

Digital Social Media Development for Learning to Promote the Power of Mental Health of the Elderly

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Abstract

The study aimed to 1) Study the accessibility and use of digital technology in the elderly; 2) Examine the peculiarities of elderly people's use of social media and the differences between elderly persons who use and do not utilize social media; and 3) Create the social media that affect the elderly in terms of loneliness reduction. The study sample was 50 people aged over 60 years, derived by purposive selection criterion. The experimental plan One-shot case design. Data was analyzed using mean, standard deviation (SD), percentage, correlations, and t-test. Study findings shown that 1) The majority of the elderly had communication devices. Two elderly people do not have a communication device, but fortyeight others have and use it for different reasons. As a result, using a communication device to address the problem of loneliness among the elderly is possible. 2) The findings with Less Lonely application cater to the needs of the elderly. The specialist indicated that the Less Lonely digital application was of Suitability level "the most" ($\bar{X} = 4.62$, $SD = 0.40$) and efficiency trials passed the 80/80 criteria. The percentage result of the One-to-One testing (80.67%), the small group efficacy findings were efficient (E_1/E_2) 80.18/82.00, the field group efficacy findings were efficient (E_1/E_2) 80.16/80.90. 3). The correlation between the amount of time spent on social networking apps and feelings of loneliness showed a significant correlation which a negative relationship. The social media affected the elderly in terms of loneliness reduction is Less Lonely application allow elderly people to engage with other friends. The results were found between the time spent on social media devices and their state of loneliness was lower.

Keywords: elderly people, digital media, mental health, aging process, loneliness

1. Introduction

Thailand met the demographic criterion for being named "aged society" in 2005, when the proportion of the total population aged 60 or overreached 10% and will meet the threshold for being labeled a "full aged society" when the elderly proportion hits 20% (Foundation of Thai Gerontology Research and Development Institute, 2014). Lampang province is the highest index of Aging in northern (The National Economic and Social Development Plan, 2020). Upon looking at data, it was discovered that 6% of the elderly lived alone, while 16% lived alone with their spouse. Social interaction is an important for human no one can living alone even though people are different some extrovert some introvert, but no one can live without interaction. A strong community bonds fosters both emotional and physical health of elderly life most studies examining the benefits of social support have focused on the elderly (Steptoe et al., 2009).

In this case study, two villages, Jom-Ping and Sri-Donmoon, are in the Na-kaew sub-district of Lampang where have got elderly problem in loneliness (Chienkul, 2017) because people of working age migrate to cities to work, more than 60% of the population in villages is old. Some people of working age spend only the night at home to rest before returning to work during the day. Other's reason is the changing of family size, the population ages and fertility drops, the elderly are now living in families with only three people on average compared to an average of five persons for 30 years ago (Foundation of Thai Gerontology Research and Development Institute, 2014). As a result, the elderly in these two villages have an unhealthy state of health that is depending on their age, according to the results of both physical and mental health examinations conducted by Lampang Hospital. Mental health issue is concerning, as 80 percent of the elderly were depressed (Ministry of Digital Economy and Society, 2017). Social isolation and relative loneliness occur from a lack of social engagement among the elderly. According to interviews with 50 elderly people in the villages of Jom-Ping and Sri-Donmoon, elderly people

frequently suffer from isolation when family members and relatives overlook of them. According to a questionnaire survey of the elderly in two villages, the elderly believe they are less efficient at work with a decaying body and death approaching elderly folks are perpetually enslaved by their fears of death. As a result, it is vital to adjust their mindsets about death and having reduced potential (Asdornnithee & Phukrongnark, 2012).

The research hypothesis was using digital social media technology will aid in the alleviation of loneliness among the elderly. Why digital social media technology is important? The usage of social media is an alternate solution to the problem of loneliness among the elderly owing to a lack of social connection. Social media and networking sites can assist elderly people in maintaining social relationships and participating fully in their communities. Technology not only encourage elderly people from becoming social isolation, but it also helps to build and maintain social relationships, which are important components in preventing the negative impacts of aging. Social distance can make it difficult for older people to make social contact, leading to feelings of loneliness and a lack of opportunities for social interaction (Walen & Lachman, 2000). Social media may overcome these barriers that engaged social contact by using online social networks.

