# Calling on Constructivist Theory to Support Internet-Based, Information-Rich Learning

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## INTRODUCTION

As a society we are turning increasingly to the Internet as a source of information concerning a very wide range of topics. There is, at the very least, an expectation that use will be made of computer technology in teaching and learning. Naturally this includes use of the Internet.

Some countries, for example, the United Kingdom (DfEE, 2000), have enshrined in law the requirement that all pupils of compulsory school age should be taught about information and communications technology (ICT). The requirements also make it very clear that ICT use should contribute toward learning in other subject areas, where this is appropriate. One of the problems arising from the use of the Internet for finding and making use of information is the issue of what has been termed "information overload."

It is the problem of information overload—being faced with more information than can be dealt with effectively—that will be considered here. Considering the problem in the context of learning and learning theory, and with reference to what has developed as best practice in classrooms, we can formulate an approach to the use of very large information sources that is likely to lead to effective learning.

## BACKGROUND

Williams (2001) points out that plagiarism in pupils' schoolwork is widespread, and, perhaps more importantly, that it has been made significantly easier in recent years, probably more common as a result of, "…the enormous growth in information and communications technologies" (p. 226). Lewis, Wray, and Rospigliosi (1995) also consider the difficulties that pupils have when faced with large amounts of textual information: little guidance and the expectation of a piece of well–formed, interesting, and informative written work. Certainly pupils copying passages is not a new phenomenon, but it is quite clear that for many uninitiated young learners, copying and pasting electronically is perfectly acceptable.

The problem, and the major concern, that is facing educators is that pupils will not benefit, in terms of their learning, from using the Internet as a source of information if all that they do is cut, paste, and reformat. Pupils need to be taught and encouraged to use certain strategies to assist with both the process of searching and the process of making selections from the enormous volume of information with which they might be confronted. Expected learning outcomes set by the teacher that the pupil would perhaps know more about the topic in question or understand some of the ideas contained in it will, in many cases, not be accomplished if the only activity that takes place is the transfer of text from one location to another.

## DIFFICULTIES WITH RICH INFORMATION SOURCES

The difficulty in locating information on the Internet can sometimes be a problem. The use of search engines and the skill of defining searches accurately is a topic that deserves attention in schools, but the problems brought about by locating information are of a less serious order than those brought about by finding enormous volumes of potentially useful information. Along with the two possibilities above, there are other problems. Volume of information is one of them. Reliability of the information is another. The problems can be summarised as in Table 1.

*Table 1.*

| Possible Difficulty | Comment |
|---|---|
| Information Overload | The sheer volume of information can lead to a state of virtual paralysis. |
| Plagiarism | Whether intentional or not, it is possible for "chunks" to be copied and presented as original work. |
| Poor Habits Encouraged | Simply "cutting and pasting" with little attention being paid to content is not a recipe for effective learning. |
| Inefficient Use of Time | Without specific initial guidance, it is possible to spend a lot of time to no apparent benefit. |
| Reliability | There are not always guarantees that the information accessed is accurate, reliable, and unbiased. |

- **Overload:** Information overload does not appear to have a clear definition, and it has been used to describe a range of different situations (Fournier, 2000). Wurman (1989) considered this a problem and defined it as thus: "…information overload is the inability to extract needed knowledge from an immense quantity of information for one of many reasons" (p. 23).
  In the context of school-aged pupils, in classroom-based information-seeking activity, we could describe information overload as being a situation in which one is presented with so much information, that to sort through it and deal with it effectively is far too big an undertaking in the time available or within the capabilities of the those involved. Ineffective approaches, from the point of view of education, are sometimes taken when one is faced with a situation of overload. An example of this is plagiarism—simply cutting and pasting.
- **Plagiarism:** Plagiarism is something that the advent of the Internet and other electronic sources of information have made easy. Williams (2001) considers the advent of increasingly more sophisticated technologies responsible. The art of copying is not restricted to the young and uninitiated. There are reports, both formal and anecdotal, of this type of activity from infant schools to post-16 settings: "…at all levels of education,…a great deal of copying of information, even plagiarism is creeping into written work in school. Sometimes this is deliberate, and at other times it is unintentional and a result of not knowing how to set about the work in question" (Pritchard, 2002, p. 1283).
- **Poor Habits:** As described above, information overload can lead to poor practices being employed in order to solve an immediate problem. Disregarding large aspects of the information is one way of managing it; simply copying sections and presenting them as original is another. Faced with even a moderate amount of information to sift through, the temptation is to use it, but not necessarily to read it.
- **Wasted Time:** When faced with a plethora of written information on a host of different Web sites or CD-ROM encyclopedia references, it is easy to jump from one to the other and to lose track of what was where, and which elements were useful and likely to help in fulfilling the task that is to be completed.
- **Reliability:** There is often a strong temptation to accept as true anything that comes in a written or published format. Information accessed via a computer seems, for some, to have special credence. The skills of Web site evaluation are essential for anyone who uses the Internet for information gathering (Pritchard, 2000). Advice on this topic for teachers is widely available. See for example the UK government's "Superhighway Safety" Web site, hosted by the Department for Education and Skills, and found at http://stagesafety.ngfl.gov.uk/schools/.

Poor computer-related skills can compound the difficulties set out above. For example, an ill-formed search will not produce results in the same way as a search configured by someone who understands, at both a conceptual and a practical level, the ways in