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From Learners to Future Educators: Cultivating Human Capital and Psychological Readiness Among Pre-Service Teachers at UTHM Malaysia

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Abstract

This study examines the development of pre-service teachers through the integrated perspectives of human capital development and educational psychology, with a focus on an international community engagement program at Universiti Tun Hussein Onn Malaysia (UTHM). The study aims to explore how future educators can strengthen professional competencies, psychological readiness, adaptability, and continuous self-development. It discusses the changing competency landscape of teachers, the role of human capital and psychological resources in professional preparation, and the transition from learners to future educators. The study further examines participatory learning, cross-border knowledge exchange, multidisciplinary perspectives, and opportunities for sustained teacher development. The discussion concludes by emphasizing the importance of preparing adaptable, reflective, psychologically ready, and future-oriented educators.

Keywords: UTHM, Pre-Service Teachers, Human Capital Development, Educational Psychology, Teacher Competencies.

INTRODUCTION

1. The Changing Competency Landscape for Future Teachers

The preparation of future teachers is increasingly shaped by an educational environment in which established pedagogical routines must coexist with technological transformation, changing learner expectations, and more complex social conditions. The role of teachers can no longer be understood primarily through the transmission of disciplinary knowledge or the mastery of conventional classroom techniques. Instead, prospective teachers are expected to develop a broader repertoire of competencies that enables them to respond to uncertainty, use emerging technologies meaningfully, collaborate across professional boundaries, and facilitate learning in increasingly diverse educational settings. This transformation requires teacher education institutions to reconsider whether conventional preparation adequately reflects the competencies required in contemporary schools. A recent systematic review of future teacher skills emphasizes that the competency profile of teachers is expanding in response to changes in technology, pedagogy, and educational environments, indicating that teacher preparation needs to move beyond narrowly defined instructional capabilities toward more comprehensive future-oriented competencies.

The changing competency landscape also implies that future teachers need to integrate technical knowledge with interpersonal, reflective, and adaptive capacities. Digital competence, for example, should not be treated simply as the ability to operate educational platforms or technological devices. Rather, it should support teachers' capacity to design meaningful learning experiences, evaluate digital resources, communicate effectively, and respond critically to technology-mediated educational challenges. At the same time, technological competence must be accompanied by social and professional capabilities because teaching remains fundamentally a human-centered profession. Competencies such as communication, collaboration, empathy, problem solving, and responsible decision-making therefore become increasingly significant when teachers operate in classrooms characterized by different learning needs and expectations. The development of future teachers consequently requires an integrated competency orientation in which digital capabilities are embedded within broader professional and human capacities rather than developed in isolation.

The demand for multidimensional competencies is particularly relevant in the context of artificial intelligence and rapid technological development. Emerging technologies are changing not only how teachers deliver instruction but also how knowledge is accessed, assessed, produced, and shared. Future educators therefore need sufficient readiness to evaluate technological developments critically while maintaining pedagogical judgment and human agency. A competency model for teachers in the age of AI similarly emphasizes the interaction between pedagogical and socio-cultural dimensions, suggesting that technological progress does not eliminate the importance of human and contextual competencies in education. Instead, technological transformation increases the need for teachers who can combine technological awareness with pedagogical understanding, social sensitivity, and professional judgment.

2. Human Capital and Psychological Readiness in Teacher Development

Within this changing environment, teacher development can be conceptualized through a human capital perspective. Human capital encompasses the knowledge, competencies, capabilities, and developmental potential that individuals accumulate and subsequently mobilize in professional contexts. From this perspective, preparing future teachers represents an investment in the capacity of individuals to generate educational value over time. Teacher education is therefore not merely a process of transferring professional knowledge before entry into the teaching profession; it is a developmental process through which prospective educators accumulate capabilities that can support their long-term professional contribution. The human capital perspective is particularly relevant because educational organizations depend heavily on the quality, commitment, and developmental capacity of their people. Research on human capital leadership in schools highlights the importance of systematically developing human capabilities as a central responsibility within educational organizations (Zerrad & Schechter, 2026).

