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Applying Andragogy to Enhance Research Project Management among Vietnamese PhD Students

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ABSTRACT: *Doctoral research projects require not only methodological expertise but also project management competencies that enable timely and effective progress. This study applies Andragogy to examine how Vietnamese PhD students conceptualize, apply, and experience challenges in developing research project management skills. A two-phase qualitative design was employed, including systematic document analysis and semi-structured interviews with 15 Vietnamese doctoral students at universities in the southern Vietnam. The findings reveal that students typically acquire project management competencies reactively after encountering delays and that autonomy alone is insufficient without structured guidance. Prior professional experience supports adaptation, but a lack of mentorship, heavy workloads, and overly theoretical training remain barriers. Students consistently reported greater engagement when exposed to experiential and problem-based approaches aligned with Andragogical principles. This study contributes by bridging adult learning theory and project management in doctoral education, an intersection rarely explored. It offers three practical implications: the need for early orientation, structured yet flexible supervisory frameworks, and milestone-based training tailored to research stages. These insights inform ongoing doctoral reforms in Vietnam and extend international debates on strengthening research capacity through Andragogical approaches.*

KEYWORDS: **Andragogy, research project management, Vietnamese PhD students, research project, adult learning.**

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1. Introduction

1.1. Context and background

Research projects are inherently complex and nonlinear, with uncertain processes and outcomes; beyond methodological expertise, effective project management competencies are essential for timely, high-quality progress (Huljenic *et al*., 2005). Once a project is defined, PhD students must identify appropriate methodologies to ensure success (Håkansson, 2013). Beyond methodological expertise, research project management competencies are critical for structuring work, avoiding delays, and ensuring academic progress (Durette *et al*., 2016).

Andragogy, a learner-centered theory of adult learning, provides a promising framework to strengthen these competencies. Core tenets such as self-directed learning, problem solving, and experiential learning (Henschke, 1998; Savicevic, 2008) are highly relevant for PhD students navigating complex, autonomous projects. Malcolm Knowles' contributions further explain how adults acquire new competencies (Henschke, 2015). Within doctoral education, applying Andragogy can cultivate independent, proactive, and reflective researchers capable of planning, executing, and adapting their projects efficiently. Prior studies highlight that adult learners demonstrate greater engagement when positioned as active participants (Moore & Shemberger, 2019; Sethy, 2025). Thus, embedding Andragogy in doctoral programs may foster ownership of research, collaborative practices, and critical thinking—competencies essential for rigorous scholarship.

In the broader policy context, doctoral education is central to a knowledge-based economy, underpinning scientific advancement and innovation. Vietnam has prioritized the strengthening of doctoral training through initiatives such as Project 89 (Phuong Chi, 2021), which aims to develop 7,300 new lecturers with PhDs by 2030, supported by significant scholarships and stipends (Le, 2021). In the 2023–2024 academic year, nearly 3,400 doctoral students were enrolled nationwide (Duong, 2024). Ongoing debates about the quality and effectiveness of doctoral education reflect public and scholarly concerns (Dinh, 2024). In this setting, equipping PhD students with robust research project management competencies is not merely desirable but also essential. Integrating andragogy-based approaches into doctoral training represents a strategic response, enabling Vietnamese universities to better prepare students for complex research demands while contributing to the nation's research infrastructure and socioeconomic progress.

1.2. Research questions

Despite the recognized importance of both Andragogy and project management, their integration within doctoral education remains underexplored. To address this gap, this study investigates the following research questions:

RQ1: How do Vietnamese PhD students conceptualize research project management competencies within the principles of Andragogy?

RQ2: How can Andragogy be applied to strengthen research project management competencies for Vietnamese PhD students?

RQ3: What challenges do PhD students face in applying Andragogy principles to manage their research projects?

2. Literature review

2.1. Research Projects

A research project is a systematic and structured investigation that addresses defined questions or objectives (Williamson *et al*., 2002). Two core dimensions shape such projects: conceptual design, which clarifies aims, and technical design, which determines the strategies to achieve them (Verschuren *et al*., 2010). Effective research competence is now widely recognized as a transferable skill across higher education (Sharp *et al*., 2017).

