

BEYOND TECHNICAL SKILLS: POSITIVE BEHAVIOR SUPPORT AS A FOUNDATION FOR AI-ERA COMPETENCIES IN ELEMENTARY TEACHER EDUCATION

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ABSTRAK

Integrasi AI menuntut kompetensi etis dan regulasi emosi siswa, namun persiapan guru PGSD dalam kerangka Positive Behavior Support (PBS) masih sangat terbatas. Penelitian bertujuan menganalisis PBS sebagai kerangka lingkungan belajar suportif yang selaras dengan Kurikulum Merdeka serta Profil Pelajar Pancasila. Menggunakan desain metode campuran terhadap 182 responden guru sekolah dasar dan mahasiswa PGSD, tahapan penelitian mencakup survei kuantitatif serta wawancara semi-terstruktur mendalam. Temuan statistik menunjukkan tingkat pengetahuan PBS responden berada pada skor rata-rata tinggi sebesar 4,08. Melalui analisis model struktural, dibuktikan bahwa pengetahuan PBS memprediksi praktik manajemen kelas secara signifikan ($\beta = 0,58$), yang selanjutnya memengaruhi keselarasan karakter ($\beta = 0,54$) serta kompetensi mengajar era AI ($\beta = 0,49$). Terdapat pengaruh tidak langsung melalui variabel keselarasan kurikulum sebesar 0,22. Temuan kualitatif menegaskan PBS memperkuat pedagogi yang berpusat manusia, mendorong pemanfaatan teknologi secara bertanggung jawab, dan mengoptimalkan pembentukan karakter religius serta mandiri. Simpulan utama penelitian menetapkan PBS sebagai fondasi profesionalisme guru masa depan bagi keberlanjutan reformasi pendidikan nasional secara inklusif. Integrasi PBS dalam kurikulum PGSD sangat mendesak guna menghasilkan pendidik profesional yang responsif terhadap kebutuhan sosial-emosional siswa sekaligus memandu transformasi teknologi di seluruh wilayah Indonesia secara humanis berkelanjutan.

Kata Kunci: *Positive Behavior Support; Kurikulum Merdeka; Profil Pelajar Pancasila; Pendidikan Dasar; Pendidikan Guru (PGSD); Era AI; Indonesia; ASEAN*

ABSTRACT

AI integration demands ethical competence and emotional regulation in students, yet the preparation of PGSD teachers within the Positive Behavior Support (PBS) framework remains very limited. This study aims to analyze PBS as a supportive learning environment framework aligned with the Merdeka Curriculum and the Pancasila Student Profile. Using a mixed-methods design with 182 elementary school teachers and PGSD students, the research phase included a quantitative survey and in-depth semi-structured interviews. Statistical findings indicate that respondents' PBS knowledge level had a high average score of 4.08. Through structural model analysis, it was demonstrated that PBS knowledge significantly predicted classroom management practices ($\beta = 0.58$), which in turn influenced character alignment ($\beta =$



0.54) and teaching competency in the AI era ($\beta = 0.49$). There was an indirect effect through the curriculum alignment variable of 0.22. Qualitative findings confirmed that PBS strengthens human-centered pedagogy, encourages responsible use of technology, and optimizes the formation of religious and independent character. The main conclusion of the study establishes PBS as the foundation for future teacher professionalism for the sustainability of inclusive national education reform. The integration of PBS into the PGSD curriculum is urgently needed to produce professional educators who are responsive to students' social-emotional needs while simultaneously guiding technological transformation throughout Indonesia in a sustainable, humanistic manner.

Keywords: *Positive Behavior Support; Kurikulum Merdeka; Profil Pelajar Pancasila; Elementary Education; Teacher Education (PGSD); AI Era; Indonesia; ASEAN*

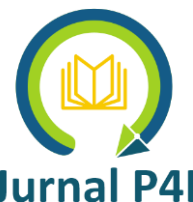
INTRODUCTION

The rapid integration of artificial intelligence (AI) and digital technologies has fundamentally transformed educational practices worldwide, reshaping how teaching, learning, and classroom interactions are designed and experienced (Almuhanna, 2024; Holmes & Luckin, 2016; Leong & Zhang, 2025). In Indonesia, this transformation is formally embedded in *Kurikulum Merdeka*, which emphasizes student autonomy, differentiated instruction, and holistic development (Amalia et al., 2024; Oktavia et al., 2023). However, alongside these technological and curricular innovations, elementary schools increasingly face complex challenges related to student behavior, emotional regulation, and social interaction. These challenges highlight the need for educational approaches that not only leverage technology but also intentionally support students' social-emotional development and positive learning behaviors (Amdan et al., 2025; Aziz et al., 2024; Mambu et al., 2023).