However, possessing competencies does not automatically mean that prospective teachers are psychologically prepared to use those competencies effectively. Psychological readiness concerns the internal resources that allow individuals to approach professional challenges with confidence, persistence, adaptability, and constructive expectations. In this context, psychological capital provides a useful conceptual lens because it incorporates positive psychological resources that can support individuals when confronting demanding situations. For prospective teachers, such resources may become particularly important during the transition from university learning to professional teaching, when theoretical knowledge must be translated into practice under conditions that may involve uncertainty, pressure, and interpersonal demands. Recent evidence involving prospective teacher students demonstrates that psychological capital is associated with work readiness and can play an important role in explaining how individual characteristics contribute to preparedness for employment (Adriansyah et al., 2026).

Psychological readiness should consequently be regarded as complementary to, rather than separate from, human capital development. A prospective teacher may possess substantial academic knowledge but still experience difficulty applying that knowledge when confronted with unfamiliar classroom situations, professional expectations, or rapid changes in educational practice. Conversely, psychological resources can facilitate the effective mobilization of knowledge and skills by supporting persistence and constructive responses to challenges. This relationship is important because the teaching profession involves continuous interaction with students, colleagues, institutions, and wider communities. Evidence concerning teacher distress indicates that psychological capital can function as a protective resource, particularly when teachers encounter occupational pressures and rely on social resources such as co-worker support (Kocar & Seki, 2026).

The developmental significance of psychological resources also extends beyond teachers' immediate professional performance. Psychological capital may influence motivation, attitudes toward learning, and individuals' willingness to invest effort in their own development. For university students who are preparing for professional careers, positive psychological resources can therefore contribute to sustained engagement with learning rather than

merely short-term academic achievement. Research among university students indicates that psychological capital can influence intrinsic motivation, suggesting that psychological resources may strengthen individuals' internal willingness to engage with developmental activities. This perspective is especially relevant for pre-service teachers because professional readiness should emerge not only from externally imposed training but also from an internal orientation toward continuous learning and self-development.

3. From Learners to Future Educators: The Rationale for the Program

The transition from university learner to professional educator represents a developmental process rather than a simple change in occupational status. Pre-service teachers must gradually reconstruct their understanding of themselves, moving from individuals who primarily receive educational experiences toward professionals who will eventually design, facilitate, evaluate, and continuously improve learning experiences for others. This transition requires the development of professional identity alongside knowledge and technical competencies. It also involves learning how to connect reflection, collaboration, flexibility, and professional expectations with the realities of teaching. Research examining the transition from students of teaching to teachers of students emphasizes the importance of deliberate preparation for this movement and the development of attributes that enhance graduates' professional readiness and marketability (Ensign & Henninger, 2021).

The rationale for a program focused on human capital and psychological readiness therefore lies in its potential to connect academic learning with broader professional development. Pre-service teachers need opportunities to reflect on their existing capabilities, identify areas for improvement, understand the psychological resources required to navigate professional challenges, and recognize learning as an ongoing developmental process. Such an approach shifts attention from simply asking whether students have acquired sufficient knowledge toward considering whether they are prepared to mobilize that knowledge in dynamic professional environments. This is consistent with research showing that positive psychological capital can mediate relationships between educational leadership and teacher leadership, indicating that psychological resources may help translate supportive learning environments into stronger professional agency (Mısırcı & Bozbayındır, 2026).

Accordingly, "From Learners to Future Educators" frames teacher preparation as an integrated process of capability formation and psychological development. The objective is not to suggest that a single educational intervention can fully prepare students for the complexity of the teaching profession. Rather, the program provides a developmental space in which pre-service teachers can recognize the relationship between human capital, psychological resources, professional competencies, and continuous learning. This orientation is particularly important because teacher readiness involves both what prospective educators know and how they respond when their knowledge is tested by changing circumstances. Research on teacher psychological capital and professional commitment further suggests that psychological resources are relevant to how teachers manage demanding professional experiences and sustain their commitment to their work (Taheri et al., 2024).