Research projects typically progress through three phases: conceptualization, empirical inquiry, and interpretation (Jain *et al*., 2020). Each phase requires not only methodological expertise but also effective coordination of time, resources, and collaboration (Holgado *et al*., 2020). External shocks such as the COVID-19 pandemic have demonstrated the vulnerability of research projects to disruption, sometimes halting them entirely (Rahman *et al*., 2021). These studies suggest that while research is foundational to doctoral training, project success depends on more than methodological knowledge; it requires explicit management competencies.

2.2. Project management competency in research projects

Doctoral research demands balancing competing pressures such as authorship, recognition, and intellectual property (Ernø-Kjølhede, 1999). Efficiency improves when project management is approached collaboratively rather than as an isolated task (Huljenic *et al*., 2005). Over time, project management has evolved into a discipline that values the competencies of both project leaders and research teams (Skulmoski, 2009). Success is consistently linked to the presence of defined project management competencies (Bredillet *et al*., 2015).

Frameworks by Takey and Carvalho (2015) and Alvarenga *et al*. (2019) provide comprehensive lists of competencies ranging from teamwork and problem solving to leadership and emotional intelligence (Magano *et al*., 2020) (see Table 1). These highlight the multifaceted nature of project management in research. Educational programs play a critical role in developing such competencies (Sołtysik, 2020). Existing scholarship notes, however, that research remains limited when projects address grand challenges—complex, uncertain, and interdisciplinary problems that push the boundaries of traditional methods (Ika & Munro,

Table 1. Most Important Project Management Competency, adapted from Magano et al. (2020)

Project Management Competency			
Assertiveness	**Delegation**	**Negotiation**	**Self-control/Work under Pressure**
Attention to detail	Development of others	Opening	Teamwork
Authority	Emotional intelligence	Negotiation	Time management
Cognition	Emotional resilience	Organization-solving	Training
Commitment	Experience	Perseverance	Use of technology
Communication	Flexibility	Political and cultural awareness	Uncertainty
Conflict management	Initiative	Problem-solving	Vision
Conceptual thinking	Interpersonal relationships	Relaxation	
Creativity	Leadership	Self-awareness	
Customer relationship	Management	Search for information	

2022). Scholars have argued that competencies can be systematically cultivated through structured methodologies and tools (Neubert, 2020). Recent evidence shows that research management practices are increasingly aligned with professional project management principles (Litvinova *et al*., 2023).

Together, these studies emphasize that project management competency is critical to successful research, but they often focus on technical or organizational aspects, leaving limited attention to how adult learning principles shape competency development in doctoral contexts.

2.3. Andragogy in higher education

Knowles (1984) argued that adults are inherently motivated and assume responsibility for their own learning. Higher education contexts thus increasingly adopt Andragogical approaches, emphasizing autonomy and experiential learning (Pratt, 1988; MacKeracher, 2004). Six core principles – need to know, self-concept, prior experience, readiness, orientation, and motivation – define adult learning needs (Knowles *et al*., 2005) (see Figure 1).

These principles align closely with the goals of doctoral training. Adult learners typically pursue education with explicit professional and personal goals (Tomei, 2009), making learner-centered strategies effective (Chan, 2010). Research has identified experiential, interactive, and transformative dimensions as central to adult learning (Muneja, 2015). Unlike pedagogy, which is oriented toward younger learners, Andragogy values prior experience and intrinsic motivation (Joshi, 2017; Sufirmansyah, 2019). This implies that doctoral education must adopt strategies tailored to these characteristics to foster engagement and retention (El-Amin, 2020).

Andragogy has often been described as "the art and science of helping adults learn" (Efgivia *et al*., 2021). Current scholarship highlights a growing need to transition from traditional, teacher-centered models to learner-centered approaches in higher education (Kaddoura & Al Husseiny, 2021). Core practices include recognizing learners' prior knowledge (Desta & Gugssa, 2022) and promoting self-directed learning for autonomy and critical thinking (Fogelberg, 2023; Skoglund *et al*., 2025).

