

## Connected Older Adults: Conceptualising their Digital Participation

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## **Abstract**

Older adults' experience of the digital divide is apparent and under explored. This paper presents a model for conceptualising older adults' digital participation by positioning self-efficacy theory, digital competence and personal learning environments together. In proposing the model we seek to illuminate a pathway toward digital participation for older adults that is afforded by developing digital self-efficacy. Following the overview of our model, we exemplify our steps towards a research agenda that seeks to examine this model by outlining the current study we are undertaking.

## **Introduction**

As adults move toward their latter years, they may experience acute complications in the process of ageing well: existing with a reduced income, health issues, and social dislocation due to no longer holding economic and socially valued roles. There has been some evidence to suggest that digital technologies have the potential to improve opportunities for older adults to socialise, access services and learning, and in turn improve their quality of life and enhance social capital; moreover some of the fastest growth in uptake of technology is occurring in older adult cohorts (Cotton, Ford, Ford, & Hale, 2012; Warburton, Cowan, & Bathgate, 2013). Yet, these benefits may be accruing for relatively few older adults as the digital divide fails to narrow to any significant degree with older adults continuing to experience lower levels of digital technology use compared to younger people, and with apparent group differences in technology use within older adulthood (Warburton et al., 2013; White & Selwyn, 2012). If, however, we wish to capitalise on the potential for older adults in an ageing population to "contribute to the re-forming of society" (Martin, 2009, p. 3) and for digital technologies to improve the health and wellbeing of individuals and communities, it is imperative that we seek to more fully understand what influences older adults' digital

participation, including issues associated with the heterogeneity of older adulthood and technology access, but also choice and motivation.

With this in mind, our challenge in this paper is to map a model that signposts a path towards examination of ageing adults as they navigate the digital era (Figure 1). Our conceptualisation has its basis in Bandura's (1997) self-efficacy theory, a motivational construct in the social cognitive tradition. Over the past decade, self-efficacy has appeared as a variable of interest alongside others for explaining older adults' digital technology use, but to the best of the authors' knowledge no self-efficacy framework integrating Personal Learning Environments (PLEs) and digital competence has been adopted to explain older adults' digital participation. In the paper, we first present an overview of self-efficacy theory and its association with older adults' digital participation. We then chart a path towards exploring how digital competences and PLEs might afford digital self-efficacy and digital participation and promote social connectedness, identity enhancement and the well-being of older adults.

