Conceptualising Digital-Based Instructional Strategies for Elderly Learning

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Abstract

With the increasing number of elderly people and the vastly developing technologies in today's world, technological devices can be considered an essential item that every household must have. Every individual must possess digital literacy. However, not everyone can handle technological devices. The high possibility of facing sensory and cognitive decline after the fourth decade of their lives makes the elderly operate slower than other users of technologies. The integration of instructional strategies during the teaching and learning period with elderly learners could mitigate the barriers between the elderly and their learning. In this study, an extensive literature review was conducted to look into past research on instructional strategies for elderly learners was used. From the literature reviewing, six instructional strategies were identified. This study adopted the Technology Acceptance Model (TAMS) by proposing a conceptual model, placing the instructional strategies as the determinants and drive for the elderly learners to use technologies.

Keywords: elderly learning; instructional strategy; technology acceptance model; technology

1. Introduction

The topic around the use of Information and Communication Technology (ICTs) by elderly people has received quite some attention over recent years (Castilla et al., 2018). Currently, the world is experiencing an increasing amount of aging population (United Nations, 2019). These aging populations, otherwise named elderly, make up the group with the slightest presence on the Internet (Van Volkom et al., 2014, Castilla et al., 2018). In today's world, technologies especially mobile devices are considered as an essential item to everyone to be able to function in their daily lives. Despite its functionality, the idea of technological devices is easy to use does not seem to be shared by everyone, particularly the elderly people (Iancu & Iancu, 2020)

Technology has many known advantages, mainly for the elderly, as it can improve their quality of life even after their retirement age (Castilla et al., 2018). Technologies could also improve elders' wellbeing besides increasing their self-esteem and their confidence as to not having to rely on other people to complete their tasks and errands. Other than that, with technologies, it can lessen the feeling of loneliness from engulfing the elders as they con maintain their social life through communicating with their friends through online platforms (Gamberini et al., 2006; Castilla et al., 2018).

Some studies reported that though technologies are common, daily users also face struggles in understanding and decoding symbols or even remembering instructions (Fisk et al., 2004; Iancu & Iancu, 2020). However, the ones who are believed to struggle more than others are the elderly, as they find it to be a challenge in using ICTs as a result of their feeling of helplessness and fear, as a result of constant failures that they have experienced, leading to their own (Minge et al., 2014). Compared to the younger generation of ICT users, elderly people are recognized as having limited operating technological devices, other than scrolling and clicking, with limited experience going through systems and software (Damant & Knapp, 2015).

Iancu and Iancu (2020) mentioned in their study that elderly people tend to have difficulties understanding vast information at a time or notice and catch screen changes. This causes the elderly to operate at a much slower pace than others, besides tending to repeat errors and are reluctant to take initiatives (Akatsu et al., 2007; Iancu & Iancu, 2020). It has been found that a decline in sensory and cognitive abilities occurs as people experience aging. This causes elders to view the process of learning new skills and abilities before being able to independently operate technological devices as a barrier or a (Melenhorst & Bouwhuis, 2004; Iancu & Iancu 2017).

Instructional strategies can incorporate opportunities for the learners to exercise the theories or the knowledge taught to them into the real world, preferably to solve problems, or even draw conclusions and solve problems (Oliver & Oliver, 2018; Scott & Scott, 2015). A teaching method that utilizes only one single teaching strategy is almost impossible. According to Campbell (2002), effective and efficient instructors would utilize multiple instructional strategies during lessons in order for the learners to gain successful learning experiences, both cognitively and behaviourally. Ackdeniz (2016) also mentioned how instructors should consider various instructional strategies to help learners achieve active learning experiences in all aspects, including cognitive, affective, and kinetic aspects. This study thus aims to identify instructional strategies that could be adapted into the learning sessions with the elderly learners, in hopes to create an effective knowledge transferring session that would benefit the elderly population.

2. Literature Review

2.1 Elderly Learner and Digital Literacy

Education is known as an agent to activating a person's knowledge and skills. For the elderly, education is a way to recognize their potential, besides to uphold themselves. To create and enhance a cultivated individual and society, elderly learning should be established as it brings many advantages, including prolonged socialization, utilizing, and expanding their existing knowledge, and improving the elderly's quality of life (Zharkova et al., 2020).

In order to enable the elderly population to make full use of the technology available to them, training programs are considered essential as it could not only train the elders, but also to minimize the digital gap present (Peral-Peral et al., 2015; Padilla-Góngora et al., 2017).

As the world moves forward, many technological devices are being produced in a fast pace, grabbing the attention of people from all ages, young to elderly (Sackmann & Weymann, 1994; Schäffer, 2007). Previous researchers Mitzner (2010) and Güner (2017) in their studies have mentioned that by encouraging the elders to make proper use of technology around them could enable them to become more independent, thus improving their quality of life.

According to the Digital Competence Manifesto (2020), digital skills cater to all spheres of life, including social or personal life, public or private life, and others, and

that by obtaining digital literacy skills, the elderly would be able to participate actively and contribute to the community, besides being able to maintain long-lasting relationships with their family and friends. These opportunities are essentials to creating a competent living experience for the elderly, thus supporting their involvement within society.

