Evaluation of an Open Learning Environment

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**INTRODUCTION**

Educational goals have generally shifted from knowing everything in a specific domain to knowing how to deal with complex problems. Reasoning and information processing skills have become more important than the sheer amount of information memorized. In medical education, the same evolution occurred. Diagnostic reasoning processes get more strongly emphasized. Whereas previously knowing all symptoms and diseases was stressed, reasoning skills have become educationally more important. They must enable professionals to distinguish between differential diagnoses and recognize patterns of illnesses (e.g., Myers & Dorsey, 1994).

**BACKGROUND**

Authentic or realistic tasks have been advocated to foster the acquisition of complex problem-solving processes (Jacobson & Spiro, 1995; Jonassen, 1997). In medical education, this has led to the use of expert systems in education. Such systems were initially developed to assist practitioners in their practice (NEOMICIN, in Cromie, 1988; PATHMASTER in Frohlich, Miller, & Morrow, 1990; LIED in Console, Molino, Ripa di Meanan, & Torasso, 1992). These systems simulate a real situation and were expected to provoke or develop students’ diagnostic reasoning processes. However, the implementation of such expert systems in regular educational settings has not been successful. Instead of developing reasoning processes, these systems assume them to be available. They focus on quickly getting to a solution rather than reflecting on possible alternatives. Consequently, it was concluded that students need more guidance in the development of diagnostic reasoning skills (Console et al., 1992; Cromie, 1988; Friedman, France, & Drossman, 1991); instructional support was lacking.

KABISA is one of the computer programs that, among other things, aims at helping students to develop their diagnostic reasoning skills (Van den Ende, Blot, Kestens, Van Gompel, & Van den Enden, 1997). It is a dedicated computer-based training program for acquiring diagnostic reasoning skills in tropical medicine.

**DESCRIPTION OF THE PROGRAM**

KABISA confronts the user with cases or “virtual patients”. The virtual patient is initially presented by three “characteristics”, randomly selected by the computer. After the presentation of the patient (three characteristics), students can ask additional characteristics gathered through anamnesis, physical examination, laboratory and imaging.

If students click on a particular characteristic, such as a physical examination test, they receive feedback. Students are informed about the presence of a certain symptom, or whether a test is positive or negative. If students ask a “non-considered” characteristic, that is, a characteristic that is not relevant or useful in relation to the virtual patient, they are informed about this and asked whether they want to reveal the diagnosis they were thinking about. When they do so, students receive an overview of the characteristics that were explained by their selection and which ones are not. Additionally, they get the place of the selected diagnosis on a list that ranks diagnoses...
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