The reviewed literature consistently emphasizes that successful doctoral research projects require explicit project management competencies in addition to methodological expertise (Skulmoski, 2009; Durette *et al*., 2016). The frameworks proposed by Takey and Carvalho (2015) and Alvarenga *et al*. (2019) provide comprehensive catalogs of competencies; however, they tend to conceptualize these skills as static lists rather than as developmental processes. Moreover, studies in adult learning

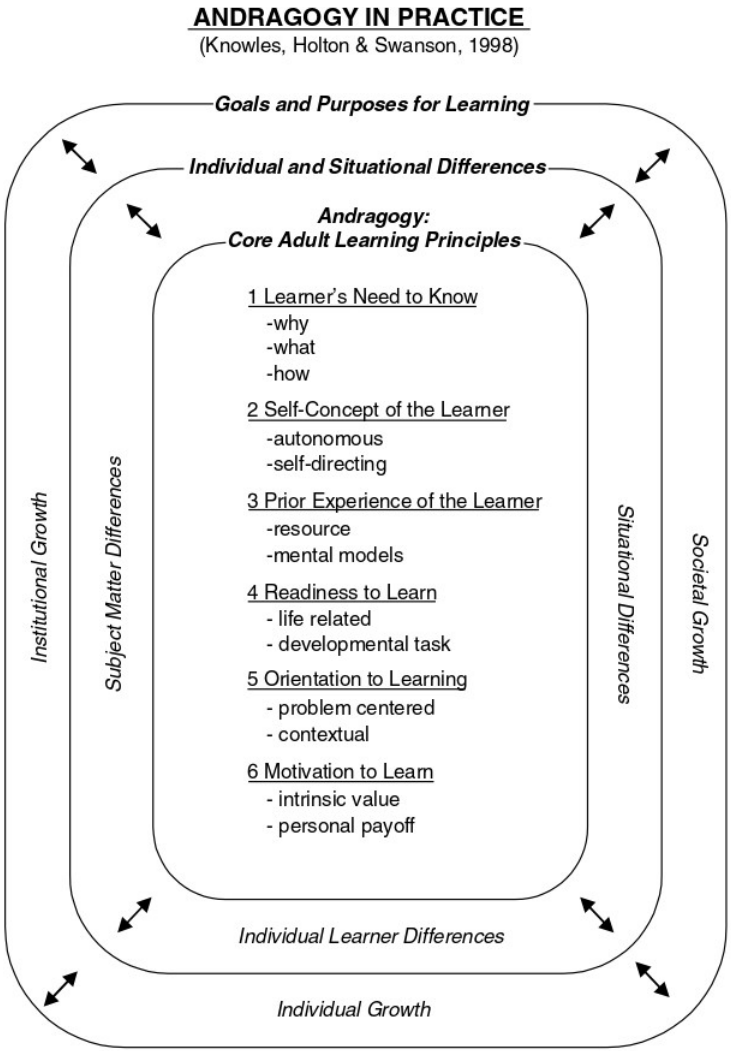

Figure 1. Andragogy Principles in Practice (adapted from Knowles et al., 2005)

confirm that Andragogy promotes autonomy, experiential learning, and problem solving (Knowles *et al*., 2005; Muneja, 2015). However, these studies remain largely parallel, with limited cross-fertilization.

Specifically, three gaps are evident. First, while project management competencies are well defined, little is known about how doctoral students actually acquire and apply them through Andragogical learning. Second, prior research on Andragogy in higher education has rarely addressed its implications for research project management, leaving the intersection underexplored. Third, most existing studies are situated in Western contexts; little empirical evidence exists from non-Western settings such as Vietnam, where doctoral reforms are actively underway.

Vietnam's doctoral education is undergoing reforms that emphasize publication outputs and research capability. In many institutions, doctoral candidates concurrently teach and hold administrative duties, producing high task loads and time competition with research projects. Supervision commonly centers on a single primary advisor, and milestone-based advising practices are uneven across departments, creating variation in structural support. International publishing requirements, academic English demands, and ethics–funding–administrative procedures add complexity to project management.

To address these gaps, this study investigates how Vietnamese PhD students conceptualize, apply, and experience challenges in developing project management competencies through the lens of Andragogy. By situating the analysis

in a non-Western doctoral context, the study contributes theoretically by bridging two distinct studies and practically by offering insights for strengthening research capacity through Andragogy principles.

3. Methodology

This study employed a two-phase qualitative design to explore the application of Andragogy in enhancing research project management competencies among Vietnamese PhD students.

3.1. Phase One: Systematic Document Analysis

The first phase involved a systematic review of peer-reviewed journal articles, conference proceedings, and academic reports to identify andragogical principles relevant to research project management. Sources were selected from the Scopus and Web of Science databases, with inclusion criteria on the basis of (i) explicit discussion of Andragogy or adult learning and (ii) relevance to higher education and project management. This phase provided a theoretical foundation for the interview study.

