



Student Teachers' Readiness for Adult Education in Alignment with  
Egypt's 2030 Agenda: A Quasi-Experimental Study Through the Lens of  
the Concerns-Based Adoption Model (CBAM)

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## ABSTRACT

This quasi-experimental study explores student teachers' readiness for adult education through the lens of the Concerns-Based Adoption Model (CBAM), aligning with the 2030 Agenda for Sustainable Development, particularly focusing on lifelong learning (SDG 4). A total of eighty-one student teachers, representing both theoretical and scientific majors, participated in the study. The cohort included a mix of students from urban and rural areas. The study utilized both quantitative (pre- and post-surveys) and qualitative (pre- and post-course interviews) methods to examine the impact of a Philosophy of Adult Education course on student teachers' attitudes toward adult education. Statistical analysis revealed significant improvements in student teachers' cognitive, emotional, and behavioral attitudes toward adult education. The cognitive component showed substantial changes, particularly in perceptions regarding older adults' ability to expand their knowledge. The emotional component reflected notable improvements in student teachers' motivation and engagement with adult learners, while the behavioral component indicated a growing readiness to advocate for and design educational programs for older adults. The study found no significant differences in attitudes based on gender, major, or residence, indicating that the course effectively influenced all participants. Qualitative interviews revealed a shift in student teachers' views of older adults as active learners, with many expressing increased interest in collaborating with older adults in future educational settings. The results highlight the significance of teacher preparation in promoting a positive and proactive approach to adult education, contributing to the broader objectives of lifelong learning within the framework of the 2030 Agenda.

### Keywords

Student Teachers, Readiness for Adult Education, Egypt's 2030 Agenda, Concerns-Based Adoption Model (CBAM).

## مستخلص

### جاهزية الطلاب المعلمين لتعليم الكبار اتساقاً مع رؤية مصر ٢٠٣٠: دراسة شبه تجريبية في ضوء نموذج التبني القائم على الاهتمامات (CBAM)

تهدف هذه الدراسة شبه التجريبية إلى استقصاء مدى جاهزية الطلاب المعلمين لممارسة تعليم الكبار، من خلال توظيف نموذج التبني القائم على الاهتمامات (CBAM)، وذلك في سياق الالتزام برؤية مصر للتنمية المستدامة لعام ٢٠٣٠، والتركيز بوجه خاص على الهدف الرابع المتعلق بتعزيز فرص التعلم مدى الحياة، وشملت عينة الدراسة ٨١ طالباً وطالبة من تخصصات علمية ونظرية، يمثلون بيانات حضرية وريفية، مما أضفى تنوعاً ديموغرافياً وثقافياً على العينة. اعتمدت الدراسة منهجين تكامليين: منهجاً كمياً تمثل في تطبيق استبيانات قبلية وبعديّة، ومنهجاً نوعياً تمثل في إجراء مقابلات قبل وبعد تدريس مقرر "فلسفة تعليم الكبار"، وذلك بهدف تقويم أثر المقرر على اتجاهات الطلاب المعلمين نحو تعليم الكبار. أظهرت النتائج الإحصائية تحسناً ملحوظاً في الاتجاهات المعرفية والعاطفية والسلوكية للمشاركين تجاه تعليم الكبار، فقد كشفت البيانات عن تطور ملموس في الوعي المعرفي لدى الطلبة، خاصة فيما يتعلق بإدراكهم لقدرة كبار السن على الاستمرار في التعلم وتوسيع معارفهم، كما ظهر تحسن في البعد العاطفي، تمثل في ارتفاع مستويات الحماسة والدافعية للتفاعل الإيجابي مع المتعلمين الكبار، أما على المستوى السلوكي، فقد برزت مؤشرات دالة على استعداد المشاركين للدفاع عن حق كبار السن في التعليم، والمساهمة الفعلية في تصميم وتنفيذ برامج تعليمية مخصصة لهم. وبالإضافة إلى ذلك، لم تُظهر النتائج فروقاً ذات دلالة إحصائية في الاتجاهات استناداً إلى النوع الاجتماعي، أو التخصص الأكاديمي، أو مكان الإقامة، مما يدل على فعالية المقرر في التأثير الإيجابي على مختلف فئات الطلبة، كما كشفت المقابلات النوعية عن تحول نوعي في نظرة الطلاب المعلمين نحو فئة كبار السن، وتنامي رغبتهم في التعاون معهم في السياقات التعليمية المستقبلية، وتبرز هذه النتائج أهمية تطوير برامج إعداد المعلمين بما يعزز من فهمهم لدور تعليم الكبار، ويدعم نهجاً إيجابياً واستباقياً نحو التعلم مدى الحياة، بما يتماشى مع أهداف التنمية المستدامة لعام ٢٠٣٠.

## الكلمات المفتاحية

الطلاب المعلمين، الجاهزية لتعليم الكبار، رؤية مصر ٢٠٣٠، نموذج التبني القائم على الاهتمامات.

## 1. Introduction

In a rapidly evolving and profoundly inequitable world, lifelong learning is emerging as a crucial organizing principle for all educational forms and an essential requirement for all individuals. It is especially crucial for those from marginalized backgrounds that have been excluded from or have not attained fundamental abilities through formal education. Conceptually, Adult learning and education (ALE) serves as a significant enabler, providing adults with the competencies and information required to adapt to swift transformations. In the contemporary world, influenced by global issues such as the digital revolution, climate change, economic transformations, and escalating violence, adult learning and education facilitate learners' adaptation to crises while simultaneously empowering them as agents of transformation (UNESCO, 2025).

In the context of lifelong learning, reading as well as numeracy are regarded as fundamental abilities essential for basic education and crucial for comprehensive societal engagement. The significance of education for the 2030 Agenda is recognized in the six reforms necessary to achieve the Sustainable Development Goals (SDGs) according to Sachs et al. (2019). The initial transform underscores the necessity over three categories of intervention strategies: (1) advancing education, (2) achieving gender equality, along with (3) mitigating inequality. The interconnection of sustainability problems among the SDGs means that the execution of Goal 4, regarded as a key mechanism for the entire 2030 Agenda, might impact the achievement of the remaining SDGs (Filho et al., 2018).

Education for Sustainable Development (ESD) can support the long-lasting influence of the Sustainable Development Goals along its social aspect, which facilitates cultural reproduction as well as a comprehensive understanding of knowledge. Although recognized in Target 4.7, the indicators lack sufficient precision to effectively illustrate accomplishments in ESD. Consequently, within the prerequisites for Education for Sustainable Development ESD and the Sustainable Development Goals SDGs framework, intrapersonal competencies as well as a focus on non-formal learning are essential for success within the frameworks of ESD and the SDG (Giangrande et al. 2019).

The Agenda for 2030 promotes sustainability research by focusing on sustainable development themes. Research on Education for Sustainable Development, a fundamental component of Sustainable Development Goal 4 (SDG 4), becomes increasingly vital for evaluating education's impact on each of the goals.

Nonetheless, the ambiguity of ESD effect as well as the intricate, indivisible nature of the Agenda for 2030 heightens the necessity for comprehending these relationships, which can be accomplished by mapping along with quantifying the interconnections between the Goals as well as Targets in particular circumstances. The SDG Summit during Sept 2019 emphasized the necessity for novel scientific research and its applications to particular local or regional settings to leverage Goal synergies as well as extend considerations beyond 2030 (UN 2019).

### 1.1. Context of the study

In line with global and regional education agendas, lifelong learning has become a national priority in Egypt, particularly in relation to reaching the Sustainable Development Goals (SDGs), specifically SDG4, which emphasizes the importance of quality, equitable, and inclusive education for all. Drawing inspiration from international frameworks such as the Europe 2030 strategy, which highlights education as a critical lever for economic recovery and social inclusion, Egypt has begun integrating lifelong learning principles into its national education strategies. Human capital theory states that competencies depreciate over time unless updated - a belief that is particularly relevant in today's constantly changing knowledge economy (Muñoz et al., 2013). In this respect, lifelong learning is a prerequisite to serious improvement both in human and national economies as well as in societies. Promoting adult learning opportunities in Egypt is thus a crucial pathway to enhancing employability, reducing inequality, and fostering active citizenship in alignment with the 2030 Agenda.

The Egyptian Adult Education Authority issued new quality guidelines for adult education in Egypt in October 2024, also with support from the UNESCO International Institute for Lifelong Learning as well as the UNESCO Cairo Office. These guidelines aim to enhance the outcomes of adult education activities and programmes nationwide. Accompanying the guidelines are comprehensive training manuals designed for adult education facilitators, trainers, managers, and supervisors (UNESCO, 2024). The development of these guidelines reflects Egypt's commitment to professionalizing adult education, improving the training of facilitators, and integrating adult learning into lifelong learning strategies, aligning with the Sustainable Development Goal 4 agenda. Notably, the guidelines emphasize learner-centered, flexible approaches that resonate with the reflections of preservice teachers in this study, many of whom recognized the

importance of adaptive methods and community engagement when working with older adult learners.

