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Adoption and promotion of KMITL e-learning program for the elderly in urban Thailand

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Abstract: This study explores the acceptance and impact of the KMITL e-learning programs among elderly populations in urban Thailand. A total of 300 participants from retired and senior citizen clubs in Ladkrabang, Romklao, and Minburi districts were surveyed through a mixed-methods approach involving questionnaires, cognitive assessments, and expert interviews. The study assessed cognitive development, user satisfaction, and acceptance of digital learning platforms. Findings demonstrate high satisfaction with the platform's content clarity, design accessibility, and learning flexibility. Courses focusing on social studies and digital media production were especially favored, reflecting the elderly's growing interest in health preparation, financial security, and intergenerational communication. Statistically significant correlations were identified between prior technological experience, satisfaction levels, and the intention to continue online learning. The results affirm that thoughtfully designed online programs can successfully support lifelong learning and active aging among the elderly. Practical implications highlight the need for adaptive learning models, specialized course development, and policy initiatives to promote digital inclusion and enhance the quality of life for aging populations.

Keywords: *Active aging approach, Digital skills, Elderly, Online learning program.*

1. Research Background

According to the Survey of the Elderly Population in Thailand by the National Statistics Office [1] there were 14,027,411 people aged 60 years and over in Thailand. This number has been steadily increasing—from 6.8% of the total population in 1994 to 20.0% in 2024—indicating that Thailand has now become a fully aged society. The country is on the verge of entering a super-aged society, where those aged 60 and over will make up more than 28% of the population (or where those aged 65 and over account for 20%).

When considering gender distribution, it was found that women comprise a larger share of the elderly population—57.9% compared to 42.1% for men. In terms of age groups, the majority of elderly individuals fall within the early elderly category (ages 60–69), followed by the middle elderly (ages 70–79) at 29.8%, and the late elderly (ages 80 and above) at 10.9% [1].

As the elderly population increases, so does the expectation for a longer life span in good health. According to the Department of Elderly Affairs, life expectancy among the elderly in Thailand is projected to rise in the coming years. This trend of longevity and improved health among older adults is a positive sign for the country. Stability in life—such as continued employment, regular income, and secure housing—can help make the elderly a valuable force in national development, complementing the working-age population in driving the economy.

In addition to preparation, maintaining good physical and mental health is essential for active aging. A stable life and economic security, along with social and community participation, are also crucial. At present, many elderly individuals still play active roles in caregiving within their communities. The

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Ministry of Social Development and Human Security supports this by helping care for vulnerable groups such as children, persons with disabilities, and the elderly themselves—contributing to the strength and resilience of communities.

To develop an elderly population that can take care of themselves, support others, and contribute to society and their communities, preparation in key skills is essential. This includes understanding the concept of proactive aging and acquiring necessary digital skills. Recent studies have emphasized the importance of personalized digital literacy programs for older adults.

In line with this, King Mongkut's Institute of Technology Ladkrabang has developed 10 online learning programs tailored for the elderly, building on existing public courses aimed at strengthening digital competency. However, none were specifically designed for media production for the elderly. This research sought to explore whether these programs, when introduced to elderly individuals in urban areas, can generate interest and effectively enhance their knowledge. The study aimed to assess the learning outcomes and develop a more suitable teaching and learning model tailored to the needs of elderly learners.

This research aligned with policy recommendations from the National Statistics Office and the Strategy Division of the Ministry of Social Development and Human Security, which emphasize the importance of enabling elderly participation in social and economic activities. This approach is key to enhancing their quality of life and reducing inequality among the elderly population.

2. Research Objectives

1. To study the acceptance and usage of the online learning programs developed by King Mongkut's Institute of Technology Ladkrabang among elderly individuals in urban areas of Thailand.
2. To develop a model for online learning groups tailored to elderly learners.

3. Research Methodology

1. Questionnaires – A total of 300 questionnaires were distributed to assess cognitive understanding before and after the study, as well as to evaluate user satisfaction and acceptance of the online learning program developed by King Mongkut's Institute of Technology Ladkrabang.
2. In-depth interviews – Conducted with 5 key informants who are experts in media production for the elderly.

Researchers mixed qualitative and quantitative methods using the tools above. Participants were retirees from the Retired Club of King Mongkut's Institute of Technology Ladkrabang, as well as elderly individuals from the Senior Citizen Club of Ladkrabang Hospital and the Senior Citizens' Clubs in the Romklao and Minburi districts. In total, 300 participants took part in trying the online learning program from King Mongkut's Institute of Technology Ladkrabang. This study involved voluntary participation through questionnaires only. Formal Institutional Review Board (IRB) approval was not required as per university guidelines for minimal-risk educational research involving adult participants.