The program at Universiti Tun Hussein Onn Malaysia (UTHM) can therefore be positioned as an educational initiative that complements formal teacher preparation by emphasizing the human dimension of professional readiness. Through an integrated perspective on human capital development and educational psychology, pre-service teachers can be encouraged to view their university experience as an investment in their future professional capacity. The emphasis is not simply on producing technically competent graduates but on cultivating future educators who are prepared to learn continuously, adapt to changing educational conditions, and develop their capabilities throughout their careers. Such an orientation is consistent with evidence that psychological capital can contribute to readiness for change, particularly when individuals must respond constructively to evolving organizational and professional circumstances.

PROGRAM DESIGN AND IMPLEMENTATION

1. Context, Participants, and Learning Objectives

The program was implemented within an international community engagement context involving doctoral students from Universitas Negeri Jakarta (UNJ) and students of Universiti Tun Hussein Onn Malaysia (UTHM). The activity focused on pre-service teachers who are preparing to enter a profession increasingly characterized by technological change, diverse learner needs, and continuous demands for professional development. Rather than positioning participants solely as recipients of instructional knowledge, the program viewed them as developing human capital whose capabilities, attitudes, and psychological resources require continuous cultivation.

The learning objectives were designed around the development of future-ready educators. The program sought to broaden participants' understanding of human capital development and educational psychology while encouraging them to recognize the importance of competence, personal potential, adaptability, motivation, and continuous learning. These objectives reflected the premise that teacher readiness encompasses more than academic achievement. Future educators require the capacity to understand themselves as developing professionals and to prepare psychologically for the responsibilities and challenges associated with teaching.

The multidisciplinary composition of the facilitation team supported this orientation. Expertise represented in the program included human resource management, talent management, industrial and organizational psychology, human resource development, agile human resource management, human capital development, digital readiness, and learning and development. This combination provided a broad foundation for discussing teacher development from complementary perspectives rather than limiting the activity to conventional pedagogical preparation. The program consequently established an environment in which professional capability and psychological development could be considered as interconnected dimensions of future teacher preparation.

2. Participatory Learning Through Human Capital and Educational Psychology

The program adopted an educational-participatory approach in which material delivery was combined with active participant engagement. The facilitators introduced fundamental ideas

concerning human capital and educational psychology and connected these concepts with the development of future teachers. This approach was intended to encourage participants to move beyond passive reception of information and consider how theoretical concepts could be interpreted in relation to their own development as prospective educators.

Human capital was presented as a developmental resource encompassing knowledge, competence, potential, and the capacity for continuous improvement. Educational psychology complemented this perspective by directing attention toward learning motivation, self-development, adaptability, and psychological preparedness. The combination enabled participants to consider teacher development as both a professional and personal process. In this sense, becoming a future educator involves not only acquiring competencies but also developing the internal readiness to apply, refine, and expand those competencies over time.

The participatory dimension was particularly important because it created opportunities for participants to reflect on the relevance of the material to their own circumstances. Learning was therefore framed as an interactive process involving exposure to concepts, interpretation, reflection, and application. Such an approach is consistent with the program's broader intention to encourage future teachers to become active participants in their own professional development.

3. Learning Activities, Tasks, and Final Presentation

Following the facilitator presentations, participants engaged in activities and tasks related to the material. These activities provided an opportunity to translate conceptual discussions into individual or group-based learning outputs. The tasks encouraged participants to reflect on human capital development and educational psychology from the perspective of their preparation for the teaching profession.

The final presentation provided a further opportunity for participants to communicate the results of their learning activities. It also strengthened the interactive character of the program by allowing participants to articulate their understanding rather than simply completing written exercises. The combination of presentations, tasks, and final presentations created a sequential learning process in which participants encountered concepts, engaged with them, and communicated their resulting understanding.

Overall, the implementation represented a relatively compact but multidimensional learning intervention. Its principal contribution was to create an international learning space where future teachers could explore professional development through the combined lenses of human capital and educational psychology. The program thus positioned the transition from learner to educator as an ongoing process of capability building, reflection, participation, and preparation for the evolving demands of the teaching profession.

RESULTS AND DISCUSSION

1. Developing Human Capital Awareness Among Pre-Service Teachers

The implementation of the program provided a meaningful context for strengthening pre-service teachers' awareness of human capital as a multidimensional resource for their future professional roles.

