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Development of Learning Model to Enhance the Elderly's Digital Competencies of Media and Information

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Abstract

The purposes of this study were to (1) synthesize the digital competencies of media and information for the elderly, (2) develop a learning model to enhance their digital competencies, and (3) investigate the results of the developed learning model as experienced by the elderly participants. The voluntary participants were 30 residents of Hua Hin District, Prachuap Khiri Khan Province, Thailand. The results indicated that the digital competencies of the elderly consisted of main purposes and major roles in which there were 4 functions of 9 competency units and 18 sub-units of the identified competencies. The developed learning model to enhance the digital competencies of the elderly contained 5 elements: (i) the defining of competency indicators, (ii) contents, (iii) teaching method, (iv) instructional media, and (v) evaluation. There were 9 learning modules developed by the researchers using the development method of competency-based training curriculum. The efficiencies of the developed learning modules were 83.33/82.56, computed by using the KW #2 method of efficiency validation. For the evaluation result of the developed learning model indicated that 25 of 30 persons passed the training criteria. The obtained chi-square statistic revealed no significant difference between the number of *pass* persons and that of the non-pass persons at the .05 level. The developed learning model could be confidently recommended to enhance the digital competencies of media and information for the elderly in similar contexts.

Keywords: *Learning model, media and information digital competency, elderly competency-based curriculum*

1. Background and Research Viability

The age structure of the Thai population has shifted dramatically in the past half century to the elderly of ages 60 and over in 1970 from 1.7 million people, or 4.9 percent of the total population, to 12.0 million or 18.1 percent of the total population of 66.5 million in 2020. Thailand was expected to be a “fully aging society” by the year 2022, which means that Thailand has taken time 17 years in becoming a fully-fledged aging society (Foundation of the Thai Gerontology Research and Development Institute, 2021).

As known, the use of social media to provide health information for older adults has been part of the information technology strategies among the government and private sectors as well as relevant community agencies related to health care services in support of living standards of the elderly and their caregivers. Some researchers paid attention to the urgent need for social media literacy for the elderly in Thailand. Ketsuwan (2018) pointed out that messengers and communicators need necessary skills for media literacy in terms of content accessibility skills as well as creative skills at work. Since participation, analysis and content evaluation are required in the use of social media, it is a must that the elderly group be trained in acquiring social media literacy to be able to function on the social media platforms of their choice. Yaree & Sikeaw (2019) identified the guidelines for the use of social media by the relevant agencies in encouraging the elderly to access needed health information via social media easily and widely in all regions of the country.

As for the Media and Information Literacy (MIL), its emphasis is on the ability to access *evaluate/understand* and the *use/creation* of information media in a variety of formats in terms of both effectiveness and criticism. Lee (2015) elaborated that it is not only dealing with content in the media but also all kinds of information media and messages from different sources, such as the internet, social media, e-libraries, virtual museums, and all other channels of communication.

The Thai government has continuously encouraged the elderly to be one of the driving forces in the country by transferring wisdom and experience to help create a balanced society of different generations. The development of information technology and creative media is also geared toward the senior groups to achieve a digital society for all people (Office of the Vocational Education Commission, 2019). It is important to promote public media freedom along with social media accountability measures. The Thai government also promotes the role of relevant organizations in educating the elderly on the use of media technology in accordance with safety and legal standards as well as awareness of other media users. The digital world and various technologies are vital to the elderly in keeping pace with the world in search of vast information. When Thailand has completely stepped into an aging society, many products will aim at facilitating the elderly's lifestyle and living conditions. In this regard, senior citizens need to learn and enhance their competencies in media literacy and digital technology to be able to live well, share information, and contribute their dues in the modern society.

2. Research Assumption

The research assumption was that the group of the elderly under study was able to pass the specified criteria of digital literacy after their training on enhancing media and information literacy competency via the developed learning model.

3. Scope of Research

This research had 30 voluntary elderly people ages 60-75 years in Hua Hin Municipality, Hua Hin District, Prachuap Khiri Khan Province.

The independent variables were learning styles for enhancing media and information literacy competencies for the elderly.

The dependent variable was the performance of the elderly in media and information literacy on the developed learning model.

The content used in the learning model to enhance competencies in media and information literacy for the elderly included:

1. Media access and safety in using digital technology
2. Analysis of media and digital technology
3. Creation and application of media in digital technology
4. Assessment of media in digital technology

4. Research Objectives

The purposes of this study were to:

- (1) synthesize the digital competencies of media and information for the elderly,
- (2) develop a learning model to enhance their digital competencies, and
- (3) investigate the results of the developed learning model as experienced by the elderly participants.