4. Literature Review

4.1. Overview of the Active Ageing Approach

As societies face demographic shifts, supporting older adults in maintaining well-being has become a global priority. The World Health Organization [2] highlights education and literacy as key determinants of quality of life (QoL) in old age. Low literacy levels are linked with unemployment and increased health risks among older adults. Lifelong learning equips individuals with skills to remain independent and socially engaged. The Organisation for Economic Co-operation and Development [3] similarly emphasizes the need for continuous training and access to technology for older adults.

Recent global studies confirm this. Marzo, et al. [4] argue that despite medical and technological advances, a gap remains in understanding how active ageing determinants influence QoL. Better insight into this relationship would allow for early interventions tailored to cultural and societal contexts.

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In Thailand, demographic data from Mahidol University [5] reveal a declining working-age population alongside rising elderly numbers. This shift necessitates greater investment in technologies and training programs that promote productivity and resilience among the elderly.

4.2. Concept and Theory of Lifelong Learning

Lifelong learning, a foundational element of active ageing, spans both formal and informal education across the lifespan. The University of Pretoria [6] frames it as a continuous process necessary for adapting to life changes. Mackenzie, et al. [7] and Peterson [8] define lifelong learning as an evolving intellectual journey that occurs from birth through late life, contributing to self-development and societal participation.

In Thailand, the Department of Elderly Affairs has aligned with the National Strategy (2018–2037) to promote lifelong learning, especially among those aged 60 and above. Programs aim to prepare pre-elderly groups (ages 25–59) as well, ensuring that individuals enter old age equipped with relevant knowledge and digital skills.

4.3. E-Learning Theory and Digital Instruction

E-learning theory emphasizes how digital platforms can enhance flexible, self-directed learning. It incorporates design principles that address cognitive load—categorized as intrinsic, germane, and extraneous Clark, et al. [9]. Mayer and Moreno [10] and Clark and Mayer [11] identify principles like multimedia use, learner control, and segmentation as essential for reducing overload and promoting engagement.

This theoretical base supports the use of online learning for older adults, particularly in urban Thailand where access to formal education may be limited. Thoughtfully designed e-learning systems can accommodate changes in memory, vision, and attention often associated with aging.

4.4. The KLIX Platform and Targeted Programming

King Mongkut's Institute of Technology Ladkrabang developed KLIX to expand learning access across various fields. Courses undergo a multi-step design process, including content review, production, and trial phases. The platform now hosts over 100 online classes, including a dedicated Lifelong/Elderly category.

The Professional Communication and Presentation course exemplifies KLIX's tailored offerings. This 14-unit program, rooted in communication and media literacy, helps seniors strengthen interpersonal, digital, and on-camera skills. Lessons cover both Thai and English communication, public speaking, articulation, and nonverbal cues. The course is structured for elderly learners with short video segments, multiple-choice assessments, and practical workshops that reinforce real-world application.

5. Findings

Building upon these theoretical foundations and contextual frameworks, the present study investigates the acceptance, satisfaction, and learning outcomes of elderly participants engaged with the KMITL online learning platform in urban Thailand. The researcher investigated the general background of older adult participants enrolled in the Lifelong Learning and Skills Development for the Future Project during the fiscal year 2023, specifically the Digital Skills for the Elderly course. The study involved a sample of 300 older adults residing in urban areas, drawn from the Minburi District Senior Citizens Club, the Ladkrabang Senior Citizens Club, and the Retired Club of King Mongkut's Institute of Technology Ladkrabang.

The findings revealed that the majority of participants were female (86.11%), while male participants constituted 13.89%. Most participants were aged 60 years or older (63.89%). In terms of educational background, the largest proportion had completed high school (27.78%), followed by those holding a bachelor's degree (22.22%). The most common occupation was self-employment (44.44%), and

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the majority reported a current monthly income ranging from 10,000 to 29,999 baht. Regarding living arrangements, most participants lived with family members (77.78%).

Concerning technological experience, 36.11% of participants reported never having used a computer, while 25% indicated occasional use. A total of 38.89% used the Internet regularly for information searches. Additionally, 41.67% reported occasional use of the Internet to enhance their knowledge and skills. With respect to experience using online learning platforms, 52.78% had never used such platforms, while 27.78% indicated current use.