Positive Behavior Support (PBS) (Alwahbi, 2024; Kuswardani & Paramita, 2023; Paananen et al., 2023) is theoretically grounded in Applied Behavior Analysis (Anderson, 2023; Critchfield & Reed, 2017; Gitimoghaddam et al., 2022) and preventive behavior theory (Anagaw et al., 2023; Baudouin et al., 2020; Prasetya et al., 2024), emphasizing proactive strategies, explicit teaching of expected behaviors, and systematic reinforcement of positive conduct. Rather than relying on punitive discipline, PBS focuses on shaping supportive environments that reduce problem behaviors before they emerge (Abou Zaid, 2025; Clark et al., 2020; Johnston et al., 2006). This theoretical orientation aligns with contemporary views of learning as a socially mediated and environmentally influenced process, where behavior is shaped through consistent expectations, modeling, and feedback.

Beyond its behavioral foundations, PBS is closely aligned with humanistic and social-emotional learning theories that emphasize student well-being, self-regulation, empathy, and positive relationships (Fisher & Kelly, 2025; Konstantinidou et al., 2023; Singh et al., 2020). In the context of the AI era, UNESCO's human-centered approach to AI in education underscores that technological innovation must be balanced with ethical responsibility, emotional intelligence, and respect for human values. PBS operationalizes these principles by embedding empathy, inclusivity, and ethical norms into daily classroom practices, ensuring that technology-enhanced learning environments remain socially and emotionally supportive (Abou Zaid, 2024; Dunworth et al., 2024; Mestari et al., 2024).

Extensive international research has demonstrated that PBS contributes to improved school climate, reduced behavioral problems, and enhanced academic engagement across diverse educational contexts (Brewer, 2024; Fox et al., 2022). Studies also indicate that PBS



supports character education by fostering responsibility, cooperation, and self-discipline (Bruinsma et al., 2025; Hayward et al., 2021; Mestari et al., 2025). Within Indonesian education, character development is institutionally framed through *Profil Pelajar Pancasila* (A.D et al., 2022; Irawati et al., 2022; Kurniastuti, R., Nuswantari, N., & Feriandi, 2022), which emphasizes faith, global diversity, mutual cooperation, independence, critical reasoning, and creativity—values that are inherently supported through consistent PBS implementation.

Despite the growing body of research on PBS at the school level, limited empirical attention has been given to PBS within teacher education programs, particularly in Elementary School Teacher Education (*Pendidikan Guru Sekolah Dasar/PGSD*). Moreover, existing studies rarely examine PBS through the lens of AI-era competencies or its alignment with *Kurikulum Merdeka* and *Profil Pelajar Pancasila*. As a result, there is insufficient evidence on how PBS can be systematically integrated into the preparation of future elementary school teachers to address behavioral, social–emotional, and ethical challenges in technology-rich classrooms.

This study offers a novel contribution by positioning PBS not only as a classroom management framework but also as a core professional competency for future elementary school teachers in the AI era. By explicitly linking PBS with *Kurikulum Merdeka*, *Profil Pelajar Pancasila*, and AI-era teacher competencies, this research advances an integrative perspective that bridges behavior support, character education, and human-centered technology use. The study further contributes empirical insights drawn from both in-service elementary teachers and PGSD students, strengthening its relevance for policy and practice.

Accordingly, this study aims to examine the role of Positive Behavior Support as a strategic framework for designing supportive learning environments in Indonesian elementary education and PGSD programs. Specifically, it seeks to analyze how PBS aligns with national curriculum reforms, character education goals, and AI-era teacher competencies, while identifying its implications for preparing future elementary school teachers who are professionally competent, ethically grounded, and responsive to students' social–emotional needs.

