Hotel Plastisse: Serious Game Design for Cognitive Training

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ABSTRACT
How to design a cognitive learning game for elderly people and for research purposes? This conference contribution will identify key features of adaptive game design based on state of the art research in adequate usability design for elderly people. “Hotel Plastisse” is a training game for the iPad which has been designed in 2011/12 by serious game designers at the Zurich University of the Arts, Department of Design (http://gamedesign.zhdk.ch/de/content/forschung/serious-games) for a study series of the INAPIC - International Normal Aging and Plasticity Imaging Center of the University of Zurich (http://www.inapic.uzh.ch). Featuring learning in enriched environments, 20 minigames have been set in a virtual hotel environment. The minigames consist of four categories, among them three single component game sets (which train inhibition, visual-motor skills and spatial orientation) and a multi-component category which trains all of the three skills together. Accordingly, one of the main research questions of the cognitive study is whether the plasticity of the brain and the cognitive behavior of the elderly are affected greater if those skills are trained separately or combined.

The 85 study participants trained/played at home, one hour daily for 50 days. The user data was transferred every day to the university server, a setting which enabled a comfortable, yet closely monitored training and research environment. This presentation outlines design issues which were imposed by the variety of stake holders: Taking into account the specific technological background and motivational factors of the (itself heterogenous) target group of elderly people of 60+ years, the design had to grant the careful implementation of motivational and feedback layers and rely on specific content, genre and gaming devices. Designing a training game for a research setting and not for commercial uses also imposed design restrictions: The minigames of a certain category

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needed to be different and exciting to provide maximum motivation to engage the test persons over the training period of 50 days, yet at the same time had to stay precisely comparable and measurable for the study purposes. Avoiding repetitive game play was one of the big design challenges in this regard.

Affected by the research situation was also the design of difficulty adjustment: Following one of the learning theory’s axiom of flow in games, players needed to be at the limit of their cognitive performance to ensure maximum training effect - therefore an adaptive game design of 50 levels per category was chosen for “Hotel Plastisse”. This DiGRA contribution discusses the complex design decisions facing those scientific requirements from the neurological study, and places them in the context of meaningful play.

**Keywords**
Adaptive game design, cognitive training, serious game, elderly people

**BIBLIOGRAPHY**