Regarding satisfaction with the KLIX online learning platform, participants reported a high level of satisfaction across multiple dimensions. The knowledge-focused design of the platform, which enables learners to explore topics independently, received an average rating of 4.44. The teaching and learning methods, which integrated both textual and visual elements effectively, received an average score of 4.32. The uniform screen layout of each lesson, which contributed to ease of understanding, was rated at 4.17. The overall satisfaction with the platform's content organization and accessibility was high, with an average score of 4.06. In terms of flexibility, participants valued the ability to access classes at any time, which received an average score of 3.75.

In terms of content and presentation, participants expressed high levels of satisfaction. The content was described as modern, clearly explained, and easy to understand. The consistent structure and language used in the lessons further facilitated comprehension. These aspects were reflected in high average scores, including 4.58 for content clarity and modernity, 4.50 for standardized lesson sequencing, and 4.39 for the alignment of content with objectives and principles.

With respect to design elements, participants found that the illustrations effectively conveyed the content, with an average satisfaction score of 4.36. Font legibility and appropriateness across media pages were rated at 4.31, while the overall layout harmony across pages received an average of 4.28. Interface features such as clearly labeled buttons and meaningful link texts were rated at 4.17.

Evaluation components within the KMITL MASTERCLASS platform also received strong satisfaction ratings. The ability for self-learning was particularly valued, with an average score of 4.44. Other evaluation-related aspects that supported independent study and further learning opportunities were rated between 4.31 and 4.42.

The study also examined various factors influencing participants' acceptance of online learning through the KMITL MASTERCLASS platform. In terms of perceived ease of use, participants found that learning how to use the platform was manageable (average score: 4.17). They also indicated that proficiency could be improved quickly (4.11), the learning process was straightforward (4.06), and minimal effort was required to engage with the platform (3.92).

Perceived compatibility with lifestyle was another important factor. Participants agreed that the online learning platform did not complicate their daily lives (4.25), and many expressed that the platform aligned with their preferred method of language learning (4.14).

In terms of perceived usefulness, participants believed that the online platform could enhance their language knowledge (4.58) and support deeper understanding (4.47). The platform was also considered enjoyable to use. Its engaging and non-monotonous structure contributed to satisfaction (4.44), with many finding the learning experience fun (4.42) and inviting (4.36).

Regarding intention to use online learning platforms in the future, the findings indicated a strong interest. Participants expressed willingness to engage with online language learning applications again and preferred these platforms over other learning methods, with an overall average rating of 4.31.

Additionally, the study investigated correlations between demographic variables and participants' satisfaction and acceptance of online learning. No significant correlation was found between gender, age, occupation, or monthly income and overall satisfaction with the platform ($p > 0.05$).

However, statistically significant correlations were identified in several areas. Satisfaction with the platform was significantly associated with the clarity of content explanation and evaluation components, particularly as they applied to teaching and real-life application ($p = 0.05$). Acceptance of online learning

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was also significantly related to intention to use, with participants more likely to prefer online methods in future learning scenarios ($p = 0.05$).

Occupational background was significantly correlated with perceived enjoyment, with participants finding the learning process more engaging ($p = 0.05$). Family structure showed significant relationships with both perceived ease of use and perceived benefits of online learning ($p = 0.05$), as well as with intention to use online platforms in the future ($p = 0.01$). Participants from family-based households were more likely to see the value in and continue using such platforms.

Computer experience was positively correlated with perceived enjoyment of the learning process ($p = 0.05$). Likewise, previous experience in using the Internet to search for information was significantly related to both satisfaction with self-learning components ($p = 0.05$) and perceived enjoyment ($p = 0.05$). Experience with online learning platforms was also associated with perceived benefits; participants believed that such platforms would enhance comprehension and increase language proficiency ($p = 0.05$).

The findings demonstrate that the KMITL MASTERCLASS online learning platform has been well-received among elderly learners in urban areas, with strong levels of satisfaction and acceptance across multiple dimensions. The study's results provide a foundation for future development of tailored online learning programs that align with the capabilities and preferences of older adults.

Table 1.
Summary of Findings on Factors Influencing the Acceptance of Online Learning via Applications: Relationships Between Demographic Variables, Satisfaction, and Acceptance of the KMITL MASTERCLASS KLIX platform.

