DEVELOPMENT OF DIGITAL LITERACY SKILLS IN USING GOVERNMENT APPLICATIONS FOR THE ELDERLY IN SAMUT PRAKAN PROVINCE

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ABSTRACT
This research aimed to study the need for digital literacy in using government agency applications and develop digital literacy skills in using government agency applications among the elderly. This study began by using the Modified Priority Needs Index ($PNI_{Modified}$) of the digital literacy skills components: use, understanding, creation, and access, among 401 elderly participants in Bang Bo District, Samut Prakan Province, Thailand, and obtained an average $PNI_{Modified}$ of 2.18. Then, designed a learning management program in a multi-age classroom for the elderly. The appropriateness of the model had a mean score of 4.71 and the consistency of the objectives with the practical learning activities in multi-age classrooms (Index of Congruence: IOC) had a mean score of 0.83 and the experiment was conducted with 60 participants (volunteers from the $PNI_{Modified}$ questionnaire). The results of the study showed that the academic achievement after learning was significantly higher than before learning at a statistical significance level of 0.05 by t-test dependent.
Keywords: Digital Literacy Skills, Government Applications, The Elderly, Modified Priority Needs Index, Active Learning, Multi-Age Classroom

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INTRODUCTION

According to the Digital Economy Outlook report by the Organization for Economic Co-operation and Development (OECD), 62.8% of individuals aged 55-74 use the Internet, compared to 96.5% in the 16-24 age group (OECD, 2017) and Digital literacy, the digital space, and inclusiveness of everyone will consider the same level of society through digital, especially women, the elderly, and low-income people can contribute to the matter and direction of the information that will occur new resources (OECD, 2020). But some important reports and household information and communication from the National Statistical Office in Thailand. Find the age group of 50 only one hundred percent 9.6 tonight. B.E. 2558 use the Internet and increasingly have to use a computer. 24.3 in 2561 check in other ages than protein 70 for the Internet, especially 93.5 to check the age of 15-24 years and opinions 74.6 of the target group aged 6-14 years can use the Internet, reflecting some and the gap between each generation in access and control of the Internet by members of the elderly group. Therefore, if some people are to be developed to keep up with the changes 21 according to the measures to promote technology and innovation in the elderly group, this is an issue that cannot be ignored in Thailand (Department of Older Persons Affairs, 2022).

Elderly learning needs to be developed in the ever-expanding information technology, which is a practice in the current world. Because the number of elderly people is increasing rapidly, supporting the elderly to develop IT skills or lifelong learning is essential. Because many elderly do not know how to manage or check the accuracy and completeness of programs and digital devices that are necessary in their daily lives (Najmi Najiha Mohd Zaid et al., 2022), which is consistent with the current situation and trends of Thai society regarding the ageing society. The Thai government has allocated budgets and projects to develop and solve problems caused by the ageing society in Thailand, which tends to increase every year. Current problems for the elderly from the survey of household information and communication technology use by the National Statistical Office 2011-2014 found that problems of fraud via the Internet or mobile phones, such as direct sales, advertising of products on the Internet, advertising via SMS/MMS/various applications, charging fees that are not consistent with reality, and in the past ten years, exploitation of the elderly in this manner has occurred continuously (Department of Older Persons Affairs, 2022). And from the survey of the ability to use information technology among the elderly in Bangkok and Samut Prakan provinces, it was found that the ability to access digital media, the ability to understand the content of digital media The ability to analyze and evaluate and interact safely with content is low (Athicha Wutthirangsi, 2021).

Therefore, the development of digital media literacy skills, including use, understanding, creation, and access, for the elderly group is very important because it is expected that the elderly will have digital media skills effectively and safely through the process of organizing practical learning in multi-age classrooms that emphasize learning in an operational format and reducing the learning gap for the elderly in each age group.

LITERATURE REVIEWS

Relationship between Digital literacy skills and $PNI_{Modified}$

Digital literacy refers to the integration of technology in the creation of academic works (Blau, Shamir-Inbal & Avdiel, 2020). Individuals with this skill should possess knowledge and understanding of technology use, think critically before applying it in data management, have basic internet skills, demonstrate strategic Internet usage, and be creative in generating various forms of information online (Hasan Tinmaz et al., 2022).

The elderly population is growing rapidly, yet they often face a gap between their real and ideal use of technology. This gap is recognized by both community values and the increasing acceptance of technological changes, which encourages greater use of technology by older adults (Witkin and Altschuld, 1996). Therefore, it is crucial to strengthen the development of

technological skills necessary for everyday life, particularly for the elderly (Najmi Najiha Mohd Zaid et al., 2022). According to Heitin (2016), digital literacy skills consist of four key components: 1) Searching for information 2) Using content 3) Creating digital content and 4) Sharing digital content.
This aligns with Barrie et al. (2021), who emphasized that digital literacy requires the ability to access data, analyze it for use or dissemination, and understand how to effectively use tools to access or analyze various types of data.

