Automatic Detection of Tutoring Styles Based on Tutors’ Behavior

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ABSTRACT

In e-learning systems, tutors have a significant impact on learners’ life to increase their knowledge level and to make the learning process more effective. They are characterized by different features. Therefore, identifying tutoring styles is a critical step in understanding the preference of tutors on how to organize and help the learners. In this context, the authors address the problem of extracting tutoring styles from tutors’ behavior. According to this later, tutors are classified automatically into their styles. This technique will be helpful to provide a suitable advice to learners. In the first step, a set of indicators are defined to characterize a tutoring style. In the second one, the accuracy between the tutoring styles obtained from the proposed approach and those defined from a simple questionnaire is investigated. To validate this approach, the authors have collected data from an online tutoring system (LETline, http://www.labstic.com/letline). They present the results of their analysis and discuss some limitations that can be helpful to the researchers working in the tutoring field.

KEYWORDS

Behavior, E-Learning, Indicator, Tutor Model, Tutoring, Tutoring Styles

1. INTRODUCTION AND MOTIVATION

Over the last years, tutor evaluation has been recognized as a necessity for many universities to improve students’ performance. This activity is defined as an assistance that is provided to students to help them attain more advanced skills (Vaessen et al., 2014). It is usually involved in assisting with homework assignments, providing instructions and fostering good study habits.

Several reviews of such studies have been presented in the educational literature (Ireson, 2004; Ellson, 1976; Fitz-Gibbon, 1977). Each one of these reviews concluded that tutoring programs can contribute to the academic growth of the children who receive the tutoring. Tutoring effectiveness varied depending on a number of features of the tutoring program. One of the most important characteristic associated with higher effectiveness was encouraging tutors to view their tutoring...
responsibilities as important and as a productive work. The main purpose is to help students to be successful during their long learning and never do their homework at their place.

When the interaction does not match to the problem of discussion, students are less able to benefit and learn interpersonal exchanges. Thus, we must affect to the student the tutor who can respond to his needs. Furthermore, the learners need tutors who can understand their problems and advise them in critical moments. Unfortunately, these features are absent in many existing environments supporting human tutoring. In the system LETline (Lafifi et al., 2010), for example, some learners have problems with their tutors in the middle of the academic year, so they requested to change them.

In order to be able to optimize and facilitate tutors’ interaction with students in an educational system, we have based on the human factors that should be taken into consideration for identifying the real characteristics of the tutors. These tutors differ one from the other. They have different skills, roles, knowledge and so many other characteristics.

There are some researches that have made different classifications of the roles that the tutor can perform in an e-learning environment (Garrot, George, & Prévôt, 2009; Teutsch, Bourdet, & Gueye, 2004; Winograd, 2003). These classifications are made according to the tutors’ functions (Garrot, 2008; Rodet, 2008; Lafifi et al., 2010; Lekira et al., 2012; McPherson and Nunes, 2004). We mention that several denominations are used for the same role.

Hence, a deep understanding of tutors’ activities is necessary for predicting their tutoring styles. Therefore, the main objective of this paper is to analyze the behavior of the tutors involved in e-learning environments, which can help the identification of tutoring styles. It is one of the individual differences that play an important role in tutoring, according to tutors’ activity.

The major contributions of this paper are first the complete construction of the tutor model, which is done automatically according to his behavior and actions when he used the system for carrying out the tutoring task. Then, based on this information, we can deduce numerical values, which represent the characteristics that define different tutoring styles, and finally calculating and updating the tutoring styles of each tutor.

To define the tutoring styles, we think to use a questionnaire because this method provides satisfactory results, but it brings the tutors to be quickly bored when responding on the questions, which may include incorrect information about the tutor’s activity. Another approach is to extract his styles automatically with an implicit method by understanding his behavior and following his interactions within the environment.

For this purpose, we are mainly focusing on three central questions:

1. What type of information is needed from tutors’ behavior to identify their tutoring preferences?
2. How can we diagnose the tutoring styles of each tutor?
3. What are the similarities between the automatically extracted tutoring styles and the tutoring styles defined from a simple questionnaire?

The rest of the paper is structured as follows. Section two describes some researches done on e-tutoring environments and defines the tutoring style term. We explain the proposed approach in section three. The results of the experiment done on a set of real data are evaluated and discussed in section four. Finally, we present a conclusion and some future works.

2. LITERATURE REVIEW: E-TUTORING ENVIRONMENTS AND TUTORING STYLES

Tutoring is an activity that appears to help learners in order to don’t feel isolated and to provide the self-directions, which should have been supported by a tutor. For this purpose, different tools have been developed in order to facilitate the activity of the tutor when he tracks his learners such as: ESSAIM (Després, 2001), FORMID (Guéraud et al., 2004), CAF (Fesakis et al., 2004) and so many
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