5. Research Methodology.

The researchers studied the concept and relevant information on competencies in digital technology, and then analyzed and synthesized the roles, duties and essential competencies for the elderly. After that, the researchers developed a process-oriented learning model to enhance users' competencies on media and information literacy. The researchers used the synthesized content and performance in four phases as follows:

Phase 1: Synthesis of media and information literacy competencies for the elderly. The researchers used media, information and digital literacy indicators at the personal level to promote democratic citizenship prescribed by the Children and Youth Media Institute as a model content for training competencies in media and information literacy for the elderly.

Phase 2: Development of a learning model to enhance competencies in media and information literacy for the elderly.

Phase 3: Development of a competency-based training curriculum.

Phase 4: Training and evaluation of media and information literacy capacity building for the elderly.

Research Tools

Phases 1-3: Use an assessment form to analyze performance development of learning styles and the development of a competency-based training curriculum on media and information literacy for the elderly. The researchers developed an assessment form and an evaluation form on a 5-level scale with the following meanings after Siljaru (2012).

The average score 4.51-5.00 means most agree.

The average score 3.51-4.50 means strongly agree.

The average score 2.51-3.50 means moderately agree.

The average score 1.51-2.50 means less agree.

The average score 1.00-1.50 means least agree.

Phase 4: Collect data with the competency assessment form on enhancing media and information literacy competency, and the media and information literacy training tests for the elderly.

6. Data Collection and Data Analysis

Phases 1-3: The researchers collected score data from the competency assessment form regarding learning styles and the developed competency-based training curriculum on media and information literacy for the elderly. These tools were content-validated by ten experts in digital competencies. The obtained data were analyzed for mean and the standard deviation.

Phase 4: The researchers collected data from the competency assessment form and the competency test of the trainees to obtain the efficiency value as KW #2 indicating the *pass* performance criteria (Whattananarong, 2012, 2017). As for the effectiveness of the developed teaching package, the score should not be less than 70/80 or $KW \#2 \geq 70/80$ to be considered effective. The number of *pass* trainees was compared with the total number of trainees by chi-square statistics.

7. Research Results

The Synthesis of Media and Information Literacy Competencies for the Elderly

The elderly's media and information literacy competencies were assessed by ten experts. The components of the function diagram and performance list are shown in Tables 1-4. These components were meant to develop the potential of the elderly to be literate in information media and digital technology.

Main Role: Understanding, Accessing and Safe Exposure to Media

Main Function: A. Access to Media and Use of Digital Technology

B. Media Analysis and Digital Technology

C. Creation and Application of Media and Digital Technology

D. Assessment of Media and Digital Technology

Table 1: Main Functions A: Access to Media and Use of Digital Technology

Unit of Competencies	Element of Competencies
A1 Understand roles and responsibilities and use digital media and technology safely.	A11 Describe the role and functions of the media. and digital technology.
	A12 Classify and compare media properties and digital technology.
	A13 Explain the laws related to the use of media. and digital technology.
A2 Access media and use a wide range of media and digital technology.	A21 Access and use a variety of information. and in line with users' own needs.
	A22 Transmit and disseminate information to others through media and digital technology correctly and safely.

Table 2: Main Functions B: Media Analysis and Digital Technology

Unit of Competencies	Element of Competencies
B1 Know and understand the structure of the media industry.	B11 describe the structure of the media industry.
B2 Analyze media differences.	B21 Able to analyze sources of media content and information.
	B22 Explain and compare objectives of content and information media.
B3. Analyze the construction of the media. and the connotation contained in the media content.	B31 Analyze the construction of the media.
	B32 Analyze connotation contained in media and information.

Table 3: Main Functions C: Creation and Application of Media and Digital Technology

Unit of Competencies	Element of Competencies
C1 Use media creatively and extend knowledge for use.	C11 Create ethical information and responsible and respect differences of opinion.
	C12 Use digital technology to creatively collaborate with people of both the same and different ages.
	C13 Use media and digital technology to seek knowledge to build upon existing knowledge and experiences.
C2 Engage in communication to create change.	C21 Participate in the selection of information media and digital technology according to their own potential and make changes that benefit individuals, communities and society.

Table 4: Main Functions D: Assessment of Media and Digital Technology

Unit of Competencies	Element of Competencies
C1 Assess the value and credibility of the media.	C11 Identify and evaluate good or bad information, useful or not useful and is it valuable or not valuable appropriate or inappropriate.
	C12 Check sources and accuracy of digital information.
	C13 Explain factors and elements that affect the credibility of media.
C2 Beware of the impact of disseminating information media on oneself, others and society.	C21 Assess risks and threats from the dissemination of information through media and digital technology.