Relationship between Multi-Age Learning and Active Learning

Multi-age classrooms create friendships and exchange their own learning experiences from different places, families, and knowledge backgrounds, but can be exchanged and learned in the same class to obtain more useful and interesting content in the classroom (David Pratt, 1986; Paula Carter, 2005) also stated in the same direction that multi-age classrooms are grouped into different ages, which helps create strong relationships between classmates and teachers. They also jointly promote success from collaboration in all classroom activities that emphasize students encouraging and creating knowledge from actual practice during teaching and learning, resulting in students connecting new knowledge with their previous knowledge (Bonwell, 2003). This is consistent with Prince (2004), who stated that it is a learning activity that promotes participatory learning behavior by giving students the opportunity to express their opinions, use their speaking, listening, reading, writing, and reflection skills, and have activities that are related and consistent with the content or subjects that all students are called to do. In addition to just sitting, watching, listening and taking notes (Felder and Brent, 2009), there are 3 components of a multi-age classroom according to the concept of Deborah L. Duay et al. (2008), which mentioned 3 aspects: 1) Learning from the experiences of participants by asking questions, discussing ideas and practicing new skills from a wider perspective. Learning is important in the process of being successful and participants must participate seriously with their classmates. 2) The teacher is the main component in the classroom. The teacher must present interesting things from their own learning experiences, giving importance to the students as if the students were their own rewards. 3) The learning environment must be organized to be as relaxing as possible, not making them feel pressured, not focusing too much on textbooks because learning of a diverse group of people needs to know and have more skills according to their needs to be used in daily life without being a burden to anyone, but not competing with anyone. Therefore, learning does not have to be done only in the classroom. But if the topic they are interested in is a topic that should be learned outside the real place, the curriculum should be organized to learn from the real place as well. And it should be a classroom that organizes learning in a mixed learning style between self-learning, learning according to preferences and personal personality. This includes learning that arises from individual differences (Zmuda Curtis and Ullman, 2015). Each aspect combines elements of active learning, including 1) micro-practice and reflection from questions, 2) learning by doing, 3) learning from transferring learning to each other, and 4) sharing learning experiences (Kannan et al., 2020). Similarly (Prince, 2004) defines active learning as any teaching method or training technique that engages participants in the learning process.
Therefore, active learning in a multi-age classroom consists of four components: 1) creating content from learners' experience data, 2) practicing together in mixed-ability and mixed-experience groups, 3) presenting with the teacher acting as a guide and stimulating learners' interest in a relaxed environment, and 4) assessing learners with positive reinforcement as shown in Figure 1.

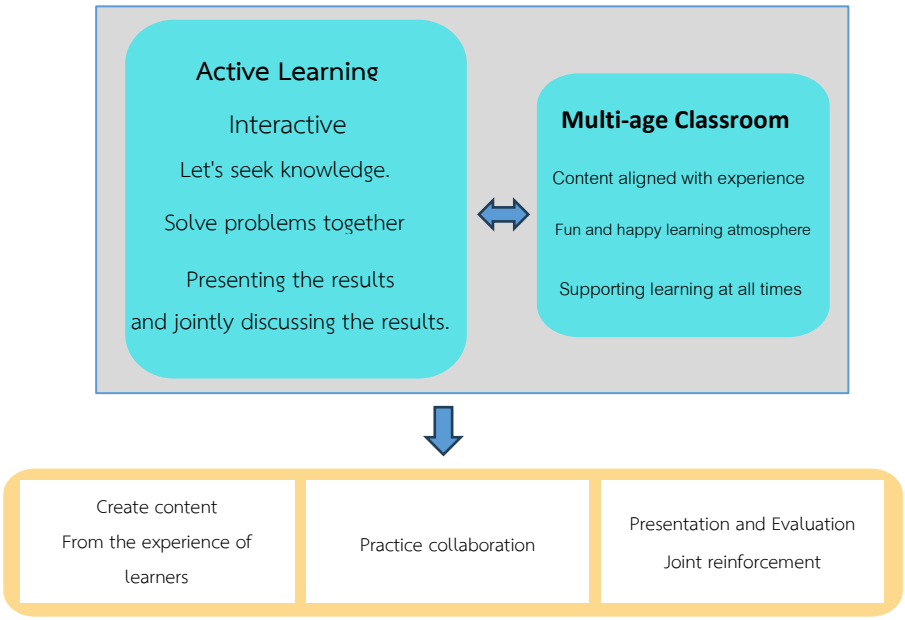

Figure 1 Draft pattern for active learning in multi-age classrooms

RESEARCH METHODOLOGY

The first process was to study and design a questionnaire on the $PNI_{Modified}$ for digital literacy in the use of government applications. For the elderly, the elderly between 60–70 years old, Bang Bo District, Samut Prakan Province, Thailand. The number of 401 peoples was obtained from the ready-made table (Krejcie and Morgan, 1970)

