The Effectiveness of Electronic Information Search Practices of Secondary School Students in a Singapore Science Education Context

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ABSTRACT

The Internet is a complex repository containing a huge maze of information from a variety of sources. It has become a common fixture in school nowadays. Whether to use technologies such as the Internet to advance teaching in schools is not the issue since technology is already pervasively in use. Rather it is how to effectively capitalize upon technology and harness fully the new opportunities created for learning with the Internet to facilitate greater learning gains. Though in Singapore, Internet access is easily available and prevalent, be it in schools or at homes, this cannot be assumed to mean that effective use of the learning affordances of the Internet is being accomplished. This study attempted to investigate the Internet information search literacy skills of secondary school students in Singapore. The general information search techniques and strategies that were adopted by students during their information seeking interactions with the Internet were examined. It was found that students generally lacked robust Internet information searching skills and require instructional mediation in enhancing these critical skills essential for the electronic information-rich age that is now prevalent.

Keywords: Educational Technology, Electronic Information, Information Literacy, Internet-Based Learning, Science Education

BACKGROUND INTRODUCTION

The ability to find, understand, evaluate and use information, referred to as information literacy is a critical skill set that students need to acquire, given the context of today’s information-rich world. The Internet in particular has emerged as an exciting and versatile information literacy tool due to the huge amounts of information that it easily presents to learners. Hence, an understanding of how students interact with the Internet in making decisions on navigating their way through the expansive digital landscape of the Internet to find, organize and construct new information schemas is important in instructional planning and development.

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Leveraging upon the educational computing potential of the Internet and the wealth of educational resources it hosts requires educational policy-makers and teachers to first assess students’ proficiencies in using the Internet before appropriate instructions can be designed to facilitate effective learning. Surprisingly little research has been done on Internet information search literacy practices of students to inform educators on these issues. What little research that has been done revealed that majority of existing web-based instructional programmes in schools are ill-designed and not developed following a theory-based instructional design process (Marcum, 2002). For Internet-based instructional programmes to be effective, they should be theory-based and organized upon a cycle of instructional design activities that have clearly defined stages. The design of these programmes needs to incorporate appropriate scaffolds in the task structure to take into account students’ current proficiencies in Internet information searching (Stern, 2002).

SINGAPORE CONTEXT

In Singapore, the first Masterplan for Information Technology (IT) in Education (1997 – 2002) was a blueprint to inform schools on the use of IT in educational development. Necessary technological infrastructure and IT-enriched learning environments were put in place in Singapore schools (MOE, 2004).

The Masterplan II for IT in Education (MP2) was unveiled in 2002. The goals of MP2 was to consolidate and build on the achievements of the first Masterplan by focusing on the interaction amongst the components of curriculum, assessment, instruction, professional development, pupil learning and school culture and leveraging on technology to enhance these relations to bring about engaged learning (MOE, 2004).

MP2 envisions the following six outcomes in technology use:

- Pupils use IT effectively for active learning.
- Connections between curriculum, instruction and assessment are enhanced using IT.
- Teachers use IT effectively for professional and personal growth.
- Schools have the capacity and capability in using IT for school improvement.
- There is active research in IT in education.
- There is an infrastructure that supports widespread and effective use of IT (MOE, 2004).

As a result of MP1, Internet services which were only available in tertiary educational institutions up till 1993 are now ubiquitously available in all primary, secondary and junior colleges, thus allowing all students an opportunity to be plugged into the global digital network. The ministry, through MP1, has rolled out an impressive technological infrastructure for schools to access the information highways of the Internet. The effectiveness of MP1 has to be evaluated based upon the use of technology to improve pedagogical processes. In the context of the Internet, the Internet definitely provides students with a robust platform to locate, verify, and exchange information with one another. However, it is to be noted that students need to be trained to assess the relevance of the informational content they find online and apply the information in task-specific situations (Jonassen, Howland, Moore, & Mara, 2004). This is important since the Internet has undergone an information explosion in which valid and accurate information has become mixed with commercial, biased and other less accurate or meaningful information (Thornburg, 2000).

PROBLEM STATEMENT, GOAL, AND STRUCTURE OF RESEARCH STUDY

In Singapore, all schools are wired electronically to the Internet and have extensive hardware and infrastructure facilities in place to support
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