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05.06: Libraries, Documentation, and Cross-Referencing

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Searching Libraries, Documenting Information, Cross-Referencing

David McMurrey and Cassandra Race

Chapter Objectives

Upon completion of this chapter, readers will be able to:

1. Explain and apply how to find information in libraries.
2. Explain and apply how to indicate sources of borrowed information.
3. Explain and apply how to cross-reference.

Information Search

This section focuses on finding information for your technical documentation projects online and in physical libraries. Your job is to get good, specific, up-to-date information for your formal report project. You may not be able to read it all—you're not writing a dissertation, nor is your knowledge about your topic expected to be anywhere close to that level. But at least you know what's out there.

Check out the library system at Kennesaw State University. Here KSU students will find research help 24/7.

How do I get started with research?

Find a Topic, Narrow It, Brainstorm It

Before you head for the library or its Internet equivalent, you need a topic, some idea of the specific aspect of the topic you want to focus on, and some ideas about what to say about that narrowed topic. Problems finding a topic and thinking of what to say about it are often called the dreaded *writer's block*.

Narrowing a topic is that process in which you go from an impossibly huge topic such as nanotechnology to something more manageable such as applications of nanotechnology in brain surgery.

Brainstorming a topic is that process in which you think of everything you can that you might write about in relation to your topic.

Know Your Booleans for Searching Online or in Databases

An important tool to have when you go searching for information—either in libraries or on the Internet—has to do with Boolean operators: AND, OR, NOT and a few esoteric others. The following table will help you become an expert in narrowing search parameters, especially in a huge database such as that provided by the university.

Narrowing Search Parameters

Technique	What it does	Example
Truncation — adding a symbol to the root of the word to retrieve related terms and variant endings for the root term. Some databases have left- and right-hand truncation.	Expands your search	structur* finds structure, structuring, structures, etc. *elasticity will find elasticity, aeroelasticity, viscoelasticity
Boolean AND — retrieves only those records containing all your search terms	Narrows your search	finite AND element AND methods
Boolean OR — retrieves records containing any of your search terms; especially useful for synonyms, alternate spellings, or related concepts	Broadens your search	energy OR fuel pollut* OR contaminat* sulfur OR sulphur
Boolean NOT, AND NOT — attempts to exclude a term that is not useful or relevant	Narrows your search	"Advanced Materials" AND composite NOT wood
Proximity — retrieves terms within a specified distance of one another; variations of proximity searches are phrase searches, where the terms	Narrows your	"Styrenic Block Copolymers" (quotation marks ensure that the multiple-word term

must be retrieved exactly as entered; NEAR, ADJACENT, WITH, and WITHIN searches	search	is searched as a phrase, but are not required for all databases)
Parentheses () — groups terms with Boolean for more complex searches	Combines searches	"mechanical engineering" AND (handbook OR dictionary)

Types of Resources for Information Research

Encyclopedias and Other Reference Works

If you are beginning at ground zero with your technical report topic, a good strategy would be to read some articles in general encyclopedias. As a researcher, you need to know something about the topic so you will know what kinds of questions to ask and how to organize your data. If you are knowledgeable, the entire research process will be more efficient and even enjoyable.

- World Book Online (yes, even this one!)
 Britannica
 Access Science for online access to the *McGraw-Hill Encyclopedia of Science and Technology*

Can you build a legitimate technical report based on encyclopedia articles that you summarize and paraphrase? NO! Most college level instructors will not accept encyclopedias as legitimate sources because their information is broad, not specific. You may not be able to gather enough information to create a report of any reasonable length. We could go on about this for a long time, but do not consider using an encyclopedia, not even wikipedia.com, as part of your cited research data...only as a place for you to begin building a background of knowledge.

You can find reference books like encyclopedias by typing in a couple of words of the title in an online library catalog (for example, mechanical engineer* handbook, "encyclopedia engineering", or "encyclopediaandengineering"), truncating any words that could have variant endings, and eliminating any prepositions or articles (*of, for, the, a, an*).