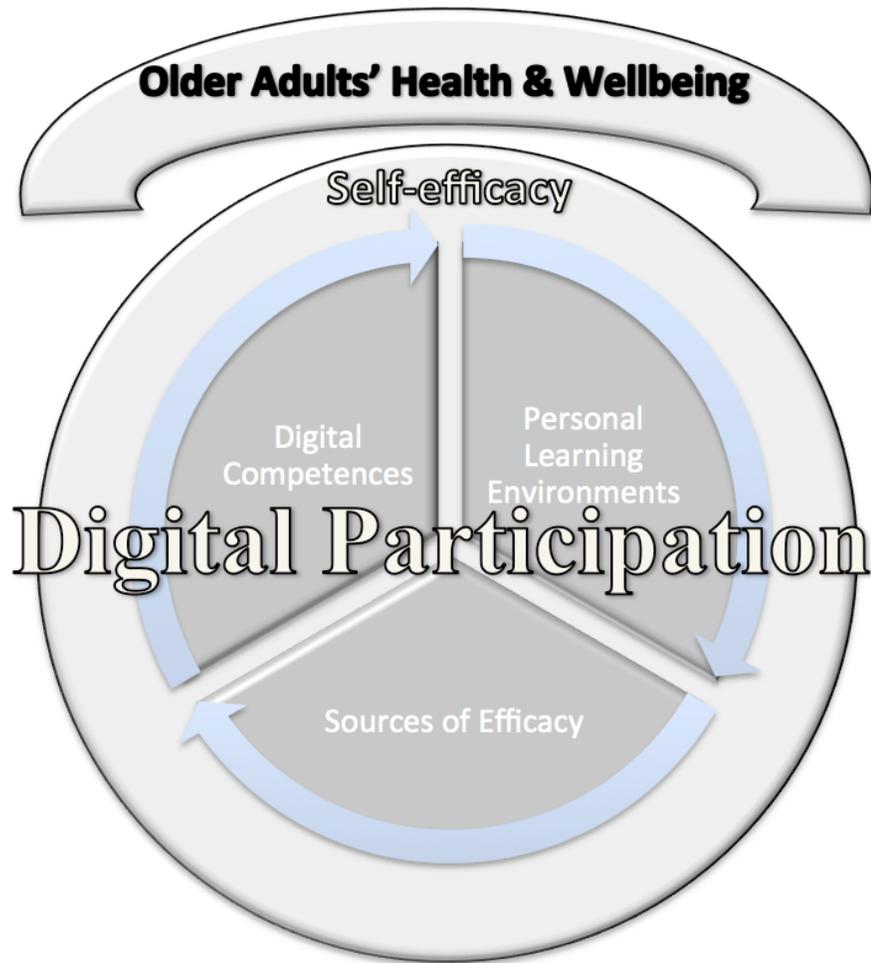


Figure 1. Conceptualising older adults' digital participation.

### **Self-Efficacy Theory and Older Adults Digital Participation**

Self-efficacy can be defined as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p. 3). Self-efficacy is a belief about capability rather than actual skills, and while both are required for effective functioning, Bandura asserts that self-beliefs are the critical factor for personal agency, the exercise of self-control, and achievement (Bandura, 1997). Certainly, confidence that one can achieve beyond their capability is not likely to make it so, but if individuals do

not believe they have personal capability, they will not attempt to do so irrespective of whether they have the skills. This may well be the case with some older adults as they confront the digital world with studies showing that those older adults with higher technology self-efficacy are more likely to be internet users, engage with Facebook, and adopt computer technology compared to those who feel less confident (e.g. Bell et al., 2013; Czaja et al., 2006; Eastin & LaRose, 2000). The implication is that seeking to develop older adults' technology-related confidence may prove valuable for cultivating older adults' digital participation.

Self-efficacy theory also specifies four antecedents or sources that influence self-efficacy judgments: enactive mastery experiences (previous accomplishments); vicarious experiences (observed or modelled experiences); verbal persuasion (verbal or social feedback associated with experience); and physiological and emotional states associated with experience. The self-efficacy judgments arising from these four sources affect goals, persistence, and motivation, which in turn affect behaviour and performance. Self-efficacy is cyclical, incorporating a feedback loop whereby performance and its consequences become new sources of efficacy information. That is, self-efficacy is both a product and a constructor of experiences. According to self-efficacy theory then, older adults' digital participation may be enhanced by seeking to improve their self-efficacy through the mechanisms associated with the sources of efficacy information. Practically this might be achieved by conceptualising digital technology training and support according to the sources of efficacy information, and although there are studies that have explored the impacts of training and support on older adult's digital participation (e.g. Russell, 2011) the authors know of no studies to date that have used the sources of efficacy information to guide the design, implementation or evaluation of technology-related learning and support experiences for

older adults. Additional to the sources of efficacy, comparison of one's personal competence in relation to the task and the nature of the setting also contribute to self-efficacy judgments. Personal competence can be considered as current functioning, which along with analysis of the current context, contributes to self-efficacy judgments that are a prediction of future capability. In the next section we argue that in our integrated self-efficacy model of older adults' digital participation the concept of personal competence is appropriately conceptualised as digital competences, and that PLEs offer a comprehensive approach to the analysis of contextual aspects that might influence older adults' digital self-efficacy judgments.

### **Integrating Digital Competences, PLEs and Self-Efficacy Theory**

Older adults are reported as having the lowest levels of digital competence of all consumers, this being cited as a key factor for older adults' low digital participation (Warburton et al., 2013). What is digital competence? A simple search on the Internet and within the academic literature reveals an array of definitions and variations in the use of the term digital competences such as: technological literacy, e-literacy, internet literacy, and digital literacy; and it is often associated with other concepts such as information literacy, media literacy, visual literacy and communication literacy, all of which offer a particular nuanced perspective. Current major projects and models reported in the literature nevertheless tend to be framed in terms of either digital competences or digital literacies. Reviews of current definitions of these terms, two of which are offered below, indicate the concepts of digital competences and digital literacies may be similar in their intention and application:

