A CONCEPTUAL FRAMEWORK FOR THE EVALUATION AND DEVELOPMENT OF THE AGENT PERSONA IN THE ADELE WEB BASED MEDICAL CONTINUING EDUCATIONAL PROGRAM

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**Abstract**  
An agent assisted, web-based continuing education tool for medical students called ADELE has been under development for some time. Its purpose is to provide practice for second year medical students in diagnosing patients in a virtual reality environment. During Adele’s initial testing, it was found that the look and feel of the agent was not consistent with that of an attending physician. Research was begun on what characteristics of attending physicians might be key to portraying that role. Part of that process was the need to identify which research methods would be most appropriate to use in an evaluation process. Sources were not found in the literature that specifically addressed research methodologies for use in the development of agent characteristics based on real life roles. This paper will discuss three methodologies, their uses, limitations, and their possible final role in developing an agent. It is hoped that this paper will provide a conceptual framework for use in researching and developing an effective agent. Formative research will be used as the first step as a way of gathering data on the most obvious and general characteristics such as dress, gesture and verbal interaction. Phenomenological Research Methodology will be used as a second level of inquiry. Phenomenological Research Methodology is inherently very subtle due to its existentialist roots. At that point, enough characteristics and a complete enough picture of an attending physician could be presented to software developers to generate a new agent depiction. Finally, a usability study would be conducted to evaluate the new agent or agents in comparison with the agents in the context of the ADELE program.
INTRODUCTION

The purpose of this article is to review the conceptual framework used in developing the research methodologies that will be used for further evaluation of the ADELE agent. What is desired is an economical research design that will be easy to use, maximize limited resources, and use tools that are appropriate for their purpose. A search of the available literature did not reveal any sources directly focused on the research of agent characteristics. As a result, it became clear that work needed to be done on how to most effectively focus research tools on the problem, given limited resources of time, money, personnel, and test subjects. What follows is a description of the ADELE project in general followed by a discussion of Phenomenological Research Methodology, Usability Testing and Formative Evaluation: their characteristics, uses, limitations and advantages. Finally, there is a synthesis of these three methodologies into a research process that fulfills the requirements of the project for economy and simplicity, and provides the ability to characterize in detail and depth a new agent for the project.

1.1.1 The ADELE Project

The ADELE project has been developed at USC/ISI (University of Southern California/Information Systems Institute) over a period of years. It has been designed as an interactive web based program of continuing education for the medical field. At the present level, it is being used and tested with second year medical students and is intended to help them develop their patient diagnostic skills in preparation for actual diagnosis of patients in their third year. Key to the program is the interaction in a web based computer program with an agent who helps to direct student’s inquiry in the process much as an attending physician would in actual ward rounds in the third year. The agent is called ADELE and is represented by a depiction of a female clinician in a sub frame of the program. This researcher was brought into the project to do a usability study on the usability of the program with second year students. Because of that study, it was learned that the agent did not depict a believable role for the students. (Shaw and Millar 1999) It was decided by the developers that since the agent was acting in the role of an attending physician, research should be undertaken to determine key characteristics that would effectively portray a physician in the role of attending physician in both dress and interactive style.

1.1.2 A Detailed Look at the ADELE Project

Animated agent technology has been proposed as a new approach for making computer-based learning more engaging and effective (Johnson 1998). It builds upon previous work on intelligent tutoring systems (Wenger 1987) and extends it in several important respects. As we view the concept, animated agents are a type of autonomous agent (Johnson & Hayes-Roth