Furthermore, the national reform efforts underscore the importance of shifting societal perceptions of adult education - from being remedial and marginal to being central to development and inclusion. This shift directly supports the observed transformation in student teachers' attitudes, particularly their increased emotional and behavioral readiness to teach older learners. Teacher readiness encompasses the knowledge, skills, and attitudes necessary to effectively implement educational practices. The importance of teacher preparation is emphasized by the idea that teacher qualifications are critical drivers that influence the hearts as well as minds of generations. This perspective resounds with CBAM's emphasis on addressing individuals' concerns as one of the critical steps in successfully implementing educational innovations, and emphasizes that educators understand themselves - their strengths and values, their professional identity - before guiding others.

## Theoretical framework

The Concerns-Based Adoption Model was used in this research to investigate the preparedness of student teachers for adult education in accordance with the 2030 Agenda. CBAM offers a logical means of examining and responding to individuals' concerns and making it suitable to the current research condition (Gabby et al., 2016). The framework suggests learners experience distinct levels of concern as they meet as well as enact educational innovations. These stages highlight the progression of development from self-concerns to task concerns and then to influencing concerns (Trapani & Annunziato, 2018). Therefore, knowing where student teachers are situated on this continuum could reveal insights into their capacity to translate adult education practices in response to the 2030 Agenda.

The principal socialization agents significantly influence teachers' views (Elwakil, 2024), especially regarding non-traditional learners like adults. This is especially relevant in adult education, where educators must often challenge ingrained beliefs and adopt flexible, learner-centered approaches. Higher education entities have to equip learners to fulfill the needs of a progressively technology-oriented world (Elwakil, 2022), specifically future teachers who will



navigate environments of adult learning. The Concerns-Based Adoption Model, which emphasizes the individual and acknowledges the stages of acceptance that educators need to traverse to successfully implement educational innovations, can shed light on this context. However, for student teachers involved in adult education, readiness needs to transcend from just the pedagogical knowledge (or what they know) to include an understanding of their own values, assumptions and attitudes. Indeed, as Elwakil (2023) highlights, teacher qualifications are key contributors that make a difference in the hearts and minds of generations for decades to come; therefore, reflective and value-oriented preparation is paramount in this transformational space.

Furthermore, CBAM's emphasis on the *"people engaged in the change process"* corresponds with the study's focus on student teachers as future implementers of adult education. As deduced from Hall & Hord (1987), *"facilitating change entails comprehending the current attitudes and perceptions of participants,"* underscoring the importance of assessing student teachers' concerns and readiness.

As described in the UN Sustainable Development Goals Report (2022), there is an urgent call to intensify global efforts to achieve the SDGs and uphold the commitment to creating a peaceful, dignified, and prosperous world that thrives on a healthy planet. Target 4.7 mandates that all learners attain the knowledge and skills essential for fostering sustainable development, encompassing an appreciation of cultural diversity and its role in sustainable development.

### 1.3. Adult Education in the Context of the 2030 Agenda

Adult education entails the instruction and learning processes of adults (Yusuff et al, 2025). UNESCO states that the primary objectives of adult education are diverse and based on fostering both individual and societal advancement. According to UNESCO's 2015 Recommendations on Adult Learning and Education, the ultimate goal is to empower adults for full participation in society as well as the labour market. This is achieved by equipping individuals with the skills needed to claim as well as exercise their rights and empower them to take charge of their futures and promote personal as well as economic growth. Adult education is conceptualized as a key tool for promoting sustainable and equitable economic development, poverty reduction, promoting well-being, and building sustainable learning communities. UNESCO delineates three primary categories of adult education: literacy and foundational skills; ongoing education and

vocational skills; and liberal, popular, and community education with civic competencies. These spaces are designed to support people in developing critical questioning, agency and responsibility, and engagement in their community and environment (ICAE, 2017).

Egypt's Vision 2030 integrates adult education as a core tenet of its human development strategy, with systemic reforms targeting literacy gaps and workforce alignment with sustainable development goals. As part of its national strategy, eradicating illiteracy among adults aged 15-35 from 28% in 2015 to absolute zero by 2030 through nationwide campaigns and community education programs. This is in line with SDG4 on inclusive education, especially by making education available to out-of-school youth through flexible learning streams and social protection programs designed to increase low school attendance regardless of the level and reduce under-18 dropout rates from 6% to 1% (The Ministry of Planning, Monitoring, and Administrative Reform, 2016).

According to the UN Economic and Social Commission for Western Asia ESCWA (2024), technical education reforms under Vision 2030 aim to increase the percentage of graduates working in their field from 30% to 80% by 2030 through private sector partnerships and standardized certification frameworks. In a bid to close the skills gaps, the Egyptian National Qualifications Framework has been introduced, and 1,929 technical schools are engaging in teacher capacity-building programs to lower student-teacher ratios from 38:1 to 30:1. But challenges persist - especially considering that public spending on pre-university education has stalled at 3% of GDP, significantly away from at least 8% needed for infrastructure improvements. The implementation of digital transformation under the Education Sector Plan 2023-2027 is a key factor towards scalable adult education and a hybrid learning model for grades 10-12 as a pilot for larger adult education scalability. Monitoring mechanisms established under the Education Sector Plan aim to track progress, with interim targets set for 2025 to assess literacy campaign effectiveness and technical education alignment with labor market needs.

The 2030 Agenda of Action for Sustainable Development underscores the need of lifelong learning for achieving sustainable development as well as quality education. The 2015 UN Sustainable Development Goal 4 (SDG4) recognizes the importance of promoting lifelong learning opportunities for continuous learning



for all, recognizing that education must extend beyond traditional primary, secondary, and tertiary institutions (Webb et al., 2019).

To accomplish the SDGs in education and learning, global collaboration among communities, sectors, and stakeholders is essential. Effective "multi-stakeholder" partnerships are necessary to drive change at the national, regional, or local levels. Innovative modalities of collaboration, social coalitions, advocacy, and mobilization must be established and executed. Accessible solutions at the local level are not readily available. To implement Agenda 2030, governance, accountability, integration, monitoring, examination, reporting, and evaluation systems are needed at national, regional, and global levels. Enabling tactics, such as new collaborations and finance models, will be necessary to get things done, despite their ambiguous meaning (Evans, 2019).

Adult learning includes all formal, non-formal, and informal education undertaken by adults after their first education and training, aimed at either professional development (such as re-skill and up-skill) or personal interests (e.g., cultural, artistic, and societal learning) (European Commission, 2013). The specified agenda notably prioritizes marginalized groups, including low-skilled individuals as well as fresh school leavers, and promotes a holistic strategy for adult education: improving accessibility for everyone, investing in guidance and validation frameworks, and allocating responsibilities while maintaining public accountability. Moreover, it underscores the significance of investing in workplace education, recognizing the advantages of lifelong learning, and promoting intergenerational learning (Muñoz et al., 2013).

In addition, the post-pandemic economic recovery has underscored the importance of upskilling and reskilling initiatives, particularly in regions facing high youth unemployment and skill mismatches, such as North Africa. Egypt's Vision 2030 and its alignment with the SDGs have further prompted national policies aimed at integrating lifelong learning strategies into public education reforms. However, challenges persist, including limited digital infrastructure in rural areas, linguistic barriers in global OERs, and a continuing need for learner guidance and motivation support. In this context, modern adult learning ecosystems must not only expand access but also design support systems that are responsive, inclusive, and aligned with both local realities and global demands.

According to Shulla et al., (2020), the core of ESD revolves around its implementation throughout all tiers of formal, non-formal, as well as informal education as a fundamental component of continuous learning. Formal education is defined by the International Standard Classification of Education as the educational process that takes place within a nation's educational system and is characterized by institutionalization, intentionality, and planning. This process is facilitated by public organizations and accredited private entities. Within the lifelong learning framework, non-formal education functions as a substitute for formal education, ensuring universal access without formal acknowledgment by educational authorities. Conversely, informal education encompasses unstructured and less organized learning experiences that transpire outside institutional settings, including daily life activities pursued autonomously or socially.

Recent discourse on adult education has emphasized the need to (re)conceptualize literacy as an integral part of lifelong learning systems, rather than a stand-alone skill. Hanemann & Robinson (2022) argue that although literacy is universally acknowledged as essential for cutting- age learning society, there is still a lack of consensus on the comprehensive implementations of a lifelong learning agenda in both policy as well as practice. Their framework - viewing literacy as a continuous, life-wide, and system-integrated activity - offers a comprehensive foundation for rethinking adult learning in alignment with SDG 4.6. They stress that literacy must be embedded across all life stages and learning modalities and that learning opportunities must reflect the social, cultural, and economic realities of learners. Importantly, the authors point out persistent gaps, including the absence of integrated strategies, low political prioritization of adult literacy, and a tendency to focus on basic education for children while neglecting adult learners. These challenges are highly relevant to the Egyptian context, where lifelong learning strategies are emerging, yet systemic integration remains limited. For student teachers preparing to work in adult education, understanding literacy through this expanded lens is critical. It equips them not only to deliver content but also to recognize literacy as a dynamic, socially embedded tool for empowerment and inclusion - consistent with the broader goals of sustainable development and educational equity.