3.2. Phase Two: Semi-Structured Interviews

The study recruited 15 Vietnamese doctoral students currently enrolled in PhD programs in Vietnam. The sample size was justified based on Guest *et al*.'s (2006) principle of data saturation, which suggests that 12 to 20 interviews are typically sufficient for homogeneous groups. Similarly, Creswell and Poth (2016) recommend 12–20 interviews for phenomenological studies.

All participants shared Vietnamese nationality, had at least one year of active research engagement, and possessed direct experience in planning or managing research projects.

Participant background**:** The disciplines represented were diverse, with five participants from education, four from engineering, and six from the social sciences. Recruitment was conducted through academic networks, doctoral cohorts, and personal referrals to ensure a mix of experiences.

While the sample was diverse across fields, it remained limited. The small number of participants restricts generalizability, the uneven disciplinary spread excluded areas such as natural sciences and medicine, and the concentration in southern universities limits nationwide representation. Thus, findings should be seen as indicative rather than representative, and future studies should involve larger, more varied doctoral cohorts.

3.3. Data collection

The interviews were guided by a structured protocol covering (i) perceptions of project management competency, (ii) experiences applying Andragogy principles, and (iii) challenges in balancing autonomy and structure. The protocol was pilot tested with two doctoral students, leading to the refinement of wording for clarity. The interviews were conducted in person or via online platforms (Zoom, Microsoft Teams, Google Meet) depending on the participants' availability. Each session lasted 35–50 minutes and was audio-recorded with consent.

3.4. Data analysis

The data were analyzed via thematic analysis. Transcripts were first read holistically, followed by open coding to identify recurring patterns. Codes were then clustered into categories corresponding to Andragogy principles (e.g., self-concept, readiness to learn) and project management competencies (e.g., time management, teamwork).

4. Results

4.1. Conceptualizations of Research project management competencies (RQ1)

The interview data show that Vietnamese PhD students conceptualize project management competencies primarily through lived experiences framed by the six principles of Andragogy. While the perspectives varied, all 15 participants highlighted at least one dimension of project management shaped by their doctoral journey.

Overall, across the full sample of 15 participants, the most frequently cited competencies were time management (11 mentions), self-regulation (9 mentions), and mentorship needs (10 mentions). Table 2 presents the distribution of perceptions across Andragogy principles with illustrative quotations.

Table 2. Vietnamese PhD Students' Perceptions of Project Management via Andragogy.

Source: Semi-structured interviews, N = 15; author coding and synthesis by the Andragogical principle.

Andragogy Principle	Key Findings (Themes)	No. of Agreed Participants	Example Illustrative Quotes (IDs)
Need to Know	Importance of project management often realized only after delays or missed deadlines.	10	"I didn't think about project timelines until I started missing deadlines." (P3) ; "Once I experienced delays, I realized how crucial project management is for my research." (P7)
Self-Concept	Autonomy valued, but structured guidance and mentorship seen as essential.	9	"I appreciate the autonomy, but sometimes I need more structured guidance." (P5) ; "Having more guidance at the beginning would have made a big difference." (P8)
Experience	Prior work/industry experience supported adaptation; others relied on trial-and-error.	8	"My experience in industry helped me manage my research better." (P9) ; "It would be great to have a peer support system." (P2)
Readiness to Learn	Competencies developed reactively; wish for earlier training.	7	"I wish I had learned project management competency earlier." (P7) ; "Juggling research, teaching, and personal life made it hard to structure my work." (P11)
Orientation to Learning	Preference for experiential/ problem-based learning over theory.	12	"I learn better when I can apply what I learn to my research directly." (P4) ; "Problem-based learning helped me understand project management better." (P8)
Motivation to Learn	Motivation often triggered by setbacks; inspired by role models.	9	"I became more interested in project management after I encountered research setbacks." (P14) ; "Exposure to well-organized researchers encouraged me to improve." (P6)

Narrative Synthesis: Taken together, the findings suggest that Vietnamese PhD students view project management competencies less as preexisting skills and more as reactive strategies learned through trial-and-error. This finding supports Knowles' (1984) notion that adult learners often recognize learning needs only after real-world consequences. Importantly, while autonomy is valued, structured guidance and peer networks are repeatedly described as essential for sustaining progress.