The Development of a Learning Model to Enhance Media and Information Literacy Competencies for the Elderly

The researchers used the competency-based training framework as a guideline for developing the learning model. Ten experts in digital competencies content-validated the competency-based training model containing:

Element 1: Performance indicators of the elderly in using media and information

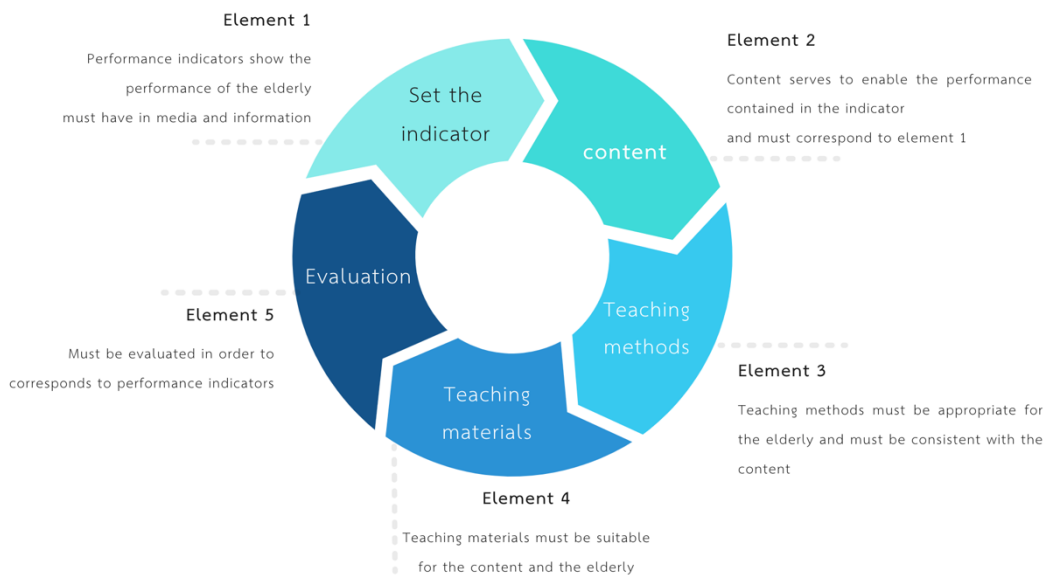
Element 2: Content enabling the performance contained in the indicators in Element 1

Element 3: Teaching methods appropriate for the elderly and consistent with the content

Element 4: Teaching materials suitable for the content for the elderly

Element 5: Evaluation of competency performance by performance indicators

Figure 1: Competency-Based Training Model on Media and Information Literacy for the Elderly



Training and Evaluation of the Elderly’s Media and Information Literacy Competencies

The efficiency of training for the elderly’s media and information literacy competencies is reported in Table 5. The results of the competency assessment of the trainees showed that 25 of 30 trainees or 83.33% met the competency evaluation criteria, indicating the efficiency of the process at 83.33%. The percentage of scores from those who passed the test was 82.56%, indicating the performance efficiency at 82.56%. The instruction set efficiency of KW #2 was at 83.33/82.56, which was greater than 70/80, interpreted as effective according to the specified criteria.

Table 5: Process and Performance Efficiencies

Total number of trainees	Number of pass trainees	Percentage of pass trainees	Percentage of scores obtained by pass trainees
30	25	83.33	82.56

Table 6: Comparison by Chi-square

Total trainees	Pass trainees	χ^2	Critical value	α
30	25	.833	3.841	.05

As seen in Table 6, 25 of 30 trainees met the assessment criteria at $\chi^2 = .833$ critical value = 3.841, which was lower than the expected critical value. The obtained chi-square statistic revealed no significant difference between the number of *pass* trainees and that of the *non-pass* trainees at the .05 level. This suggested that the number 25 could serve as a target number of trainees per group. The developed learning model could be confidently recommended to enhance the digital competencies of media and information for the elderly in similar contexts.

8. Discussion of Results

This research was to develop a learning model to enhance media and information literacy competencies for the elderly. The model was developed by synthesizing media and information literacy competencies obtained from the related literature and ten digital competency experts. The researchers converted the synthesized competencies into a competency-based training curriculum and training plans for media and information literacy for the elderly in 9 learning modules. The following points were discussed in the sequence of the research objectives:

8.1 Synthesis of Media and Information Literacy Competencies for the Elderly

The synthesis consists of (i) the main purpose, (ii) the main role, (iii) the main function of 4 functions, (iv) the competency unit containing 9 competency units, and (v) the sub-

component unit holding other 18 competency elements. The researchers developed the performance synthesis approach to media literacy information and digital competencies regarding security, media knowledge and media creation with social responsibility. Today's society is full of information that is disseminated through media on a variety of platforms in the rapid and continuous trend of digital communication technology. Users can create their own media--at times with appropriate and inappropriate contents. The use of digital technology in the virtual world inevitably affects the livelihoods of people of all age groups in society.