Factors	Broader Factors	p-value	Sig
Age	Online language learning applications can make language learning fun.	6.91	0.032*
Education Level	The explanation of the content is clear and easy to understand.	11.36	0.05*
	This lesson can be applied to work.	18.39	0.05*
	Learning the language through the application in the future.	25.37	0.05*
	There will be an increasing demand for online language learning applications in the future.	25.22	0.05*
Occupation	It is an enjoyable learning process.	15.81	0.05*
Family structure	The design uses colors that are comfortable to the eye. There is balance on all pages.	11.60	0.02*
	Satisfied with the evaluation.	6.46	0.04*
	The process of using the application is clear.	15.00	0.02*
	The application makes it easier to learn a language.	13.43	0.04*
	Learners' language skills are improved.	14.95	0.01**
	The application helps to learn better.	9.17	0.05*
	I will choose to learn the language through an application rather than other methods.	17.50	0.01**
Computer experience	The application has an enjoyable learning process.	12.52	0.05*
Experience using the Internet to search for information	Self-learning	12.18	0.05*
Experience in using the Internet to enhance your skills	You can attend classes at any time.	26.43	0.01**
	The language of the lessons is in a standard order.	12.89	0.01**
Experience using online learning platforms	The application better helps learners understand and learn.	21.03	0.01**
	The application can increase language knowledge.	17.55	0.01**

Note: *Statistically significant at $p < 0.05$
**Highly significant at $p < 0.01$.

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6. Summary

This section summarizes participant demographics, satisfaction levels, and platform acceptance, specifically in the context of the KMITL MASTERCLASS IN THE FUTURE study. This research explored a variety of opinions on factors influencing the acceptance of online learning through digital applications, as follows:

1. Gender
   Gender was found to have no significant relationship with satisfaction in using online platforms. It was also not related to satisfaction with the *Digital Skills for the Elderly* training course. Moreover, gender did not show a significant relationship with the acceptance of learning through online platforms in the KMITL MASTERCLASS IN THE FUTURE study.
2. Age
   There was no significant relationship between age and satisfaction with the use of online platforms. Similarly, no relationship was found between age and satisfaction with the Digital Skills for the Elderly training course. Age was also unrelated to acceptance of learning through online platforms in the context of KMITL MASTERCLASS IN THE FUTURE.
3. Education
   Educational background was found to correlate with satisfaction in using online platforms. Participants with different levels of education responded differently to the clarity and ease of understanding of the content, as well as the evaluations related to applying KMITL MASTERCLASS lessons to teaching, learning, and work.
   Education level also had a significant relationship with acceptance of learning through online platforms. Participants with higher education levels expressed a stronger intention to use online applications in the future and a preference for using online platforms for language learning over other methods.
4. Career
   Occupation showed no significant relationship with satisfaction with online platforms or with the Digital Skills for the Elderly training course. However, it was found to be related to acceptance of learning through online platforms. Participants' perceptions of enjoyment indicated that online language learning applications offer an engaging learning experience that encourages continued participation.
5. Average Current Income per Month
   There was no significant correlation between average monthly income and satisfaction with online platforms, nor with satisfaction in the *Digital Skills for the Elderly* training course. Similarly, no relationship was observed between income level and acceptance of learning through online platforms in the KMITL MASTERCLASS IN THE FUTURE study.
6. Family Structure
   Family structure was significantly related to satisfaction with the use of online platforms, particularly in opinions concerning the design of learning materials, such as the use of eye-comfortable colors, page harmony, and satisfaction with the evaluation process.
   It was also found to be related to acceptance of learning through online platforms. Participants indicated that the clarity and ease of use of online language learning applications made them more accessible. Additionally, they believed such applications improved the convenience of learning, enhanced language skills, and supported better comprehension. Regarding future intentions, participants expressed a preference for choosing online applications over traditional learning methods when learning a language.
7. Computer Experience
   Computer experience showed no significant correlation with satisfaction in using online platforms or with the Digital Skills for the Elderly training course. However, it was associated with acceptance of learning through online platforms. Specifically, participants with computer

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experience were more likely to perceive online language learning applications as enjoyable and engaging.

