

which publishes only educationally related, full-text articles and conference proceedings from the United Kingdom.

Many of the textbook and journal publishers are also developing boutique search engines that provide selected readers (often those who purchase their textbook) access to electronic versions of articles and resources that are normally only available in paper format. For example, the parent company of the publisher of this book, Pearson Education, provides a service known as Content Select at <http://ebSCO.pearsoncmg.com/>.

Content Select provides access to approximately 25,000 articles in each of fifteen discipline areas. The articles can be searched using a natural language interface, and the full text of each article is available.

Finally, most of the popular education, social science, and humanities reference databases, including Educational Resources Information Center (ERIC) are now available for searching online (see <http://WWW.accesseric.org/>). ERIC indexes two types of documents, those published in peer-reviewed journals (the Current Index of Journals in Education [CIJE] with ERIC reference numbers beginning with EJ) and more informal research papers, conference, and government documents (Resources In Education [RIE] with ERIC reference numbers beginning with ED). The full text of the CIJE journal articles must be obtained from the journal publisher. In an increasing number of cases these CIJE articles are online, but often paper copies must be obtained through campus libraries and interlibrary loan services or purchased through commercial library services that provide faxed copies of copyright materials, such as CARL at WWW.carl.org.

The full texts of RIE documents are available in microfiche format at major university libraries, and the more current RIE documents are available through subscription or single-copy prices online at <http://WWW.edrs.com/> .

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TIPS FOR FINDING FORMAL RESEARCH LITERATURE

- If you have trouble finding the full text of an article you have seen referenced by others, use Google (WWW.google.com) or one of the other search engines to find and link to the home page of the author. The sought-after article or an even more recent or relevant work may be available directly from the *author's* home page.

- If you have neglected to copy some important piece of information about a reference or wish to obtain a second quote, searching one of the full-text search engines such as Google, with a few words from the title (typed in quotations), often finds the text of the complete reference or perhaps even a copy of the full-text article.
- Be wary of the " ~ " sign in a URL as illustrated in Web address www.ual-berta.ca/~tanderso/. This often indicates that the site is a personal page of an employee that works for the organization, but such sites are usually unauthorized, private, and not official pages of the host site owner and thus may lack authenticity and be temporary.

THE LITERATURE REVIEW PROCESS IN E-RESEARCH

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Informal Online Sources

Our discussion on the creation of a literature review has focused, thus far, on review-ing and compiling information from the formal materials that are published on paper or online by researchers and academic or professional organizations. There is, how-ever, a second source of valuable literature to review. This is the informal network of researchers researchers who communicate, share, and build knowledge using both the older oppor-tunities provided at face-to-face conferences and seminars and, increasingly, newer opportunities from a variety of Net-based tools (Hart, 1997). These informal commu-nications constitute the "invisible college" of researchers who are supported on the Net via mail servers, personal emails, personal emails, newsgroups, chats, and webcasts.

The informal discourse within the community of educational scholars was, before the development of the Internet, a private process that occurred through letters, telephone calls, and at professional conferences. This discussion has now evolved into public and text-based discourse. Messages can be supported on a variety of individual and group-based communications tools. The act of posting, using these text-based tools, forces researchers to articulate their arguments in discourse that is free of much of the trappings of status, gender, and distracting body language that can both illuminate and confuse face-to-face discussion. Finally, this mediated form of informal communication leaves a permanent, searchable record, thereby permitting motivated researchers revisit and reanalyze discourse on their networked computers. We next briefly outline the most popular tools that support informal literature for review.

Email Lists

The most popular tool to support these informal networks is currently the ubiquitous email list. Lists are usually owned and managed by professional organizations, institutions, research teams, or dedicated individuals inspired by a variety of service motivations.

Most often, membership in academic lists is both free of charge and open to any-one with an interest in the topic. However, membership is always a privilege and never a right. The list owner has the power and is expected to expel anyone whose contributions to the Net are deemed to be offensive to or not supportive of the mailing list membership. Most lists are unmoderated in the sense that the list owner does not pre-view each posting before it is distributed to the group. This allows for faster exchange and less tasks for the list owner but leaves the list open to abuse through inappropriate posting by any member.

These lists can be used to ask and answer particular questions and relevant research issues and/or read to gain an understanding of the issues, major theories, activities, and personnel involved in a particular research field. Novice e-researchers often subscribe to a large number of email lists an initial burst of enthusiasm. However, participation in a stimulating exchange of relevant information can all too easily disintegrate into a flood of unread emails and overflowing mailboxes. Thus, efficient e-researchers regularly measure the value of each list to which they subscribe to insure that they are getting information of current value.

Finding an appropriate and relevant mailing list can be a challenge to the e-researcher. There are a number of databases that attempt to gather data and provide subscription information on these lists. For example Dianne Kovacs *Directory of Scholarly and Professional Conference Lists* lists 375 discussion lists related to education (see <http://www.kovacs.com>).

The tips provided in the following section are a subset of list netiquette (etiquette rules and practices designed specifically for communicating via the Net) provided by such groups as the HTML Writers' Guild at <http://www.hwg.org/lists/netiquette.html> or detailed in the official *Internet Engineering Task Force Netiquette Guidelines* (RFC 1855) at <http://www.ietf.org/rfc1855.txt>.

Usenet Groups

A second source of informal discussion is the venerable Usenet group. Access to Usenet groups is usually provided by your Internet Service Provider (ISP) and is commonly accessed via the "news reader" functions built into popular Web browsers. Usenet groups provide much of the functionality of the email discussion group, with one major difference. Contributions to a Usenet group are not distributed via email, but in a separate stream of information that circulates throughout the Internet. One participates by reading any of the 50,000 or more groups one wishes to subscribe to. If a subscriber is short of time, the unread messages merely accumulate on the ISP server and are eventually deleted. The messages never overflow the subscriber's mailbox.

Most Usenet groups are unmoderated in the sense that anyone can post anything to the lists. This has resulted in very high levels of spam, or unsolicited messages of a commercial, political, or religious nature. Excessive spam in some newsgroups (many users argue that even one spam message is excessive) has effectively made many Usenet groups useless for their intended purpose with the result that many group members dropped their subscriptions. For this reason, much scholarly discussion has migrated from Usenet groups to public or private email lists.

Usenet groups are organized hierarchically (much like Internet domain names), however unlike domain names the major grouping is listed first, with each subsequent grouping listed after the major topic group.

The major top-level groups describe the nature of underlying newsgroups in the hierarchy; they include categories such as "comp," "humanities," "misc," "news," "rec," "sci," "soc," "talk," and the designation "alt" for more informal groups. For example, most of Usenet groups related to education are located under the alt.education hierarchy. A recent glance at the Usenet group alt.education.research revealed six postings during the past two days—two of them spam postings related to real estate purchases!

TIPS FOR EFFECTIVE USE OF EMAIL AND USENET RESEARCH GROUPS

- Search for a Frequently Asked Question (FAQ) list that may be stored at the list homepage or posted regularly to the discussion group. Many of the Usenet