Even in other countries, the use of social media to combat loneliness among the elderly is widely accepted. Because of the cultural and lifestyle variations in Thailand, it will be fascinating to examine how much access Thai elderly people have to social media digital technology, if it is used, and if it is related to the rate of loneliness. As a result, social media digital technology that is acceptable for the elderly in Thailand should be investigated. The Research Objectives aimed to 1) Study the accessibility and use of social media technology in the elderly; 2) Examine the peculiarities of elderly people's use of digital social media technology and the differences between elderly people who use and do not utilize social media; and 3) Create the digital social media that affect the elderly in terms of loneliness reduction.

2. Literature Review

2.1 Elderly Needs Social Interaction

Social interaction is an innermost human need of the elderly. A lack of social contact results in social isolation and relative loneliness. However, elderly people faced social isolation when family members and relatives do not have time to care for them or their best friends have passed away. Due to global demographic changes, this situation is increasingly affecting to more and more elderly people. The mentality of elderly people is varying, and some of elderly people seem to be more at risk of loneliness than others. Leist (2013) study of social isolation in elderly people group, the result showed that 7% of the elderly population are often lonely and social isolation would be affected the long-term mental health in elderly people group. Being elderly is often thought of as a lifelong risk, especially in terms of "the risk of death." However, it should not be considered that elderly people are constantly imprisoned with thoughts about death. This concept has been refuted in general among expertise of adult study. When living conditions are communicated, they are able to plan their future and realize their plans. It is more common to see them involve elderly association and becoming delighted about starting their own business. It is important, therefore, to change our thinking about the elderly and avoid false perceptions of aging (Tufan, 2011).

2.2 The Elderly and the Use of Digital Social Media as a Mode of Communication

Digital social media can enable elderly people to maintain social connections and participate actively. Technology not only helps them avoid being socially alone, but it also assists those who are already socially isolated in escaping their condition. Establishing and maintaining social interactions are key components of protecting against the downsides of aging. Social distancing, impaired movement, or doing daily activities that take a long time, may hinder elderly from social interactions. There is a risk that these folks will feel lonely and have limited opportunities for social interaction. Because social networks can be utilized to participate in social contact regardless of physical location or time. Thus, social media may be able to overcome these hurdles (Chamniandamrongkarn & Sumritdejkhajon, 2015).

2.3 The Opportunity to Use Social Media of Elderly

Although digital media technology is useful, the elderly currently does not make the most of this new technology. In the UK, 19% of adults who aged over 65 years have never used the internet (Office for national statistics, 2019). Likewise, in Thailand, 67% of adults who aged over 60 years have never used the internet (Thailand National statistical office, 2021). New technologies can play a significant role in generating many important benefits for the elderly by helping them to contribute better to society and giving them better access to public and private services. Similarly, a study conducted by Trabucchi (2011) noted that elderly people who used social networks and IT technologies can be keep their brains young, mental acuity, and lively life. Ministry of Interior

(2016) reported that some of the interviewees admitted digital media offered different levels of engagement, allowing many of them to feel a part of society. Most people agree that digital social media will help elderly people feel less alone. In addition, there is a significant correlation between social and digital isolation. According to The Ministry of Digital Economy and Society (2021), people who are most socially disadvantaged are also the ones who are least likely to have access to digital media. Furthermore, 15% of Thailand population is socially excluded and has no meaningful Internet interaction.

3. Method

The study was conducted in two villages of Na-kaew sub-district, Jom-ping village and Sri-Donmoon village. The elderly population: consisted of approximately 95 people.

The elderly sampling: 50 elderly people was obtained elderly people who live in Sri-Donmoon Village and Jom-Ping Village by using purposive selection criterion. The elderly people who aged 60 to 70 years were selected to being the sample. The experimental plan One-shot case design (Best & Kahn, 1993). Data analysis: The statistics employed for data analysis were mean (\bar{X}), standard deviation (SD), percentage, correlations, and t-test (Cohen et al., 1986).