Here are some examples of what you might find:

- *Prentice-Hall Encyclopedia of Information Technology*
- *McGraw-Hill Dictionary of the Life Sciences*
- *Robotics Sourcebook and Dictionary*
- *Energy: A Guide to Organizations and Information Resources in the United States*
- *McGraw-Hill Yearbook of Science and Technology*

Books

Books can provide excellent background, a historical treatment of your subject and depth. Check a book's table of contents and index to see if it has what you are looking for. For some current research topics, however, books tend to be too general. To obtain more specific information on technological advancements, go to journal articles, technical reports, or other sources discussed later in this chapter.

Try these resources. Search "drone aircraft" on each to see which has the most up to date resources:

- Online Books
- Library of Congress Catalog
- World Cat

Here are some sites that consolidate access to thousands of libraries worldwide:

- LibDex
- The WWW Library Directory
- LibWeb

Periodicals

Periodicals is a librarian's word for stuff that comes out periodically—like magazines, journals, newspapers. Magazines, which are by definition for general audiences, are not likely to have much that is useful to your report. At the college level, you will be expected to use scholarly, or peer reviewed, journals for research. You can find these in the university database, or you can borrow from other systems through an system of inter-library loans. When in doubt, pay a visit to your campus library and make friends with the librarians there.

Directory of Open Access Journals. DOAJ offers free access to over 3,500 full-text, quality-controlled scientific and scholarly journals, over 1,200 of which are searchable at the article level.

Most of the following are services you pay for; some offer a free 30-day trial. Your local library may subscribe to some of these, giving you free access:

- Applied Science and Technology
- Academic Search Complete
- INSPEC
- ScienceDirect

Technical Reports

- National Technical Information Service (NTIS)
- IEEE Xplore
- NASA Technical Reports Server

Associations and Interest Groups

Organizations like associations, special-interest groups, and advocacy groups are good potential sources for information on your topic—or a terrible ideological swamp. Keep in mind that associations and interest groups generally have agendas or biases about their topics. *Encyclopedia of Associations* may be a good resource. Ask your librarian for help with this kind of resource.

Library and Subject Guides

Research assistance, subject guides, useful resources and web sites compiled by the friendly librarians at Austin Community College, for example, occupational therapy, business and technical communications, and other department and field names. These are presented here.

Austin Community College Research Guides

Your own library at Kennesaw State University also has awesome resources for you to use.

KSU LibGuides

Other Information Resources

There are certainly other kinds of information sources such as patents, standards, product literature, conference proceedings. Again, ask your librarian for help with these kinds of resources.

Evaluate Your Research Findings

The following is a system of evaluating the reliability of Internet information developed by the Cornell University Library. This information is especially important if you are using Internet sources and need to defend their validity and reliability.

Evaluating Research Findings

Point of view	Does this article or book seem objective, or does the author have a bias or make assumptions? What was the author's method of obtaining data or conducting research? Does the website aim to sell you something or just provide information? What is the author's purpose for researching and writing this article or book?
Authority	Who wrote the material? Is the author a recognized authority on the subject? What qualifications does this author have to write on this topic? Is it clear who the intended audience is? What is the reputation of the publisher or producer of the book or journal? Is it an alternative press, a private or political organization, a commercial press, or university press? What institution or Internet provider supports this information? (Look for a link to the homepage.) What is the author's affiliation to this institution?
Reliability	What body created this information? Consider the domain letters at the end of a web address (URL) to judge the site's quality or usefulness. What kind of support is included for the information? Are there facts, interviews, and statistics that can be verified? Is the evidence convincing to you? Is there any evidence provided to support the author's conclusions, such as charts, maps, bibliographies, and documents? Compare the information provided to other factual sources.
Timeliness	Has the site been recently updated? Look for this information at the bottom of a web page. How does the copyright of a book or publication date of an article impact the information contained in it? Do you need historical or recent information? Does the resource provide the currency you need?

Scope	Consider the breadth and depth of an article, book, website, or other material. Does it cover what you expected? Who is the intended audience? Is the content aimed at a general or a scholarly audience? Based on your information need, is the material too basic, too technical, or too clinical?
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In addition to the above, if you are looking at Internet sites, pay careful attention to any advertising on page. Online gambling or magic weight loss solutions might not be the kind of company your research needs to keep.

As a rule of thumb, steer clear of any resource that has "wiki" or "about" in the title or url. Your safest bets are sites sponsored by the U.S. government (.gov) or educational institutions (.edu).