RESEARCH METHOD

This study employs a mixed-methods explanatory design integrating quantitative survey data and qualitative interview data. The quantitative phase tests a measurement and structural model consisting of four latent constructs: PBS Knowledge and Attitudes (PBS-KA), PBS Classroom Practices (PBS-CP), Curriculum and Character Alignment (CCA) with *Kurikulum Merdeka* and *Profil Pelajar Pancasila*, and AI-Era Teaching Competencies (AI-TC). The model hypothesizes that PBS-KA directly predicts PBS-CP; PBS-CP predicts both CCA and AI-TC; and CCA mediates the relationship between PBS-CP and AI-TC. Structural relationships among these constructs are examined using structural equation modeling (SEM). The qualitative phase is conducted subsequently to deepen understanding of PBS implementation practices, contextual challenges, and professional preparation in AI-supported learning environments.

The participants comprised 182 respondents, including in-service elementary school teachers (guru SD) and PGSD students (pre-service elementary teachers). All participants had direct experience with classroom management, teaching practicum, or the implementation of *Kurikulum Merdeka*. A purposive sampling technique was used to ensure relevance to character education and behavior support practices in elementary education settings. Quantitative data

were collected using a structured questionnaire measured on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The instrument consisted of four scales corresponding to the latent constructs: PBS Knowledge and Attitudes, PBS Classroom Practices, Curriculum and Character Alignment, and AI-Era Teaching Competencies. Content validity was established through expert judgment, while construct reliability and validity were assessed using Cronbach’s alpha, composite reliability, and confirmatory factor analysis (CFA). Qualitative data were obtained through semi-structured interviews with selected participants to explore experiences in implementing PBS, perceived challenges under Kurikulum Merdeka, and the role of PBS in fostering character education and ethical AI use. Quantitative data were analyzed using descriptive statistics and correlation analysis, followed by structural equation modeling (SEM) to test the hypothesized direct and mediating relationships among constructs. Model fit was evaluated using standard goodness-of-fit indices. Qualitative interview data were analyzed thematically to identify recurring patterns and themes, which were used to contextualize and explain the quantitative findings.

RESULTS AND DISCUSSION

Results

This study involved 182 participants, including elementary teacher education students and practicing teachers. Descriptive statistics indicated relatively high levels across all measured constructs. Specifically, participants reported strong knowledge and attitudes toward Positive Behavior Support (PBS-KA), classroom implementation of PBS (PBS-CP), curriculum and character alignment (CCA), AI-era teaching competencies (AI-TC), professional competence (PC), personal competence (PeC), and AI teaching readiness (AI-TR). The means ranged from 3.98 to 4.12 on a five-point Likert scale, and standard deviations were moderate (0.49–0.57), suggesting relatively consistent responses among participants. Internal consistency was satisfactory for all constructs, with Cronbach’s α values ranging from 0.85 to 0.88 (Table 1).

Table 1. Descriptive Statistics and Reliability of Constructs (n = 182)

Construct	Items	Mean	SD	Cronbach’s α
PBS Knowledge & Attitudes (PBS-KA)	3	4.08	0.51	0.86
PBS Classroom Practices (PBS-CP)	3	4.05	0.50	0.85
Curriculum & Character Alignment (CCA)	3	4.02	0.49	0.87
AI-Era Teaching Competencies (AI-TC)	3	3.98	0.57	0.88
Professional Competence (PC)	6	4.12	0.52	0.88
Personal Competence (PeC)	6	4.05	0.49	0.85
AI Teaching Readiness (AI-TR)	5	3.98	0.57	0.87

Correlation analysis revealed significant positive associations among constructs. PBS knowledge and attitudes (PBS-KA) were positively associated with PBS classroom practices (PBS-CP; $r = 0.61, p < .01$). PBS-CP correlated positively with curriculum and character alignment (CCA; $r = 0.65, p < .01$) and AI-era teaching competencies (AI-TC; $r = 0.62, p < .01$). Professional and personal competence also demonstrated significant positive associations with AI teaching readiness (PC \rightarrow AI-TR: $r = 0.68, p < .01$; PeC \rightarrow AI-TR: $r = 0.60, p < .01$).

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These results indicate that higher knowledge, skills, and competencies are interrelated and collectively support preparedness to integrate AI into teaching (Table 2).