#### 1.4. Reframing Literacy Through the Lens of Lifelong Learning

Literacy often denotes an array of competencies and activities involving writing, reading, as well as numerical usage as facilitated by texts. The acquisition, preservation, and ongoing enhancement of literacy skills constitute an essential element of one's right to education, as acknowledged according to the Universal Declaration of Human Rights (UN,1948), serving as a core objective of basic education. Simultaneously, its fundamental nature renders it an inherent right that enables the realization of all other human rights. Moreover, as a social activity, literacy possesses the capacity to augment individuals' capabilities and agency in the quest for freedom, enabling them to interpret and alter their living circumstances (Maddox, 2008; Markauskaite et al., 2022; Valladares, 2021).

UNESCO's (2008) paradigm, "Literacy for All: Making a Difference," posits that literacy is an essential human, social, and economic asset, applicable at both individual and global levels. These dimensions echo the four pillars of education put forth by UNESCO: acquiring knowledge and to do, to be and to live together - in addition to a fifth transformation pillar of "learning to transform". It classified the functions of literacy across different domains - for self-confidence, autonomy, citizenship, participation, empowerment, social inclusion, and poverty reduction - demonstrating how the same literacy can, therefore, promote both personal development, civic engagement, equitable societies and economic growth (see **Fig.1**). This holistic understanding of literacy highlights its foundational importance for progress toward Sustainable Development Goal 4, in particular, targets oriented towards access to outstanding education, inclusion and lifelong learning. Contextualizing this framework within Egypt can trig to assess how literacy policies and teacher training programs can legitimize inclusive and transformative adult education practices. This is all a helpful conceptual framework in which this study aims to understand how prospective teachers perceive the broader social implications of literacy, especially during the candidate's transition to prepare for servicing multiple adult learners across complex settings.

Asset Function	Human: Learning TO BE	Political: Learning TO LIVE TOGETHER, AND TRANSFORM	Social: Learning TO KNOW	Economic: Learning TO DO
	Self-confidence Autonomy Personal development Inclusion Access to information Freedom	Democracy Citizenship Participation Empowerment Nation-building Human Rights Peace	Literate societies Gender equality Multi-cultural inclusion Education- EFA Improved Health Fertility control	Poverty reduction Livelihoods Growth Productivity
Level				
Individual				
Family				
Community				
National				
Global				

**Fig.1. Matrix of Literacy represents a Potential Human, Political, Social, and Economic Asset at various Levels (UNESCO, 2008, P. 78)**

Definitions and notions of literacy have evolved alongside emerging social as well as educational theories, and also with technological advancements, reflective of the intricate and globalized contexts of the 21st century. The transformations in the economic notions, labor dynamics, media functions, digitization, as well as societal dynamics have significantly elevated the relevance of literacy for the citizens in comparison to previous generations. The growing volume of information, particularly online, along with the necessity to discern as well as utilize knowledge from many resources pose significant challenges for individuals with inadequate core abilities (Hanemann 2015).

To elucidate the concept of an extended vision of lifelong literacy while analyzing contemporary trends, I draw upon the analytical framework proposed (Hanemann 2015, 302-304). It delineates three interconnected analytical dimensions: literacy as a lifetime learning endeavor, literacy as a life-wide learning experience, and literacy as a fundamental element of holistic, sector-wide, and cross-sector reforms targeting lifelong learning ecosystems;

(1) *The concept of literacy as a lifelong learning process* emphasizes the importance of recognizing improvement, enhancing, or preservation of literacy skills as an ongoing educational journey that transpires before, during, and after formal schooling, both within and outside educational institutions, as well as formal, non-formal, along with informal learning modalities. This necessitates

solutions that facilitate flexibility in advancement for learners across various competency stages and offer alternate pathways, thereby promoting continuous learning.

(2) *Literacy, as an extensive learning process*, entails utilizing various resources that function as literacy-enhancing environments and offering opportunities to practice skills at home, in the workplace, within the communities, via media, online, in libraries, along with numerous other public as well as private settings. Enhancing the need for the aspect of a "literate ecosystem" involves associating literacy with the social, cultural and economic, pursuits that individuals aspire to as well as require for their everyday existence.

(3) *Addressing literacy within a comprehensive framework of universal, sector-wide, and cross-sector reform aimed at continuous learning systems* necessitates concurrent efforts on multiple fronts as well as across various age demographics, while reinforcing prevention strategies to ensure inclusivity. It necessitates the establishment of adaptable institutionalized learning systems that facilitate education throughout all life stages and diverse circumstances (Hanemann, 2015).

## 1.5. Key Theories Shaping Adult Education Practices

### 1.5.1. Andragogy: A Foundation for Understanding Adult Learners

Andragogy aids educators and trainers in comprehending adult learning, it is a paradigm based on humanism that, according to Knowles (1980), has concepts relevant to the majority of adult education contexts. Knowles et al. (2020) assert that Andragogy serves as a foundational framework of principles guiding adult education. The six pillars of andragogy are: (1) the learner's need for knowledge, (2) the learner's self-perception, (3) the learner's previous experiences, (4) the learner's readiness to learn, (5) the learner's learning orientation, and (6) the learner's drive to learn. These concepts are applicable to all adult learning contexts, provided they are evaluated with other relevant aspects inherent to the circumstance. Adults should get acceptance, respect, and support, since there is a spirit of mutuality between educators as well as learners as co-inquirers (Knowles, 1980). As education progresses, learners go from reliance to autonomy. Throughout this educational journey, learners necessitate support that may be offered by instructors (Grus et al., 2024).



### 1.5.2. Social Capital Theory: Building Educational Value Through Relationships

Social capital theory asserts that relationships and social networks are essential resources for individuals, allowing them to obtain support, information, and opportunities in their communities (Kumi & Sabherwal, 2018). One that plays a dual role within adult learning; it influences adults' engagement within learning and it is also enhanced through engaging in educational activities. According to Cocquyt et al. (2017), participating in education can help adults to widen their existing social networks, hence introducing new connections that can provide them with emotional and practical support leading to greater levels of social inclusion and belongingness. These new connections - known as "bridging" and "bonding" social capital - provide adults with access to information, resources, and opportunities that may not otherwise be available to them, especially for vulnerable groups like ethnic minorities, the unemployed, or people with lower educational attainment. In addition, adult education leads to wider social capital outcomes that include greater civic engagement, tolerance, and positive attitudes towards diversity and social cohesion. Research relates participation in adult learning to greater civic engagement (eg, voting and joining community organisations) and to changes in social and political attitudes, which can promote social cohesion (Feinstein and Hammond, 2004). The association is thus a two-way relation – social capital motivates and enables adults to learn, whereas participation in adult education can foster and reinforce social capital at the community level (Taylor, 2011).

### 1.5.3. Social Learning Theory: Learning Through Observation and Experience

Social learning theory, formulated by Bandura, suggests that adults acquire novel behaviors, skills, and attitudes through social observation and imitation, placing modeling and imitation at the core of the learning process (Bandura & Walters, 1977). In adult education, this signifies that learning is not simply an individual cognitive process but is inherently shaped by social interaction, shared activities, and collective engagement (Niewolny & Wilson, 2011). Observational learning enables adults to quickly acquire new competencies by observing peers or facilitators, particularly when the role models appear relevant for the learner, increasing the effectiveness and efficiency of adult learning environments (Buritica et al., 2024). Diagonal social learning approaches in adult education promote social constructivism as well as the development of a sense of



community, enhancing engagement and supporting knowledge building through conversation and collaborative problem solving (Chuang, 2021). Peer learning, a practical implementation of social learning theory, has been proven to contribute greatly to the retention of knowledge and engagement of learners in adult education programs, leveraging group dynamics and mutual aid (Cherrstrom et al., 2017). Fourthly, social learning theory offers a theoretical foundation for understanding how adults learn through interactions as well as observations with others and highlights the importance of collaborative learning across adult education, which it suggests when designing learning experiences for adults, one must consider how these aspects can be integrated.

#### **1.5.4. Personal Investment Theory: Motivating Adults Through Purpose and Identity**

The theory of personal investment provides a guiding framework for analyzing adult learning motivation by exploring the forces that lead adults to allocate time, energy, and resources to learning (Maehr & Braskamp, 1986). However, the theory advances a more dynamic conception of motivation, arguing that it is shaped by subjective meaning, a product of three core components; facilitating conditions, sense of self as well as perceived goals (King et al., 2019). Therefore, supportive conditions refer to the social and contextual environment that supports or inhibits adults' pursuit of learning (e.g., family, peers, workplace) (McInerney et al., 2005).

