Miles, Huberman, and Saldaña (2014), which includes the stages of data condensation, data presentation, and drawing and verifying conclusions (M. B. Miles et al., 2014). In the data condensation stage, interview transcripts, field notes, observation recordings, and documentation were coded and arranged chronologically according to the weekly project implementation schedule. Each relevant data fragment is also associated with a GPD dimension and a corresponding DEDEn stage. Next, the data is presented through an integrated narrative and operational matrix that shows the alignment between children's activities, PjBL-DEDEn syntax, and the targeted GPD dimensions. Conclusions are drawn inductively by identifying recurring patterns and relationships within the data. The interpretations that emerge are repeatedly compared with the original data and discussed through a member checking process with the class teacher to improve the accuracy of the interpretation.

To describe children's developmental progression qualitatively yet systematically, this study adopted the four-level developmental rubric aligned with the Indonesian ECE assessment standards (Permendikbud No. 137/2014 and Permendikdasmen No. 10/2025):

Table 1.
Scoring Rubric and Developmental Categories

Category	Code	Operational Definition
Not Yet Developing	BB (Belum Berkembang)	The child has not yet shown the behavioral indicator even with teacher scaffolding.
Beginning to Develop	MB (Mulai Berkembang)	The child shows the behavioral indicator occasionally but requires significant teacher prompting.

Category	Code	Operational Definition
Developing as Expected	BSH (Berkembang Sesuai Harapan)	The child consistently shows the behavioral indicator with minimal teacher prompting.
Developing Very Well	BSB (Berkembang Sangat Baik)	The child consistently shows the behavioral indicator independently and initiates the behavior spontaneously.

The classical mastery percentage reported in the findings was computed descriptively using the following formula:

$$P = \frac{f}{N} x100\%$$

Where:

P = The percentage of children achieving the expected developmental threshold (BSH or BSB categories) in a given week.

f = The numerator, representing the frequency or number of children who achieved the BSH and/or BSB category for a specific GPD dimension in a given week.

N = The denominator, representing the total number of children in the class (N = 15).

This percentage is not a statistical measure of effect size but rather a descriptive qualifier to illustrate the proportion of the class that has achieved the expected developmental threshold at each chronological phase.

The trustworthiness of the findings was enhanced through prolonged engagement in the field, persistent observation, triangulation, and member checking. Prolonged engagement was achieved through the researcher's participation throughout the seven-week cultivation project, while persistent observation focused on behavioral indicators established in the GPD observation matrix. Source triangulation was conducted by comparing observational data with teacher interview results and documentation. Member checking was carried out with the classroom teacher to verify the accuracy of the researcher's interpretations. These strategies were implemented to strengthen the credibility and consistency of the qualitative findings.

RESULT

The results present the chronological trajectory of the Graduate Profile Dimension (GPD) development among the 15 Group B children over the 7-week PjBL-DEDEn implementation. To ensure data trustworthiness, the findings are triangulated using structured observations (anecdotal records), semi-structured interviews with the classroom teacher (denoted as T), and documentation of children's artifacts (D). Children's developmental progress is systematically mapped using the four-tier rubric (BB, MB, BSH, BSB) established in the methodology. The overall classical progression of the 15 children across these categories is summarized in Table 2.

Table 2.
Chronological Progression of GPD Developmental Categories (N=15)

Phase / Week	BB (Not Yet)	MB (Beginning)	BSH (Expected)	BSB (Very Well)	Dominant GPD Stimulated
Week 1 (Design)	2	3	8	2	Creativity, Critical Reasoning
Week 2 (Design)	1	2	9	3	Faith/Piety, Independence
Week 3 (Explain)	0	4	7	4	Communication, Critical Reasoning
Week 4 (Development)	0	2	8	5	Independence, Critical Reasoning
Week 5 (Development)	0	0	2	13	Health, Faith/Piety
Week 6 (Development)	0	0	3	12	Collaboration, Creativity
Week 7 (Evaluation)	0	0	1	14	Citizenship, Communication

Week 1 (Syntax: Design - Intracurricular Phase) The project commenced with an open-field orientation to the school's urban farming area. Based on the observation matrix, 10 out of 15 children (67%) demonstrated the BSH and BSB categories in the Creativity and Critical Reasoning dimensions. [Observation] Anecdotal records showed children actively asking "why" and "how" questions about the farming space and eagerly drawing diverse sketches of their dream gardens. [Documentation] The visual artifacts (dream garden sketches and plastic bottle cutting patterns) confirmed their cognitive flexibility and divergent thinking. [Interview] The classroom teacher corroborated this, stating: "In the first week, I was surprised by their ideas. They didn't just copy my example; they designed unique bottle pots and asked critical questions about where the plants would get sunlight."