Rather than limiting human capital to academic qualifications or technical teaching abilities, the activity encouraged participants to consider knowledge, personal capabilities, adaptability, awareness, and continuous learning as interconnected elements of professional development. This perspective is particularly important because future teachers will work in educational environments affected by technological development, social transformation, and increasingly complex learner needs. Human capital awareness therefore represents an important foundation for recognizing that becoming an effective educator requires continuous investment in individual capacity. Research on teacher candidates' awareness of sustainability and climate change similarly demonstrates that contemporary teacher preparation increasingly requires awareness extending beyond conventional subject knowledge toward broader societal and environmental concerns (Doğru & Orzan, 2025).

The discussion of human capital also encouraged participants to recognize that teachers operate within broader social and educational systems. A future educator needs to understand how knowledge and competencies can be translated into meaningful contributions to students, schools, and communities. Consequently, human capital development should encompass the ability to interpret emerging issues, respond to contextual challenges, and connect professional knowledge with real-world problems. This orientation expands the meaning of teacher competence from classroom performance to a broader capacity for social responsiveness. For pre-service teachers, such awareness can influence how they conceptualize their future profession and the responsibilities associated with educating diverse generations of learners. The emphasis on broader awareness is consistent with evidence that teacher candidates' understanding of contemporary educational issues can be influenced by their engagement with technology and computational thinking, suggesting that modern teacher preparation is increasingly connected with wider forms of knowledge and awareness (Ata & Çevik, 2020).

An important implication of the program is that human capital awareness should not be developed solely through theoretical explanation. Participants need opportunities to examine how concepts relate to their own development and future professional circumstances. Activities that connect human capital with social responsibility, professional ethics, communication, and inclusive educational practices can encourage future teachers to see their competencies as resources that should be continually refined and responsibly applied. This is particularly significant because teachers influence not only students' academic development but also their attitudes toward society, diversity, responsibility, and participation. Evidence from human rights education demonstrates that targeted educational interventions can influence pre-service teachers' attitudes and awareness, reinforcing the value of experiential and participatory approaches in teacher preparation (Ulubey & Aykaç, 2016).

2. Cultivating Psychological Readiness for the Teaching Profession

The second important outcome concerns the development of psychological readiness among prospective educators. Psychological readiness extends beyond mastery of subject matter because teaching requires individuals to manage interpersonal interactions, respond to unexpected classroom situations, maintain motivation, and adapt to changing professional expectations. In this program, educational psychology provided a conceptual basis for discussing the personal and psychological dimensions of becoming

a teacher. The emphasis on readiness is particularly relevant during the transition from university to professional life, when students must transform their existing academic capabilities into professional behaviors and responsibilities. Psychological readiness can therefore be understood as an enabling condition that allows competencies to be mobilized effectively in authentic professional situations. A study specifically examining psychological readiness among teacher students demonstrates the relevance of assessing such readiness as an important dimension of preparation for professional life (Samoderzhenkov et al., 2021).

Psychological readiness is also closely connected with motivation and personal values. Future teachers may possess adequate academic knowledge while differing considerably in their willingness to assume responsibility, persist through difficulties, regulate emotions, or respond constructively to challenging circumstances. These characteristics can influence how they eventually approach classroom management, collaboration, student relationships, and professional learning. Accordingly, teacher development should provide space for participants to examine not only what they know but also how they respond to pressure, uncertainty, feedback, and responsibility. Such reflection can strengthen awareness of personal strengths and developmental needs before entering the profession. Research concerning psychological preparation for teaching similarly emphasizes that professional readiness involves personal and psychological characteristics that complement technical and subject-specific preparation.

The program's emphasis on psychological readiness is particularly important because contemporary classrooms require teachers to respond to increasingly diverse educational circumstances. Teachers may encounter students with different learning characteristics, social backgrounds, emotional conditions, and levels of educational support. These circumstances require more than procedural knowledge; they demand emotional regulation, flexibility, communication, and a willingness to understand learners from multiple perspectives. Psychological preparation can therefore contribute to the development of teachers who are better positioned to approach complexity without immediately interpreting difference as a problem. Research examining the motivational-value dimensions of psychological readiness among future teachers indicates the relevance of such dimensions for preparing educators to work under inclusive education conditions.