Conceptually, sense of self is related to how adults view their skills, identities, and values in the learning context, and it influences their Openness-to-Experience and willingness to persevere through challenging learning contexts (Maehr & Braskamp, 1986). The perceived goals are the personal and social purposes, including mastery, performance, social, and extrinsic goals of the learners within cultures and life stages (Torres & Beier, 2018). Adult learners tend to be more immersed and persistent when they see the personal relevance and value in what they are doing, and the surrounding atmosphere enables their interest to flourish (McInerney et al., 2005). Conceptually, personal investment theory highlights the interplay of individual effort, social setting, and intended outcomes as crucial factors in adult learning, providing crucial guidance to adult educators in planning motivating, supporting education programs.

### 1.5.5. Transformation Learning Theory: Facilitating Change Through Reflection

The transformative learning theory, initially proposed by Jack Mezirow, is an essential theory for adult education that indicates the process of how adults will review and change their beliefs, assumptions, and perspectives of the world when there is an altogether new experience or disorienting dilemma that happens (Mezirow, 1997). Critical reflection is at the heart of transformative learning: adults are invited to name and question previously unquestioned assumptions, which causes frames of reference to change and becomes the basis for more autonomous, inclusive, and epistemologically critical thinking (Liu, 2020). Transformative learning means not only learning but also changing the way in which adults make sense of and engage in the world, leading to increased self-awareness and development (Jaakkola et al., 2022). Indeed, in practice, which pedagogical approaches in adult education can promote transformative learning and support shifting of perspectives are typically those that foster dialogue, critical self-reflection, and participatory, learner-centered activities (such as discussion groups, case studies, drama, storytelling etc.) (McCoy-Wilson, 2019). These approaches create settings in which adults can safely question their own and others' assumptions, which is the key to transformation. This represents the main reason of why this theory is the basis of adult education because it enables learners to respond to complex social transformations and be more responsible and engaged citizens.

### 1.6. Teacher education and student teachers' attitudes towards adult education

Within a knowledge-based society, adult learning is essential for personal, professional, and social development. Adult education seeks to provide individuals as well as communities with the training and skills to develop and continue to navigate a rapidly changing world driven by technological advancements and evolving methodologies, through which individuals can foster adaptability and maintain competitiveness in the job market (Edwards-Fapohunda, 2024). The application of adult learning not only improves individual competencies but also fuels economic growth through innovation, productivity enhancement, and entrepreneurship (Biney, 2023). Education is, additionally, a fundamental device for addressing socio-economic inequalities, particularly for

marginalized individuals, by opening up access to education that can facilitate their full participation in society (Chari, 2024).

Adult education is an inclusive and expansive learning process that supports individual growth in various aspects of life, including professional skills, personal development, social awareness, and digital literacy, while also promoting societal well-being through flexible, participatory learning methods tailored to the experiences and needs of learners, fostering active engagement, social inclusion, and informed citizenship (Leyla, 2025). Beyond professional skills, adult education promotes personal growth, self-esteem, and an attitude of lifelong learning, which is fundamental for permanent social development (Mejía-Manzano et al., 2022). This is a culture of lifelong learning - the thirst as well as aptitude to know more, to do more which drives humans to better and better decisions throughout their lives, and within their environments, and at work. This has led to a need for upskilling through adult education, which plays an essential part in addressing the most critical skill shortages that can be barriers to economic growth as sectors evolve in a rapidly evolving employment landscape (Leyla, 2025). Through enhancing decision-making, critical thinking, and problem-solving capability, adult learning also nurtures an engaged and informed citizenry poised to support sustainable development goals of the 2030 Agenda.

As Egypt moves toward embedding adult education into broader lifelong learning policies, the role of teacher preparation programs becomes increasingly vital to operationalize these goals on the ground. These developments suggest that the current study is not only timely but also contributes valuable evidence to support the policy-practice nexus in Egypt's adult education landscape. By capturing how student teachers can be sensitized and equipped to engage with older learners, this research complements Egypt's strategic priorities and the global education community's focus on inclusive, lifelong learning for all. Moreover, the study explores how teacher preparation programs can play a key role in addressing the challenges and opportunities of adult education in line with Egypt's 2030 Agenda. What distinguishes this study is its focus on student teachers in the Arab context, where adult education is still an emerging field in teacher preparation. Thus, it adds a valuable regional perspective to the global discourse on integrating adult education into formal training programs.

### 1.7. The Concerns-Based Adoption Model

The current study chose the CBAM due to its incorporation of both Change Theory (Hall, 1976) as well as Concern Theory (Fuller, 1969). Change Theory posits that educators can evolve their methods for instruction and perspectives over time; Concern Theory emphasizes the acknowledgment and articulation of a teacher's pedagogical concerns. Conceptually, the model emphasizes three essential assumptions: (1) change remains a process rather than a mere event; (2) a change holds no significance until people within the organization adopt the innovation; and (3) change is subjectively experienced, personal, and encompasses emotions as well as perceptions. The term innovation encompasses several forms of change, including alterations to curricula, modifications in instructional methods as well as educational reforms (Hall, 2013). In the current research, innovation refers to the readiness for adult education.

The literature on CBAM identifies 12 principles of change to facilitate the adoption of new programs. Conceptually, change is characterized as a process rather than a singular event, recognizing how humans progressively comprehend and get more proficient in utilizing the new method over time. Another fundamental tenet of the model is that intervention strategies are crucial to the effectiveness of the transformation process. Although the twelve principles highlight consistent patterns of change, these two principles act as the catalyst for this research. Recognizing that the implementation of innovation is a process and that intervention strategies can effectively shape the trajectory and pace of change necessitates the assessment and monitoring of this process to ensure that support is advantageous to users.

The concerns-based adoption model encompasses three pillars for analyzing change processes: (a) stages of concern (SoC), which examines the personal aspects of change; (b) innovation configuration (IC), which delineates the fundamental elements of the action; and (c) levels of use (LOU), which characterizes the actions associated with the innovation. The subsequent discussion will address each of these tools, with the findings section primarily concentrating on data acquired and analyzed for SoC, while also placing secondary emphasis on data gathered as well as interpreted for the IC as outlined in CBAM.

### 1.7.1. Stages of concern

The CBAM framework has proven to be a viable tool commonly utilized in the implementation of new innovations, particularly in educational reforms (Anderson, 1997; Chen and Jang, 2014). Conceptually, the seven phases of concern (SoC) that teachers face while adapting innovation are described in the model framework (Anderson, 1997; Hall and Hord, 2011; Khoboli and O'toole, 2012).

Emotions and perspectives around a change/reorientation are grouped into seven varieties of concerns which are awareness, informational, personal, management, consequence, collaboration and refocusing. They are separate levels of concern and their related emotions and attitudes. Stage 0 (Awareness) entails minimal engagement or interest in the new program. Stage 1 (Informational) indicates a desire to acquire further knowledge regarding the new program. Stage 2 (Personal) conveys apprehension on the personal obligations as well as the ramifications of the new program, especially possible conflicts with individual commitments. Stage 3 (Management) emphasizes the administration, scheduling, and temporal requirements of the new program. Stage 4 (Consequence) focuses on the effects of the new curriculum on students. Stage 5 (Collaboration) signifies a desire to coordinate and cooperate with others in the new program. Stage 6 (Refocusing) entails examining supplementary advantages of the new program, together with the potential for modifications or substitution with an alternative (Chen and Jang, 2014).

The seven stages tend to be categorized into three sub-stages: (1) personal issues (Awareness, Information, and Personal), (2) task concerns (Management), along with (3) impact concerns (Consequences, Collaboration, and Refocusing). Teachers may concurrently experience multiple stages of concern at varying intensities. However, as a teacher gains experience and proficiency with a reform, the intensity of earlier stages will diminish, while the strength of advanced stages (Consequence, Collaboration, and Refocusing) will escalate (Hall and Hord, 2011; Chen and Jang, 2014). The initial phases of apprehension define educators lacking experience across the innovation and are worried about its effects on themselves. The next stages of worry concentrate on the repercussions,



implications, along with superior alternatives presented by the innovation. During these phases, the educator inquires about methods to enhance and optimize the advantages of the innovation (Gabby et al., 2016).

