USE OF A LOCAL INFORMATIONAL RETRIEVAL SYSTEM (DATATRIEVE) BY UNDERGRADUATES

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Introduction

Like many small colleges, our library lacks a full complement of primary sources for students to do in-depth reviews of the literature to support their term papers and senior theses. We had been instructing students in the use of BioAbstracts and Dialog. Also, our library faculty was doing an excellent job in demonstrating the use of alternative information sources. Nevertheless, students were somewhat hamstrung by their inability to actually secure primary sources. Further, many students were waiting weeks to receive an interlibrary loan, sometimes even when a biologist on campus was receiving the journal! With the advent of a DEC PDP 11/70 on campus in the late 1970's a system program called DATA-TRIEVE (DTR) came with it. DTR is an interactive program that allows information to be stored and accessed.

DTR comes with a standard demo program called Big Boats, which is a file of information on a hypothetical marina that sells large yachts. Information such as beam, sail size, cost and type are stored and may be retrieved for any boat or group of boats by any stored parameter. For example, a list of all yachts of a certain dimension, cost, and classification may be requested.

During a seminar on the new computer, we explored with DEC personnel the possibilities of constructing a DTR retrieval system unique to our needs and eventually adopted DTR with modifications unique to our needs, which included the following:

1) easy of access to students and faculty from any terminal on campus linked to the PDP 11/70;
2) secure, tamper-proof files; and
3) ease of data entry.

Following is a brief explanation on how our system operates.

The information we store in DTR consists of a series of coded descriptions of books, journals, student-produced papers, bibliographic lists of the computer searches of BioAbstracts (DIALOG) that have been done by Ripon students, reprints owned by the Biology faculty, etc. Each reference (no matter what it is) is coded into four information fields that describe the content of the item and its location. These four fields are KEYWORDS, NAME, VOLUME NUMBER, and ISSUE NUMBER.

Retrieval

The first field is a series of keywords known as the KEYWORD field. A KEYWORD field is exactly 75 characters long. If fewer than 75 characters are needed to describe the reference, the
remaining spaces are filled with blanks automatically by DTR. We do not separate keywords by the use of blank spaces (etc.) as we felt that it would just waste space. If more than 75 characters are required to write the keywords which have been invented for the reference, then two separate entries must be made. In that case, each group of keywords has a few of the most important keywords held in common between them. Each KEYWORD field is linked to a series of three smaller fields that give information about the location of the reference. They are NAME field, VOLUME NUMBER field (VN), and ISSUE NUMBER field (IN).

The NAME field can be the name of the journal from which the reference came or the initials of the faculty member who owns the reprint. The NAME field is 10 characters long. VN is the volume of the journal or, in case of reprints, the reprint number of the faculty member who owns the reprint. The VN field is four characters long (0 through 9999 possible). The issue number is the issue number of the journal. The IN field is two characters long (0 through 99 possible). In the case of reprints it is simply a double zero. In the journal series Annual Reviews of (e.g., Ecology and Systematics) the issue number is the order number of the paper in that volume.

A complete DTR reference is 91 characters long (75+10+4+2=91). Three examples are shown in Figure 1.

**Important Points of DTR**

1) There are no spaces used to separate words. This is done to save space in the DTR file. (Although this saves space, it can cause some problems in doing DTR searches if running two words together creates another word [i.e., 'false hits']).

2) The keywords can be nested to some degree to save space. What is meant by nested is that the last letter or letters of one word can double as the first letter or letters of the next word. As an example (first reference above), note the nesting of ULTRASONIC and CONTROL as ULTRASONICCONTROL.

3) The references in DTR are stored in upper case letters, but may be accessed by using upper or lower case letters.

DTR references are sequentially added to the DTR file so it continues to grow (at times daily). As of 1 December 1987 there were approximately 12,000 references in our DTR file. Since some of these are multiple inputs of a single reference (item), there are actually some number slightly less than that.

ULTRASONICCONTROLMATERNALBEHAVIORPARENTALRODENTSINFANTS
OUNDSLITTERATTUSN.....AMER.ZOOL....19.2
DECOMPOSITIONLEAFLITTERASPENFORESTBIRCHCLEVEENERGYWEIGH
TLOSSFOLIAGE...........ECOLOGY.......52.4
LEAFLITTERSOILARTHROPODSAVORYCRYPTOSPHERE..........................R
LW........77.0

Where periods (.) represent a null character.

Figure 1

DATATRIEVE retrieval structure.
The Biology faculty believe that this system has substantially improved student term papers by providing them with easy access to a select source of primary literature that they did not have before. DTR is not without its problems, however. These include:

1) As the system is constituted, there is NO field for the author's name or page numbering. Both would be very valuable and could be done relatively easily if a new file were created.

2) During peak use of our system it can take more than 15 minutes to run a search. However, if few people are on the system, a search of all 12,000+ references can be completed in less than one minute.

3) Due to the interest of certain faculty members our references are slanted towards some rather specific fields, mainly ecology and invertebrate zoology.

We teach the use of DTR along with BioAbstracts, Dialog and other information retrieval systems in our writing intensive course Scientific Writing in Biology, a course that has been running for more than a decade.

**Availability of DTR**

Anyone who is interested in DTR should contact Dr. R. L. Wallace, Biology Department, Ripon College, P. O. Box 248, Ripon, WI 54971-0248