Create a questionnaire on the $PNI_{Modified}$ of the elderly group with 3 parts: 1) general information of the respondents, 2) the $PNI_{Modified}$ for digital literacy in 4 areas: digital use, digital understanding, digital literacy, and access to digital platforms. The creation of digital content and access to various content on digital platforms required respondents to choose the status quo (D) and the expected condition level (I), which is characterized by a 5-level rating scale, and 3) additional recommendations, and then submitted to 5 experts. The students are in the field of computers, information technology, and linguistics. The content validity and the Index of Congruence (IOC) were checked with an average value between 0.60-1.00, meaning that it can be used, and 30 non-sample elderly people were asked (try-out) to re-check the quality of the questionnaire in terms of reliability. (Pannee Leekitwattana, 2015) The average of the questionnaire for the current condition (D) was 0.98, the expected condition (I) was 0.97 and the overall was 0.98.

The data were analyzed by determining the frequency (f), percentage (pct), Mean (Mean) Standard Deviation (S) (Pannee Leekitwattana, 2015) and using the Modified Priority Needs Index ($PNI_{Modified}$) (Suvimol Wongwanich, 2015) to determine the criteria for determining The importance of essential needs. As follows

If the $PNI_{Modified}$ value is + (positive), it means that there is a need to take action because the current condition is lower than the expected condition.

If the $PNI_{Modified}$ value is 0 (zero), it means that there is no need to take action because the current condition is the same as the expected condition.

If the $PNI_{Modified}$ value is – (negative), it means that there is no need to take action because the current condition is higher than the expected condition.

The second process was designing practical learning management activities in multi-age classrooms for the elderly. Digital literacy in the Use of Government Applications (as shown in figure 2) with 5 experts in computers, information technology, and linguistics. The average

value of 4.71 and the consistency of the objectives with practical learning management activities in multi-age classrooms were considered. The average score was 0.83.