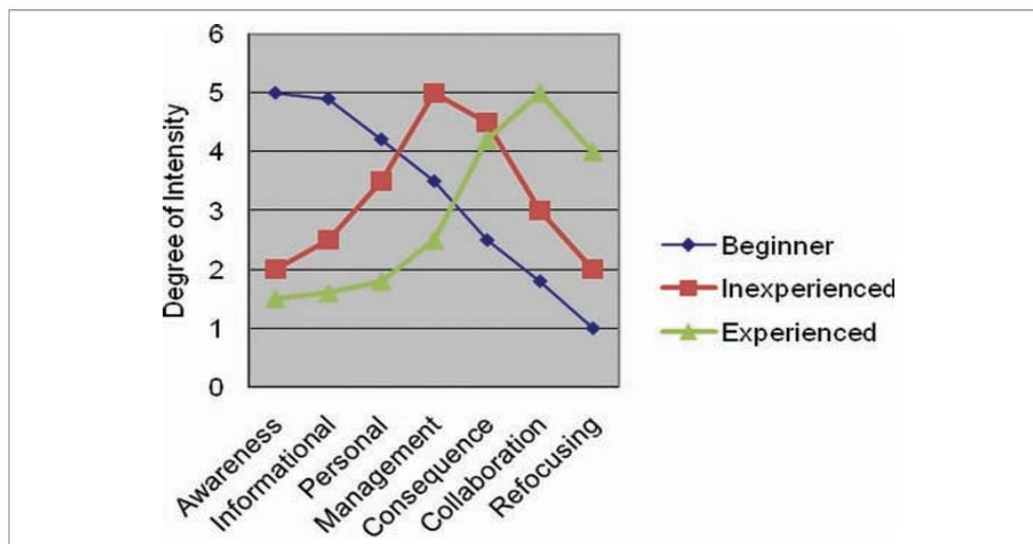


Fig.2.Theoretical concerns profile developing across the change process (Hollingshead, 2009)

**Figure 2.** depicts a hypothesized concerns profile for an individual whose worries have developed over three distinct temporal intervals during the transition process. Initially, the participant exhibits a significant degree of information-related apprehension during the adoption of the innovation. As the individual acquires facts and begins utilizing the new software, managerial apprehensions rise. Over time, the implementer gains proficiency and expertise in utilizing the innovation, leading to a reduction in management issues. Hall and Hord (2006) contend that at this stage, the implementer prioritizes the program's effects on students, teamwork, and conceptualizations of the program over the concerns that were prominent at the outset of the process. Conceptually, this model delineates a developmental trajectory for the emotions as well as attitudes individuals encounter during the transformation process; nevertheless, humans advance through these stages at differing paces. Furthermore, the orientation may invert throughout a transitional process, and individuals may encounter many concerns with significant intensity. The data obtained from the survey furnish program facilitators with insights to reconcile implementers' concerns with intervention strategies aimed at expediting their adoption process.

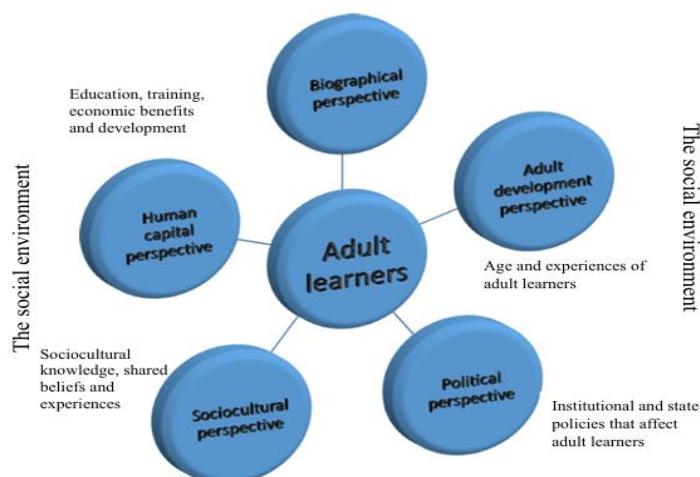


### 1.7.2. Innovation Configuration

IC is a component of the CBAM acknowledging that the implementation of innovation tasks varies among users. Certain users may do duties similar to those envisioned by the authors of a new program, while others may utilize the innovation in unforeseen manners. An IC frame comprises a range of configurations for the tasks within the new program. Additionally, it delineates the components as well as provides instances, varying from negligible utilization to exemplary implementation quality. The intricacy of the innovation determines the range of quality variations, usually between two and six. The IC map functions as a reference for program implementers and facilitators. The IC map is produced using data gathered via the levels of usage interview protocol, administered to individuals executing software (Hollingshead, 2009).

### 1.7.3. Levels of use

While SoC assesses attitudes and emotions, another diagnostic feature, LoU, pertains to the behaviors of implementers throughout the innovation's adoption. The behavior of each participant within the change process can be categorized at a certain level, encompassing both nonusers as well as users of the innovation. Additionally, classifications commence with non-use, denoting an individual who has not engaged in implementation. Innovation is deemed in use when users commence interaction with a task. Levels of use are delineated in a sequence of quality, assessing the implementers' advancement across the change initiative. An approach for clearly identifying an implementer's Level of Use (LoU) involves conducting a concise informal interview, commencing with the question, "Are you utilizing the innovation?" Additional inquiries encourage the individual to delineate any behaviors associated with tasks in the new program. Additionally, an informal interview that provides insights into a persons' LOU can assist in the execution of change. For instance, LoU can facilitate comprehension of the dynamics, obstacles, connections, and boundaries to enhance the scope and quality of implementation. These phenomena can be represented by diagrams, maps, along with puzzles including sequences, structures, and stimuli (Hollingshead, 2009).



**Fig.2. Diagrammatic presentation of the theoretical frameworks that characterize adult learners (Owusu-Agyeman, 2019, p. 936)**

As shown in **Figure 2**, adult learners are shaped by a multidimensional set of perspectives - including biographical, human capital, sociocultural, political, and adult development factors - which collectively influence their motivations, experiences, and learning needs. For student teachers preparing for adult education, understanding these perspectives is essential for designing inclusive and effective pedagogical approaches that address the diverse backgrounds as well as aspirations of adult learners. Conceptually, this holistic understanding aligns with the strategies outlined for advancing literacy and lifelong learning, such as multisectoral collaboration, culturally responsive and high-quality programming, integration of technology, and robust assessment and data systems, all of which are in direct support of Sustainable Development Goal Target 4.7. Target 4.7 By 2030, guarantee that all learners attain the knowledge and skills requisite for fostering sustainable development, encompassing sustainable lifestyles, human rights, gender equality, fostering a culture of peace and non-violence, global citizenship, and a recognition of cultural diversity and its contribution to sustainable development. Finally, theoretical perspectives, strategies, and global issues will be integrated throughout the teacher preparation experience so that the student ranks will be prepared to achieve personal and societal objectives through transformative adult education.

### ***Purpose of the current study***

This study seeks to examine how student teachers transfer their attitudes towards adult education after participating in a course focused on lifelong learning and inclusive pedagogy. No studies before have specifically examined the impact of the Philosophy of Adult Education course on student teachers' attitudes toward adult education, especially in alignment with the 2030 Agenda for Sustainable

Development. While much research has focused on practical or skills-based courses for preservice teachers, there is a lack of inquiry into how philosophical foundations of adult education influence their readiness to engage with adult learners. This study aims to fill this gap by investigating how engaging with philosophical perspectives on adult education can shape preservice teachers' attitudes toward lifelong learning and inclusive pedagogy.

This study specifically investigates how student teachers' attitudes toward adult education change after completing the Philosophy of Adult Education course, which emphasizes critical reflection on the role of education in societal transformation, global citizenship, along with lifelong learning. The study also seeks to examine whether student teachers' attitudes differ based on their gender, specialty, and residence, an area that has not been explored in relation to this course. Based on the literature review and theoretical framework, this study addresses the following research questions:

- How does adult education contribute to the achievement of the educational and socio-economic goals outlined in Egypt's Vision 2030?
- What is the level of student teachers' readiness for adult education in alignment with Egypt's 2030 Agenda?
- How does the Philosophy of Adult Education course impact student teachers' attitudes toward adult education?
- What changes in student teachers' attitudes towards adult education are observed from pre-course to post-course, in terms of cognitive, emotional, and behavioral components?
- How do gender, academic major, and place of residence affect student teachers' attitudes toward adult education?
- How does the Concerns-Based Adoption Model (CBAM) help in understanding the student teachers' concerns and readiness for implementing adult education practices?

## ***1- Method***

### ***2.1. Participants***

The study performed a pre- and post-questionnaire design to assess the attitudes of pre-service teachers enrolled in the Philosophy of Adult Education course at Tanta University. This course is a compulsory course within the College of

Education and is offered to both primary and secondary education students. A total of eighty-one students were enrolled in the course during spring 2024, with 61.7% females and 38.3% males. The course aimed to deepen students' understanding of adult education as well as its role in societal transformation, in alignment with SDG 4 and lifelong learning principles. All students were invited to participate in the study, and 92.5% of them responded to the pre-survey and post-survey. Students who did not respond to either survey were excluded from the analysis. Therefore, the final analysis includes the responses of 81 students, with 51.9% specializing in theoretical majors and 48.1% specializing in scientific majors. Additionally, the study considered the students' residence as a possible influencing factor, with 67.9% of participants coming from urban areas and 32.1% from rural areas. The analysis aimed to compare the changes in student teachers' attitudes toward adult education from pre- to post-course. In particular, this study investigates the differences in student teachers' attitudes in terms of their specialty (theoretical vs. scientific) and other demographic factors (gender and residence).