As seen in the reported indicators of media, information and digital literacy at the personal level to promote democratic citizenship, this point was in line with the research of Ketsuwan (2018) on increasing communication potential in the media literacy campaign among the elderly in Chiang Kha District, Phayao Province. Ketsuwan (2018) analyzed the process of increasing communication campaign potential about media literacy among the elderly in Chiang Kha District, Phayao Province and identified the necessary skills for media literacy similar to the findings of this present study in terms of content accessibility, substance analysis, media understanding and media literacy awareness.

The researchers used a function analysis technique to create a work function diagram starting from setting the main goal, defining major roles, specifying core functions, and identifying digital competencies and their sub-competencies. The reported competency elements under study included performance criteria, knowledge evidence and assessment guidelines, as studied earlier by Whattananarong (2012, 2017).

For consideration and certification of media and information literacy competencies for the elderly obtained by the synthesis approach, the researchers invited ten experts in digital competencies to evaluate the content validity of the developed curriculum and teaching techniques in educational technology and digital communication. This finding was in line with the research of Srisuwan (2019) on the development of a model for enhancing communication competency through *online video media* for small and medium enterprises entrepreneurs. The researcher synthesized online video communication competencies for small and medium enterprises--containing the main purpose, the main role, 5 main functions, 11 competencies and 22 sub-competencies.

8.2 The Learning Model

The researchers developed a learning model to enhance media and information literacy competencies for the elderly. The final result on suitability assessment for each component was found to be at a high level in the sum of the learning styles (Mean = 4.75, S.D. = .48). The assessment criteria were averaged of not less than 3.5--similar to those used by Siljaru (2012).

8.3 Training and Evaluation

The researchers arranged for training and evaluation of media and information literacy capacity building for the group under study by setting the process efficiency effect and the effectiveness of media literacy enhancement outcomes at $KW \#2 \geq 70/80$ to be considered

effective. The obtained efficiency was 83.33/82.56, representing a process efficiency of 83.33 and an output efficiency of 82.56. This type of process/performance efficiency was conducted earlier by Amatmontri (2017) on the development of a competency-based learning model on *the production of audio-visual media*. The efficiency of the process and the efficiency of the performance-based learning model on the production of audio-visual media read 73.33/83.02, representing process efficiency at 73.33 and performance efficiency at 83.02.

9. Suggestions

Based on the obtained findings, the researchers would like to suggest the following:

- The training should be divided into groups according to occupations or similar levels of basic knowledge for appropriateness in organizing activities.
- There should be follow-ups after the training periodically so that the trained group can update their latest development in digital competencies.
- Further research could promote and increase digital competencies of other older adult groups with new modules on citizen journalism and online marketing for specific products.

10. The Authors

Weerawat Pengchuay and Krismant Whattananarong are lecturers in the Department of Technical Education Technology, Faculty of Technical Education, King Mongkut's University of Technology North Bangkok, Thailand. Both authors have their research interest in autonomous learning, digital learning model development, information and media competencies, and recognition issues of particular groups.

11. References

Amatmontri, S. (2017). *The Development of a Competency-Based Learning Model on Audio-Visual Media Production*. A Doctoral Dissertation. Department of Technical Education Technology, the Graduate School, King Mongkut's University of Technology North Bangkok.

Foundation of the Thai Gerontology Research and Development Institute. (2021). *The Situation of the Thai Elderly 2020*. Nakhon Pathom: Institute for Population and Social Research, Mahidol University.

Ketsuwan, N. (2018). Enhancement of communication potential in the elderly group media in Chiang Kham District, Phayao Province. *Veridian E-Journal, Silpakorn University, 2018, 11(1): 523-539*.

Lee, A.Y.L. (2015). Understanding Media and Information Literacy. *Media and Information Literacy (MIL) in the Digital Age*. Bangkok, MIL, 20-21,

Office of the Vocational Education Commission. (2019). *Vocational Qualification Standards*. Bangkok: Office of the Vocational Education Commission.

Siljaru, T. (2012). *Research and Analysis of Statistical Data Using SPSS and AMOS*. Thirteenth edition. Nonthaburi: SR Printing Mass Products Co., Ltd.

Srisuwan, P. (2019). The Development of a Model for Enhancing Communication Competency through Online Video Media for Small and Medium Enterprises Entrepreneurs. A Doctoral Dissertation. Department of Technical Education Technology, the Graduate School, King Mongkut's University of Technology North Bangkok.

Yaree, U. & Sikeaw, M. (2019). The use of social media and health care of the elderly in Thailand 4.0. *Journal of Lampang Rajabhat University*, 2019, 8(1), 222-238.

Whattananarong, K. (2012). *Professional Competency*. Bangkok: Textbook Production Center of King Mongkut's University of Technology North Bangkok.

Whattananarong, K. (2017). *Trends and Issues in Technical Education Technology*. Bangkok: Textbook Production Center of King Mongkut's University of Technology North Bangkok.