WISDeM and E-learning System Interaction Issues

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INTRODUCTION
This paper discusses interaction between the computer interface and the user in e-learning. [Catania 1992] reports that sensory input is mainly derived from iconic 60%, auditory 30%, and haptic 10% with little from olfactory and gustatory. [Driscoll and Garcia 2000; Fleming 2001; Fleming and Mills 1998; Fuller et al. 2000; Murphy et al. 2002] show that everyone has his/her own preference for exchanging ideas, acquiring and passing on knowledge. [Sadowski and Stanney 1999] report that there is a tendency to prefer one sensory input (visual, auditory or kinaesthetic – tactile/haptic) whilst [Fleming 2001]’s research shows that most students prefer multi-modal communication.

Logical type preferencesi. MBTI® has four preference categories: i) Thinking focuses on objective facts and causes and effect, ii) Judging focuses on the adaptive process of decision making. [Driscoll and Garcia 2000] report that results from student class profiles using VARK, indicate that their Learning Styles are firmly in place by the time a student is 18 and may well differ substantially from what their tutors perceive or assume. [Myers and Myers 1995]’s MBTI® is a self-reporting personality inventory designed to provide information about your Jungian psychological type preferences1. MBTI® has four preference categories: i) Interpersonal Communication - Extraversion focuses outwardly on and gains energy from others, Introversion focuses inwardly and gains energy from ideas and concepts, ii) Information Processing - Sensing focuses on the five senses and experience, Intuition focuses on possibilities future use, the big picture, iii) Information Evaluation - Thinking focuses on objective facts and causes and effect, Feeling focuses on subjective meaning and values, and iv) Decision Style - Judgment focuses on timely, planned conclusions and decisions, Perception focuses on the adaptive process of decision making.

AVATARS IN E-LEARNING
Using Avatars in e-learning is currently being widely researched and developed creating guidelines for ITS interaction. Interesting “ActiveWorlds” (http://www.activeworlds.com/edu/eduaw.asp), a typical 3D avatar world offers online facilities including the usual DLT components PLUS 3D-synchronous-avatar-world-chat. The interaction tends to keep students interested; however, tutor involvement in real-time chat requires careful lesson and time planning (see also [Riedl et al. 2000] on Active Worlds and [Vilhjalmsson 1997] on BodyChat).

[Vark and MBTI in E-learning]

[V Fleming 2001]’s VARK suggests four sensory-modality-categories that reflect students’ experiences used for learning:

- Visual orientated prefer information displayed as words,
- Kinaesthetic orientated “learning by doing”, learning by simulated real-world experience and practice.

His research shows that the number of multi-modal students in a class can range from approximately 50% to 90%, depending upon context. [Driscoll and Garcia 2000] report that results from student class profiles using VARK, indicate that their Learning Styles are firmly in place by the time a student is 18 and may well differ substantially from what their tutors perceive or assume.

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WISDEM – THE DISTANCE LEARNING TOOL

[Janvier and Ghaoui 2002a; Janvier and Ghaoui 2002b] argue that human-computer interaction from inception is vital. It is necessary for the computer to interact with the user AFTER establishing the user’s communication preference and learning style. Communication preference is conveyed, amongst other things, by eye-movement, eye-gaze and Neuro-linguistic Programming language patterns. WISDEM has been developed as a generic Distance Learning Tool (DLT) including all normal DLT components. It uses a Web-database front-end for authoring the look-and-feel of the tool, the module content is authored using MS Word, Excel, PowerPoint and, if required, an HTML editor. The DLT uses HTML, DynamicHTML, CSS Style, JavaScript, Active Server Pages, and Structured Query Language linking to the database using ODBC. The student’s DLT includes: university links, registration and login, low-vision user facility, staff information and module content (overview, specification, main topics, coursework, exam papers, revision (multi-choice Q&A), tutorials, courses (additional information)), resources, download, evaluation, feedback, forum, mail-list, student registration, search, help, MS NetMeeting). The Intelligent Tutoring System (ITS) section is currently being developed starting with Communication Preference and Student Personality Type to create the initial Student Learning Style to use with the inference engine.

Scenario

A new learner connects to WISDeM and selects his/her school and module. The learner uses his/her University Registration ID, password and Module selection to log on. The system checks if the user is new or existing: if the former, the Communication Preference (CP) question/answer screen is opened. The student is asked to complete the CP questionnaire by selecting only those statements with which he/she agrees. When completed the Learning Style question/answer screens are activated. The questions/answers are couched using the learner’s NLP Language Pattern as ascertained from the CP answers. The resulting Learner Profile is saved in the Learner Profile Repository and the module front page is opened (see Fig.1).

CONCLUSION

The interaction between the computer interface and the user in e-learning is rapidly developing to include multi-modal interaction with researches taking more cognisance of the user’s sensory preferences and thus the ability of the interface interaction to be more natural. This needs to provide for Human-Computer interaction to be as realistic as possible and include Communication Preference and matching Learning Styles with Teaching Styles from inception.

FUTURE DEVELOPMENT

WISDeM is being designed to link CPLS with teaching styles and motivational feedback for both the novice and expert user [Handley 2002] and provide facilities for the learner to change the functionality if required. Figure 2 shows the intended development that is currently taking place.

ENDNOTES

1 Jungian psychological type preferences: Carl G. Jung was a Swiss psychiatrist (1875-1961) who identified certain psychological types (Extroversion/Introversion – Judgment / Perception)
2 WISDeM – Web Intelligent Student Distance-education Model

REFERENCES


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