## 2.2. Measures

### 2.2.1. Attitudes toward Education for Older Adults (AEOA)

The Attitudes toward Education for Older Adults (AEOA) scale designed by Kim et al. (2017) is a self-report measure that assesses attitudes regarding adult education for older adults, divided into three domains which include Cognitive, Affective and Behavioral, with a total of 38 items. This is measured on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the AEOA scale based on reliability analysis was high (Cognitive:  $\alpha = 0.609$ ; Emotional:  $\alpha = 0.892$ ; Behavioral:  $\alpha = 0.928$ ). The total scale had an overall Cronbach's alpha of 0.92 (signifying very good reliability). The translation, validation, and review of this scale were initially done by Kim et al. (2017). The findings of the current study validate the results of the original validation regarding the strong internal consistency of all the domain subscales, confirming its reliability as an effective measure of attitudes towards adult education for elders.

## ***2.2.2 The introductory adult education- centered course (The Philosophy of Adult Education)***

This course was designed to prepare prospective teachers to effectively understand and engage with adult learners in various educational settings. Key areas of focus included the origins and development of adult education, with an emphasis on the reasons for adult education in the context of the 2030 vision for Sustainable Development. The course explored the functions, goals, and essential terms related to adult education, equipping pre-service teachers with a comprehensive understanding of the field. The course also covered the global and local significance of adult education, particularly in fostering lifelong learning opportunities in line with SDG 4 (Quality Education) as well as other related sustainable development goals. Additionally, the course addressed how adult education fosters learner's empowerment and cultivates skills essential for navigating the challenges of an evolving world. Furthermore, the course explored the role of conferences and international collaborations in shaping the direction of adult education globally. Preservice teachers enrolled in the course attended lectures focused on theoretical foundations, with a total of 13 weeks of instruction. Through this experience, participants gained insights into adult education theories and their educational applications.

### **2.2.3. Interview instrument**

Open-ended interviews were conducted after the end of the course to investigate student teachers' changing attitudes and perceptions on adult education, especially for older adults. The interview guide was developed to elicit personal reflections, emotional responses, and perceived educational needs. The questions were based on the constructs of the Attitudes toward Education for Older Adults (AEOA) scale and the aims of the study. I used the questions flexibly in semi-structured interviews, using follow-up prompts as needed to probe deeper or clarify responses.

Participants were asked three guiding questions:

1. What were your beliefs about adult education prior to entering this course?
2. How has your perception of adult education for older adults changed? In what way?
3. What was after the process of learning about older adult learners - how did you personally feel?



4. Will you teach older adults in your future career? Why or why not?
5. What additional training do you feel you need to confidently teach adult education?

### 2.3. Procedures

Eighty-one student teachers participated in the study, with 51.9% enrolled in theoretical majors and 48.1% in scientific majors. Of the participants, 67.9% were from urban areas as well as 32.1% from rural areas. Participants completed both a pre-survey and a post-survey during the course. The pre-survey was administered during the first session of the course, and the post-survey was completed during the last session. In addition to the surveys, participants also engaged in pre-course interviews as well as post-course interviews to provide qualitative insights into their attitudes and experiences regarding adult education. The combination of these quantitative (surveys) as well as qualitative (interviews) measures allows for a comprehensive analysis of the impact of the Philosophy of Adult Education course on student teachers' readiness for adult education, specifically from the lens of lifelong learning and SDG 4.

### 2.4. Data analysis

Means and standard deviations were calculated for all items and subscales utilized in the present investigation. Cronbach's alpha was computed for the internal consistency of the questionnaire replies, yielding a value of 0.925. Numerical data was statistically characterized by mean  $\pm$  standard deviation ( $\pm$  SD), whereas categorical data was represented as frequencies (number of cases) and percentages. The comparison of numerical variables before as well as after the survey was conducted using a paired sample T-test. Two-sided p-values less than or equal to 0.05 were deemed statistically significant. All statistical analyses were conducted using IBM SPSS version 27 for Microsoft Windows.

## 3. Results

### 3.1. Changes in student teachers' attitudes

A paired sample t-test was performed from pre- to post-survey to assess the changes in student teachers' attitudes toward adult education at the end of the Philosophy of Adult Education course. It was found that a significant change took place in the overall attitudes of student teachers, as well as in all subscales of the attitudes scale (Cognitive  $t(81) = 12.77$ ;  $p \leq 0.05$ ; Emotional  $t(81) = 24.01$ ;  $p \leq$



0.05; and Behavioral  $t(81) = 18.73$ ;  $p \leq 0.05$ ). Two-sided p-values less than or equal to 0.05 were deemed statistically significant. An examination of the changes in attitude mean scores indicated substantial improvements across all subscales, with large effect sizes observed for Cognitive ( $d = 1.55$ ), Emotional ( $d = 2.67$ ), and Behavioral ( $d = 2.62$ ).

### 3.1.1. Changes in student teachers' attitudes (cognitive component)

Each item was examined from pre- to post-survey, revealing statistically significant variations across all items (refer to Table 1). The most notable alteration in attitude scores across the cognitive subscale items was observed in Item 8 *"Through education, older adults can expand their knowledge"*, indicating a huge effect. This was followed by Item 12 *"Education for older adults is a waste of time and money"*, and Item 14 *"Older adults show interest and curiosity about a new topic"*, both representing very large effects. These findings indicate that the course was particularly effective in reshaping misconceptions about older adults' learning potential and in reinforcing the cognitive value of lifelong education. An examination of Cohen's d values showed that change in attitude mean scores were large for all items in the cognitive subscale, as the d values ranged between 0.27 and 3.81, indicating substantial changes in attitudes toward the utility of education for older adults.

**Table 1. Change in student teachers' attitudes towards adult education (cognitive component)**

Item	Pre-survey		Post-survey		t test	D
	M	SD	M	SD		
1. Education is useful for older adults to make new friends.	5.26	1.27	6.52	0.67	7.482*	0.83
2. Education is not helpful for older adults to better understand their children, relatives, or friends.	5.61	1.57	6.76	0.48	6.761*	0.75
3. Education for older adults can increase their employment opportunities.	5.54	1.33	6.47	0.86	5.634*	0.63
4. Education is useful for older adults to reduce loneliness.	5.74	1.32	6.58	0.54	5.408*	0.60
5. Older adults enjoy learning just for learning's sake.	4.41	1.70	5.70	1.62	4.796*	0.53
6. Education helps older adults to share their feelings with others.	5.82	0.96	6.41	0.87	3.817*	0.42
7. Education can help older adults to adjust to a changing society.	5.21	1.26	6.50	0.67	8.847*	0.98

8. Through education, older adults can expand their knowledge.	3.07	0.31	6.17	0.78	34.32*	3.81
9. Older adults are willing to spend their money attending educational classes.	4.12	1.25	4.53	1.20	2.446*	0.27
10. It is more important to provide education to younger adults than older adults.	2.79	1.74	4.64	1.72	6.597*	0.73
11. Older adults are capable of participating in most of the same educational activities as younger adults.	4.10	1.46	4.67	1.29	2.794*	0.32
12. Education for older adults is a waste of time and money.	3.25	0.62	5.94	1.06	18.74*	2.08
13. Cognitive impairment does not prevent older adults from learning new things.	3.29	0.99	4.47	1.51	5.984*	0.67
14. Older adults show interest and curiosity about a new topic.	3.52	0.88	5.56	0.9	13.24*	1.58
15. Older adults have no difficulty following instructions while learning.	2.78	1.03	3.42	1.56	3.39*	0.38
Total cognitive score	68.05	6.25	83.43	7.07	12.765*	1.55

Paired sample t test \*: Statistically significant at  $P \leq 0.05$

### 3.1.2. Changes in student teachers' attitudes (emotional component)

Each item was examined from pre- to post-survey, revealing statistically significant variations across all items (refer to Table 2). The greatest substantial alteration in attitude scores across the emotional subscale items was observed in Item 18 "*I feel useful when helping older adults learn*", followed by Item 21 "*It is fun to help older adults learn new things*", and Item 19 "*I find participating in elderly education irritating*". These findings indicate that the course was particularly effective in enhancing student teachers' emotional engagement and motivation toward older adult learners, as well as reducing negative emotional perceptions. The d values ranged between 1.27 and 2.34, indicating strong, consistent emotional shifts in attitudes toward the value of adult education for older learners.