3.1 Research Tools

The research Digital Social Media Development for Learning to Promote the Power of Mental Health of the Elderly created a data collection tool for use in research as follows.

- 1) Interview form about technologies use barriers: This interview form was created to investigate the unique characteristics of elderly people's use of digital media.
- 2) Elderly competency assessment Form: To investigate the differences between use digital social media and do not use. Composed of four stages: Social health, Intellectual health, Emotional health and Spiritual.
- 3) Quality assessment form: Three specialists will utilize it as a social media application quality inspector based on score interpretation; 4.01–5.00 = the most, 3.01–4.00 = very, 2.01–3.00 = moderate, 1.01–2.00 = few, 1.00 ≤ least.
- 4) Questionnaire on application usage; Using one-to-one testing to examine opinion when participants used social media application. The evaluation parameters depend on score interpretation; Strongly disagree (1–19%), Disagree (20–39%), Neither agree nor disagree (40–59%), Agree (60–79%), Strongly agree (80–100%).
- 5) Usability tests: used to measure the application usability through social contact behavior and are both formative and summative assessments for media efficiency E_1/E_2 (Promwong, 2010).
- 6) Loneliness testing questionnaire: Assess the extent of loneliness in the elderly after utilizing a social media application. The reliability of Loneliness testing questionnaire was measured by Cronbach's Coefficient Alpha analysis, the result showed high reliability that was .81 (Cronbach's alpha = .81). Moreover, the instrument validity was ranging from .67 to 1.00 that judged by three subject matter experts.

3.2 Data Collection

Data were collected from a group of 50 elderly in two villages, Jom-Ping and Sri-Donmoon. All research process took about 10 months were operates as follows:

- 1) Setting process of focus groups, observations, and interviews with elderly sampling groups to study the accessibility and use of social media digital technology
- 2) Analyze data from focus groups, observations, and interviews, as well as meet with the researcher group to plan the project.
- 3) To acquire information regarding senior people's use of social media, design all questionnaire and create field techniques.
- 4) Meeting with research participants to clarify and comprehend the questionnaires Then team started working in the field.
- 5) Analyze information gathered from focus groups, observations, and interviews with examine the peculiarities of elderly people's use of technology and the differences between elderly persons who use and those who do not utilize social media.
- 6) Set up social media application of elderly who live by themselves that has a positive impact on the elderly in terms of reducing loneliness.
- 7) After making improvements with the advice of specialists, the application was taken qualitative evaluations

and efficacy testing: 1) three experts' qualitative evaluations. They rated quality of application that showed the most level of quality 2) one-to-one testing, 3) small group E₁/E₂ efficiency testing, and 4) field group E₁/E₂ efficiency testing.

8) Experimental stage with a target group of 50 elderly individuals, with the goal of obtaining data on the effects of utilizing a social network media on the elderly in terms of loneliness reduction.

9) The stage of loneliness is assessed following the use of social media applications.

4. Results

The research approach is implemented in three parts to attain objectives: The results are as follows.

4.1 The Results of Accessibility and Use of Digital Social Media

Interviewing and a discussing group of 50 elderly people from 2 villages found that the data as shown in Table 1.

Table 1. Results of accessibility and use of social media digital for learning

Elderly population	don't have devices frequency (%)	have devices frequency (%)	Reasons for using communication devices				
			entertainment frequency (%)	Take photo frequency (%)	communicated frequency (%)	Information frequency (%)	Asking for help frequency (%)
Jom-Ping villagers (25)	2 (4%)	23 (46%)	5 (10%)	5 (10%)	5 (10%)	2 (4%)	6 (12%)
Sri-Donmoon villagers (25)	0 (0%)	25 (50%)	4 (8%)	8 (16%)	5 (10%)	3 (6%)	5 (10%)
Total	2 (4%)	48 (96%)	9 (18%)	13 (26%)	10 (20%)	5 (10%)	11 (22%)
Grand total	50 (100%)		50 (100%)				

Note. The table showing an overview of 50 elderly people, 2 people (4%) do not have a communication device and 48 people (96%) have a communication device and used it for different reasons, 9 (18%) for entertainment, 13(26%) for photography, 10(20%) for communicated, 5(10%) for information and 11(22%) for Asking for help.