[Digital competence] “(...) *consists in being able to explore and face new technological situations in a flexible way, to analyze, select and critically evaluate data and information, to exploit technological potentials in order to represent and solve problems and build shared and collaborative knowledge, while fostering awareness of one’s own personal responsibilities and the respect of reciprocal rights/obligations.*”

Calvani, Cartelli, Fini, & Ranieri, 2008, p. 186

[Digital literacy is] “(...) *the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process.*”

Martin, 2005, p. 135, DigEulit project

A review of various frameworks and models of digital competences and digital literacy also initially suggest they are interchangeable terms. For example, some models of digital literacy emphasise the notion of multiple digital literacies and refer to a range of technical, cognitive, motor, and socioemotional skill sets required for navigating the digital world. The model of Eshet-Alkalai (2012), for example, refers to six digital literacies: photo-visual (understanding and communicating graphically), reproduction (manipulating digital material to create new and meaningful materials), branching literacy (constructing knowledge from non-linear navigation of hypermedia environments), information literacy (critical consumption of digital information), social-emotional literacy (communicating effectively in online contexts), and real-time thinking (processing and evaluating large volumes of digital information simultaneously). Similarly, several models of digital competence also reflect the

multi-faceted skills needed to engage with the digital world. For example, the European Digital Competence (DIGCOMP) project has identified knowledge, skills and attitude (KAS) competences as necessary to engage with the digital world: information management (identify, locate, access, retrieve, store and organise information), collaboration (link with others, participate in online networks and communities, interact constructively), communication and sharing (communicate through online tools, taking into account privacy, safety and netiquette), creation of content and knowledge (integrate and re-elaborate previous knowledge and content, construct new knowledge), ethics and responsibility (behave in an ethical and responsible way, aware of legal frames), evaluating and problem solving (identify digital needs, solve problems through digital means, assess the information retrieved, and technical operations (use technology and media, perform tasks and through digital tools) (Ferrari, 2012). This model notes that these KAS competences may develop according to levels depending on age, depth of application, or cognitive complexity.

Martin (2009), however, offers a different take on conceptualising digital literacy, modelling it as three levels of engagement with the digital. The first level, digital competence, is according to Martin a precursor of digital literacy, and is the skill and differentiation of skill levels necessary for digital engagement. Similar to the notion of multiple digital competences presented above, Martin suggests that digital competence presents as levels of expertise to be mastered, from the basic to the complex, and includes such activities as finding and retrieving information on the web, using task specific software, generating content for web presentation and the like. At level two, digital usage emphasises the connect between a user (individual, group, or community) and the life situation to which the digital competence is being deployed. Successful doing can result when the user's digital expertise shapes a unique response to a task or problem (Martin, 2009). In Martin's model,

digital transformation is the third and final level of digital literacy. This stage is reached when innovation and creativity are used to stimulate change in personal and social circumstances and contexts. Digital usages offer the catalyst and conduit for these changes. When applied to older adults this may mean enabling and maintaining social networks by remaining connected through email, chat room and various instant-messaging opportunities; or challenging the societal perceptions about older adult consumers as they launch themselves into the convenience of online purchasing, participate in online social commentary through social networking sites, or engage in digitally mediated forms of learning. We argue that these transformational consequences of digital usages that shape identities and facilitate social inclusion are the critical aspects that may promote the observed improvements in older adults' health and wellbeing as a result of digital participation.

What is clear from this review of various definitions, models and frameworks is that digital literacy is more than being technologically savvy; the digitally literate have necessary knowledge, skills and attitudes in information management and communication, as well as being good technical operators. Further, these knowledges, skills and attitudes, although described as digital literacy in some models, may be more appropriately considered as digital competences, themselves only one component of what it means to be digitally literate. We argue that digital competence as a set of knowledge, skills and attitudes, and a sub-component of digital literacy, aligns best with the concept of personal competence in self-efficacy theory and is therefore an antecedent of digital self-efficacy. An increase in digital competence to varying degrees and with consideration of individual capability, circumstance and purpose will feed the self-efficacious position that feeds back into widening and deepening digital participation, a process that offers a cycle of contribution and development particularly into and through Martin's (2009) usage and transformation levels of digital

literacy. As degrees of self-efficacy increase, an increased motivation is experienced that prompts wider and deeper digital participation; and this in turn leads to the creative, innovative, and transformative activities that may promote older adults health and wellbeing.

