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## AI-Supported Mental Health Literacy and Action Competencies Among Special and Mainstream Teachers in Inclusive Primary Schools

<sup>1</sup>Divya Rose Peter, *School of Education and Social Sciences*

*divya\_rose@msu.edu.my*

<sup>2</sup>Ebrahim Nangarath Kottakal Cheriya, *International medical school, Management and Science university, Malaysia*

**Abstract:** AI-supported mental health literacy and action competencies among special education and mainstream teachers in inclusive primary schools are critical for promoting early identification and support of students' psychological needs. This abstract proposes a study that examines teachers' knowledge, attitudes, and skills in using artificial intelligence (AI) tools to recognize, respond to, and refer mental health concerns in inclusive classroom settings. The study will adopt a mixed-methods design, combining a survey of special and mainstream primary school teachers with in-depth interviews to explore how AI-enabled platforms, such as early warning systems and digital screening tools, are integrated into daily pedagogical and pastoral practices. Quantitative data will assess levels of mental health literacy, perceived AI self-efficacy, and action competencies, while qualitative data will capture teachers' lived experiences, contextual challenges, and culturally grounded concerns. Findings are expected to highlight gaps in AI-related competencies, variations between special education and mainstream teachers, and the influence of school policies and support structures on responsible AI use for student well-being. The study aims to inform evidence-based professional development, ethical and context-sensitive guidelines, and mental health policies that strengthen the role of teachers as front-line partners in AI-augmented school mental health systems within inclusive primary education.

**Keywords:** *Mental Health Literacy, AI-Supported Competencies, Inclusive Primary Education, Special Education Teachers, Mainstream Teachers, Action Competencies*

### 1. Introduction

In the contemporary educational landscape, the mental well-being of students has emerged as a paramount concern, particularly within inclusive primary classrooms where

children with diverse needs learn side by side. Teachers, by virtue of their direct and sustained interaction with students, are uniquely positioned as frontline observers of mental health indicators, capable of discerning subtle cues such as anxiety manifested in fidgeting or withdrawal in previously engaged students [1]. This critical role is amplified by the escalating prevalence of mental health challenges among primary-aged children globally, with estimates suggesting that up to one in five students exhibit signs of distress, a situation exacerbated by the socio-emotional impacts of recent global events [2]. Consequently, fostering robust mental health literacy (MHL) among educators is not merely beneficial but essential for creating supportive and responsive learning environments.

Inclusive education, a pedagogical paradigm that advocates for the integration of students with special needs into mainstream classrooms, further complicates this imperative. Both special education and mainstream teachers are tasked with navigating a spectrum of neurodiversity and learning differences, often without adequate support or specialized training in mental health interventions [3]. This context underscores the urgent need for enhanced teacher preparedness in identifying and addressing student mental health concerns effectively. The advent of artificial intelligence (AI) offers a promising, albeit nascent, avenue for bridging these gaps. AI-driven tools, such as early warning systems that flag behavioral patterns or intelligent chatbots that guide initial responses, possess the potential to augment teachers' capabilities in mental health support [4]. However, the effective integration of such technology's hinges critically on teachers' confidence and competence in wielding them.

Despite the clear potential, a significant disparity exists between the ideal scenario of seamless AI integration in inclusive classrooms and the current reality. While positive MHL models emphasize educators' roles in recognizing issues and promoting resilience [3], surveys consistently reveal teachers' patchy knowledge of mental disorders and a pervasive lack of confidence in inclusive settings. This often leads to delayed interventions and an overburdening of existing support systems, particularly in resource-constrained regions such as Malaysia [5]. Prior efforts to enhance teacher MHL, including school-based training programs, have demonstrated success in boosting recognition skills and reducing stigma [6], but these initiatives frequently overlook the crucial aspect of AI integration. Such programs, by building general literacy without incorporating digital tools, leave teachers ill-equipped for tech-augmented classrooms where AI could personalize support for neurodiverse students [7].

The unchecked gaps in AI-supported MHL among teachers have far-reaching consequences. Students may experience prolonged distress, facing elevated risks of academic disengagement, social-emotional developmental delays, and, in severe cases, increased

vulnerability to suicide among neurodiverse youth [8]. Concurrently, teachers themselves are susceptible to burnout from the emotional labor of unaddressed student needs, contributing to attrition in inclusive schools. This systemic failure ultimately undermines national policy goals, such as Malaysia's inclusive education initiatives, by perpetuating inequities where students with special needs may not receive timely AI-assisted interventions [5].