2.2 Instructional Strategy

Instructional strategies consist of steps based on theories and studies designed to enhance a particular student's learning style. According to Seechalio (2017), instructional strategy refers to the concept, approach, or principle of conducting, calibrating, and evaluating instructions that are to be used. Hence, many instructional components need to be considered before implementing instructional strategies. The instructional components consist of the individuality of the learners, such as their knowledge, behaviour, and attitudes, other than the objectives of the lesson, the contents of the lesson, the overall context, and the instructors' skills.

It is crucial to align learners' learning styles and instructors' teaching skills when designing and selecting instructional strategies (The Royal Institute, 2012; Seechaliao, 2017). Teaching and learning for the elderly community requires the implementation of specific strategies and approaches to ensure quality and effective learning to happen (Martínez-Alcalá et al., 2018).

Instructional strategies concentrate on improving learning based on the activities initiated and assisted through instructions (Seel et al., 2017). In order to achieve effective production and transmission of instructions, lesson content and materials to be used during the lessons are essential aspects to be considered. Deliberately and purposely integrating learning strategies into the course's design can create efficiency (Hultberg et al., 2018).

With the utilization of appropriate approaches and integration of the design of the course (Fink, 2003), learners' positive learning outcomes can be accomplished when instructors create significant learning experiences for them (Hultberg et al., 2018). With that, education for the elderly should consist of a personalized strategy that could cater to the elderly people's needs to provide a meaningful learning, which could create an environment where the elderly feels comfortable to learn with ease, thus making the adaptation of technology in their live more probable (Martínez-Alcalá et al., 2018).

3. Research Method

With the guidance of the ROSES review protocol, an extensive literature review was conducted to study instructional strategies used by past researchers specifically for elderly learning. ERIC, Google Scholar, and MDPI were used as reliable databases searching for relevant articles to be reviewed for the current study. The review of articles involves identifying articles that contain relevant information to be included in this current study through said databases.

Next, after obtaining the articles, the second process would be screening through the articles by reading the title and abstract, deducting the ones that are not relevant to the current topic. This is to minimize the number of articles and a process to ensure that the articles that would be reviewed are eligible for the current study.

Once eligible articles have been determined, the content of the articles is reviewed, extracting eligible and suitable information to include in this study. For this present study, identifying, analysing, and reporting sub-themes are based on thematic analysis, also known as qualitative analysis techniques by Braun and Clarke (2006).

Table 1 below shows the instructional strategies that were obtained as a result of the thematic analysis conducted earlier. The table shows the instructional strategies that were implemented, also the specific tactics that the past researchers have used during the instructional period with elderly learners.

Table 1: instructional strategies and the specific tactic used by previous authors

Instructional strategy	Specific tactic
Collaborative learning	Engagement in activities and between learners
	Participation in course/learning activities
	Implementing and encouraging cooperative learning strategies during lessons
	Intergenerational learning activities
	Application of mentoring
Using teaching aids	Implementing and integrating teaching aids; - Audio-visual aids - Technical aids
	Integrating reading materials
	Integrating game-based strategy during teaching and learning session
Relevance	Relevant to elderly learners' needs
	practical
Understanding learners	Incorporate elderly learners' background knowledge
	Experience-based learning strategy
	Personalized learning
Formative assessment and feedback	Giving exercises during and after learning to assess learners' understanding
	Time-to-time assessment
	Feedback is given to motivate learners
Types of teaching and learning approaches	Modifying and adapting teaching and learning approaches according to learners' needs and characteristics
	Types of materials, activities, and assessments
	Selecting appropriate teaching and learning methods to cater to learners' needs

Implementing just one single teaching method during an instructional period is considered to be almost impossible. In order for learners to experience effective learning, instructors would need to choose among the various instructional strategies present to cater to the learners' needs, resulting in them achieving impactful learning in all aspects, including cognitive, behaviour (Campbell, 2002) and kinetic fields (Ackdeniz, 2016).

4. Proposed Conceptual Model

Based on the extensive literature review discussed in the earlier section, this paper proposes a conceptual model in placing instructional strategies as the determinants to guide the elderly learners in using technologies (Figure 1).