Psychological readiness should consequently be cultivated as an ongoing developmental capacity rather than treated as a fixed attribute that students either possess or lack. The program creates an initial learning environment in which participants can become more conscious of the psychological resources required by the teaching profession. This orientation also opens possibilities for future interventions involving emotional awareness, communication, stress management, motivation, and professional self-reflection. Research involving prospective teachers indicates that psychological preparation can be linked to teachers' ability to approach classroom responsibilities with greater preparedness, reinforcing the importance of integrating psychological dimensions into broader professional education.

3. From Knowledge Acquisition to Active Learning and Self-Development

A third outcome of the program concerns the movement from passive knowledge acquisition toward active learning and self-

development. The use of participant activities and tasks encouraged students to engage with the material rather than simply receive information from facilitators. This distinction is important because professional competence cannot be produced through information exposure alone. Future teachers must learn to interpret concepts, connect them with their experiences, evaluate their relevance, and determine how they can be applied in future professional contexts. Such learning requires metacognitive engagement, whereby learners become increasingly aware of how they think, learn, and regulate their own development. Research on pre-service teachers' metacognitive awareness demonstrates the importance of understanding and regulating one's own thinking in the development of prospective educators (Lee et al., 2010).

The task-based component of the program further created opportunities for participants to translate conceptual knowledge into learning outputs. By engaging with assignments related to the presented material, participants were encouraged to process information through interpretation and application. This approach supports a shift in the learner's role: instead of viewing education as the accumulation of information, participants can begin to understand learning as a process of capability development. For future teachers, this distinction is particularly valuable because they will eventually be responsible for designing learning environments that encourage students to become active participants themselves. Teacher preparation should therefore model the kind of active learning that educators are expected to facilitate in their future classrooms.

Self-regulated learning provides another important perspective for understanding this transition. Future teachers need the capacity to establish learning goals, monitor their progress, evaluate outcomes, and modify strategies when necessary. These capabilities are essential because professional development does not end when formal teacher education is completed. Teachers must continually acquire new knowledge, respond to changes in educational policy and technology, and adapt their practices based on experience and feedback. A recent structured review of teacher training for self-regulated learning highlights the importance of developing teachers' knowledge and skills so that they can subsequently transfer self-regulatory approaches into educational practice (Poladura et al., 2026).

Finally, reflective practice provides a mechanism through which active learning can become sustained professional self-development. The participants' tasks and presentations can be understood not merely as assessment activities but as opportunities to articulate interpretations, evaluate understanding, and communicate learning outcomes. Reflection allows future teachers to connect educational concepts with their emerging professional identities and recognize areas that require further development. Research on reflective frameworks for pre-service teachers indicates that structured reflection can support prospective educators in making sense of their experiences during teacher preparation and practicum. Such processes are important because effective professional learning depends not only on acquiring new knowledge but also on continuously examining how that knowledge changes one's understanding and practice (Chitpin et al., 2008).

Taken together, the results indicate that the program contributed to three interconnected dimensions of future teacher development: awareness of human capital, psychological readiness, and active self-development. These dimensions should not be treated as

separate outcomes. Human capital provides the capabilities that future teachers need to develop; psychological readiness supports their capacity to mobilize those capabilities under changing conditions; and active learning and reflection provide mechanisms through which development can continue. The significance of the program therefore lies less in the amount of information delivered during the activity than in its potential to encourage participants to perceive themselves as developing professionals. From this perspective, the movement from learner to future educator represents an ongoing process of awareness, psychological preparation, active engagement, and deliberate investment in professional growth.

IMPACT, REFLECTION, AND FUTURE DEVELOPMENT

1. Strengthening Future-Ready Teacher Competencies

The program's contribution to future-ready teacher development can be understood through its emphasis on competencies that extend beyond conventional academic and pedagogical knowledge. The changing educational environment requires prospective teachers to combine disciplinary understanding with generic competencies such as communication, collaboration, problem solving, adaptability, and the capacity to respond to complex professional situations. For pre-service teachers, these competencies are particularly important because professional effectiveness depends on the ability to mobilize knowledge appropriately rather than simply possessing knowledge. Recent research on teacher preparation emphasizes the importance of developing generic competencies systematically within teacher education, demonstrating that future teachers require a broader capability profile to respond effectively to contemporary educational demands (Ciriza-Mendivil & Mendioroz Lacambra, 2025).