Week 2 (Syntax: Design - Intracurricular Phase) The design phase transitioned into physical preparation, focusing on soil mixing and seed sowing. This phase strongly stimulated the Faith and Piety and Independence dimensions. By the end of the week, 12 out of 15 children (80%) reached the BSH/BSB threshold in showing care for living things. [Observation] Researchers noted a distinct shift in behavior; children handled the micro-seeds with extreme gentleness and whispered when approaching the planting area. [Documentation] Daily project journals showed children independently drawing the seeds they planted without teacher prompting. [Interview] The teacher reflected on this moral-spiritual internalization: "They started to treat the seeds like babies. They reminded each other to be gentle, showing an early understanding of caring for God's creation."

Week 3 (Syntax: Explain - Intracurricular Phase) During the germination week, the Explain syntax was executed. Children presented their visual observation sheets in front of the class. This activity catalyzed the Communication and Critical Reasoning dimensions. Progress data indicated that 11 out of 15 children (73%) achieved the BSH/BSB category in expressive language and scientific articulation. [Documentation] Audio-visual recordings of the presentations revealed that children could confidently point to their observation sheets and explain the cause-effect relationship between water and sprout growth. [Observation] Peer interactions during this phase showed active listening, fulfilling the citizenship indicator of respecting peers' opinions. [Interview] The teacher noted, "The Explain phase forced them to organize their thoughts. The scaffolding we gave them to present transformed their passive knowledge into confident public speaking."

Week 4 (Syntax: Development - Intracurricular Phase) Entering the Development phase, scientific exploration deepened through non-standard measurement. Children used sticks and paperclips to measure stem heights and count leaves. This reinforced the Independence dimension, with 13 out of 15 children (87%) consistently showing self-regulation and task responsibility (BSH/BSB). [Documentation] Individual project journals served as concrete evidence; children independently recorded daily leaf counts using tally marks and comparative size drawings. [Observation] Researchers observed children negotiating and sharing measuring tools without teacher intervention, indicating a solidification of early mathematical logic and autonomous work habits.

Week 5 (Syntax: Development - Intracurricular Phase) Week five marked the Pakcoy Harvest Day and cooking class. This milestone drastically impacted the Health and Faith/Piety dimensions, specifically regarding self-preservation ethics and healthy eating. Field data recorded a massive spike in classical achievement, with 13 out of 15 children (87%) reaching the BSB category in willingly consuming healthy food. [Observation] During the cooking class, children who previously exhibited picky eating behaviors were observed eagerly washing, chopping (with safe tools), and tasting the pakcoy meatball soup. [Documentation] Photos of the empty bowls and the Wordwall digital quiz results confirmed their enthusiasm. [Interview] The teacher highlighted this behavioral shift: "Harvesting their own food changed everything. They were so proud to eat the pakcoy soup." The teacher perceived that the connection between planting, harvesting, preparing, and eating the pakcoy increased children's willingness to taste the prepared food.

Week 6 (Syntax: Development - Cocurricular Phase) The project scaled into social-group dynamics through the production of ecoprint crafts. This inclusive group work elicited peak performances in the Collaboration (Mutual Cooperation) and Creativity dimensions. By this week, 12 out of 15 children (80%) consistently demonstrated the BSB indicators for sharing, role distribution, and peer assistance. [Observation] Anecdotal records captured a significant decrease in egocentrism; children naturally divided tasks, with some pressing leaves, others applying color, and others organizing the canvas. [Documentation] The final ecoprint tote bags displayed harmonious group aesthetics, providing qualitative evidence of collaborative engagement and creative expression. [Interview] The teacher observed, "The large canvas forced

them to collaborate. They couldn't do it alone. They learned to compromise and help friends who were struggling with the leaf patterns."