4.2 The Results of Examine the Peculiarities of Elderly People' Use of Digital Media for Learning and the Differences Between Elderly Persons Who Use and Do not Utilize Social Media

The characteristics of the elderly's use of digital media learning, and also the differences between the elderly who use and don't use. The result was as follows.

4.2.1 Features of Elderly People's Use

Using the Interview form to interview a sample of 50 elderly people about hurdles of using digital social media for learning, as shown in Table 2.

Table 2. Barriers to using digital social media for learning

Samples' comment	frequency	Percentage	Solutions
Lots of content and hard to understand	50	100%	- The application should not contain a large amount of data and should be divided into sections with easy-to-understand phrases.
There are no usage instructions	49	98%	
Confusing to use	46	92%	- A clear instructional section or a demonstration animation should be included at each step.
Many menus make me dizzy	44	88%	
Complex route	43	86%	- The emphasis is on ease of access and comprehension; symbols may be used that are immediately understandable.
It has nothing to do with old age	41	82%	
Vision is blurry	40	80%	

Note. According to the table, the top seven issues that the elderly suffer when using digital social media. Therefore, digital social media application developers need to design to avoid these incidents. according to the solutions in the table

4.2.2 The Differences Between Use Digital Social Media and Do not Use

Interview with a sample of 50 elderly people using Elderly competency assessment Form to investigate the differences between those who use digital social media and do not. Composed of four stages and score

interpretation. 4.51–5.00 = the most, 3.51–4.50 = very, 2.51–3.50 = moderate, 1.51–2.50 = few, ≤ 1.50 = least. Inspection results are described in Table 3.

Table 3. The results of the differences between use digital social media and do not use are summarized

Item	Don't use digital social media			Use digital social media		
	Mean	SD	Level	Mean	SD	Level
Social health	1.33	0.51	least	4.60	0.65	the most
The satisfaction that comes from socializing can be obtained by participating in activities that enjoy.						
Intellectual health	2.29	0.34	few	3.25	1.04	moderate
When working or doing something be able to think and make good decisions prevention of dementia						
Emotional health	2.36	1.22	few	3.98	0.49	very
Be enthusiastic about everything around you and never feel bad about age or your current lifestyle.						
Spiritual	1.25	0.85	least	4.33	0.98	very
From the inside out, it's like having a mental anchor that provides a peace of mind.						
All items	1.81	0.73	few	4.04	0.79	very

Note. According to the table, the elderly who used digital social media for learning had greater scores than the elderly who don't use in all concerns. The issue that affected the most was social health. It was concluded that digital social media was a differentiating factor for older people to use and don't use.

4.3 The Results to Create the Digital Social Media Application for Learning that Affect the Elderly in Terms of Loneliness Reduction

4.3.1 Digital Social Media Application for Learning

Collecting and analyzing data to application design and development and defining features to fulfill the needs of the elderly, all based on data analysis. which has the characteristics as shown in Figure 1.

