ATIT
(ALZHEIMER’S THERAPY AIDED BY INSTRUCTIONAL DESIGN AND TECHNOLOGY)

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Aim:

To examine the formation of a heuristic instructional design approach to the development and use of computing based Cognitive Training (CT) strategies.
CT can at best utilise the cognitive reserve of those afflicted with Alzheimer's to allow them to hold onto their activities of daily living (ADLs) before a more rapid cognitive decline.

Reference:
Dementia and ageing population

- Dementia mainly affects older people

- After age 65, the likelihood of developing dementia roughly doubles every five years

- Dementia population worldwide:
  - 2010 - 36 million
  - 2030 - 66 million
  - 2050 - 115 million

Cognitive Training (CT) strategies and Alzheimer’s Disease

Wilson et al. (2010, p.990) states that “Mentally stimulating activity in old age appears to compress the cognitive morbidity associated with AD by slowing cognitive decline before dementia onset and hastening it thereafter.”

Cognitive Training (CT) strategies and Alzheimer’s Disease

Metaphor of lighting candles within dark room
Commercialisation versus Open Source Software (OSS)

- With a large selection of commercialised CT programmes and the availability of affordable touch screen mobile computing, now is the time to harness that power through a targeted epistemology aided by instructional design principles.
Commercialisation versus Open Source Software (OSS)

- Dr. Kawashima's (2005) "Brain Age" on the Nintendo DS game console
- Lumosity
- Cognifit
- Einstein Brain Trainer
- Brain Challenge
- Brain Lab
- Brain Trainer
- PositScience
- BrainSmart
- Many others
Commercialisation versus Open Source Software (OSS)

1. Those generic courseware that are not designed as customisable cognitive stimulation engines.

2. At best their focus is upon a cognitive workout, not contemplating the issues of motivation or maintaining at least a decade of engagement to combat an Alzheimer’s user’s disease trajectory.

3. Commercially orientated courseware are limited to graded gameplay levels that do not access reminisce, attempt to maintain ADLs nor are personally relevant to clients within a residential care setting.
Relevant Computer Interactive programs and their application

- A collaborative programming development model to assess, support, entertain and apply cognitive therapy for people with or approaching AD.

- The model such as used by Mozilla to develop Firefox OS for mobile phones to utilise computers or mobile devices such as iPad.
Relevant Computer Interactive programs and their application

Create an open sourced software (OSS)

This collective would create an open sourced software (OSS) platform that would allow for individualised reminiscence and conversational aids with built support for the maintenance of ADLs.
Relevant Computer Interactive programs and their application

Tracking the user’s experience

Through tracking the user’s experience via:

- TinCan LRS (Learning Record Store) that would be built into a LMS (Learning Management System)

The courseware could also output data to a database for research purposes as well as being compliant to useability standards.

http://tincanapi.com/learning-record-store/
Relevant Computer Interactive programs and their application

ADAS (cog) & GPCOG - Cognition Assessment Measures

Two standard tests that I would build into this resource based upon Australian recommendations.

1. **The Alzheimer’s Disease Assessment Scale - Cognition (ADAS-Cog)**
   [is oriented towards research]
   *The data collected from the ADAS (cog) could be placed on an online database for international research.*

2. **General Practitioner Assessment of Cognition (GPCOG)**
   [is oriented towards carers at home or aged care facility/ 4minutes duration]

Relevant Computer Interactive programs and their application

**Computer Interactive Reminiscence and Conversation Aid (CIRCA)**

At least two major perspectives with the use of cognitive therapies

1. **CIRCA** [reminiscence/conversation/entertainment focus]
2. **Luminosity, Cognifit etc.**
   [cognitive workout courseware, which are not content relevant to the individual user]
Relevant Computer Interactive programs and their application

Reference: http://www.circaconnect.co.uk/
Relevant Computer Interactive programs and their application

Computer Interactive Reminiscence and Conversation Aid (CIRCA)

√ To provide an intuitive, expansive and fail-safe reminiscence experience,
√ Utilizing contemporary computer touch-screen technology
√ Interactive media design
√ In prompting conversations in one to one and group situations
√ Oriented to make a bridge towards more effective communication for those with dementia through reminisce.
× Not intended to maintain or improve ADLs directly

Reference: http://www.circaconnect.co.uk/
Relevant Computer Interactive programs and their application

The design of a CT (Cognitive Training) courseware engine could like CIRCA allow a care provider to drag and drop relevant content to the user such as movies, images, games and text that then would be utilised by the courseware.

At the same time this courseware engine could track the user's exploration within the courseware to reveal the state of their Alzheimer's and that data could be anonymously sent to researchers for evaluation.
Relevant Computer Interactive programs and their application

This type of courseware would also be Tin Can-compliant as it worked within a learning management system (LMS)

http://tincanapi.com/learning-record-store/
Courseware design and culturally appropriate consideration

“Six Arts”
By the Hong Kong Alzheimer’s Disease Association

- As stated above the courseware would be easily updated by care providers by drop and dragging content into media placeholders (folder) as similar to CIRCA and as such would be culturally appropriate to traditional perspectives.

- The “Six Arts” has calligraphy as one of its six arts (matching picture, sound to image, cognitive to visual, eye/hand to cognitive, calligraphy, mathematical calculation).
Courseware design and culturally appropriate consideration

“Six Arts”

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Courseware design and culturally appropriate consideration

As stated earlier, a key feature would be that this CT engine would be an "Open Sourced Software" (OSS) platform allowing free collaborative programing development within an initial amorphous paradigm following the philosophy of Mozilla's Firefox and Thunderbird whilst attracting the development of a content archive as was the case of Wikimedia that hosts Wikipedia.
OSS projects are hosted on SourceForge a web-based source code repository.

- This website is a centralized node on the Internet that acts as a hub for software developers to control and manage free and open sourced software development.

- SourceForge repository as of July 2011 had over 300,000 projects hosted at its site with more than 2 million registered users.

http://sourceforge.net/
Conclusion

Finally this presentation will enable delegates to grasp the synergy of instructional design principles and it’s at present unrealized potential aimed towards harnessing technology to aide our elderly travelling along the Alzheimer's path.