

ePA-Coach: Design of the Intelligent Virtual Learning Coach for Senior Learners in Support of Digital Literacy in the Context of Electronic Patient Record

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Abstract : Over the last few years, the call for the support of senior learners in the development of their digital literacy has become prevalent, mainly due to the progression towards ageing societies paired with advances in digitalisation in all spheres of life, including e-health and electronic patient record (EPA). While major research efforts in supporting senior learners in developing digital literacy have been invested so far in e-learning focusing on knowledge acquisition and cognitive tasks, little research exists in learning models which target virtual mentoring and coaching with the help of pedagogical agents and address the social dimensions of learning. Research from studies with students in the context of formal education has already provided methods for designing intelligent virtual agents in support of personalised learning. However, this research has mostly focused on cognitive skills and has not yet been applied to the context of mentoring/coaching of senior learners, who have different characteristics and learn in different contexts. In this paper, we describe how insights from previous research can be used to develop an intelligent virtual learning coach (agent) for senior learners with a focus on building the social relationship between the agent and the learner and the key task of the agent to socialize learners to the larger context of digital literacy with a focus on electronic health records. Following current approaches to mentoring and coaching, the agent is designed not to enhance and monitor the cognitive performance of the learner but to serve as a trusted friend and advisor, whose role is to provide one-to-one guidance and support sharing of experiences among learners (peers). Based on literature review and synopsis of research on virtual agents and current coaching/mentoring models under consideration of the specific characteristics and requirements of senior learners, we describe the design framework which was applied to design an intelligent virtual learning coach as part of the e-learning system for digital literacy of senior learners in the ePA-Coach project founded by the German Ministry of Education and Research. This paper also presents the results from the evaluation study, which compared the use of the first prototype of the virtual learning coach designed according to the design framework with a voice narration in a multimedia learning environment with senior learners. The focus of the study was to validate the agent design in the context of the persona effect (Lester et al., 1997). Since the persona effect is related to the hypothesis that animated agents are perceived as more socially engaging, the study evaluated possible impacts of agent coaching in comparison with voice coaching on motivation, engagement, experience, and digital literacy.

Keywords : virtual learning coach, virtual mentor, pedagogical agent, senior learners, digital literacy, electronic health records

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