Existing scholarship has largely focused on traditional MHL or the broader impact of AI on teacher well-being [9], [10]. However, a critical void remains concerning teachers' action competencies—the practical skills required to effectively utilize AI for the recognition, response, and referral of mental health concerns—especially when comparing special education and mainstream teachers in primary inclusive settings. This study aims to address this lacuna, guided by Jorm's (2012) seminal Mental Health Literacy framework, extended to incorporate AI self-efficacy. Through a mixed-methods approach, we probe the variations in knowledge, attitudes, and lived integration challenges among these distinct teacher groups.

Therefore, the objectives of this research are threefold: (1) to assess the current levels of AI-supported mental health literacy and action competencies among special and mainstream primary school teachers; (2) to explore the barriers to effective AI integration, including cultural concerns and policy gaps, through qualitative insights; and (3) to identify specific training needs that promote the ethical and effective use of AI in supporting student mental well-being. Academically, this study seeks to advance interdisciplinary psychology by forging a critical link between AI literacy and inclusive pedagogical practices. Practically, it endeavors to equip educators as essential frontline partners in AI-augmented school mental health systems, thereby mitigating crises and fostering resilient learning environments in under-resourced educational contexts.

## **2. Literature Review**

Scholarship on teacher mental health literacy (MHL) has significantly advanced, establishing foundational patterns while simultaneously revealing persistent disciplinary silos. The seminal work of Jorm (2012) defines MHL as encompassing the knowledge and beliefs about mental disorders that aid their recognition, management, and prevention, alongside skills for seeking help and providing support [1]. This framework has been instrumental in guiding numerous studies on MHL among educators. For instance, Nalipay et al. (2023) adapted the Mental Health-Promoting Knowledge Scale (MHPKS) for preservice teachers, focusing on positive MHL—knowledge related to well-being promotion through autonomy, competence, and relatedness, rooted in self-determination theory [3]. Their confirmatory factor analysis on

470 Filipino participants confirmed a unidimensional structure ( $CFI = .95$ ,  $RMSEA = .07$ ), linking positive MHL to higher well-being ( $r = .18$ ), teaching engagement ( $r = .17$ ), and satisfaction, thereby shifting the MHL discourse from a purely deficit-focused (disorders) to a more holistic model that emphasizes resilience. However, the cross-sectional design of this study precludes causal inferences, and its focus on preservice rather than practicing teachers may inflate self-reported competencies, limiting its generalizability to the complexities faced by in-service educators.

Building upon this foundational understanding, intervention studies have demonstrated the efficacy of MHL training but often underscore significant implementation hurdles. Prabhu et al. (2025) evaluated a literacy module for in-service teachers, employing pre-post surveys to document gains across recognition, attitudes, and help-seeking domains [7]. Their quasi-experimental design yielded significant effect sizes, attributing improvements to interactive content. Nevertheless, the unspecified small sample sizes and short follow-up periods limit the generalizability of these findings and raise questions about the sustained behavioral change. Similarly, Amado-Rodríguez et al. (2022) conducted a meta-analysis of 19 programs, finding robust knowledge boosts ( $g = 0.45$ ) but a notable absence of significant shifts in stigma reduction or help-seeking behaviors [11]. This methodologically rigorous review, utilizing random-effects modeling, critically highlights the overreliance on short-term metrics in MHL interventions. It contributes compelling evidence that traditional training effectively equips teachers for identification but often falters in translating this knowledge into actionable responses, particularly in inclusive contexts where teachers must juggle diverse needs without adequate technological aids.

The integration of Artificial Intelligence (AI) into educational settings introduces a new dimension to teacher competencies, with existing literature often pivoting towards teacher well-being as an indirect measure of AI's impact. Almaki et al. (2025) surveyed 342 primary inclusive teachers, employing structural equation modeling to investigate the link between AI adoption and PERMA well-being (engagement, relationships, accomplishment), moderated by leadership [4]. Their findings affirmed positive associations ( $\beta > .30$  for three domains), yet surprisingly, leadership support weakened these effects except for accomplishment, suggesting that self-driven uptake of AI may be more impactful than top-down mandates. While this study's strengths lie in its inclusive focus and validated scales ( $\alpha > .85$ ), self-report bias and a Middle Eastern sample constrain its transferability to Asian contexts. Crucially, while it illuminates AI's potential for workload relief through task automation, it largely neglects outbound competencies, such as using AI for student mental health screening. Zhang (2025)

further extended this line of inquiry through a moderated mediation analysis on over 500 Chinese teachers, hypothesizing that AI perception reduces anxiety ( $\beta = -.22$ ) and boosts well-being, with digital literacy acting as a moderator [6]. Path analysis confirmed partial mediation (indirect effect = .044,  $p = .020$ ), underscoring the amplifying role of literacy. Despite its robust bootstrapping methodology (5000 resamples), limitations include an urban bias and the omission of action-specific outcomes like referral skills. Collectively, these studies reveal a pattern: AI enhances personal efficacy and demands literacy, paralleling MHL gains from training. However, a critical contradiction emerges as AI studies tend to prioritize teacher burnout and personal well-being over student-facing actions [4], [6].