Digital transformation adds another dimension to future-ready teacher competencies. The increasing presence of artificial intelligence, digital platforms, and media-based learning environments means that future educators need to become capable users and critical evaluators of educational technologies. Digital competence should therefore involve more than operational proficiency. Teachers need to understand how technological tools can support learning, recognize their limitations, and make pedagogically appropriate decisions regarding their use. The program's attention to human capital development provides a useful foundation for considering digital readiness as part of broader professional capability. Evidence from higher education indicates that teachers' digital competencies are important for effective AI integration, particularly as educators increasingly encounter technologies that can reshape teaching, assessment, and learning processes (Khalil & Alsenaidi, 2024).

The development of future-ready competencies should also involve opportunities to connect learning with realistic professional contexts. Pre-service teachers may understand pedagogical concepts theoretically but encounter difficulties when attempting to apply them to unpredictable classroom situations. Experiential learning can reduce this distance by allowing prospective teachers to encounter authentic or simulated professional challenges and reflect on possible responses. Such experiences can strengthen professional judgment and help students understand that effective teaching requires continuous adaptation. Research examining the

integration of real-world teaching experiences into higher education teacher preparation demonstrates the value of connecting academic preparation with practical professional experiences.

The program consequently provides a foundation for future development rather than representing a complete model of teacher preparation. Its value lies in encouraging participants to recognize that future teaching requires continuous expansion of professional, digital, interpersonal, and adaptive competencies. This perspective is important because future-ready teachers cannot rely exclusively on competencies acquired before entering the profession. They must remain capable of learning, unlearning, and adapting as educational technologies, student expectations, institutional priorities, and social conditions evolve. Teacher education should therefore cultivate an orientation toward continuous capability development rather than treating professional competence as a fixed endpoint.

2. Cross-Border Knowledge Exchange and Multidisciplinary Learning

The international setting of the program creates an additional dimension of impact through cross-border knowledge exchange. Bringing together participants from different educational and national contexts creates opportunities to encounter alternative assumptions about teaching, learning, professional preparation, and educational challenges. Such encounters can encourage participants to reconsider perspectives that may otherwise remain unquestioned within a single educational environment. International learning therefore has value not simply because it exposes students to another country, but because it creates conditions for comparative reflection and perspective-taking. Recent research involving students from multiple European countries demonstrates how experiences of diversity within international teacher education can shape participants' understanding of difference and educational interaction (Ruin et al., 2026).

The UTHM-UNJ context also illustrates the potential of cross-border learning to promote dialogue around equity and diversity. Educational problems are rarely confined to one national context, while their solutions cannot always be transferred directly from one setting to another. Meaningful international exchange requires participants to compare contexts, identify similarities and differences, and critically consider which practices may be relevant elsewhere. Collaborative dialogue can therefore become an important mechanism for developing intercultural awareness while simultaneously encouraging participants to examine their own assumptions. Research on cross-border instructional design demonstrates that collaborative international dialogue can contribute to greater attention to equity and diversity within educational processes (Zhang et al., 2023).

Cross-border learning becomes even more valuable when it is combined with multidisciplinary perspectives. The PKM team itself represents several areas of expertise, including human resource management, psychology, human resource development, talent management, digital readiness, and learning and development. Such disciplinary diversity provides a different way of understanding teacher development because the preparation of educators is not exclusively a pedagogical issue. It also involves psychological resources, human capital, organizational capabilities, digital transformation, and professional development. Boundary-crossing research in teacher learning similarly suggests that engagement across educational and geographical contexts can help

educators develop new understandings by navigating different professional and knowledge environments (Tang & Lu, 2026).

This international and multidisciplinary dimension also creates opportunities for participants to develop global competence. Future educators will increasingly encounter educational issues that transcend national boundaries, including technological change, sustainability, cultural diversity, migration, and changing labor-market requirements. Exposure to alternative educational perspectives can help prospective teachers become more comfortable with complexity and less dependent on a single conceptual framework. However, cross-border learning should not be regarded as valuable merely because it is international. Its educational value depends on meaningful interaction, critical reflection, and the ability to translate diverse perspectives into constructive professional learning.