Interim conclusions for RQ1: Vietnamese PhD students conceptualize project management competencies largely as reactive skills acquired through challenges, trial-and-error, and experiential problem solving. Autonomy is appreciated but insufficient without structured guidance. The students consistently emphasized the value of applied, hands-on learning and indicated that motivation often arose only after they encountered research difficulties.

4.2. Application of Andragogy to Project Management (RQ2)

Both document analysis and interview data revealed that Andragogy principles can be systematically applied to strengthen project management competencies. Across participants, learning was most effective when grounded in experiential and problem-based approaches rather than abstract theory. Although autonomy remained highly valued, the students emphasized the need for scaffolding through structured tools such as research logs, Gantt charts, and milestone reviews.

Table 3 summarizes how each principle of Andragogy was reflected in participants' experiences and identifies corresponding strategies for enhancing research project management. Together, the findings indicate that doctoral programs can foster competencies more effectively by combining autonomy with structured support, embedding training at key milestones, and promoting peer and mentorship opportunities.

Table 3. Application of Andragogy to Project Management Competency

Source: Selected literature and interview data; author synthesis.

Principle	Explanation	Application Andragogy to Enhancing Project Management Competency in Research Projects	Example Illustrative Quotes
Need to Know	Adults learn better when they understand why a skill is necessary (Taylor & Kroth, 2009; Youde, 2018).	• Before engaging in research, Vietnamese PhD students must understand why project management is essential for completing their dissertation successfully. • Institutions should integrate introductory workshops or orientations that highlight the impact of poor project planning on research delays, funding issues, and publication challenges. • Supervisors should emphasize structured research roadmaps from the beginning.	"I wish I had enhanced project management competency earlier, before running into big problems." (P7) "A missed deadline made me rethink everything about how I organize my work." (P4)
Self-Concept	Adult learners prefer to be autonomous and self-directed (Knowles, 1984; Knowles *et al*., 2005; Sethy, 2025).	• Vietnamese PhD students are independent learners, so they should be given control over their research timelines. • Universities can provide project management frameworks while allowing students to tailor them based on their research needs. • Encourage the use of self-monitoring tools (e.g., Kanban boards, research logs) to track progress.	"The freedom was good, but I also needed checkpoints." (P6) "Without structured deadlines, I procrastinated." (P10)
Experience	Prior experiences shape learning; experiential learning strengthens retention (Knowles, 1980; Wozniak, 2020).	• Many Vietnamese PhD students come with industry or academic experience that can be leveraged in project management. • Institutions should encourage peer learning, mentorship, and case study analysis where students apply past experiences to new research challenges. • Research project planning should integrate experiential learning (e.g., analyzing past research failures and successes).	"My industry background gave me tools to manage my research better." (P9) "It would be great to have a peer support system where we can share project management strategies." (P2)
Readiness to Learn	Learning is most effective when it aligns with immediate needs (Knowles, 1972; Knowles, 1980; Taylor & Kroth, 2009; Tomei, 2009).	• Vietnamese PhD students are most ready to learn project management competency when they encounter real research challenges (e.g., data collection hurdles, manuscript submission deadlines). • Universities should offer modular project management training aligned with research milestones (proposal writing, ethics approval, data collection, publication). • Supervisor-led discussions on project risk assessment should be integrated into progress reviews.	"I only started caring about project management when I faced publication delays." (P1) "Juggling research, teaching, and personal life made it hard to structure my work." (P11)

Principle	Explanation	Application Andragogy to Enhancing Project Management Competency in Research Projects	Example Illustrative Quotes
Orientation to Learning	Adults prefer problem-solving over theoretical learning (Hillier, 2005; Gboku & Lekoko, 2007; Moore & Shemberger, 2019).	• Research project management should focus on problem-solving and application, rather than theory-based instruction. • PhD training should include case-based learning, simulations, and real-world project management scenarios (e.g., handling publication delays, ethical approval roadblocks). • Use of project simulation software to train Vietnamese PhD students in managing timelines and resource allocation.	"Problem-based learning helped me understand project management better than theoretical classes." (P8) "I learn better when I can apply what I learn to my research directly." (P13)
Motivation to Learn	Intrinsic motivation (career growth, academic success) drives learning (Graham & Walsh, 1996; Tomei, 2009; Fogelberg, 2023).	• Institutions should link effective research management with career growth, emphasizing how well-managed projects lead to stronger publications, funding opportunities, and networking prospects. • Universities can introduce incentives such as awards for best-managed research projects or funding for well-structured research proposals. • Introduce mentorship programs where postdocs and senior researchers share success stories on how project management influenced their academic careers.	"Exposure to well-organized researchers encouraged me to improve my project management competency." (P6) "I became more motivated after setbacks made me realize project management affects publication success." (P15)

