When interest pays off: The relationship between motivation and the learning of mobile technologies by older adults

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ABSTRACT
This paper discusses research on how to encourage older adults in the adoption of mobile technologies and how to consequently assist them along the pathway to ageing well. Government and local organisations are concerned about the low level of technology uptake amongst older adults. Not being able to use technology is isolating and makes it difficult for older adults to conduct their everyday lives. Hence, it is imperative for older adults to participate in technology use including – Digital Participation: Engaging Diverse and Marginalised Communities. Presently, there is very little research conducted in relation to older adults’ interests and the influence of older adults’ interests on their uptake of mobile technologies. This research explores the role of interest based on the Interest-Bridge Model developed by Beh et al. (2015). Results show that, an understanding of individual interests and hobbies can help in the adoption of and interest in mobile technologies.

Author Keywords
Ageing, Older adults, Interest, Motivation, Learning, Engagement, Mobile Touch Screen Technologies.

ACM Classification Keywords
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
Older adults are living longer and many are leading active lives, despite the decline of their physical well-being as they approach the fourth age (Barnes, 2011). There are many misconceptions, however, about the abilities of older adults. One of these is that they are not interested and/or motivated to learn the use of new technologies. As a result of these perceptions, older adults are often excluded from the digital world. More needs to be known about the attitudes and behaviours of this diverse group towards technology.

THEORY OF INTEREST
The topic of interest in learning appeared more than one hundred years ago (Herbart, 1891; Dewey 1910). After this initial appearance, it was encountered infrequently until the 1980s when it entered the field of educational psychology (Silvia, 2006). At present, research in interest is mainly associated with early learning and adolescence within a school environment of academic subjects. This concept has been rarely used for older adults.

Interest-Bridge Model
The Interest-Bridge Model (Figure 1 and Figure 3) developed by Beh et al. (2015) is a combination of The Four-Phase Model of Interest Development by Hidi and Renninger (2006) and Self-Determination Theory (SDT) developed by Deci and Ryan (1985) (Figure 2). It was derived from previous studies conducted by the authors. The model comprises of the following – (1) no interest, (2) triggered situational interest, (3) maintained situational interest, (4) SDT bridge, (5) emerging individual interest and (6) well-developed individual interest.

The initial phase of no interest, refers to interest being dormant (Lipstein and Renninger, 2006). This phase is before interest is triggered. Triggered situational interest is phase one and results in short-term changes. It is usually caused by the environment and peers (Hidi and Renninger, 2006), and as such the learning of technology is attributed by educational and instructional stipulations. Phase two is called Maintained situational interest. It is considered to be the subsequent state after interest has been triggered. It may also be sustained through peers and environment. If continued over time, it could reoccur again (Hidi and Renninger, 2006). The fourth element, the Self-Determination Theory Model can be broken down into two key sections. The Self-Determination Theory and the Self-Determination Theory for Older adults. The Self-Determination Theory (SDT) model (Deci and Ryan, 1985) involved motivation – intrinsic motivation (Figure 2). The developed Self-Determination Theory for Older Adults (Figure 3) conceived by Beh et al. (2015) consists of three elements – (1) autonomy, (2) self-confidence and (3) life-satisfaction. Phase three is emerging individual interest. It occurs over time, might not necessarily be self-generated but supported by external factors such as peers helping each other with learning. This in turn leads to improvement in the understanding of technology.
As for phase four, **well-developed individual interest**, this takes place over a period of time. It involves knowledge seeking by individuals (Hidi and Renninger, 2006). Usually effortless and sustained over a longer period of time, it enables individuals to undertake activities that are creative and constructive (Tomkins, 1962). An investigation of motivation literature led researchers to a collection of different motivation models and consequently SDT was incorporated into their model.

Yet, two of the existing elements do not seem appropriate towards the role of learning mobile technologies for older adults. We suggest replacing competence by self-confidence and relatedness by life-satisfaction (Figure 3). Autonomy promotes self-valuing. Self-confidence means being valued as an individual and part of the local community. Building up older adults’ self-confidence helps them to avoid being pushed into a vulnerable position of feeling vulnerable when confronted by the use of technology. Life-satisfaction expands on fulfilment of purposes, use and sharing of interests, existing knowledge, life experiences and providing peer-support to one another.

**Current situation**

The education managers we interacted within the study reported that their curricula of Information Technology (IT) trainings for older adults are based on a structure whereby contents are determined by teachers and/or external funding bodies in order to meet minimum requirements. Yet, older adults are not required to sit for exams nor fulfil assignments criteria so as to determine whether they have learned what is required of them. Boulton-Lewis (2009) suggests that it is not only important to provide technologies that are easy to learn, but also consider the specific interests of older adults in order to facilitate a successful learning environment and make use of learning capabilities of older adults. Also a study by Waycott et al. (2012) shows that older adults need to see a purpose in using a technology in order to engage with it.

**Personalised workshops based on interests**

Therefore, the authors suggest that it is no longer sufficient to be able to merely trigger older adults’ technological interest. Based on effective learning techniques, older adults need to adopt technology and integrate it into their daily life long-term. Therefore, in order to accomplish this, we suggest the need for specific teaching methods based on older adults’ interests and hobbies, through creating of teaching methods tailor-made solely for each of them.

