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# Comparing recent reviews about touchscreens for dementia with lessons learnt from the field

## Quick Overview

Two recent reviews on (touchscreen) technologies and people with dementia were compared with lessons learnt in practice from projects in the UK, the Netherlands and Canada. The combined findings provide a good basis to discuss and define new strategies for exploiting touchscreen technology for people with dementia.

## Introduction/Background

Two recent reviews respectively examined the general state of the art of assistive technologies for persons with dementia [1] and the specific application of touchscreens [2]. The former included the use of technology in 'participating in pleasurable and meaningful activities' (p2), considering usability and effectiveness among other things. The second review concentrated specifically on applications of touchscreen technology with people who have dementia, which they identified as falling broadly into three domains: assessment and screening; daily assistive and cognitive rehabilitation; and leisure activities [2]. The authors of both reviews also identified gaps for future research and development.

The findings of these two reviews confirm the emerging body of evidence demonstrating that people with dementia can use touchscreen technology for meaningful activities and entertainment [1-3], in line with the International Classification of Functioning, Disability and Health support for Activities and Participation [4]. This expansion was fuelled by the introduction of the Apple iPad in 2010, which opened up the field to explore how touchscreen technology can enable people with dementia to independently participate in leisure activities just as other app users do. In connected projects in the UK, the Netherlands and Canada, practice-based research was conducted to observe people with dementia, playing games on the iPad in a variety of settings; home, day care and long-term care. Alongside the primary research data, a lot was learnt about implementing touchscreen technology in the environments where people with dementia live. Here we compare these practical experiences and implications from the field, with findings from these two recent reviews.

## Methods

The two reviews were read and the key messages relating to the use of touchscreens by people with dementia were extracted. These were supplemented by an additional review of articles about leisure activities with touchscreen technology [3-14]. A similar process of identifying key messages was carried out, summarising the lessons learnt from the field. To consolidate the two sets of information the findings were compared (Table 1).

## Results

In their general review of technology for dementia, [1] highlighted the suitability of touchscreen devices and described two actions regarding the deployment of assistive technologies. First was the need for clear information for persons with dementia, therapists and carers, about what already exists, for whom, and in what situations. They also need examples of how devices can be used effectively by persons with dementia to enable appropriate deployment. Second, the usability of devices and applications by people with dementia should be considered before forms of technology are brought on the market or disseminated. In their review of specific deployment of touchscreens with people who have dementia [2] highlighted three areas for further development. First the need for improved accessibility features for people with dementia to gain most benefit from this technology. Second is the importance of guidance on how to identify apps that might be suitable for people with dementia. Third is a widening of the scope of use of touchscreens to ensure maximum benefit to people with dementia (Table 1). Both reviews emphasised the importance of involving people with dementia in future developments and evaluation.

Table 1. Key findings about touchscreens for dementia from the literature and the field

Literature	Field
Information, education and training [1]	Tablet and cover
Usability [2]	Choice of games, apps, game selection
Accessibility [2]	App design
Guidance on app selection [2]	(informal) Support and prompts
Greater range of activities [2]	Acceptance by caregivers
Involving people with dementia [1,2]	Stimulation of social interaction

The first point from the field is consideration of the suitable placement of the tablet (touchscreen) and ability to raise it to a comfortable level [5,9,11]. A specially designed cover/stand for the device helps people with dementia use the tablet comfortably. This will also appeal to the urge of people with dementia to hold something. A tablet is thin and uneasy to hold and buttons can be also touched unintentionally. Tablet covers with grips [11] or comfortable, soft edges, appeal to their needs and hide crucial buttons at the same time.

Regarding app selection, more choice and more applications are needed that are suitable for people with dementia. People with a diagnosis, therapists and carers, need information about the choices available and how to identify them. This can include digital versions of familiar games (e.g. chess or 'sjoelen') but can also include novel digital activities, for instance tile matching games [13]. After making a list with the most successful apps, further experimental validation of the benefits is warranted. More dedicated apps should also be developed that consider the specific limitations in speed of processing, memory, and attention skills of people with dementia [8]. Combining current and future digital functionality and hardware with understanding of the cognitive profiles of different dementia subtypes, will open up many opportunities [7]. Not only identifying more suitable apps is needed, but also information about the characteristics of the activity, needed skills, and the effect on persons with dementia. Information should be easily accessible to enable deployment. The list of apps, with additional information, should be available through popular websites concerning dementia. Effective design features should also be shared with app developers.

Lessons from the field also identified the need for informal support for using the device from family members, is highly valued [5]. In nursing homes the support of grandchildren or other visitors, also influences the use of the device positively. To aid this further research on what types of prompts are effective [9,14]. The response to prompts also differs per individual, again warranting more investigation. Another important aspect of successful deployment is acceptance by caregivers. This can be stimulated by features enabling communication, social networking and reminder systems [5]. Accessibility [2] is easier when a device is used more in daily practice. In day care the use of the iPad was for instance more easily accepted when caregivers could also use it for other activities, such as translation of words to or from the original mother language of persons with dementia.

Finally, experience in the field revealed that sharing experiences or some other form of external motivation can stimulate people to engage more [10-11]. Apps can provoke conversations and become a favourable shared activity [5-6,12]. Stimulation and social interaction is a key success factor.

## **Discussion**

Many identified studies in the domain of leisure activities with touchscreen technology for persons with dementia also report experiences from practice. Lessons learnt from the field overlapped in respect of app selection and development but also highlighted more practical issues relating to actual use in the field (Table 1). Both review articles [1-2] mentioned the need for dissemination of what is already known about the use of available apps and devices for persons with dementia, to enable deployment in practice. Both the literature and practice from the field, identified the need for ongoing research to identify successful apps and their benefits, as well as highlighting the need for involving people with dementia in development and evaluation.

Combining all the knowledge is an important task. The limitations of the two mentioned reviews and the ever-growing app market for games, make this a huge research theme. However, the exchanged lessons learnt by researches in connected projects, show many similarities with findings of the identified studies. The challenge is to inform intended users in a constructive way and provide them with a wide range of apps. Which activity is suitable for an individual person with dementia, will always be a result of showing and trying. The barriers for doing this, should be lowered. Based on these two reviews and the lessons learnt from the already co-operating researchers, new strategies can be discussed.

## **Conclusions (optional)**

Conclusions about strategies and future co-operation in this field will be presented at the conference.

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