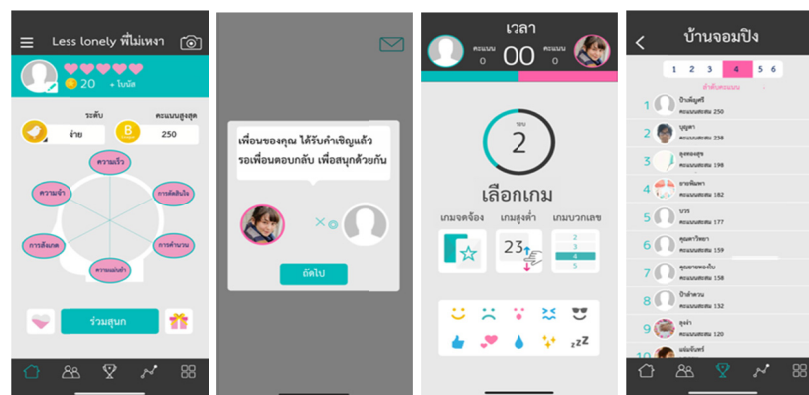


Figure 1. Shows the Less Lonely application screen

Application Information

Provider	Less Lonely
Size	150 MB
Category	Education/Health
Compatibility	Works at phone
Languages	Thai
Age Rating	60+

Application Features

Most importantly, the Less Lonely application allow elderly people to engage with other friends while using and establish a world free of loneliness by playing games together. The details of the Less Lonely digital application are as follows.

- Make friends by sending requests to interact, chat or call and have fun through gaming. Activities designed for elderly people with limited vision and accessibility
- 10+ games for critical cognitive skills like memory, processing, and precision
- Adaptive difficulty progression to ensure your experience is challenging
- Workout calendar to help you track your streaks and stay motivated

4.3.2 Quality Assessment of Learning Digital Application

The criteria for assessing the Less Lonely digital application based on score interpretation. 4.51–5.00 = the most, 3.51–4.50 = very, 2.51–3.50 = moderate, 1.51–2.50 = few, ≤ 1.50 = least. Inspection results of quality carried out by three specialists are described in Table 4.

Table 4. The results of the quality inspection are summarized

Item	Mean	SD	Level
Health issue content			
1. Social health	4.67	0.41	the most
2. Intellectual health	4.33	0.35	very
3. Emotional health	4.33	0.50	very
4. Spiritual	4.33	0.68	very
Total	4.42	0.48	very
Media composition and functionality			
1. Media suitable for elderly.	4.33	0.47	very
2. The content is reflected in the media characteristics.	4.67	0.00	the most
3. integrating creativity.	5.00	0.58	the most
4. The media is alluring.	4.33	0.47	very
5. Appropriateness of language for elderly.	4.67	0.58	the most
Total	4.67	0.41	the most
Measurement results			
1. There is an evaluation measure appropriate to the content.	4.33	0.58	very
2. There are various measurements.	4.67	0.47	the most
3. The difficulty of the test is appropriate for the elderly.	4.33	0.58	very
4. The test has a suitable number of questions for the elderly.	5.00	0.32	the most
5. Appropriate to user interests	4.33	0.15	very
Total	4.58	0.38	the most
All items total	4.62	0.40	the most

Note. The Summarizes the quality inspection results obtained by 3 specialists, indicated that the the Less Lonely digital application was of Suitability level “the most” (\bar{X} =4.62, SD=0.40).

4.3.3 One-to-One Testing

Three elderly people were chosen at random for the One-to-One testing. A questionnaire was used to gather information in order to gain a better understanding of the digital social media application and how they are used, as well as to assess the medium's actual operation for ways to improve it. The results are shown in Table 5.

Table 5. Results of Less Lonely digital application trial by One-to-One testing group

No.	Assessment Indicator	Participants			Score
		1	2	3	
1	Professionally appropriate content	9	8	8	25
2	The content is arranged in a logical order in reference to one another.	9	9	8	26
3	The information is organized according to the occupational hierarchy.	8	9	9	24
4	The content is simple and straightforward.	7	8	7	22
5	According to the actual work, the content is correct.	6	9	8	26
6	Design of a user-friendly application	9	9	9	27
7	The photographs in the program are stunning and plainly communicate	7	8	9	24
8	Access to a motivational application	9	6	6	21
9	The application and the experience can be linked.	8	8	7	23
10	The application is simple to use.	8	8	8	24
average value					24.20
Percentage (%)					80.67

Note. The percentage result of the One-to-One testing (80.67%) carried out by three participants indicated that the Less Lonely digital application accepted of strongly agree. Furthermore, according on participant feedback some of participants think the question need to be repeated more can't remember them by only seeing them for 1–2 times, if there were options to choose wish to repeat the words that would be great.