Table 2. Correlation Matrix of Study Variables

Variable	1	2	3	4	5	6	7
1. PBS-KA	1	0.61**	0.55**	0.50**	0.49**	0.47**	0.45**
2. PBS-CP	0.61**	1	0.65**	0.62**	0.50**	0.48**	0.46**
3. CCA	0.55**	0.65**	1	0.57**	0.47**	0.45**	0.43**
4. AI-TC	0.50**	0.62**	0.57**	1	0.46**	0.44**	0.42**
5. PC	0.49**	0.50**	0.47**	0.46**	1	0.62**	0.68**
6. PeC	0.47**	0.48**	0.45**	0.44**	0.62**	1	0.60**
7. AI-TR	0.45**	0.46**	0.43**	0.42**	0.68**	0.60**	1

Note. $p < .01$

The measurement model was evaluated using Confirmatory Factor Analysis (CFA), which demonstrated excellent fit with the observed data. Fit indices met conventional thresholds ($\chi^2/df = 1.87$, CFI = 0.957, TLI = 0.945, RMSEA = 0.059, SRMR = 0.045), confirming the validity of the proposed constructs and their indicators (Table 3).

Table 3. CFA / SEM Fit Indices

Fit Index	Value	Recommended Cut-off
χ^2 / df	1.87	< 3
CFI	0.957	> 0.90
TLI	0.945	> 0.90
RMSEA	0.059	< 0.08
SRMR	0.045	< 0.08

Structural Equation Modeling (SEM) was conducted to test the hypothesized paths. PBS knowledge and attitudes significantly predicted PBS classroom practices ($\beta = 0.58$, $t = 7.12$, $p < .001$). PBS-CP significantly influenced both curriculum and character alignment (CCA; $\beta = 0.54$, $t = 6.85$, $p < .001$) and AI-era teaching competencies (AI-TC; $\beta = 0.49$, $t = 5.97$, $p < .001$). Additionally, CCA partially mediated the relationship between PBS-CP and AI-TC (indirect effect $\beta = 0.22$, $p < .01$). Professional and personal competencies further enhanced AI teaching readiness, with PC ($\beta = 0.46$, $t = 6.57$, $p < .001$) and PeC ($\beta = 0.33$, $t = 5.50$, $p < .001$) showing significant direct effects (Table 4).

Table 4 SEM Path Coefficients

Path	β	SE	t	p
PBS-KA → PBS-CP	0.58	0.08	7.12	< .001
PBS-CP → CCA	0.54	0.08	6.85	< .001
PBS-CP → AI-TC	0.49	0.08	5.97	< .001
CCA → AI-TC	0.45	0.07	5.32	< .001
PC → AI-TR	0.46	0.07	6.57	< .001
PeC → AI-TR	0.33	0.06	5.50	< .001
PBS-CP → CCA → AI-TC (indirect)	0.22	—	—	< .01

Overall, these results indicate a coherent and interconnected pattern among knowledge, skills, and competencies. Specifically, participants who demonstrated higher understanding and positive attitudes toward PBS were more likely to implement effective classroom practices, which in turn supported curriculum and character alignment and enhanced AI-era teaching competencies. Furthermore, professional and personal competencies played a significant role in preparing participants for AI integration in teaching. These findings collectively suggest that fostering both behavioral support knowledge and holistic teacher competencies is essential for developing well-prepared, AI-ready elementary educators in the context of modern educational frameworks.

Discussion

Interpretation of Key Findings

The study's findings indicate that participants generally hold positive perceptions of Positive Behavior Support (PBS) and recognize its alignment with *Kurikulum Merdeka* and *Profil Pelajar Pancasila*. Higher scores in PBS classroom practices suggest that preventive and reinforcement-based strategies are increasingly adopted in Indonesian elementary classrooms. Quantitative analysis further demonstrated that PBS knowledge and attitudes (PBS-KA) significantly predicted PBS classroom practices (PBS-CP), which in turn influenced curriculum and character alignment (CCA) and AI-era teaching competencies (AI-TC). The mediation effect of CCA between PBS-CP and AI-TC highlights that PBS practices enhance AI-era teaching competencies most effectively when embedded within national curriculum values.