8. Experience Using the Internet to Search for Information
   Experience in using the Internet to search for information was significantly correlated with satisfaction in using online platforms, particularly in the evaluation of KMITL MASTERCLASS topics. It was also related to acceptance of online learning. Participants with such experience viewed the learning process as enjoyable and were more likely to engage with online language learning applications.
9. Experience Using the Internet to Improve Skills and Knowledge
   This experience was found to be significantly related to satisfaction with online platforms. Participants appreciated the flexibility to attend classes at any time and recognized the clear, standardized arrangement of lesson content, which aided comprehension. However, no significant relationship was found between this type of Internet use and acceptance of online learning through platforms in the KMITL MASTERCLASS IN THE FUTURE study.
10. Experience Using Online Learning Platforms
    Experience with online learning platforms did not correlate with satisfaction in using the platforms. Nonetheless, it was significantly associated with acceptance of online learning. Participants with prior experience were more likely to recognize the benefits of online applications, believing that they improved comprehension and increased language knowledge.

7. Discussion and Conclusion

Once the survey results were obtained, the researcher selected several courses that were most frequently chosen by the elderly to evaluate their suitability for further development. The goal was to ensure that these courses would offer quality learning experiences in terms of content, teaching techniques, and relevance.

Analysis showed that the early elderly group expressed the highest level of interest in the course Social Studies on the Elderly, accounting for 70 percent of the sample. This interest stems from their concern with preparing for healthy aging, emphasizing physical and financial stability as well as active social participation—all of which are essential for a fulfilling life in old age.

The second most preferred course was Digital Media Production, which elderly participants viewed as an essential skill in today's world. They recognized its value in maintaining communication across generations—with children, grandchildren, peers, and the wider community. Additionally, digital media skills were perceived as tools for fostering creative expression, career opportunities, and personal enjoyment.

Elderly participants with prior work experience and internet usage expressed strong interest in using online learning platforms specifically designed for seniors. Experts in elderly media production also provided suggestions for improving such platforms. One key recommendation was to develop a blended learning model—combining online self-learning with on-site training activities. This approach would enable the elderly to form networks through collaborative activities while also gaining hands-on experience through workshops. These workshops would support the development of skills related to creating online learning materials.

To ensure the continued relevance of these programs, new courses should be regularly introduced based on the evolving needs of the elderly in today's society. Course content should also be updated consistently, especially in subjects related to digital literacy. Topics such as digital media production, digital communication, media literacy, and digital-age investment are highly recommended. These areas represent essential and practical knowledge that older adults can apply in both professional and personal contexts.

Building on the insights gained from this study, future research should continue to explore new approaches and innovations that respond to the evolving educational needs of elderly learners and support active aging in an increasingly digital world.

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8. Recommendations for Future Research

Future research should expand the sample group to include elderly populations not only in urban areas but also in rural and semi-urban regions. Investigating regional differences in digital readiness and learning preferences will enable the development of more inclusive educational content and bridge the digital divide between urban and rural elderly communities. Additionally, longitudinal studies should be conducted to evaluate not only the initial acceptance of online learning programs but also the long-term retention of knowledge, sustained engagement with digital platforms, and the programs' overall impact on active aging and quality of life over time.

Further studies should also explore the integration of adaptive technologies, such as artificial intelligence-driven personalized learning systems, into e-learning programs for the elderly. This would allow researchers to assess whether tailored learning paths improve the accessibility, responsiveness, and effectiveness of online education for older adults. In addition to this, the development and assessment of blended learning models—combining self-paced online learning with in-person workshops or social learning activities—should be explored, as such models may enhance learning outcomes while fostering social connections that are crucial for the well-being of elderly learners.

Research focusing on psychological and emotional factors affecting elderly participation in online education is also recommended. Investigating aspects such as digital anxiety, self-efficacy, motivation, and the influence of family or peer support networks can provide deeper insights into strategies for promoting digital confidence and emotional resilience among senior learners.

Moreover, future studies should measure the relationship between participation in online learning programs and key active aging indicators, such as mental stimulation, social participation, physical well-being, and life satisfaction. A clearer understanding of these correlations could validate the broader societal benefits of elderly e-learning initiatives.

In terms of content development, research should emphasize the creation and evaluation of specialized course materials tailored to the evolving needs of elderly learners. Topics such as financial literacy, cybersecurity awareness, digital communication skills, and emerging technologies for daily living should be considered, as they directly support the autonomy and empowerment of the elderly population.

Finally, policy-oriented research is needed to provide evidence-based recommendations for the design of national strategies supporting lifelong learning for older adults. Studies that inform digital inclusion policies, funding models, and the incorporation of elderly-focused e-learning initiatives into broader aging frameworks will be instrumental in enhancing educational access and quality for Thailand's aging society.

Ultimately, future research that embraces these directions will help ensure that online learning programs not only respond to the diverse needs of elderly learners but also contribute to building resilient, inclusive, and age-friendly learning environments for the future.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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