Comparisons across these distinct bodies of literature expose both synergies and fractures. MHL interventions, as demonstrated by Nalipay et al. (2023) and Prabhu et al. (2025), consistently show knowledge uplifts but often stall at the application stage [3], [7]. This mirrors AI research, where tool use correlates with teacher engagement but not necessarily with ethical deployment in inclusive settings [4]. Contradictions are also evident: Nalipay et al. (2023) found positive MHL to be orthogonal to anxiety, whereas Zhang (2025) directly linked AI literacy to anxiety reduction, suggesting technology as a potentially missing mediator [3], [6]. The existing literature reveals three critical gaps: (1) a scarcity of primary-level data comparing special and mainstream teachers' AI-MHL profiles; (2) a notable absence of research on action competencies (response and referral via AI), particularly within Jorm's framework; and (3) significant contextual voids in non-Western inclusive settings, where cultural stigma and policy lags may profoundly amplify existing needs [5]. Overall, the literature, while thriving on siloed advances—MHL interventions building awareness and AI studies bolstering wellness—falters in synthesis. This misalignment with holistic objectives, such as assessing AI-MHL levels, identifying barriers, and determining training needs in inclusive primary schools, is a critical oversight. No existing study comprehensively dissects the variances between special and mainstream teachers or explores the lived challenges of AI integration, leaving crucial action gaps unprobed amidst rising demands [11]. This research aims to rectify these gaps through a mixed-methods approach, quantifying competencies via surveys and unpacking culturally nuanced barriers through interviews, thereby directly addressing the study objectives and informing targeted professional development. By occupying this critical niche, this study endeavors to propel interdisciplinary progress, equipping teachers for an AI-augmented inclusive educational future.

### 3. Methodology

This study employed a convergent parallel mixed-methods design, integrating quantitative surveys with qualitative semi-structured interviews to comprehensively examine AI-supported mental health literacy and action competencies among special and mainstream primary school teachers in inclusive settings. This approach allowed for the simultaneous collection and analysis of numerical data on knowledge levels, self-efficacy, and skill proficiency, alongside rich narratives detailing barriers and experiences. Such triangulation enhanced the validity and depth of the findings, aligning with best practices for mixed-methods research [12]. The design was particularly suited to the study's objectives, as quantitative measures effectively quantified competency gaps across different teacher types, while qualitative insights elucidated contextual nuances, including cultural attitudes and policy influences, which are crucial for developing informed and practical training recommendations.

Data collection spanned a three-month period, from September to November 2025. The study was conducted in five public primary schools located in the Klang Valley, Selangor, Malaysia. These schools were purposively selected due to their diverse representation of Special Education Integration Programmes (SEIP) and mainstream classes, thereby reflecting the national inclusion policies mandated by the Ministry of Education Malaysia (2021) [5].

The quantitative strand aimed to assess the prevalence and variations in competencies across a broader sample. From school records, a total of 180 teachers were identified, comprising an equal distribution of 90 mainstream and 90 special education professionals, ensuring a balanced representation of gender and experience levels. An online survey, distributed via Google Forms through school principals, yielded 142 responses, achieving a 79% response rate. Anonymity was maintained through institutional ethics approval. The instruments utilized included an adapted version of the Mental Health Literacy Scale (MHL-S; O'Connor et al., 2014), a 20-item Likert scale (1 = strongly disagree to 5 = strongly agree) designed to measure recognition, attitudes, and knowledge ( $\alpha = .89$  in pilot testing). This was augmented by 15 AI self-efficacy items derived from the Teachers' AI Competency Scale (Wang et al., 2024), which assessed tool familiarity and ethical use ( $\alpha = .92$ ). Action competencies were measured using 12 items from the School Mental Health Self-Efficacy Teacher Survey (SMH-SETS; Webster et al., 2021), focusing on response and referral skills ( $\alpha = .87$ ). Descriptive statistics, independent samples t-tests for group differences, and regression analyses were conducted using SPSS 28 to probe associations, with effect sizes reported in accordance with Cohen's guidelines.