Narrative Synthesis: When mapped against Andragogy, student experiences confirm that (1) the need to know motivates engagement once failures are felt, (2) self-concept works best when autonomy is combined with scaffolding, and (3) orientation to learning is strongest when activities are hands-on and problem-centered (Hillier, 2005; Taylor & Kroth, 2009). These patterns also echo Wozniak's (2020) critique of the gap between theory and practice in adult learning. Together, these insights suggest embedding Andragogical practices – milestone-based training, simulations, and peer mentoring – into doctoral programs to systematically cultivate project-management skills.

Interim conclusions for RQ2: Andragogy can be systematically applied to enhance PhD students' project management competencies by integrating early orientation, structured autonomy, peer learning, milestone-based training, problem-solving activities, and motivational support. These practices align each Andragogy principle

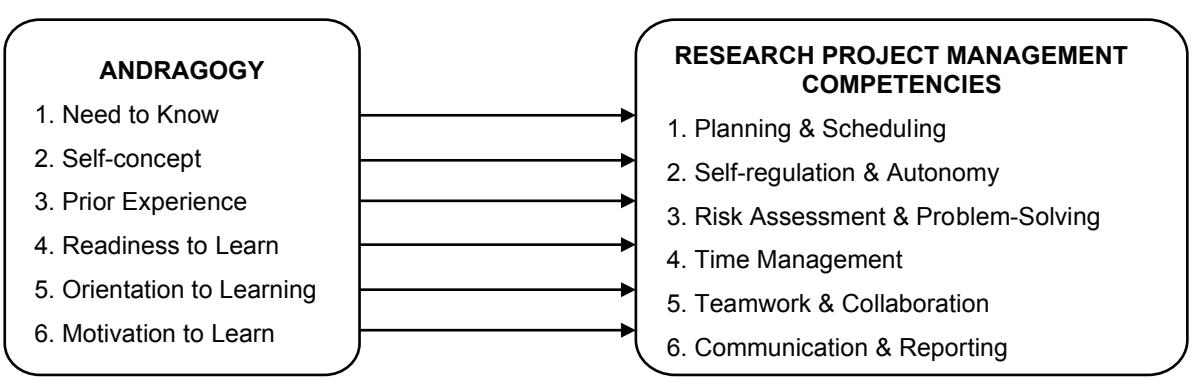

Figure 2. Conceptual Mapping between Andragogy Principles and Research Project Management Competencies (study synthesis).

with specific project management needs. Building on Table 2, Figure 2 provides a visual synthesis that positions Andragogy as a framework for understanding and developing research project management competencies.

4.3. Challenges in Applying Andragogy (RQ3)

Despite recognizing its value, the students reported significant barriers to applying Andragogy principles in practice. One recurrent challenge was the reactive nature of learning. Another common theme was struggles with autonomy and self-regulation. A lack of mentorship and peer support was also widely mentioned. The students further described overload from multiple responsibilities. Finally, the students criticized overly theoretical training.

Narrative Synthesis: The challenges identified fall into six categories: reactive learning, weak self-regulation, insufficient mentorship, competing responsibilities, lack of practical training, and reliance on failure as motivation. Importantly, these barriers align with those of prior studies that criticized the gap between theory and practice in adult education (Wozniak, 2020). The findings suggest that

Table 4. Challenges in Applying Andragogy to Research Project Management. Source: Semi-structured interviews, N = 15; author coding and synthesis by the Andragogical principle.