Week 7 (Syntax: Evaluation - Cocurricular Phase) The project culminated with Market Day and a circular reflection. This phase served as an authentic social laboratory, actualizing the Citizenship and Communication dimensions. The final classical achievement stabilized at its peak, with 14 out of 15 children (93%) categorized as BSB in demonstrating social transaction etiquette and honest reflection. [Observation] During Market Day, researchers observed children acting as sellers and buyers, demonstrating orderly queuing, polite verbal greetings, and honest monetary calculations. [Documentation] The circular retelling session was documented via video, showing children objectively evaluating project obstacles without blaming peers. [Interview] Concluding the project, the teacher stated, "Market Day was the ultimate test. Seeing them return the correct change and say 'thank you' politely proved that the character traits we built over 7 weeks had become their natural habits."

DISCUSSION

The findings regarding the implementation of the Design, Explain, Development, and Evaluation (PjBL-DEDEn) model through pakcoy cultivation at TK Al-Azhar Makassar illustrate how chronologically structured instructional sequencing facilitates the progression of the Graduate Profile Dimension (GPD) in early childhood. This interpretation aligns with current evidence indicating that PjBL in early childhood education (ECE) is fundamentally process-oriented and structured around inquiry, meaning-making, collaboration, reflection, creative expression, and teacher-supported learning activities (Lahe et al., 2026). The observed progression in classical development categorie, from an initial state dominated by the Newly Developing tier to a peak of 90% in the Berkembang Sesuai Harapan (BSH) or Developing as Expected category (8 of 15 children; 53%), whereas BSB became dominant in the final three weeks, reaching 14 of 15 children (93%) in Week 7, suggests that young children are adept constructors of knowledge when provided with environments rich in concrete stimulation. This phenomenon aligns with Piaget's foundational views on cognitive development, which highlight the necessity of direct physical object manipulation to allow children to assimilate and accommodate new knowledge structures (Piaget & Inhelder, 1969). The pakcoy agricultural project acts as a mediating tool that bridges the child's abstract conceptual world with concrete environmental realities. This interpretation is in line with evidence from systematic reviews showing that nature-based early childhood education (ECE) can provide opportunities for social interaction, creativity, play, and cognitive and social-emotional development (Johnstone et al., 2022).

Analyzed chronologically, extending the first two weeks to focus exclusively on the Design syntax provided sufficient room to stimulate divergent thinking and spatial-aesthetic imagination. Evans et al. offer the strongest behavioral evidence: among 130 children aged 4–6, purposeful and iterative exploration positively predicted success in a creative problem-solving task, whereas simply generating or selecting more responses did not (Evans et al., 2021).

This supports exploration as an important component of creativity. In this study, children's activities involving repeated questioning, sketching, and experimenting using recycled plant containers also provided observable opportunities for exploratory creativity. Through dream garden sketches and repurposing plastic bottle waste, children were encouraged to apply critical thinking to resolve immediate ecological issues (Kamiliyah et al., 2026). More broadly, systematic evidence on environmental education for early childhood suggests that play-based approaches rich in nature elements can support cognitive, as well as social-emotional and environmental learning outcomes (Ardoin & Bowers, 2020).

The notable transformation during this Design phase was the emergence of early interpersonal ethics integrated within the noble character dimension. When a child made an effort to restrain personal egocentrism to listen to a peer's design presentation, an emerging pattern of prosocial participation was observed. This aligns with Lickona's (1996) moral development theory, which posits that character is formed through three simultaneous stages: moral knowing, moral feeling, and moral action (Lickona, 1996). The activities of the second week involving direct physical contact with compost soil and micro-seeds provided opportunities for children to practice translating moral feeling into moral action, expressed as gentleness and care toward living things.

In the third week, executing the Explain syntax played a notable role in reinforcing Critical Thinking and Creativity from an expressive communication standpoint (Sadaruddin, Cahaya, et al., 2025). The children's experiences tending to the plants in preceding weeks yielded a deep, intuitive understanding of science; consequently, when prompted to explain their observation sheets, they articulated ideas clearly and confidently. This interpretation is consistent with the sociocultural view of learning, in which children's participation in socially mediated activities and scaffolding from adults can support the development of higher-order psychological functions (Vygotsky & Cole, 1978). This critical thinking capacity was further refined throughout the three-week Development phase (Weeks 4, 5, and 6) via activities rich in multi-aspect developmental integration (Sadaruddin, Syamsuardi, et al., 2025). This process-oriented interpretation is consistent with recent PjBL research in ECE emphasizing children's inquiry, agency, collaboration, creative expression, reflection, and teacher-supported meaning-making as defining characteristics of project learning (Lahe et al., 2026). Measuring stem heights and counting leaves with sticks and paperclips in week four supported the construction of early mathematical logic without relying on premature mechanical drilling (Novita & Muqowim, 2019).