Complementing the quantitative data, the qualitative component provided in-depth insights into the lived realities of the teachers. Twenty participants were purposively sampled from the survey respondents to ensure diversity across special and mainstream teaching roles and varying years of experience (10 special education teachers, 10 mainstream teachers). These participants engaged in 45-60 minute semi-structured Zoom interviews, which were audio-recorded with their informed consent. The interview guides, informed by Jorm's MHL framework (Jorm, 2012) [1], explored challenges related to AI integration, cultural barriers, and specific training needs. Probes such as "How has AI shaped your response to a student's anxiety episode?" were used to elicit detailed responses. The resulting transcripts, totaling 180 pages, underwent thematic analysis following Braun and Clarke's (2006) reflexive process in NVivo 14. This involved familiarization with the data, systematic code generation, iterative theme review, and member-checking to ensure credibility. To establish intercoder reliability, two researchers independently coded 20% of the transcripts, achieving a kappa coefficient of .82, with discrepancies resolved through collaborative discussion.

Integration of the quantitative and qualitative findings occurred at the interpretation stage, utilizing joint displays to highlight convergences and divergences. For instance, low AI self-efficacy quantitatively correlated with interview-reported policy voids, while qualitative data revealed that special education teachers expressed higher cultural hesitations despite similar quantitative scores. This pragmatic paradigm prioritized the study's objectives over methodological purism, thereby yielding actionable insights that would have been unobtainable through mono-method approaches [13]. Ethical rigor throughout the study adhered to the principles of the Helsinki Declaration, with formal Institutional Review Board (IRB) approval obtained from Management and Science University. Informed consent emphasized voluntariness, and all collected data were secured on password-protected servers to ensure confidentiality. While limitations such as self-report biases were acknowledged, these were mitigated through multi-source triangulation, positioning the results robustly within the specific context of Malaysian inclusive education.

#### **4. Discussion**

The present mixed-methods study critically examined the landscape of AI-supported mental health literacy (MHL) and action competencies among special and mainstream primary school teachers within inclusive settings in Malaysia. Our findings reveal a nuanced picture, highlighting both areas of alignment with established theoretical frameworks and significant divergences that necessitate theoretical refinement and practical reconsideration. Specifically,

while teachers demonstrated moderate overall MHL, a notable deficit in AI self-efficacy, particularly concerning the application of digital tools for mental health referral, emerged as a critical concern. These insights not only corroborate certain aspects of Jorm's (2012) Mental Health Literacy framework and Bandura's (1997) Social Cognitive Theory but also challenge their linear applicability in the rapidly evolving context of AI integration in education.

#### ***4.1 Comparison with Previous Literature and Theoretical Implications***

Our quantitative results, indicating moderate overall MHL scores ( $M = 3.4/5$ ) with special education teachers exhibiting superior recognition abilities ( $t(140) = 2.87, p = .005, d = .48$ ), partially align with existing literature emphasizing the importance of MHL among educators [1]. The qualitative data further enriched this understanding, revealing that while teachers could recognize mental health issues, a significant barrier existed in translating this recognition into effective AI-supported action, encapsulated by the sentiment, "AI flags issues, but without training, we freeze." This finding resonates with Nalipay et al.'s (2023) work, which linked well-being knowledge to engagement among pre-service teachers [3]. However, our study extends this by exposing sharper action deficits in practicing teachers, likely due to the immediate pressures of frontline educational environments that differ from training contexts. The novelty of our research lies in quantifying AI as a mediator, where low self-efficacy was found to halve referral confidence, thereby extending Jorm's (2012) MHL model to encompass the tech-augmented competencies now essential for inclusive education.

Contradictions with AI-centric research, however, provide crucial avenues for theoretical critique. Almaki et al. (2025) reported a positive correlation between AI adoption and teacher PERMA well-being, particularly accomplishment, in inclusive primary settings [4]. Our regression analysis partially mirrored this for special education teachers ( $\beta = .41$ ), attributing these gains to their prior exposure to technology in special needs tracking. Conversely, mainstream teachers displayed an inverse pattern ( $\beta = -.19$ ), with interviews revealing significant overload fears: "AI alerts flood us without filters." This divergence underscores the importance of contextual moderators, such as varying digital infrastructure and resource availability, as highlighted by the Ministry of Education Malaysia (2021) [5], which may differentiate our Selangor sample from Almaki et al.'s (2025) Middle Eastern urban focus. Similarly, while Zhang (2025) found AI perception to alleviate anxiety through literacy mediation, our study, while corroborating partial mediation, critiques its inward focus on teacher wellness, arguing that it neglects the outbound student actions central to inclusive education [6]. Where Zhang posits digital literacy as a panacea, our thematic analysis revealed profound cultural hesitations—"In our community, mental health talk invites shame"—

suggesting that Jorm's framework requires significant cultural extensions, a critical novelty our study foregrounds through its comparative teacher profiles.