As indicated in the definitions of digital literacy and competence provided above, and as detailed in Martin's model, digital participation is contextualised by the nature of the task to be achieved and the characteristics of the environment. Contextual influences are also crucial for self-efficacy judgments. It is here that we argue PLEs offer an opportunity to more fully conceptualise these individual and social aspects of context as they apply to digital self-efficacy and digital participation for older adults. PLEs are fluid and relational learning contexts in which individuals are both autonomous and interconnected; they appropriate available external (digital and non-digital) and internal tools, methods and resources within communities to problem solve, learn and develop (Buchem, Attwell, & Torres, 2011).

While we could not locate studies looking specifically at PLEs and older adults' digital competence, digital participation, or digital self-efficacy, the literature demonstrates the importance of the personal and social context for older adults' digital participation. For example, there is evidence that approaches that are agentic and capitalise on the existing interests and needs of older adults can motivate digital technology use; and that staying connected with family and friends, the accessibility of aged based interest groups or intentional communities, the availability of support for technology assistance, less formal instructional settings, can influence older adults technology use (Bell et al., 2013; Rees Jones, Gilleard, Higgs, & Day, 2011; Kearns, Tyrrell, & Bend, 2002; Selwyn, Gorard, Furlong, & Madden, 2003).

Ivanova and Chatti (2011) state that "a PLE can be viewed as a supporting tool for the enhancement of the learner's performance in his or her activities management as well as for

the acquisition of knowledge, skills and expertise (p. 2). Similarly, we model PLEs as personal and social affordances (including, but limited to the notion of “tools”) that along with the sources of efficacy and digital competences can facilitate digital participation through building self-efficacy (Figure 1). Future research will be needed to clarify the key features of older adults PLEs related to their digital participation, and the specific relationships among older adults’ PLEs and the other variables in our model. In the next section of the paper we exemplify how we intend to clarify these proposed relationships by presenting an overview of a research study that we are currently undertaking as part of a larger research agenda that seeks to examine our proposed model of older adults’ digital participation.

### **Our Current Research**

Currently we are studying older digital users and non-users (the digital participation dimension of our model – see Figure 1) and the relationship of these positions with their digital self-efficacy (the self-efficacy dimension of our model). We are also examining how digital self-efficacy may develop in older adults by focusing on aspects associated with two other dimensions in our model – these are the personal learning environments dimension and the sources of efficacy dimension. More specifically for personal learning environments, we are investigating technology access, personal utility and social influence. For the sources that are proposed to influence self-efficacy judgments, we are investigating mastery experiences, in particular previous success with digital technologies. Digital anxiety is an example of the physiological and affective source that we are focusing on.

More broadly in our research we are interested in examining the various specific paths of influence to digital participation and wellbeing suggested in our model. Importantly, we

wish to create opportunities for older adults to voice their digital experiences, this we envisage will alert to the range of influences on digital participation that are not necessarily reflected in our model presently. This will necessitate that our methodologies are flexible as demonstrated in our current study where we are using a parallel or embedded mixed methods approach (Cresswell & Plano Clark, 2011) in which both quantitative and qualitative data will be gathered simultaneously to allow us to path analyse and predict the proposed relationships between digital participation, self-efficacy, sources of efficacy and personal learning environments, but also to gain a deeper and more nuanced perspective about the barriers and affordances for digital participation among older people.

We are necessarily interested in the continuum of older digital technology users – from the non-user to the high-level-user – and we argue this as requirement to gaining a full appreciation of the factors that facilitate and hinder digital technology use of older people. Hence, and as exemplified in our current study, we have considered carefully the data collection methods that are inclusive of older people at various points on this continuum. An online survey, for example, would almost certainly exclude the older non-user from our study; hence we have opted for a face to face structured survey to gather both the quantitative (Likert-type) data and qualitative (open verbal responses) data.

## **Conclusion**

Achieving positive experiences of the digital by older adults appears as a reasonable goal that accords well with the mentioned notions of social contribution and wellbeing. Digital engagement by older adults needs to be purposive and agentic, and we argue that a means of achieving this is by the building of efficacious responses to particular experiences and contexts that afford learning. Further researching what these actually are, that is, which

are most influential and which might best be leveraged to increase older adults' technology self-efficacy, appear as our next step toward deepening an understanding of older adults' digital terrain.

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