

Using Learning Styles to Enhance Computerised Learning Systems

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Introduction

Intelligent Tutoring Systems (ITS) are computerised learning systems which attempt to mimic human tutors to provide more personalised learning than previous content delivery systems (Papanikolaou *et al* 2003). Most ITS adapt content to a student's level of knowledge, but a recent enhancement is to present content suitable to a student's learning style, assessed by a questionnaire (Wang *et al* 2006, Triantafillou *et al* 2004). Learning styles describe the way in which groups of people learn most effectively, e.g. by trial and error or observation, and are normally assessed by questionnaire (Kolb 1976). This paper describes a novel conversational ITS which estimates student learning styles by picking up cues from students during tutoring conversations. The results of an initial study are presented which analysed the results of a learning styles questionnaire to determine which questions best predict a person's overall learning style.

Methodology

The Index of Learning Styles (ILS) (Felder & Silverman 1988) models learning styles in engineering education using four learning style dimensions, each assessed by 11 questions. The ILS questionnaire was converted into an online questionnaire to improve access and efficiently gather results. A randomly selected group of 103 people completed the ILS questionnaire. Each question's answer was compared with the overall learning style to give a prediction accuracy.

Results and Evaluation

Of the 44 questions on the questionnaire, 26 questions (over all four dimensions) could predict the overall learning style with an accuracy of at least 70%, and 17 questions with at least 75%. The three best predictor questions had an accuracy of 84%.

Conclusions and Further Work

The results indicate that a subset of the ILS questions could be incorporated into an ITS tutoring conversation to estimate learning style. Further work will develop the ITS incorporating the ILS questions and evaluate its estimation of learning style.

References

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