3. Opportunities for Sustained Teacher Development

The outcomes of the program also highlight the importance of continuing teacher development beyond the immediate PKM intervention. A short-term educational activity can introduce concepts, stimulate reflection, and create awareness, but sustainable professional competence requires repeated opportunities for learning and application. Future teachers will need professional development throughout their careers because the knowledge, technologies, pedagogical approaches, and expectations surrounding education will continue to change (Sihotang, 2026). Continuous professional development should therefore be understood as an integral component of professional identity rather than an occasional institutional requirement. Research examining school leaders' perspectives on continuous professional development emphasizes its importance for teacher learning and broader school improvement (Lafferty et al., 2024).

Sustained development is more likely to be meaningful when teachers and future teachers perceive professional learning as relevant to their actual needs (Sihotang et al., 2027). Development programs that are disconnected from participants' professional realities may produce temporary engagement without generating lasting changes in practice (Sihotang, Suhud, Handaru, et al., 2027). For this reason, future initiatives building on the present program should consider participants' developmental priorities, existing competencies, and anticipated professional challenges (Suhud, Caniago, Sihotang, et al., 2026). A needs-responsive orientation can make professional learning more meaningful while strengthening participants' sense of ownership over their development. Professional development research similarly identifies contextual factors, participant needs, support structures, and opportunities for application as important components influencing the effectiveness of teacher development (Marynowski et al., 2022).

Another opportunity concerns the development of collaborative and coaching-based approaches (Cholifah et al., 2027). Professional learning is not necessarily an individual activity; teachers can learn through interaction with colleagues, mentors, facilitators, and professional communities. Sustained collaboration can provide opportunities to exchange experiences, receive feedback, discuss problems, and develop solutions collectively (Suhud, Caniago, Sihotang, et al., 2026). For future educators, developing this collaborative orientation during university preparation can establish habits that later support professional learning within schools. Rather than positioning professional

development as a one-directional transfer of knowledge from experts to teachers, collaborative approaches can treat educators as active contributors to knowledge development (Sihotang, 2027).

The future development of the program could therefore move toward a more sustained learning ecosystem. Subsequent activities might incorporate mentoring, peer discussion, reflective assignments, digital learning resources, follow-up workshops, and collaborative projects (Sihotang, Suhud, Handaru, et al., 2027). Such continuity would enable participants to revisit concepts introduced during the initial intervention and connect them with subsequent academic or professional experiences. Professional development becomes more meaningful when learning is sustained over time and connected to opportunities for experimentation and reflection (Suhud, Allan, Hoo, et al., 2026). Evidence from sustained professional development in culturally responsive education, for example, demonstrates the potential of continued learning to influence teachers' attitudes and practices rather than producing only short-term awareness (Uribe-Zarain et al., 2025).

Overall, the program's impact should be understood as the beginning of a developmental pathway from learner toward future educator (Suhud, Boonkaew, Sihotang, et al., 2025). Its contribution lies in bringing together future-oriented competencies, psychological and human capital perspectives, international knowledge exchange, and active professional learning (Sihotang, Suhud, Reztriandi, et al., 2027). The cross-border setting at UTHM further strengthens this orientation by exposing participants to alternative perspectives and multidisciplinary approaches (Suhud, Sihotang, Allan, et al., 2026). Moving forward, the most important opportunity is to transform this initial learning experience into sustained professional development in which future teachers repeatedly reflect, collaborate, acquire new competencies, and adapt their practices. In this way, the transition from learners to future educators becomes a continuing developmental process rather than a single educational milestone (Suhud, Sihotang, Juliana, et al., 2026).

CONCLUSION

1. Reframing Pre-Service Teachers as Developing Human Capital

The transition from university learner to future educator should be understood as a continuous process of human capital development rather than a simple progression toward professional certification. Pre-service teachers enter teacher education with different forms of knowledge, experience, motivation, personal characteristics, and developmental potential. These resources constitute an important foundation for their future professional contribution, but they require continuous cultivation before and after entering the teaching profession. The program at Universiti Tun Hussein Onn Malaysia (UTHM) provides a context for encouraging participants to recognize themselves as developing professionals whose capabilities can be strengthened through learning, reflection, interaction, and deliberate self-development (Suhud, Sihotang, Chanthawong, et al., 2026).