Citing Sources of Borrowed Information

When you write a technical report, you can and should borrow information like crazy—to make it legal, all you have to do is "document" it. If your report makes you sound like a rocket scientist but there's not a single source citation in it and you haven't even taken college physics yet, people are going to start wondering. (In *Night Court*, you'd be guilty of plagiarism. Fine—an F on the paper in question.) However, if you take that same report and load it up properly with source citations (those little indicators that show that you are borrowing information and from whom), everybody is all the more impressed—plus they're not secretly thinking you're a shady character. A documented report (one that has source indicators in it) says to readers that you've done your homework, that you're up on this field, that you approach these things professionally—that you are no slouch. Most importantly, you've shown that you respect the rights of the original authors, the owners of the intellectual property you are using.

The following resources will provide all the guidance you need to correctly document, or give credit to, your sources.

- Research and Citation Resources. Overview from the Purdue OWL with links to specific systems.
- APA Documentation. From Austin Community College.
- MLA Documentation. From Austin Community College.
- Turabian Documentation. From Austin Community College.
- CSE Documentation: Name-Year Method. From Austin Community College.
- CSE Documentation: Citation-Sequence System. From Austin Community College.
- IEEE Citation Style Guide . From Georgia Tech. (The IEEE system is very similar to the system described in the following.)

Number System of Documentation

If you've taken other college writing courses recently, you have probably been exposed to other documentation systems—specifically the MLA, or works cited system. The problem with that system is that it is rather limited to the literature and humanities field. Unfortunately, it is not widely used outside that field—especially not in technical and scientific fields. One of the more common systems used in technical fields is the *number system*, a formatting procedure that is easy to learn and use. The citation-sequence version of the *CSE (Scientific) Documentation* (see the link above) is one of the specific incarnations of the number system. (Notice here that we use *brackets*, not parentheses, for the source indicators.)

In this number system, you list your information sources alphabetically, number them, and put the list at the back of your report. Then in the body of your report, whenever you borrow information from one of those sources, you put the source number and, optionally, the page number in brackets at that point in the text where the borrowed information occurs. The illustration below shows how this system works. However, in a hypothetical example:

- [4] would refer to source 4 in the list.
- [4:231] would refer to page 231 of source 4.
- [4:231-235] would refer to pages 231 through 235 of source 4.
- [4;7] would indicate that the information was borrowed from source 4 and source 7.