**STUDIES**

A mix of qualitative and quantitative methods have been employed in the research, engagement with 131 independently living participants aged 60 years and older. There were 109 women and 22 men. A repeated measures mixed method methodology collected data from.
interviews, observations and questionnaires. Participants were taught according to requests based on interest and technology usage.

RESULTS

Findings from the study suggest that without a relationship between domain individual interest and technology interest, older adults do not tend to develop an interest in technology. Results indicate that curriculum guided only by the interests of older adults, rather than a structured curriculum has a positive influence on their adoption of mobile technologies (Beh et al., 2016). Results will also inform future research on the development of a set of guidelines to enhance older adults’ learning and use of technology. At the same time, the research will assist organisations through flexible curriculum development of lifelong learning programs.

![Figure 4. Participants sharing their interests and hobbies with each other.](image4)

**Building on participants’ interests and experience**

The curriculum was guided by the interests and hobbies of older adults (Figure 4). Based on feedback from participants, researchers paired their individual interests and hobbies with equivalent apps (Table 1 and Figure 5). The objective was not only to support participants’ interests and hobbies but also expanding them. Based on feedback from Nolan, the workshop provided a “[…] very supportive environment with small number of participants, giving everyone opportunities to learn. I have widened my interests because everything is available through the iPad.”

**Learning of basic tablet interactions**

Participants using desktop computers and laptops were accustomed to input devices such as keyboards and mice. Mobile technologies function in a different way. Participants were able to acquire basic tablet interaction gestures such as tap, swipe, pinch, zoom and drag through activities that were developed in context to real world applications.

**Applying learnings in real world context**

Activities and apps requested by participants tend to be related to their everyday lifestyle and purposes. Tasks developed are relevant and participants could continue to use these skills in their everyday life activities (Figure 6).

**Repetitions of things in favour of singular tasks**

A crucial component for learning was the repetition of tasks. This leads to a building up of participant confidence and enables them to duplicate what they have learned in a class environment to real-life applications.

<table>
<thead>
<tr>
<th>Individual Interests</th>
<th>Equivalent Apps</th>
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<tbody>
<tr>
<td>Emails</td>
<td>Yahoo mail, Gmail, Hotmail</td>
</tr>
<tr>
<td>Entertainment</td>
<td>ABC iView, ABC Radio, Plus 7, 9 Now, 10 Play, SBS on Demand, YouTube</td>
</tr>
<tr>
<td>Family history</td>
<td>Google Earth</td>
</tr>
<tr>
<td>Painting</td>
<td>Sketchbook Pro</td>
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<tr>
<td>Playing musical instruments</td>
<td>Tiny Piano, Drum Kit, Guitar, Ukulele</td>
</tr>
<tr>
<td>Playing games</td>
<td>Fruit Ninja, Tic Tac Toe, Ludo, Air Hockey</td>
</tr>
<tr>
<td>Searching</td>
<td>Google Chrome, Safari, Mozilla Firefox</td>
</tr>
<tr>
<td>Travel</td>
<td>Skyscanner, Expedia, TripAdvisor, Google Translate, TramTracker, Public Transport Victoria (PTV), Google Maps</td>
</tr>
<tr>
<td>Weather</td>
<td>Weather zone, AUS Weather</td>
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</tbody>
</table>

![Figure 5. Participants playing Air Hockey.](image5)

**Table 1. Pairing of participants’ individual interests with equivalent apps.**

**Purchase advice**

Participants also queried price differences between similar devices as they were unfamiliar with technical specifications such as storage capacity, processor chip and connectivity. Aileen went to the Apple store with her daughter to purchase an iPad. She brought it with her as she preferred to use her own device. She said “I feel more confident and interested in having an iPad” that belonged to her.

**Additional factors of success**

**Peer-supported environment**

According to participants, it is important that they have a non-judgemental environment available in which to share
similar experiences and discuss coping mechanisms. Participants feel safe knowing that there is support available from their peers (Figure 7).

**Figure 6. Participant using travel app to search for next holiday destination.**

**Figure 7. Participants sharing knowledge.**

**Socialising**
Besides learning, participants also socialised. This is highly encouraged, because as they get older, it gets more difficult for older adults to remain connected to their local community and to find a sense of belonging. It provides opportunities for participants to develop friendship networks, thus widen their social circle of friends.

**Sharing of success and problems**
Participants were delighted to help each other and shared their experiences with fellow participants. According to Hazel, she said “[...] good to discuss one’s concerns, thoughts with others in like age group.”

**CONCLUSIONS**
The roles of technology, interest in the uptake and long-term engagement of activities involving mobile technologies were explored. The results confirmed that well-developed interest in mobile technologies can be fostered in older adults as they progress through the interest stages with individual interests. It encourages long-term adoption of technology and builds up older adults’ confidence in the usage of tablets. In teaching technologies, we have to consider older adults as individuals instead of a homogenous cohort. The take home message is to avoid prescribing what older adults should learn but to ask them what they need, like and want to learn. With that in mind, the focus should be on designing activities associated with older adults’ individual interests and hobbies that can be incorporated into their everyday lives and applied directly between classroom environment.

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**REFERENCES**


