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EDUCATIONAL COACHING THROUGH AN INTELLIGENT AGENT BASED ON THE THREE KNOWLEDGES OF EDUCATION IN A VIRTUAL TEACHING-LEARNING ENVIRONMENT

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Abstract: This research focuses on the development of a Conversational System that integrates the knowledge of education (*knowing – knowing, knowing – doing and knowing – being*) in a virtual educational environment. The relevance of this problem lies in the importance of coaching processes in education and the need to improve customization and the quality of learning in this context. The objectives for the creation of utterances by an intelligent agent that transmit reflective listening in educational coaching include the modeling of educational knowledge through theoretical approaches such as the theory of the acts of speaks, the dialectics Socratic and recovery of information. With the integration of this knowledge in an intelligent conversational agent, learners can not only acquire knowledge through *knowing*, but also develop important social and emotional skills through *knowing – being*, which is essential for their personal growth and professional. The assessment of the results of the interaction between the conversational system and the users, seeks to verify that the phrases of the conversation reflective listening in the advisees.

Keywords: Conversational system, educational knowledge, virtual learning environment, educational coaching, intelligent virtual agent.

INTRODUCTION

In education Cuadra-Martínez [1], recognizes the importance of three educational knowledge to guarantee an education of excellence: the formal knowledge acquired (*knowing – knowing*), the ability to apply pedagogical skills (*knowing – doing*), and behavior, expression and values of the teacher (*knowing – being*). In the current technological era it has become feasible to conceive an intelligent agent with an advisory function that is competent in the incorporation and

manifestation of its competencies, managing to express statements that represent reflective listening through the same type of personality of the advisee.

Seeking contribute to a substantial improvement in the quality of interactions in online educational environments this research seeks the integration of a phrase characterization module as part of the agent's knowledge (*knowing – knowing*), the modeling of dialectical principles as part of *knowing – doing* and the acquisition of information from phrases available on the web as an element of *knowing – being* in order to represent reflective listening in the advised.

RELATED JOBS

The three essential knowledge of education have become a critical issue to offer quality education. Some of the approaches regarding educational knowledge (*knowing and doing*) can be seen reflected in the works proposed by García-Morales. In [4], an automatic sentence characterization model is presented. In that work, the model uses computational linguistics to find the type of illocutionary act of the interlocutor's sentence. The agent's knowledge (*knowing – knowing*) can be represented by this characterizing model, because it works under natural language processing to find the definitions of the words found in the sentence.

Educational *knowing – doing* can be represented by the characterization model due to its structure, which integrates an educational teaching-learning methodology. This model, proposed by García-Morales et al. in [3], [4], takes into account the influence of the user's personality to formulate powerful questions tailored to their profile, which not only guides self-knowledge but also questions the validity of the user's responses, prompting reflection on possible errors or misunderstandings through a methodology known as Socratic

dialectic. These works allow for the inclusion of educational knowledges in a virtual agent, offering the possibility of emulating coaching conversations and promoting self-learning effectively.

APPROACH AND JUSTIFICATION

This work of research proposes the creation and integration of the *knowing – being*, the which involves reflective listening in order to create a virtual coach that integrates the three knowledges of education, the above will allow the development of intrapersonal competencies through personalized dialogues in educational coaching in a virtual educational environment. The emulation of virtual entities with realistic behaviors offers a rich and authentic learning environment, where students can not only acquire knowledge, but also develop social and emotional skills vital for their personal and professional growth.

This model tries to integrate the characteristics that a teacher must possess for the transmission of knowledge in order to model the same characteristics in their advisees through congruent dialogues, thus ensuring that users find solutions to their problems based on their cognitive possibilities.

Although methodologies have been developed to characterize sentences and formulate questions powerful based on the dialectics Socratic, they have not managed to integrate the essence of reflective listening in the responses generated by the virtual agent. This limitation represents a major obstacle to achieving an education of quality that fully integrates the three essential knowledge. A more sophisticated approach is needed that not only asks questions powerful, but also demonstrates an authentic and empathetic understanding of the agent's responses, thus promoting a true development of *knowing – being* in the virtual educational context.

GOALS OF THE INVESTIGATION

General objective

Model the three knowledges of education through the theory of speech acts, dialectics socratic, and a profile of personality for the design of a conversational system in a virtual coach.

GOALS SPECIFIC

- Integrate the models (characterization of sentences through speech acts and sentence selector) proposed by García-Morales [4] for the representation of knowledge (*knowing and doing*) in education into a virtual coach.
- Design a search and information retrieval model for the collection of information relevant to the context and corresponding to the same type of illocutionary act structured by users in a Socratic dialogue.
- Model *knowing – being* of education through the structuring of sentences that transmit reflective listening on the part of users.
- Model the influence of personality in the *knowing – being* of a expert tutor with a focus on virtual teaching that incorporates the three knowledges of education.

CONTRIBUTIONS EXPECTED

The research seeks to contribute significantly to the improvement of virtual learning environments by providing a coherent and congruent conversational system that facilitates learning through the modeling of educational knowledge, involving reflective listening in a Socratic dialogue, which would allow progress in the simulation of virtual entities with credible behaviors through the integration of dialectics, speech acts and

personality in a virtual coaching system, making it innovative in the field of online education.

The innovation of this research it lies capturing and replicating the *knowing – being* of one of the advised students through an intelligent agent. This process, which involves modeling the personality of the coachee to create a reflective listening experience in educational coaching, marks a milestone in the field of virtual education. The emotional connection between the student and the conversational system represents a significant advance in how we conceive and apply technology in the educational field.

ASSESSMENT AND DIVULGATION

It is planned to evaluate the results through tests and analysis of the interaction between the conversational system and users in virtual educational environments, seeking to verify that the conversation phrases achieve to transmit the three knowledges of education. In order to evaluate the similarity of the expected dialogue formulated by a real coach compared to the dialogue generated by the virtual agent with the same personality type of the real coach, we use the Euclidean distance metric.

The evidence of these results is intended to be presented to the academic community through publications in journals and

conferences in the fields of artificial intelligence and online education

CONCLUSIONS AND FUTURE WORK

In this research work, we propose the creation of a conversational agent that integrates the three knowledges of education for the creation of congruent dialogues based on coaching processes. It is expected that the developed virtual agent will be able to maintain personalized and empathetic dialogues with those it advises, incorporating reflective listening into its interactions, formulating phrases that may or may not be accompanied by powerful questions based on the characteristics of a reflection methodology.

It is also expected that the modeling of the three knowledges of education within the conversational system proposed in this document will improve the performance of virtual learning environments, incorporating naturalness in the dialogue management processes, which would allow us to contribute in the area of simulation of virtual entities with features oriented towards credibility and congruence of behavior. Measures will be implemented to ensure data confidentiality and informed consent will be obtained from all participants in future studies. These ethical practices will be crucial for the responsible and effective development of the conversational system.

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