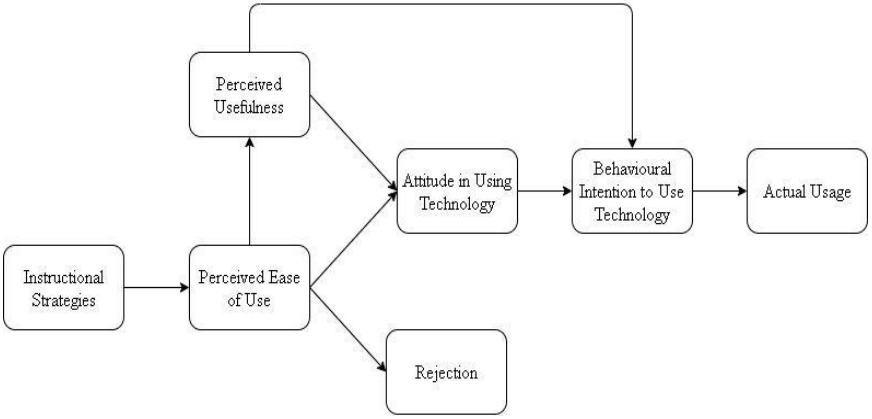

Figure 1: Proposed Conceptual Model

4.1. Perceived usefulness

As cited by Guner (2017), Davis (1989) defined perceived usefulness as an individual's subjective interpretation of the usage of a digital device within a particular context. As Jahangir and Begum (2008) interpreted, usefulness is the individuals' judgment if a task could be completed more systematically by using technology than done manually. Perceived usefulness is one of the essential elements of adoption and the usage of technology (Tarhini et al., 2016; Negahban & Chung, 2014; Callum &

Jeffrey, 2013; Joo & Sang, 2013). Previous studies revealed how perceived usefulness contains practical and positive influences on the actual usage of technological devices (Lee & Kim, 2009).

4.2. Perceived ease to use

Perceived ease of use is a term used to define an individual's understanding and perception regarding the easiness of a system or technological device and ways of operating them in a given setting (Davis, 1989; Guner, 2017). Davis (1989) also described perceived ease to use as "the degree to which a person believes that using a particular system would be free of effort". Previous studies noted that perceiving ease of use has a positive relationship that links to the actual usage (Anisur et al., 2016; Elkhani et al., 2014; Kripanont, 2007).

4.3. Attitude in using technology

According to the Cambridge dictionary, attitude carries the meaning of an individual's feeling or opinion regarding something or even someone. In this model, attitude is the positive or negative emotion that an individual possesses concerning using a system or any technological device (Venkatesh et al., 2003; Guner, 2017). An individual's attitude when using technology has a significant role in adapting and adopting technology, especially for individuals who have less experience operating technological devices (Razmak & Bélanger, 2018).

4.4 Behavioural intention to use technology

Behavioural intention can be defined as "the person's subjective probability that he or she will perform the behaviour in question" (Venkatesh et al., 2003). Past researches have reported that behavioural intention can be used as a critical and valid predictor of how someone would behave during the actual use of technology stage (Ajzen, 1991; Chau & Hu, 2002; Mathieson, 1991; Venkatesh & Davis, 2000; Venkatesh et al., 2003). This is based on the amount and types of motivation the learners have that will influence a specific behaviour that will result in the learner performing in a way they intended (La Morte, 2019).

4.5. Rejection

Rejection of technology can be understood in a way where individuals within a community, regardless of age, have little to no problem accessing technologies, however voluntarily abstaining from utilizing the devices, wholly or entirely (Rama Murthy & Mani, 2013). The authors further found that this phenomenon is caused by multiple factors that mostly come from the nature of interaction among the community and technological devices, which heavily rely on the literacy advancement of the users.

The model had adopted the task, technology, and individual characteristics from the technology-to-performance chain model by Goodhue and Thompson (1995). Huang and Chuang (2016) explained that this model helps users and establishments with the mastery of utilization and performance impact. Task characteristic is the job requirements, technology characteristic is the technology's functionality, and individual character is the abilities of an individual using said technology. Depending on the user's attitude, it affects the usage of the technology to complete the task given. The technology characteristics should cater to the task given. In addition, the characteristic of an individual to use the interactive tool will then facilitate learners' interactive learning effectively.

5. Conclusion

As technologies continue to rapidly develop and the number of elderly people is constantly increasing, knowing how to use technologies, even just the basics, is fundamental. Technologies are known to be very helpful in managing and executing tasks, small or big. Even for those aged 65 years and above otherwise known as the elderly, being digitally literate and to be able to actively operate their own technological devices is essential.

Adding on to the barriers that are faced by the elderly people with some complex devices that are developed nowadays, elderly might shy away from using these devices. However, by implementing instructional strategies during the teaching and learning session with the elderly learners, the barriers that are face by them could be mitigated, and the elders will eventually be able to adopt technological devices in their daily lives.

The systematic literature review conducted has resulted in the finding of 6 instructional strategies that could be implemented during elderly people's learning process, besides the activities that could be done under each strategy. With the integration of instructional strategies during the lesson, it could affect the elders' view

in the ease of use of the technology, which would influence their decision in either wanting to use the technology or reject it. Instructional strategies could also influence the elderly's attitude in using technology. Hence it is why the selection and adaptation of instructional strategies in the learning session for elderly is crucial. Elderly could become interested in using and have a desire to learn to use technology if elderly see the relevance of it to their lives and appropriate learning methods are provided (Liu, 2020).

6. Recommendations for Future Studies

Although having these instructional strategies outlined, it is still crucial to identify the rate of effectiveness of each of the strategies, and whether the rate of technology acceptance of elderly people increases or decreases with the implementation of instructional strategies in the lessons. As this study conducted an extensive literature review, the instructional strategies found were not implemented on elderly people in the real-life settings as it only looked into past research. Future researchers could use the strategies identified in this study to act as the determinants in the technology acceptance model as proposed in this study.

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