4.3.4 E₁/E₂ Efficiency Testing in the Small Group

The small group testing comprised a group of nine randomly selected. The E₁/E₂ efficiency results from the participants' evaluation of the Less Lonely application feasibility are shown in Table 6.

Table 6. Results of E₁/E₂ efficiency testing by small group according to the 80/80 criteria

N	Formative			Summative			efficiency E ₁ /E ₂
	A	Σx	E ₁	B	Σy	E ₂	
9	60	433	80.18	50	369	82.00	80.18/82.00

Note. Table 3 shows that the small group efficacy findings were efficient (E₁/E₂) 80.18/82.00 passed the 80/80 criteria

4.3.5 E₁/E₂ Efficiency Testing in the Field Group

A group of twenty randomly elderly participants with varying characteristics in terms of gender, age, and knowledge conducted the field group testing. Table 7 shows the E₁/E₂ efficiency results from the participants' assessment of the Less Lonely digital application feasibility.

Table 7. Results of E₁/E₂ efficiency testing by field group according to the 80/80 criteria

N	Formative			Summative			efficiency E ₁ /E ₂
	A	Σx	E ₁	B	Σy	E ₂	
20	60	962	80.16	50	809	80.90	80.16/80.90

Note. Table 4 shows that the field group efficacy findings were efficient (E₁/E₂) 80.16/80.90 passed the 80/80 criteria

4.3.6 Media Experiment Results

The media experiment step used 50 participants to observe the state of loneliness:

Table 8. Correlation between the amount of time spent on social networking apps and feelings of loneliness

State of Loneliness	Spearman's rho correlation coefficient	Jom-Ping.	Sri-Donmoon
		-0.849	-0.713
Sig. (2-tailed)		0.001	0.000
N		25	25

Note. The amount of time spent on social media platforms was found to have a significant correlation (Jom-ping (p-value=0.001) and Sri-donmoon (p-value=0.000)). The relationship was a negative relationship, experiencing a lower rate of loneliness.

5. Discussions

It was discovered that the majority of the elderly had communication devices. Out of 50 elderly people, 48 (96%) have a communication device, but use it for various reasons not over 20% each reason. As a result, using a communication device to address the problem of loneliness among the elderly is possible. However, possessing a communication device does not imply accessibility, as this study discovered that only a small percentage of elderly people use communication devices, which corresponds to a recent study (Romiszowski, 1992) published elderly perspectives on technology found that many times “frustration” with new technology made older adults unsure of their ability to use it, leaving them unmotivated to even try.

So apparently the problem of digital social media development for Learning to promote the power of mental health of the elderly was no input from elderly adults on their design (Academic focus, 2017). This study revealed that the usage of digital technologies by the elderly is limited. Therefore, we were collecting data from the elderly need. The emphasis is on simplicity of access and comprehension; symbols may be used that are immediately intelligible to decrease complication, and accessibility should be structured in a single direction when developing apps for them. Information concerning the elderly's way of life should be large, clear, and appealing on the screen. This study discovered that the development of this application was bottom-up process that begins with the elderly voice then continues to the design and development of an application that meets the needs of the elderly according to the researcher of the UC San Diego (Malik & Agarwal, 2012) wrote a ‘top-down’ design process creates mismatches between technologies and older adults’ needs. The findings of this study culminated Less Lonely digital application caters to the needs of the elderly by specialist quality assurance and efficiency trials criteria passed that can be confident in Less Lonely digital application.

The results of using of the Less Lonely digital application found that that amount of time spent on social media devices was found to have a significant correlation and their state of loneliness was lower. This involve most studies examining the benefits of social support have focused on the elderly (Costello, 2016) having a social network is crucial for psychological and physical health social involvement even social media device is also important as we age. In a study of Europeans over the age of 60 (Sirven & Debrand, 2008) found that individuals who participated in social or social network activities were more likely to report good mental and good health.

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