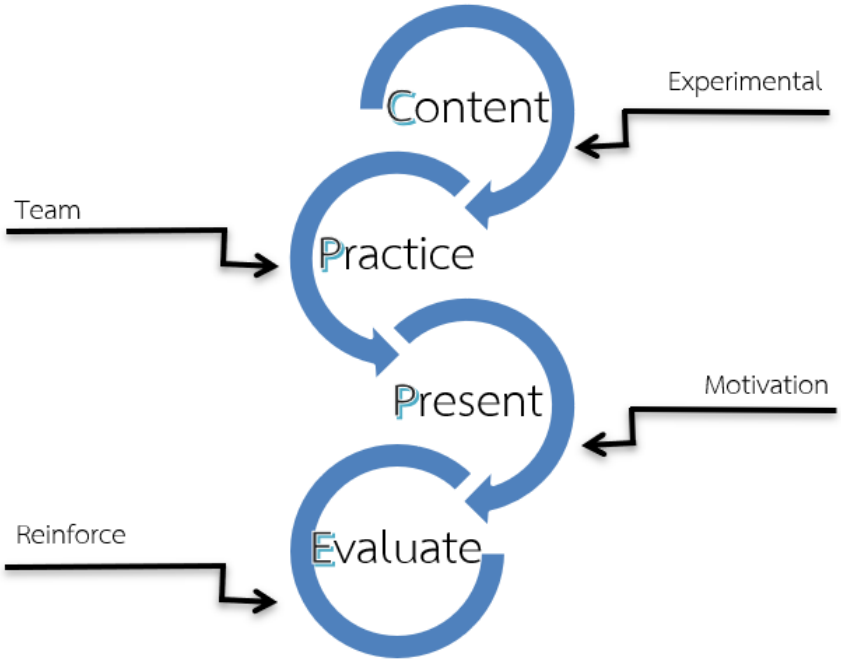

Figure 2 Active learning in multi-age classrooms

The third process was to collect 60 elderly volunteers from the $PNI_{Modified}$ questionnaire using criteria or estimates from the population (Boonchom Srisaeng, 2017) and create a test to measure the achievement of digital media literacy skills in the use of government agency applications for the elderly according to Bloom's concept of behavioral range (Anderson and Krathwohl, 2001) by applying 4 levels: memorization, understanding, application, and presenting the test to experts to check the content validity of 5 people, considering the consistency (Index of Congruence : IOC) with a conformity assessment (Pannee Leekitwattana, 2015) with an average value between 0.80-1.00. The average value of the classification power (r) was between 0.21-0.64, and the reliability was calculated using the KR-20 formula of Kuder-Richardson (Pannee Leekitwattana, 2015), and the average value was 0.76.
The fourth process uses a one-group pretest-posttest design (Pannee Leekitwattana, 2015) and analyses the data by comparing academic achievement. Re: Digital Media Literacy Skills in Using Government Applications for the Elderly Before and after classes with practical learning activities in multi-age classrooms. Using t-test statistics for two groups that are not independent of each other (t-test for Dependent Samples) (Pannee Leekitwattana, 2015)

RESEARCH RESULTS

The results of the study on the $PNI_{Modified}$ value for digital literacy in the use of government agency applications

The results of the study on the $PNI_{Modified}$ value for digital literacy in the use of government agency applications
Table 1 show the results of the $PNI_{Modified}$ study showed that the average total condition was moderate at 3.18 and the standard deviation was 1.06, while the expected condition was at a high level of 4.08, the standard deviation was 0.92, the average of the $PNI_{Modified}$ index was 2.18, and the most necessary priority was Use, which had a $PNI_{Modified}$ value of 2.23, followed

by Understanding, which had a $PNI_{Modified}$ value of 2.18, followed by Access, which had a $PNI_{Modified}$ value of 2.18, and the least, Create, had a $PNI_{Modified}$ value of 2.15.

Table 1 Shows the status, expected conditions and PNI of digital literacy skills for elderly in using government applications. (n = 401)

Topic	**status (D)**			**expected conditions (I)**			PNI	Order
	$\bar{X}$	**S**	**level**	$\bar{X}$	**S**	**level**		
Use								
1) Using Communication Applications	3.49	1.03	moderate	4.16	0.92	very	2.49	1
2) Use of Electronic Transaction Applications	3.13	1.01	moderate	4.15	0.89	very	2.13	3
3) Using Healthcare Applications	3.08	1.13	moderate	4.03	0.95	very	2.08	4
4) Using the application for entertainment	3.21	1.09	moderate	3.93	0.96	very	2.21	2
Averages	**3.23**	**1.06**	**moderate**	**4.07**	**0.93**	**very**	**2.23**	**1**
Understand								
1) Understanding the meaning of commands used to communicate on the application	3.31	1.02	moderate	4.07	0.95	very	2.31	1
2) Understanding the meaning of electronic transaction commands on the application	3.03	1.03	moderate	4.04	0.94	very	2.03	4
3) Understanding the meaning of healthcare-related commands on the application	3.06	1.08	moderate	4.06	0.91	very	2.06	3
4) Understanding the meaning of commands related to entertainment on the application	3.08	1.00	moderate	4.05	0.92	very	2.08	2
Averages	**3.18**	**1.05**	**moderate**	**4.06**	**0.93**	**very**	**2.18**	**2**
Create								
1) Using language to create text, images, and videos for communication through applications.	3.31	1.07	moderate	4.14	0.93	very	2.31	1
2) Using language to generate text, images, and videos to generate revenue and make transactions through the application.	2.96	1.03	moderate	4.01	0.92	very	1.96	3
3) Using language to create text, images, and videos for	3.05	1.05	moderate	4.07	0.94	very	2.05	2

Topic	status (D)			expected conditions (I)			PNI	Order
	$\bar{X}$	S	level	$\bar{X}$	S	level		
presenting health information on the application.								
4) Using language to create text, images, and videos for creating entertainment on the application.	2.96	1.05	moderate	4.09	0.93	very	1.96	3
Averages	**3.15**	**1.05**	**moderate**	**4.07**	**0.93**	**very**	**2.15**	**4**
Access								
1) Access to communications through the application	3.48	1.06	moderate	4.15	0.84	very	2.48	1
2) Access to electronic transactions through the application	3.09	1.02	moderate	4.27	0.82	very	2.09	4
3) Access to healthcare through applications	3.10	1.10	moderate	4.15	0.83	very	2.10	3
4) Access to entertainment through the application	3.17	1.10	moderate	4.79	0.53	most	2.17	2
Averages	**3.16**	**1.05**	**moderate**	**4.12**	**0.89**	**very**	**2.16**	**3**
Total averages	**3.18**	**1.06**	**moderate**	**4.08**	**0.92**	**very**	**2.18**	

Finalized Hypothesis Analysis show the results of the academic achievement by Active Learning Activities in a multi-age classroom.

