Designing pedagogical agents to address diversity in learning

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Motivating Diverse Learners

Pedagogical agents are animated life-like characters designed to facilitate learning in computer-mediated learning environments (Johnson, Rickel, & Lester, 2000). As a social human-computer-interface, pedagogical agents have a unique potential to address diverse learning situations and diverse learners. Using two different research designs, we have found that agent *image* can play a key role in motivating learners. The first study examined how learners' gender and ethnicity influenced their choice of pedagogical agents how they perceived the persona of the chosen agents (see Baylor, Shen, & Huang, 2003). 183 undergraduates from two southeast universities participated in the study and were provided eight agents (see Table 1) to choose from, each differing by gender (male, female), ethnicity (African American, Caucasian), and realism (realistic, cartoon).

Table 1. Eight pedagogical agents, differing by gender, ethnicity, and realism

Overall, perceived agent demeanor was the most cited reason for why learners chose a particular agent. The results showed that African-American learners were significantly more likely to choose an agent with the same ethnicity and also to have significantly more positive attitudes toward the chosen agent after learning from it. Female learners were more likely to choose a cartoon-like (as opposed to realistic) agent than male learners. While choice in itself may be motivating, the risk is that learners may not know what is "best" for them. Consequently, the second study implemented a between-subjects research design and focused on agent gender and ethnicity (see Baylor & Kim, 2003). 139 students were randomly assigned to one of four conditions, where agents differed by ethnicity (African-American, Caucasian) and gender (male, female). In every other way (voice, dialogue, affect, animation) the agents were identical. Results indicated a main effect for agent gender, in which male agents were perceived as more extraverted and agreeable than the female agents. Further, with respect to learning and motivation, students working with the male agents were more satisfied with their performance and reported that the agents better facilitated self-regulation. An interaction effect between student ethnicity and agent ethnicity revealed that students working with agents of the same ethnicity perceived the agents to be significantly more engaging and affable.

References

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