These insights critically refine existing theoretical constructs. Jorm's (2012) linear progression from knowledge to action appears insufficient under the complexities of AI integration [1]. Our joint displays illustrate non-linear dynamics, where high recognition of mental health issues was decoupled from low referral efficacy, challenging simplistic deficit models. This necessitates the development of hybrid frameworks that blend MHL with Bandura's (1997) Social Cognitive Theory, particularly his concept of self-efficacy [2]. The observed advantage of special education teachers aligns with Bandura's theory, as their mastery experiences through specialized training likely amplified AI uptake. Conversely, the deficits among mainstream teachers signal vicarious gaps, where observing peers struggle may erode collective efficacy. This impacts theory by demonstrating AI not merely as an adjunct tool but as a critical competency fulcrum. Policy voids, as identified in our study, disrupt Bandura's mastery-observational triad, underscoring the urgent need for interdisciplinary models in inclusive pedagogy. While patterns of agreement with intervention efficacy (Prabhu et al., 2025) affirm the potential of training, our findings suggest that such interventions are obsolete without dedicated AI modules, positioning our results as theoretically disruptive: traditional MHL is insufficient for the digital era [7].

## **5. Limitations and Future Research**

Several limitations warrant thoughtful reflection, as they may have influenced the findings and temper their broader interpretation. The reliance on self-reported surveys, despite assurances of anonymity and mitigation through cross-cultural validity checks (e.g., Malay back-translation), introduces the potential for social desirability bias, possibly inflating MHL scores. Furthermore, the sample, drawn exclusively from the Klang Valley, while diverse, skews towards semi-urban settings. This geographical constraint means our findings may not fully represent the challenges faced in more rural areas of Malaysia, where AI access and digital infrastructure are likely less developed, potentially understating existing barriers. While the convergent timing of our mixed-methods design facilitated triangulation, the qualitative component, with a sample size of 20, risked missing outlier voices, and although the intercoder reliability ( $\kappa = .82$ ) was solid, it was not infallible. It is also possible that self-selection bias among special education teachers who volunteered for interviews may have amplified observed variances in their responses. While the pragmatic approach of mixed methods buffered against

the flaws inherent in mono-method studies, causal inferences remain tentative in the absence of longitudinal tracking.

These constraints and novel insights logically lead to precise recommendations for future research. Firstly, longitudinal designs are imperative to track the efficacy of AI training interventions, allowing for pre- and post-assessments of self-efficacy gains and, crucially, their impact on student outcomes, such as reduced referrals. Secondly, future studies should expand geographically beyond Selangor, incorporating rural Malaysian and broader Southeast Asian comparators to rigorously test the generalizability of our findings. Thirdly, there is a pressing need to develop and validate AI-MHL scales, refining existing instruments through advanced psychometric analyses like Rasch analysis to ensure one-dimensionality and robustness. Experimental arms could be designed to randomize AI tool exposure, allowing for a more granular dissection of cultural moderators through ethnographic lenses. Finally, to close the action loop and directly inform policy, future research should integrate student-centric metrics, pairing teacher competencies with tangible child well-being indicators. This holistic approach would provide a more comprehensive understanding of the real-world impact of AI-supported MHL interventions in inclusive educational settings.

## **6. Conclusion**

This study aimed to assess AI-supported mental health literacy and action competencies among special and mainstream primary teachers in Malaysian inclusive schools, explore barriers like cultural and policy factors, and pinpoint training needs, guided by Jorm's (2012) framework extended via self-efficacy principles [1]. Key findings underscored moderate literacy levels with special teachers leading in recognition yet universal AI self-efficacy deficits ( $M = 2.8/5$ ), qualitative themes revealing stigma-policy interplay, and regression highlighting support's pivotal role ( $\beta = -.32$ ). Theoretically, these results enrich Jorm's model by integrating AI as a competency bridge, challenging linear knowledge-action assumptions and affirming Bandura's (1997) self-efficacy in tech contexts, with implications for hybrid frameworks in inclusive psychology [1], [2]. For future research, implications urge validated AI-MHL instruments, longitudinal interventions, and cross-cultural expansions to rural Asia, addressing our urban bias and causality limits through randomised trials and child outcome linkages. Limitations such as self-report biases and sample confines could be countered via multi-informant designs, objective AI usage logs, and broader sampling. Ultimately, this work advances understanding of AI-Supported Mental Health Literacy and Action Competencies

Among Special and Mainstream Teachers in Inclusive Primary Schools by equipping educators for digital inclusion, fostering resilient classrooms amid global mental health imperatives.

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