What to Document

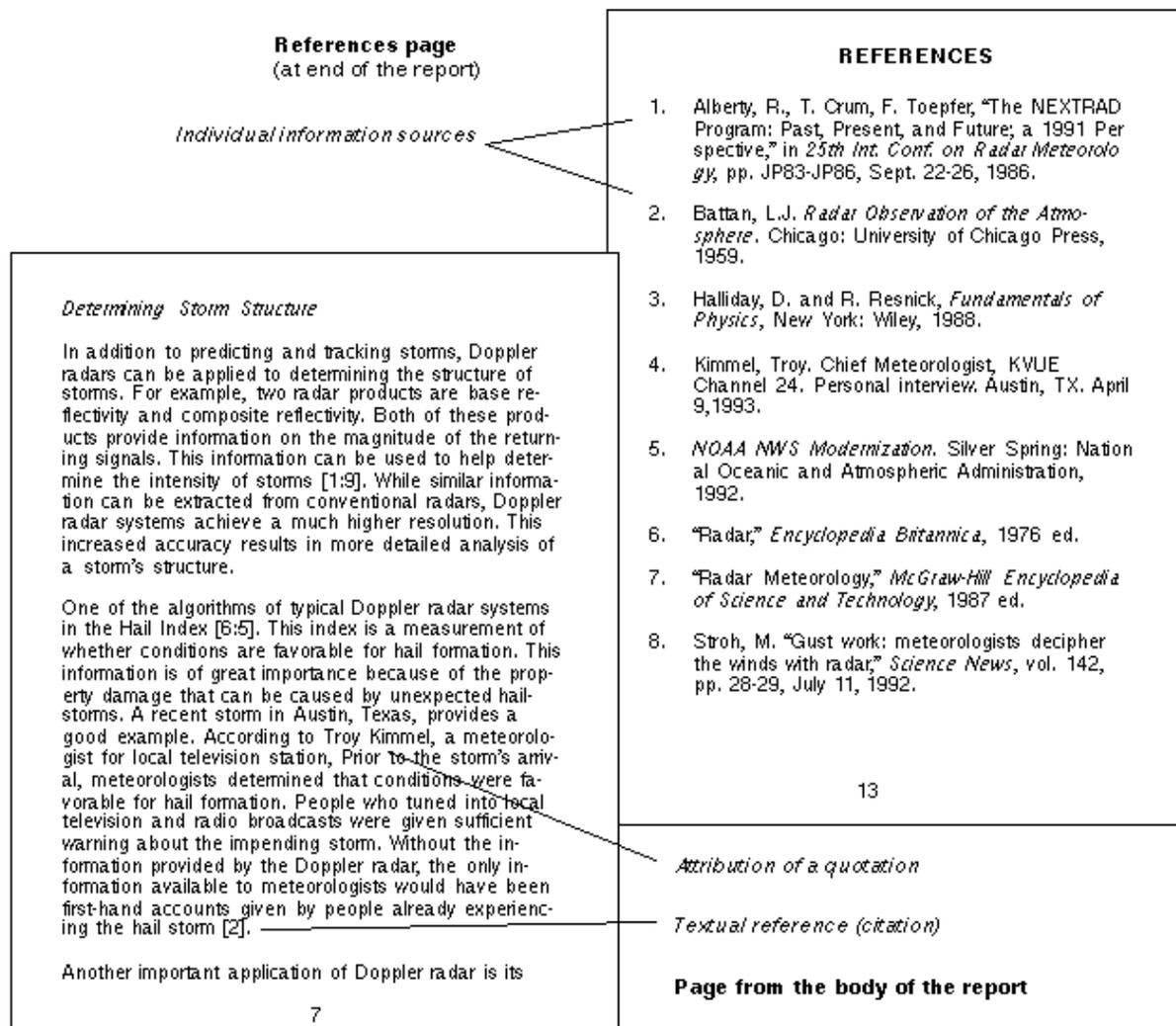
This question always comes up: how do I decide when to document information—when, for example, I forgot where I learned it from, or when it really seems like common knowledge? There is no neat, clean answer. You may have heard it said that anything in an encyclopedia or in an introductory textbook is common knowledge and need not be documented. Don't believe it. If it really isn't common knowledge for you, at least not yet, document it! If you just flat can't remember how you came by the information, then it has safely become common knowledge for you. (All that's really going on here is that we're trying to protect the efforts of those poor devils who worked themselves into the ground originating the information we want to borrow—give 'em a break, give 'em their due!) If you know you read it during your research process, you need to document it.

One other question that is often asked: do I document information I find in product brochures or that I get in conversations with knowledgeable people? Yes, most certainly. You document *any* information you did not create, regardless whether it is in print,

in electronic bits, magnetic spots, or in thin air. While you probably studied this in high school, it becomes a very serious issue in a university that expects research to not only be useful, but also to be honest.

How to Place the Source Indicators

It's a bit tricky deciding exactly where to place the source indicators—at the beginning of the passage containing the borrowed information, at the end? If it makes sense to "attribute" the source (cite the name of the author or the title of the information), you can put the attribution at the beginning and the bracketed source indicator at the end (as is shown in the following).



In the number documentation system, the code numbers in the text of the report are keyed to the references page. For example, [6:5] in the middle of the page from the body of the report indicates that the information came from source 6 (in References), page 5. Notice that the attribution of the quotation indicates the beginning of the borrowed information and the bracketed source indicator marks the end.

How to Set up the Sources List

A bit more challenging is setting up the list of information sources—that numbered, alphabetized list you put at the end of the document. (The context here is still the number system.) The best way to learn is to use examples. The following examples show you how to handle books, government reports, articles from magazines and journals, encyclopedia articles, and personal interviews.

Internet and web information sources. For format information regarding citing Internet and web sources, see any of the resources listed above. As you will see, there are quite a few variations. However, a simple functional practice would use this order:

1. Author name, last name first. If that's not available, use the organization's name, followed by a period.
2. Next, the title of the page.

3. After that the publication date of the web page, if available; otherwise, use the "N.d" indicator.
4. Next, the full URL of the page.
5. And finally an indication of the date you accessed the page, for example, Accessed June 6, 1988.

