

**USING EFFECTIVE INFORMATION
SEARCHING SKILLS
TO SOLVE PROBLEMS**

By

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ABSTRACT

Problem-based learning (PBL) is an instructional approach that is organized around the investigation and resolution of problems. Problems are neither uniform nor similar. Jonassen (1998, 2000) in his design theory of problem solving has categorized problems into two broad types - well-structured and ill-structured. He has also described a host of mediating skills that impact problem solving outcomes. However, this list of skills is not exhaustive and in view of the utility of the Internet as an informational repository, this study examined the need for effective information searching skills to be included in this list.

This study was aimed at studying how students solve well and ill structured problems and how different Internet information seeking strategies can be used to engage in problem solving. This study devised and empirically tested the efficacy of an interventionist conceptual model that maps the application of different information seeking techniques to successfully resolving well and ill structured problem types. The intervention helps to better understand the influence of information searching skills on problem solving performance and the various problem solving strategies students can adopt in approaching problem solving. The contrasting patterns of navigational path movements taken by students in seeking information to resolve ill and well structured problems were also investigated.

A mixed methodology research design, involving a mix of quantitative and qualitative approaches was used in this study. The research site was a polytechnic in Singapore that has implemented problem-based learning in its

curriculum design. A first year class of 25 students were the sample population who participated in this study. Six problems from the curriculum were chosen for this study – three well-structured and another three ill-structured problems.

The research findings of this study inform that information searching skills indeed play an important role in problem solving. The findings affirm the need for students to be systematically instructed in the skills of information searching to be aware of the complexities involved in information seeking and accomplish desired problem solving goals. This study has also shown that well and ill structured problems demand different cognitive and information seeking capabilities. Well-structured problems are easily solved and come with singular correct answers. The information searching necessary for solving well-structured problems is constrained and readily manageable. Thus, students only have to be acquainted with fundamental information searching skills to solve well-structured problems. On the other hand, ill-structured problems are messy and contain a number of unknown elements. There are no easy prototypic solutions. Subsequently, the information needs of ill-structured problems are usually complex, multi-disciplinary and expansive. Hence, students have to be trained to apply a more advanced set of information searching skills in resolving ill-structured problems.

This thesis has not been submitted for a higher degree to any other university or institution. Approval from Ethics committee has been obtained in carrying out the research work of this thesis (HE25AUG2006-D04840).

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