Theme	Description	Example Illustrative Quotes
Lack of Initial Awareness & Reactive Learning	Many students underestimated the importance of project management until they faced significant delays. Project management competency were often acquired reactively rather than proactively.	"I didn't think about project timelines until I started missing deadlines." (P3) "I only started learning how to manage my research when my progress was already behind schedule." (P6)
Challenges in Self-Regulation & Autonomy	While students valued flexibility in research timelines, many struggled with procrastination, ineffective time management, and inconsistent supervisory expectations.	"Without deadlines from my supervisor, I lost track of time." (P7) "I appreciate the autonomy, but sometimes I need more structured guidance." (P5)
Gaps in Mentorship & Peer Support	Many students lacked access to experienced mentors or peer networks, making it difficult to navigate research project management challenges.	"A mentor could have helped me avoid common mistakes early on." (P10) "It would be great to have a peer support system where we can share project management strategies." (P12)
Overload from Multiple Responsibilities	Balancing coursework, research, and teaching responsibilities overwhelmed students, delaying their ability to learn and apply project management competency effectively.	"I had too many tasks at the same time, so I just kept postponing learning project management." (P5) "Juggling research, teaching, and personal life made it hard to focus on structuring my work." (P9)
Lack of Practical Training & Hands-on Learning	Students found existing project management courses too theoretical, lacking direct application to their research. Many relied on trial-and-error rather than structured training.	"Workshops were about concepts, not real-life research situations." (P8) "I mostly figured out research management on my own by making mistakes and learning from them." (P4)
Fear of Failure as a Motivator	Many students only became interested in project management after encountering setbacks, such as missed deadlines or failed research submissions.	"A missed deadline made me rethink everything about how I organize my work." (P4) "I only started caring about project management when I realized it could impact my publication success." (P1)

without intentional scaffolding, Vietnamese doctoral students experience uneven and often stressful development of project management competencies.

Interim conclusions for RQ3: Challenges include reactive rather than proactive learning, limited self-regulation, insufficient mentorship, competing responsibilities, lack of practical training, and reliance on failure as a motivator. These barriers underscore the need for structured and hands-on training interventions.

5. Discussion

This study provides new insights into how Vietnamese PhD students perceive and apply Andragogy principles in research project management. The findings confirm the relevance of all six principles of Andragogy—need to know, self-concept, prior experience, readiness, orientation, and motivation—but also reveal that their application is uneven and often reactive.

First, the reactive acquisition of competencies observed among participants aligns with Knowles' (1984) argument that adults often recognize learning needs only after they encounter real-world consequences. However, it contrasts with Moore and Shemberger (2019), who argued that structured and scientific interventions can prompt earlier competency acquisition in professional settings.

Second, the tension between autonomy and structure mirrors earlier debates in adult learning. While students valued independence, they also expressed difficulty with self-regulation, confirming that Knowles' (1980) claim that adult learners, although self-directed, still require facilitation. Similar patterns were reported by Kaddoura and Al Husseiny (2021), who reported that learners benefitted most from blended approaches that combine autonomy with scaffolding.

Third, the lack of mentorship and peer support resonates with Wozniak (2020), who identified mentorship as central to competency development in adult learning. This study extends that argument by showing that in Vietnam, the absence of mentorship is not just an individual shortcoming but also reflects systemic gaps in doctoral program structures.

Finally, the limited value of theoretical training alone echoes critiques by Hillier (2005) and Gboku and Lekoko (2007), who argued that adult learners learn most effectively through problem-solving and experiential application. By confirming this in the Vietnamese doctoral context, the study contributes evidence from a non-Western setting, addressing the geographical gap identified by Savicevic (2008).

6. Conclusions

This study explored how Vietnamese PhD students conceptualize and apply Andragogy principles in research project management. Three main conclusions emerge. First, competency development is largely reactive, acquired after setbacks, which highlights the need for structured early training. Second, while students value autonomy, balance with structured guidance is essential to sustain progress. Third, persistent barriers – limited mentorship, heavy workloads, and overly theoretical training – constrain the effective application of Andragogy.

The study makes three contributions. Theoretically, it bridges adult learning theory and project management, showing how Andragogy can explain doctoral competency development. Empirically, it provides rare evidence from a non-Western context, extending debates beyond the Western-centric literature. Practically, early orientation, structured yet flexible supervisory frameworks, and milestone-based training are recommended.

For Vietnam's ongoing doctoral reforms under Project 89, these findings suggest that integrating Andragogical strategies is essential for building a competitive research workforce. Internationally, this study offers insights for enhancing doctoral education in contexts facing similar challenges.

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