This perspective also changes the way teacher preparation is conceptualized. Rather than focusing exclusively on the acquisition of academic and pedagogical knowledge, teacher development should consider how students build broader capabilities that enable them to respond to professional demands (Suhud, Wolor, Sulistyowati, et al., 2025). Communication, adaptability,

collaboration, self-awareness, digital readiness, motivation, and continuous learning are increasingly important components of a teacher's professional capacity (Suhud, Nair, Chee Hoo, et al., 2026). Viewing pre-service teachers as developing human capital encourages them to take greater responsibility for their own growth and recognize that professional competence is built progressively throughout their educational and professional journeys (Sihotang, Suhud, Handaru, et al., 2027).

2. Integrating Human Capital and Educational Psychology

The integration of human capital development and educational psychology provides a more comprehensive approach to preparing future teachers (Sihotang, Suhud, Handaru, et al., 2026). Human capital emphasizes the development of knowledge, competencies, capabilities, and professional potential, whereas educational psychology contributes attention to motivation, learning processes, psychological readiness, self-development, and individual responses to challenges (Suhud, Sihotang, Boonkaew, et al., 2026). Bringing these perspectives together allows teacher preparation to address both what future educators need to develop and how they can psychologically engage with that developmental process (Suhud, Unarto, Sugianto Sihotang, et al., 2026).

This integration is particularly important because professional competence cannot be separated completely from psychological readiness (Ilhamalimy et al., 2025). Future teachers may possess relevant knowledge and technical skills but still require confidence, adaptability, emotional awareness, motivation, and willingness to learn when confronting unfamiliar professional situations (Sihotang et al., 2025). Preparing educators therefore requires opportunities to reflect on both their capabilities and their psychological resources (Sihotang, Suhud, Handaru, 2025a). The PKM program demonstrates the value of creating such a learning environment through educational presentations, participatory activities, assignments, and opportunities for participants to communicate their understanding (Sihotang & Hidir, 2022).

The multidisciplinary character of the program further strengthens this integration. Perspectives from human resource management, talent management, psychology, human resource development, agile human resource management, digital readiness, and learning and development provide complementary ways of understanding future teacher development (Wibowo et al., 2026). Such integration reinforces the idea that preparing educators is not solely a pedagogical responsibility but a multidimensional process involving human capability, psychological development, professional learning, and adaptation (Sihotang et al., 2025).

3. Toward Future-Ready Educators

The ultimate objective of developing human capital and psychological readiness is to cultivate future-ready educators who can respond constructively to changing educational environments (Pertiwi et al., 2026). Future-ready teachers need to remain capable of learning new technologies, understanding diverse learners, adapting their teaching approaches, collaborating with others, and continuously evaluating their professional practices (Merina, Suhud, Sihotang, et al., 2026b). Readiness should therefore be understood as an ongoing capacity rather than a final condition achieved at the completion of teacher education (Sihotang, Suhud, Handaru, 2025b).

The experience at UTHM demonstrates how international and participatory learning can contribute to this broader developmental objective (Cholifah et al., 2026). Through interaction, knowledge exchange, task-based learning, and presentation activities, participants were encouraged to move beyond passive knowledge reception and engage with their own development as prospective educators (Hernita et al., 2026). The international setting also provided an opportunity to experience educational perspectives beyond a single institutional context, reinforcing the importance of openness, adaptability, and cross-cultural learning (Permana et al., 2026).

Ultimately, the journey from learners to future educators requires continuous investment in human capabilities and psychological resources (Murti et al., 2026). A future-ready educator is not defined solely by what they know at the point of graduation, but by their willingness and capacity to continue learning, adapting, reflecting, collaborating, and developing throughout their professional lives (Saputra et al., 2026). The PKM program at UTHM therefore represents not an endpoint in teacher preparation, but a meaningful step toward cultivating educators who are professionally capable, psychologically prepared, adaptable, and committed to lifelong development (Indriani et al., 2026).

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