Books. For books, first put the name of the author (last name first), followed by a period, followed by the title of the book in italics, followed by a period, followed by the city of the publisher, followed by a colon, followed by the publisher's name (but delete all those tacky "Inc.," "Co.," and "Ltd." things), followed by the year of publication, ending with a period. In this style, you don't indicate pages.

Burn, Duncan. *Nuclear Power and the Energy Crisis*. New York: New York University Press, 1978.

Magazine and journal articles. Start with the author's name first (last name first), followed by a period, then the title of the article in quotation marks and ending with a period, followed by the name of the magazine or journal in italics, followed by a period, followed by the date of issue of the magazine the article occurs in, followed by the beginning and ending page. If the article spread out across the magazine, you can write "33+." or "33(5)." The (5) in the preceding is an estimate of how many pages the article would be if it were continuous.

If there is no author, start with the article or book title. If there are two authors, add "and" and the second author's name, first name first. If there are too many authors, use the first one (last name first), followed by "*et al.*," which means "and others."

Idso, S. B. "Climate Significance of Doubling CO₂ Concentrations." *Science* (March 28, 1980), 128-134.

Note: You may have seen complex entries indicating volume and issue numbers. While those may be required in some contexts, normally you can simplify things and just include the issue date. But ask!

Encyclopedia articles. Encyclopedia articles are easy! Start with the title of the article in quotation marks ending with a period, followed by the name of the encyclopedia (in italics if you have it; otherwise, underline), followed by the period, then the year of the edition of the encyclopedia.

"Nuclear Reactor." *Van Nostrand's Scientific Encyclopedia*. 1980 ed.

Reports. With reports, you're likely to be dealing with government reports or local informally produced reports. With most reports, you may not have an individual author name; in such cases, you use the group name as the author. For government reports, the publisher is often the Government Printing Office; and the city of publication, Washington, D.C. Also, for government documents, you should include the document number, as is shown in the following example.

Committee on Energy and Natural Resources, *U.S. Senate Hearings on the Effects of Carbon Dioxide Buildup in the Atmosphere*. DOA 2.8/NAA 6655.3. Washington: U.S. Government Printing Office, 1980.

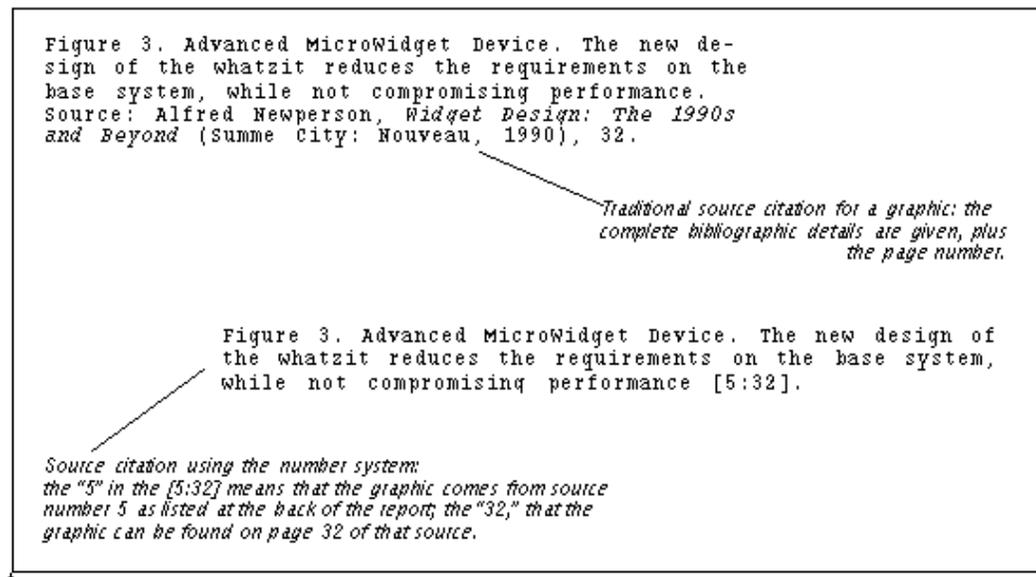
Personal interviews, correspondence, and other nonprint sources. With these sources, you treat the interviewee or the e-mail or letter writer as the author, follow that name with the person's title, followed by a period, then the company name, followed by a period, then the city and state, followed by a period, then what the information was ("Personal interview" or "Personal correspondence") followed by a period, ending with the date.