Table 2. Change in student teachers' attitudes towards adult education (Emotional component)

Item	Pre-survey		Post-survey		t test	d
	M	SD	M	SD		
16. I am comfortable with being involved in education programs for older adults	3.51	0.84	5.64	1.04	15.153*	1.68
17. I am enthusiastic about working with elderly students	3.32	0.95	5.39	1.33	12.264*	1.363

18. I feel useful when helping older adults learn	3.15	0.57	5.87	1.02	21.029*	2.34
19. I find participating in elderly education irritating	3.21	0.63	5.59	1.24	17.372*	1.93
20. It is gratifying to meet learning needs of older adults	3.36	0.63	5.75	1.18	15.742*	1.75
21. It is fun to help older adults learn new things	3.24	0.71	5.87	0.97	19.206*	2.13
22. Trying to teach new things to older adults makes me tired	3.39	9.2	5.19	1.29	11.43*	1.27
23. Being involved in elderly education programs is tedious	3.38	0.82	5.6	1.10	15.799*	1.76
24. I enjoy facilitating education for older adults	3.38	0.82	5.66	1.26	14.369*	1.60
25. Providing education for older adults is exciting	3.27	0.78	5.46	1.24	13.207*	1.47
Total emotional score	33.11	4.10	56.08	8.35	24.006*	2.67

Paired sample t test \*: Statistically significant at  $P \leq 0.05$

### 3.1.3. Changes in student teachers' attitudes (behavioral component)

Each item was examined from pre- to post-survey, revealing statistically significant variations across all items (refer to Table 3). The greatest notable alteration in attitude scores was noted across the behavioral subscale items, in Item 30 "*I would develop educational programs for older adults*", followed by Item 32 "*I would try to enhance older adults' right to learning*", and Item 36 "*I would give older adults advice about how to address barriers to learning*". These findings suggest that the course was highly effective in encouraging student teachers to take proactive roles in designing, supporting, and advocating for educational opportunities for older adults. The d values ranged between 1.16 and 2.53, indicating consistently strong behavioral shifts in participants' readiness to engage in adult education practices aimed at older learners.

Table 3. Change in student teachers' attitudes towards adult education (behavioral component)

Item	Pre-survey		Post-survey		t test	d
	M	SD	M	SD		
26. I would actively support older adults participating in educational activities	3.24	0.68	5.69	1.16	16.991*	1.89
27. I would ask my elderly clients about their educational needs while developing a case plan	3.26	0.70	5.60	1.00	16.226*	1.80
28. I would hesitate to help older adults with educational activities	3.38	0.97	5.52	1.81	13.494*	1.50

29. I would encourage older adults to participate in educational activities	3.22	0.61	5.88	1.05	18.381*	2.04
30. I would develop educational programs for older adults	3.12	0.51	5.94	0.95	22.806*	2.53
31. I would seek opportunities to educate older adults	3.36	0.86	5.81	1.11	17.198*	1.91
32. I would try to enhance older adults' right to learning	3.21	0.56	5.89	0.98	20.305*	2.26
33. I would actively seek funding for education for older adults	3.36	0.70	5.57	1.36	10.154*	1.35
34. I would avoid providing education to older adults	3.15	0.80	5.43	0.16	12.552*	1.40
35. I would spend time providing education for older adults	3.61	0.96	5.35	1.28	10.405*	1.16
36. I would give older adults advice about how to address barriers to learning	3.49	0.89	5.97	0.67	19.089*	2.20
37. I would avoid participating in education for older adults.	3.24	0.73	5.42	1.58	10.518*	1.17
38. I would try to find new ways of increasing educational effects on older adults	3.26	0.65	5.78	1.05	18.231*	2.03
Total behavioral score	42.64	4.90	75.35	10.61	18.731*	2.62

Paired sample t test \*: Statistically significant at  $P \leq 0.05$

### 3.2. Differences in student teachers' attitudes according to their gender, major and residence

An independent sample t-test was conducted to examine whether there were differences in attitudes toward adult education based on gender. The pre-survey results showed no significant statistical difference between male and female preservice teachers ( $t = 0.306$ ,  $p > 0.05$ ), with mean scores of 143.77 for males and 144.46 for females. Similarly, post-survey results revealed no significant gender-based difference ( $t = 0.318$ ,  $p > 0.05$ ), with males scoring a mean of 220.65 and females 228.81. These findings indicate that both male and female student teachers benefited equally from the course, with substantial attitude shifts regardless of gender. The comparable pre- and post-survey means suggest that the adult education course was effective across gender lines, reinforcing its inclusive impact on participants' perceptions of older adult learning.

The pre-survey data also indicated no significant differences between theoretical and scientific specialty preservice teachers' attitudes toward adult education at the beginning of the course. The results of the independent sample t-test for pre-

survey scores showed no statistical difference between the two groups ( $t = 0.940$ ,  $p > 0.05$ ). Similarly, there were no statistically significant differences in attitudes based on residence, as urban and rural students' pre-survey scores showed no significant difference ( $t = 0.795$ ,  $p > 0.05$ ). The means of the pre-survey scores for the AEOA scale were 145.14 for theoretical and 143.07 for scientific specialty students, and 144.83 for urban and 143.00 for rural students, indicating comparable attitudes before the intervention.

At the end of the course, independent sample t-tests were conducted again to evaluate differences in post-survey attitudes based on specialty and residence. The results showed no statistically significant differences between theoretical and scientific specialty students ( $t = 0.443$ ,  $p > 0.05$ ), or between urban and rural students ( $t = 1.057$ ,  $p > 0.05$ ). Post-survey mean scores were 220.73 for theoretical and 218.20 for scientific specialty students, and 221.75 for urban and 215.47 for rural students. These findings confirm that the adult education course effectively improved attitudes across all subgroups, regardless of academic specialty or place of residence.

**Table 4. Difference in Overall Attitudes toward Education for Older Adults (AEOA) score pre and post-survey as regard specialty and residence**

Overall Attitudes toward Education for Older Adults (AEOA) score		Pre-survey		t test	P
		M	SD		
Gender	Male	143.77	9.4	0.306	0.760
	Female	144.46	8.61		
Academic Major	Theoretical	145.14	7.04	0.940	0.351
	Scientific	143.07	10.63		
Residence	Urban	144.83	7.93	0.795	0.430
	Rural	143.00	10.45		

Independent sample t test \*: Statistically significant at  $P \leq 0.05$

Overall Attitudes toward Education for Older Adults (AEOA) score		Post-survey		t test	P
		M	SD		
Gender	Male	220.652	25.81	0.318	0.751
	Female	228.81	17.07		
Academic Major	Theoretical	220.73	18.11	0.443	0.660
	Scientific	218.20	24.24		
Residence	Urban	221.75	16.16	1.057	0.295
	Rural	215.47	27.99		



**Table 5. Change in Overall Attitudes toward Education for Older Adults (AEOA) score**

Overall Attitudes toward Education for Older Adults (AEOA) score	Pre-survey		Post-survey		t test	d
	M	SD	M	SD		
	144.19	8.87	219.7	20.8	22.039*	3.25

Paired sample t test \*: Statistically significant at  $P \leq 0.05$

As indicated in Table.5, The paired sample t-test revealed a statistically significant increase in overall attitudes toward education for older adults following the completion of the course. The mean score increased from  $M = 144.19$  ( $SD = 8.87$ ) in the pre-survey to  $M = 219.7$  ( $SD = 20.8$ ) in the post-survey, with a t-value of 22.039 and  $p \leq 0.05$ , indicating a highly significant difference. The size of the effect (Cohen's  $d = 3.25$ ) is extremely large and indicates a "huge effect" according to Cohen's (1988) and Sawilowsky's (2009) standards. The difference here indicates that the intervention caused a marked overall change in student teachers' attitudes towards adult education and suggests that the content of the course was effective in relating to the students' various factors when it comes to educating older students. This degree of change in a single semester points to successful efforts of the course where awareness was positively matched with changes in how students feel and think about interacting with older adults in educational settings.

### 3.3. Student Teachers' Reflections from Interviews

To complement the quantitative data, a set of open-ended interviews was conducted with a sample of student teachers following the completion of the Philosophy of Adult Education course. The aim was to gain deeper insights into their perceptions, emotional reactions, and experiences related to adult education, particularly in the context of learning for older adults. Student responses reflected a marked shift in how they perceived adult learners. Several participants shared that the course had shifted their awareness, challenging previous assumptions about older adults' capacity or interest in learning. Several participants admitted that prior to the course, they had limited awareness or interest in the field of adult education. One participant remarked, *"Before this course, I believed that adult education was primarily about literacy and basic skills. I never realized how deeply it connects to all the educational opportunities one encounters throughout life."* As the course progressed, students began to express a growing appreciation for the value of education in older adulthood. A number of them noted how their

understanding of lifelong learning expanded. For example, one student shared, *"It opened my eyes to how learning is part of human dignity, even in old age. It's not just about skills - it's about feeling included."* In addition to shifting perceptions, the interviews also revealed that many student teachers felt more open to working with adult learners in the future. One participant explained, *"Now I think I'd actually enjoy teaching older adults - maybe in literacy programs or lifelong learning centers. It feels rewarding."*