Table 2 Show the results of the study showed that the academic achievement after learning was significantly higher than before learning.

Table 2 Comparison of Average Academic **Achievement Before and After School with Learning Management Activities Practical in multi-age classrooms for the elderly**

Learning Management	Activities		Media
	Instructor	Elderly	
1) Creating content from learners' experience data	Content Design and Learning Sequence	-	Slides and Videos
2) Practicing together in mixed-ability and mixed-experience groups	Divide learners into groups and mix experiences from the digital literacy skills test in using government applications. and create scenarios from various forms of government applications.	Take the test and join the group as arranged by the instructor. Members of the group help each other figure out how to use each screen. Understand how to use it Create accurate text and post images or videos, and	Government applications such as the government Gold by dop 1669, etc.

Learning Management	Activities		Media
	Instructor	Elderly	
		access information quickly.	
3) Presenting with the teacher acting as a guide and stimulating learners' interest in a relaxed environment	Stimulate interest in a fun way and provide guidance on how to collect information to design presentations.	Collect information and design media for presentation appropriately.	Canva
4) Assessing learners with positive reinforcement	Reinforced evaluation and encouragement at all times.	Present and exchange ideas with instructors and other groups.	Google from

Finalized Hypothesis Analysis shows the results of the academic achievement by Active Learning Activities in a multi-age classroom.

Table 3 Show the results of the study showed that the academic achievement after learning was significantly higher than before learning.

Table 3 Comparison of Average Academic Achievement Before and After School with Learning Management Activities Practical in multi-age classrooms for the elderly (n=60)

Achievement	Score	(n=60)		t	Sig.
		$\bar{X}$	S		
After	16	15.42	4.14	5.09	*0.00
Before		10.84	3.56		

*sig.< 0.05

DISCUSSION & CONCLUSION

Conclusion of the study on the $PNI_{Modified}$ of digital literacy skill in using government applications for the elderly.

The researcher studied the PNI to develop digital literacy skills in the use of government applications for the elderly in Bang Bo District, Samut Prakan Province, Thailand 401 people. The research tool is the PNI questionnaire to develop digital literacy skills in the use of government applications for the elderly. It is characterized by a 5-level Rating Scale, including: Questions about the status quo (D) and expected condition (I), both of which have a reliability of 0.98, and the data were analyzed by calculating the Modified Priority Needs Index ($PNI_{Modified}$). The results showed that the average overall value of the status quo was 3.18 and the standard deviation was 1.06, while the expected condition had a high average of 4.08 and the standard deviation was 0.92. The PNI between the average status quo and expected conditions is 2.18, and the most important priority is Use, which has a PNI of 2.23, followed by Understand, which has a PNI of 2.18, Access, which has a PNI of 2.18, and create, which has a PNI of 2.15.

Conclusion of developing digital literacy skills for the Elderly.

The researcher conducted a study and designed practical learning management activities in multi-age classrooms for the elderly, consisting of 4 components: 1) content creation, 2) collaborative practice, 3) presentation, and 4) evaluation, with an average appropriateness value of 4.71 and an average Index of Congruency (IOC) of 0.83.

The results showed that the results of the study showed that the academic achievement after learning was significantly higher than before learning at a statistical significance level of 0.05.

Discussion of the study on the $PNI_{Modified}$ of digital literacy skill in using government applications for the elderly.

This is in line with the research of Hasan Tinmaz et al. (2022), who made a necessary needs assessment in this regard, in line with Al-Ismail, et al. (2023), which emphasizes the key characteristics of learning, assessing the needs needed for continuous professional development, and Sittisak, et al. (2022), who report that the need assessment is a tool to help educators develop managerial skills and competencies. The Essential Needs Ranking is aligned with Chanyawudhiwan, et al. (2023) using the Enhanced Essential Needs Importance Index to rank the digital competencies of students in the Open Universities of Thailand.

Discussion of developing digital literacy skills for the Elderly.

This is in line with the study by Min Xia et al. (2020) on Multi-Stage Feature Constraints Learning for Age Estimation, which shows that learners of different ages can reduce the distance between each other, and this method can effectively improve the collaboration between differences such as age, ability, creativity, etc. And the concept of Active Learning, which is consistent with Miller B, at el. (2020), has compared the results of passive learning with Active Learning, and found that Active Learning makes learners more effective than passive learning.

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