Smith, Eunice J., Public Relations Director. Fayette Power Facility. Fayetteville, TX. Personal interview. June 6, 1988.

Product brochures. For these kinds of information sources, treat the company name as the author, followed by a period, use something identifying like the product name (including the specific model number), followed by anything that seems like the title of the brochure, followed by a period, ending with a date if you can find one (otherwise, put "N.d.>").

Society to Stop Nuclear Power Plants. *Stop the Nukes*. Political brochure. N.d.

Documenting borrowed graphics. It's certainly legal to copy graphics from other sources and use them in your own work—as long as you document them. You indicate the source of a borrowed graphic in the figure title (caption), which is located just below the graphic. In the figure title, you can show the source of the graphic in two ways—the long traditional way or the shorter way that uses the format of the number system:



Cross-Referencing

Technical reports and instructions often require cross-references—those pointers to other places in the same document or to other information sources where related information can be found.

A cross-reference can help readers in a number of different ways:

- It can point them toward more basic information if, for example, they have entered into a document more complex than their level of understanding.
- It can point them to more advanced information if, for example, they already know the stuff you're trying to tell them.
- Also, it can point them to related information.

Related information is the hardest area to explain because ultimately everything is related to everything else—there could be no end to the cross-references. But here's an example from DOS—that troll that lurks inside PC-type computers and supposedly helps you. There are several ways you can copy files: the COPY command, the DISKCOPY command, and XCOPY command. Each method offers different advantages. If you were writing about the COPY command, you'd want cross-references to these other two so that readers could do a bit of shopping around.

Of course, the preceding discussion assumed cross-references within the same document. If there is just too much background to cover in your document, you can cross-reference some external website, book, or article that does provide that background. That way, you are off the hook for having to explain it all!

Now, a decent cross-reference consists of several elements:

- Name of the source being referenced—This can either be the title or a general subject reference. If it is a chapter title or a heading, put it in quotation marks; if it is the name of a book, magazine, report, or reference work, put it in italics or underline. (Individual article titles also go in quotation marks.) Choose italics over underlining when possible.
- Page number—Required if it is in the same document; optional if it is to another document.
- Subject matter of the cross-reference—Often, you need to state what's in the cross-referenced material and indicate why the reader should go to the trouble of checking it out. This information may necessitate indicating the subject matter of the cross-referenced material or stating explicitly how it is related to the current discussion.

These guidelines are shown in the following illustration. Notice in that illustration how different the rules are when the cross-reference is "internal" (that is, to some other part of the same document) compared to when it is "external" (to information outside of the document).

For details on creating graphics and then incorporating them into a document, see the section on graphics in this guide on page 16.

In this *internal* cross-reference, the section is referenced generically. It's standard to cite the page number in internal cross-references.

For details on creating graphics and then incorporating them into a document, see "Graphics" in the *Online Technical Writing Guide*.

The title of the chapter is in double quotation marks. The title of the book that the chapter occurs is italicized.

For details on creating graphics and then incorporating them into a document, see the chapter on graphics in the *Online Technical Writing Guide*.

If you don't want to cite the exact titles of the chapter, just use lowercase.

For details on creating graphics and then incorporating them into a report, see "Brighten Up That Monthly Report!" in the *Office Information Newsletter*.

If you cite an article in a periodical, put the article in quotation marks and italicize the name of the periodical.

Activities and Exercises

1. Locate several journals in your major field and find the information for writers section. What formatting protocols are expected if you want to be published?
2. In small groups, visit the Purdue OWL Research and Citation Section and explore it. What can you learn about the different formatting styles? When would you use APA? MLA? IEEE? Chicago?
3. In small groups or a discussion forum, share some of your own research techniques...what has been effective for you in the past? What advice would you offer others in the class for becoming a good researcher?
4. Locate your school's policy on plagiarism and academic honesty. How important do you think this is? Find some sources that reveal cases of academic dishonesty...how does lack of integrity in research affect the individuals and the university?