PBS, Character Education, and AI-Era Learning

Consistent with prior research (Darling-Hammond et al., 2020; Horner et al., 2017; Lane et al., 2013), PBS supports character development, emotional regulation, and ethical behavior, particularly in technology-rich learning environments. The strong correlations among professional competence, personal competence, and AI teaching readiness indicate that these competencies are interrelated, forming a comprehensive framework for preparing future-ready teachers. Professional competence, including pedagogical knowledge, curriculum understanding, and teaching skills, emerged as a stronger predictor of AI teaching readiness than personal competence, although self-management, adaptability, and continuous learning also contributed significantly.

Designing Supportive Learning Environments under Kurikulum Merdeka

Kurikulum Merdeka emphasizes differentiated learning, student agency, and well-being (Amalia et al., 2024; Oktavia et al., 2023). PBS complements this curriculum by establishing clear behavioral expectations, predictable routines, and emotionally safe classrooms that enable students to engage actively and independently in learning. In elementary classrooms, PBS supports formative assessment, project-based learning, and collaborative activities promoted by Kurikulum Merdeka.

Integration of PBS in PGSD Curriculum and Practicum

For teacher education (PGSD), PBS should be systematically embedded into coursework such as classroom management, educational psychology, and teaching practicum. Pre-service teachers can be trained to design PBS-aligned lesson plans, conduct behavioral observations, and reflect on classroom dynamics using data-informed approaches. Embedding PBS into PGSD curricula ensures that future teachers are equipped to manage classrooms effectively while fostering positive student behaviors.

Alignment with Profil Pelajar Pancasila

PBS contributes directly to the development of Profil Pelajar Pancasila (A.D et al., 2022; Febriyanti et al., 2023; Irawati et al., 2022; Kurniastuti, R., Nuswantari, N., & Feriandi, 2022) by promoting: (1) Mutual cooperation (gotong royong): Through collaborative norms and positive peer interaction (2) Independence (kemandirian): Via self-regulation and responsibility (3) Critical reasoning: Through reflective behavior and problem-solving (4) Creativity: By providing psychologically safe environments for expression

Tiered Model of Positive Behavior Support

The implementation of PBS in elementary schools can be structured through a three-tiered approach:

Table 5. PBS Implementation

Tier	Focus	Description	Elementary School Application
Tier 1	Universal	Preventive strategies for all students	School-wide expectations, classroom routines, positive reinforcement
Tier 2	Targeted	Support for at-risk students	Small-group interventions, mentoring, behavior monitoring
Tier 3	Intensive	Individualized support	Behavior intervention plans, collaboration with counselors and families

This tiered framework ensures that all students receive appropriate levels of behavioral support, from universal preventive measures to individualized interventions (Table 5).

Implications for Policy and Practice

For Research Implications: This study contributes to the limited literature linking PBS, *Kurikulum Merdeka*, and AI-era teacher competencies. Future research should employ longitudinal and mixed-methods designs to examine the effectiveness of PBS implementation in Indonesian elementary schools and PGSD programs. While for Policy Implications: PBS should be explicitly integrated into national teacher competency standards, PGSD curricula, and school accreditation frameworks. Such integration supports character education, student well-being, and ethical digital transformation, aligning behavioral support with AI-era pedagogical requirements.

Limitations and Future Research

The study is limited by its reliance on self-reported data and a purposive sample of 182 participants (96 PGSD students and 86 elementary school teachers). Future research should include classroom observations and longitudinal designs to strengthen causal inferences and examine the impact of PBS on student outcomes and AI teaching competencies over time.

CONCLUSION

Positive Behavior Support (PBS) represents a strategic, human-centered framework for designing supportive learning environments in Indonesian elementary education. Aligned with *Kurikulum Merdeka* and *Profil Pelajar Pancasila*, PBS strengthens character education, supports AI-era competencies, and enhances teacher professionalism. Embedding PBS within teacher education programs and school policies is essential for sustainable and inclusive educational reform. Designing such environments requires intentional planning, collaboration, and ongoing reflection. By integrating clear expectations, positive relationships, tiered interventions, and engaging instructional practices, educators can promote positive behavior, improve learning outcomes, and foster the holistic development of all students. In the AI era, PBS equips both students and future teachers with the social, emotional, and ethical skills necessary to thrive in increasingly complex and dynamic learning contexts.

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