The climax of the Development phase in weeks five and six demonstrated how the PjBL-DEDEn model addresses behavioral challenges contextually. The observed positive shift in the pakcoy soup cooking class in reducing picky eating behaviors indicates that engaging children in the food production chain—from planting to preparation—can foster an emotional connection to healthy nutrition (Ulfah et al., 2026). This interpretation is consistent with evidence from childcare cooking programs showing increased willingness to try green vegetables and reduced picky eating, as well as systematic reviews indicating that gardening-based interventions can have positive—though variable—impacts on children's fruit and vegetable intake (Garcia et al.,

2020). A bowl of soup from their own harvest served as an authentic medium for practicing self-preservation ethics, where children showed a willingness to consume clean, wholesome, and nutritious (thayyib) food, supported by the Independence Dimension in managing personal dietary habits. Subsequently, during the production of ecoprint crafts in week six, the children's Mutual Cooperation Dimension showed marked improvement. Large-scale group work encouraged the children to subordinate individual preferences to authentic collaboration (Sadaruddin, Nasaruddin, et al., 2025). The resulting aesthetic displays in the school hall provided clear evidence of spatial intelligence and group self-regulation (Annisa et al., 2026).

Finally, the execution of the Evaluation syntax in week seven via the Market Day program served as a culminating context that provided an authentic context in which citizenship and communication became particularly visible. Macro-roleplaying as buyers and sellers extended beyond practicing early economic mathematics (Zahwa et al., 2018) it functioned as a practical setting for practicing social transaction etiquette (Dinawati et al., 2018). The display of orderly behavior, willingness to wait in line, and polite verbal delivery during Market Day suggests that the character practices stimulated over 7 weeks could be actively demonstrated in a novel social context. The circular retelling reflection at the project's close demonstrated emerging reflective skills, as the children evaluated project successes and hurdles with guidance. Collectively, this discussion underscores the potential value of the pakcoy agriculture-based PjBL-DEDEn model at TK Al-Azhar Makassar as a contextual framework for modern ECE instruction that balances cognitive process intelligence with observable graduate character practices.

CONCLUSION

These findings indicate that the structured PjBL-DEDEn syntax can provide a contextual framework for documenting the chronological manifestations of various Graduate Profile Dimensions (GPD) in project-based learning in early childhood. The classical progression observed refers to the descriptive proportion of children achieving the expected developmental thresholds (BSH and BSB categories). Ultimately, the model offers a balanced educational ecosystem integrating cognitive processes with observable character practices. Chronologically, each DEDEn phase systematically stimulated distinct GPD dimensions. The extended Design phase (Weeks 1–2) laid the foundation for Creativity through garden sketches, Critical Reasoning via ecological problem-solving, Independence through self-initiated preparation, and Faith and Piety manifested as ecological ethics. The Explain phase (Week 3) catalyzed Communication through confident scientific articulation. The Development phase (Weeks 4–6) reinforced Independence via self-initiated visual documentation, actualized Health through self-preservation ethics in cooking activities, and maximized Collaboration during group craft production. Finally, the Evaluation phase (Week 7) via Market Day functioned as an authentic social laboratory for Citizenship, demonstrated through orderly transactions and polite etiquette.

Strategically, educators are encouraged to move away from conventional, abstract project designs—which often feel artificial and disconnected from children's realities—toward structured, contextually relevant frameworks like

PjBL-DEDEn. Importantly, the model's strength lies in its sequential syntax rather than its agricultural topic; thus, educators in coastal or fishing areas can adapt the DEDEn framework to marine or maritime contexts for equivalent holistic GPD stimulation. School management should support contextually relevant infrastructures complemented by engaging tools, while future researchers are advised to explore the model's adaptability across diverse ecological settings with larger samples and longitudinal parental involvement to evaluate the consistency of children's character practices over time.

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