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Individual Characteristics as Factors in the Navigation Process

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The navigation process in hyperdocument structures is highly complex. This is due to the vast amount of information, possible pathway options, and richness of visual stimuli. Several studies have reported the effects of different interface approaches and hypertext content structures that produce users misorientation and cognitive overload (Cimino, Elkin & Barnett, 1992). Other studies add information on how these "navigational problems" may be circumstancial due to several users' characteristics. They also approach hypertext research tradition as being much more oriented towards "navigation outcome" rather than "navigation process", and urge research in this field for better understanding users' cognitive processes when interacting with hyperdocuments (Dillon, McKnight & Richardson, 1993).

The present research sought to explore the navigation process beyond the standard treatment of cognitive maps to include the investigation of individual characteristics and previous knowledge schemata that may influence this process. They are: (1) experience with the use of computers and peripherals (hardware schemata); (2) experience with the use of electronic space (software schemata); (3) knowledge of hypertext concepts (hypertext schemata); (4) interest in the content (affective issue); (5) appraisal of the use of the hypertext system (affective issue).

A hyperdocument on the topic of Food Conservation was developed. The design included manipulation facilities and access mechanisms such as keyword index, program menu, content map, along with other artifacts intrinsic to hypertext structures. Following the psychological literature on hypertext (Dillon et al., 1993) these mechanisms would correspond to representations of schemata instantiations (landmarks, routs, and maps) for system users.

Nutrition students (N=30) participated on the study interacting with the hiperdocument. The students were divided into three groups according to their formal previous contact with the content of the program (G1= who have attended the discipline on food conservation before; G2= who were attending the discipline, and G3= who have never attended the discipline). Three basic intruments were used to collect data to study students' navigation processes: (1) recording of the navigation history of each student (dependent variable); (2) observation of students' interaction with the system, and (3) student profile questionnaire and hyperdocument attitude scale.

Observation data on users' interacting with the system, users' appraisal of their experience, and users' general characteristics data (e.g. previous experience with computers, hypertext, content knowledge, etc.) were organized into a "user schemata profile".

Records of each user navigation history were summarized into "navigation maps" (dependent variable) indicating contents (nodes) visited. User pathways (links between nodes) were color coded according to "shemata instantiations" used to access the nodes (e.g. hotwords, index, page browser, content map, and menu). Users'navigation styles divided them into two main categories - browsers and deliberate searchers - compatible with Wright (1993).

Qualitative analyses of users' profiles were compared with their navigation styles. The results indicate that "browsers" differ from "deliberate searchers" in the quantity and quality of some basic schemata. However, affective issues (variables 4 and 5) were indentified as important stimuli for schemata construction during the navigation process.

The results of this study may be useful to guide the design of learning systems which include facilities for developing necessary schemata during the learning process. Furute reserarch would benefit from examining the influence of different navigation styles on content learning through hypermedia.

Acknowledgements

References

Cimino, J.J., Elkin, P.L., & Barnett, G.O. (1992). As we may think: The Concept Space and Medical Hypertext. Computers and Biomedical Research, 25:238 263.

Dillon, Mc.Knight & Richardson (1993). Space the Final Chapter or Why Physical Representations are not Semantic Intentions. In Mc. Knight, Dillon & Richardson, editors, Hypertext: A Psycological Perspective. London, Ellis Horwood.

Wright, Patricia (1993). To jump or not to jump: strategy selection while reading eletronic texts. In Mc.Knight, Dillon & Richardson, editors, Hypertext: A Psychological Perspective. London, Ellis Horwood.