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Influencing students' construction of personalised concept maps through the use of query expansion (QE) searching of the World Wide Web

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1. Introduction

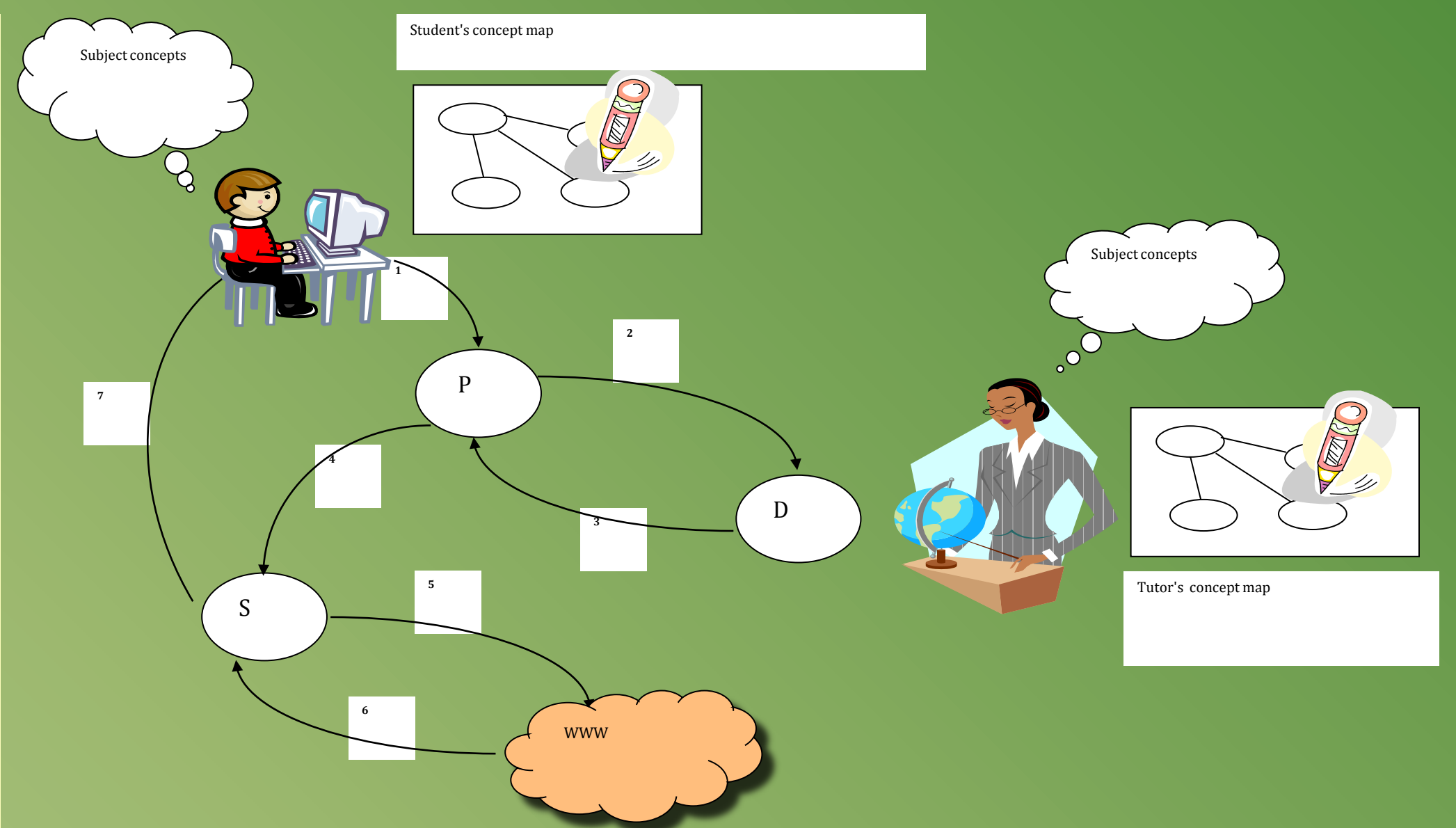
Despite the on-going development of search engines, users of the World Wide Web, including school and undergraduate students, still find searching for appropriate information problematic. Keener students may seek relevant information to help them to construct a better understanding of the various concepts within a taught subject. Unfortunately there is no guarantee that the information contained in the located documents is of sufficient educational quality; measured for example in terms of the information's usefulness, accuracy, relevancy, trustworthiness, level of language, completeness and status. In this research it is argued that a domain expert (perhaps in the form of a "web literate" subject tutor) has several major advantages over a school or undergraduate student when it comes to searching for relevant subject-related information.

2. Approach

This research relies on the ability of an experienced subject tutor to be able to explicitly relate the definitive keywords within their subject expertise. The current version of the software, developed as part of this research, uses a generalised hierarchical semantic network as a representation of a subject's keywords as chosen by a knowledgeable tutor as well as how that tutor chooses to inter relate them.

The type of semantic net chosen is assumed to loosely obey a set of rules.

3. Software Overview



4. Stages

Step	
0	The tutor uses their own concept map (of inter-related key terms) to populate the relational database. Their concept map may be as simple or as complex as they consider appropriate for the learning task and student group.
1	The student enters their initial key term into the software.
2 & 3	The student's key term is used to query the relational database. See below for further details of the enriched search string.
4	The enriched search string is sent to a search engine (the software has been tested using Google).
5 & 6	Google (or other search engine) searches the Web and returns details of web sites.
7	The student or student group investigates the web sites, selecting those appropriate to the learning task.
8 & 9	Using evidence from the enriched search string and selected information from retrieved Web sites, the student draws a personalised concept map.

5. Initial Conclusions

Students may often be overwhelmed by the number of web-site addresses resulting from the search process and there is no guarantee that the information obtained through this process is accurate or useful in the learning process.

The research also integrates Web searching with the development by the student of their conceptual knowledge; represented by the student constructing a domain specific concept map or topic map of related key words.