Several mentioned that they had not previously considered older adults as active learners, and the course helped them recognize the value of continuing education later in life. One participant noted, *"I used to think education stops at a certain age, but now I see how important it is for older people to keep learning - for their confidence and health."* A few student teachers also reported feeling more prepared and open to working in adult learning contexts in the future. One shared, *"Before, I thought I'd only work in a school, but now I'd actually consider teaching adults, maybe in a community center or literacy program."* Another student expressed a growing sense of personal connection and responsibility, saying, *"After learning about how learning empowers older people, I started seeing my own grandparents differently - now I want to encourage them to join a program."* One remarked, *"I never imagined teaching anyone but children, but now I feel more open and even excited to work with older adults - maybe in community centers or lifelong learning programs."* Another student expressed *"The most powerful part was realizing that older people are still learners, I felt sad for those who never had the chance before, but hopeful knowing I can now be part of changing that."*

### 3.4. Insights on Student Teachers' Training Needs

In addition to changes in attitudes, interview responses revealed that many student teachers recognized gaps in their own preparation and expressed a need for more targeted training in adult education. Several participants noted that while the course raised their awareness and interest, it also exposed areas where they felt underprepared to engage adult learners in real-world contexts. One student said, *"Now I'm interested in teaching adults, but I honestly don't know what strategies or methods work best. I need more practical training."* This sentiment was echoed by others who appreciated the theoretical foundation but sought additional tools and examples. *"We talked a lot about the philosophy, which was important,"* said another, *"but I wish we had more case studies or even short field visits to see*

*adult classes in action.*” Some student teachers emphasized the need for resources and techniques specific to older adult learners, particularly in inclusive or informal settings. *“We need to know how to deal with different backgrounds and abilities - older adults may face health issues, or they may be nervous about learning again,”* one participant reflected. Others also pointed out that this type of content is rarely integrated into teacher education programs. *“This is the first time I even heard about adult education in university - it should be part of our training from the start,”* one interviewee stated. These comments suggest that while the course succeeded in raising interest and shifting attitudes, there is a clear demand for practical, skill-based training modules that go beyond philosophy and theory.

#### 4. Discussion and conclusion

The results of this study reveal that the Philosophy of Adult Education course had a significant impact on student teachers' attitudes toward adult education for older adults. Quantitative analysis showed statistically significant improvements across all three subscales - cognitive, emotional, and behavioral - with large to very large effect sizes. The most notable change in the cognitive subscale was observed in Item 8, reflecting a strong shift in recognizing the value of learning for older adults. Likewise, emotion and behavior items scored very high d-values, implying deep emotional engagement and heightened preparedness for the implementation of adult education-oriented practices. There were no statistically significant differences that emerged in attitudes by gender, academic specialty, or residence, indicating that the course worked across diverse students. Qualitative findings based on student interviews also indicated more profound emotional and reflective changes. Participants reported greater empathy for older learners, a change in professional goals, and heightened insight into the role of adult education in fostering dignity, inclusion, and social contribution.

Insights gleaned from the qualitative evaluation of the post-course interviews demonstrate how student teachers underwent a transformation as a result of the course. This extensive data matches remarkably well to the Concerns-Based Adoption Model (CBAM) that describes in great detail the way people move through different phases of development concerning a new educational innovation. At the earlier stages of concern, many student teachers expressed a lack of prior awareness of older adult learners as a target group in education. This

corresponds with the awareness and informational stages of CBAM, where participants are first introduced to a new concept and begin to inquire about its relevance. One participant admitted, *"Before this course, I believed that adult education was primarily about literacy and basic skills. I never realized how deeply it connects to all the educational opportunities one encounters throughout life"*.

As participants advanced, they reflected on the personal and emotional significance of adult learning. These reflections indicate movement into the personal and consequence stages, where individuals begin to internalize and assess the innovation's value. One student noted, *"It opened my eyes to how learning is part of human dignity, even in old age. It's not just about skills - it's about feeling included."* In terms of levels of use, while students were not implementing adult education directly, several described themselves as more confident and willing to engage in such environments. Statements such as *"Now I think I'd actually enjoy teaching older adults - maybe in literacy programs or lifelong learning centers. It feels rewarding."* suggest that they had entered the orientation and preparation stages.

As the course progressed, participants moved into more personal and consequence-oriented stages, marked by emotional engagement and reflections on the social value of adult education. One student remarked, *"Now I think I'd actually enjoy teaching older adults - maybe in literacy programs or lifelong learning centers. It feels rewarding."* One student remarked, *"I used to think education stops at a certain age, but now I see how important it is for older people to keep learning - for their confidence and health."* This shift suggests a deeper concern not only with what adult education is but also with how it impacts the lives of learners, a hallmark of the consequence stage. Another student expressed a growing sense of personal connection and responsibility, saying, *"After learning about how learning empowers older people, I started seeing my own grandparents differently - now I want to encourage them to join a program."* Such emotional investment reflects a movement into the consequence and collaboration stages of CBAM, where individuals become more focused on the impact of implementation and their role in promoting it.

When asked whether they would consider engaging in adult education professionally, many showed increased readiness to use what they had learned.

One remarked, *"I never imagined teaching anyone but children, but now I feel more open and even excited to work with older adults - maybe in community centers or lifelong learning programs."* This illustrates an early stage in the Levels of Use dimension of CBAM, where student teachers begin to shift from awareness to potential application.

Some also reflected on the transformative emotional experience of the course. A participant noted, *"The most powerful part was realizing that older people are still learners. I felt sad for those who never had the chance before, but hopeful knowing I can now be part of changing that."* Such quotes show how the course fostered not just knowledge, but also empathy and identity alignment with the values of lifelong learning.

These findings align with Sharvashidze & Bryant (2011) that found positive shifts in teacher training and its potential for changing school teachers through adult learning. Likewise, Hanemann (2015) suggests that adult education concepts should be incorporated into preservice training, particularly given the emerging global paradigm of SDG 4 and inclusive, lifelong education and learning. Furthermore, participants' reported emotional and behavioral changes support those discussed in Baporikar (2016), whereby adult education is highlighted as a source of potential change - both personally and at a broader social level. The interview data are also echoed by Muñoz et al. (2013) whose scenarios of open adults' learning were focused on learner empowerment, recognition, and autonomy - concepts that were implicitly echoed in students' reflections. Findings from this study illustrate that enrollment in and exposure to structured coursework in adult education will produce demonstrable change in attitudes and perceived readiness. Including philosophy- and values-based adult education courses in teacher training programs has the potential to expand preservice teachers' world views and equip them for ongoing learning contexts. As countries aim to achieve the 2030 Agenda, particularly SDG 4.7, teacher education programs must equip future educators with the competencies to support adult learners across various settings, including community learning centers and non-formal environments.

Similarly, UNESCO (2016a) emphasized that community-based lifelong learning must include structured teacher training to develop awareness, motivation, and practical competence to work with non-traditional learners. The student reflections in this study - particularly regarding their need for more field exposure



and applied methods - echo UNESCO's call for experiential learning and professional development that connects theory with community needs. Finally, the current study's alignment with the Incheon Declaration (UNESCO, 2016b) confirms that preservice teachers play a vital role in realizing SDG 4.7, which calls for promoting education for sustainable development and lifelong learning. The increase in behavioral intent to teach older adults, as reflected in interview responses and survey gains, underscores the importance of preparing future teachers to view education as a lifelong, inclusive process that spans all generations.

In evaluating student teachers' readiness for adult education, several internationally recognized strategies provide a robust framework for both policy and practice. First, it is essential to establish a sector-wide and multisector approach for formulating literacy policy and plans by strengthening collaboration among relevant ministries and stakeholders, including education, health, social welfare, labour, and civil society (UNESCO, 2016b, p.48); (1) This approach ensures that student teachers understand the importance of intersectoral cooperation in adult education. Second, it is crucial to ensure literacy and numeracy programmes rely on high-quality content that is projected to meet learners' needs (UNESCO, 2016b, p.48); (2) Student teachers must be prepared to design instruction that is responsive to learners' backgrounds, cultures, and experiences, with special attention to marginalized groups and the integration of skills for decent work and lifelong learning. Third, scaling up effective adult literacy and skills programmes by involving civil society as partners can enrich the learning environment and leverage community resources (UNESCO, 2016b, p.48); (3) Student teachers should be encouraged to collaborate with local organizations and draw on existing good practices.

Fourth, the promotion of ICT, particularly mobile technology, for literacy and numeracy programmes is increasingly important (UNESCO, 2016b, p.48); (4) Student teachers should develop digital literacy and be capable of integrating technology into their teaching to improve adult learning outcomes. Additionally, a literacy assessment framework and tools must be developed to evaluate competence levels according to learning outcomes (UNESCO, 2016b, p.48); (5) Student teachers should be trained in assessment literacy, enabling them to measure progress and adapt instruction accordingly. Finally, establishing a

system to collect, analyse, and share relevant data on literacy levels and needs, disaggregated by gender and other indicators of marginalization, is vital for informed decision-making and targeted interventions (UNESCO, 2016b, p.48); (6) This data-driven approach should be embedded in teacher preparation programmes. These strategies align with Target 4.7, which calls for all learners to acquire knowledge and skills necessary for sustainable development, human rights, gender equality, and global citizenship by 2030. Preparing student teachers to address these interconnected goals will enhance the efficacy and pertinence of adult education.

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