

## Encouraged students to use multiple resources to improve understanding

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### Why this Teaching Method Matters

A few years ago, when the information world was highly structured and key resources could be found on the shelves of any respectable college or university library, getting students to use scholarly and other resources was a rather straight-forward matter. Assignments indicated what specific (mostly print) resources formed the “universe” from which students could choose and they, sometimes with the assistance of a librarian, would go directly to the desired books or journals. All this changed dramatically with the introduction of the Internet and the proliferation of online resources. Access to information resources has now become almost universal and mostly unfettered. One might assume that student research and use of resources would have improved dramatically.

Reality, though, is far from satisfactory. The challenges facing today’s information-seeker are far different from those of only a few years ago (1). With the proliferation of resources, both instructors and students must develop information literacy. That is, they must become proficient in: assessing one’s information needs, searching for possible sources of information, evaluating the credibility and quality of sources, and integrating information across sources and into research and/or

assignments (2). In too many cases, assignments have not kept pace with the changing information environment. An emphasis on using multiple resources is especially important in classes stressing life-long learning, communication skills, critical analysis, and the development of personal values. But in today’s “information society,” being able to find and use resources will be increasingly relevant regardless of a class’ specific objectives.

Expediency and lack of training are the most common reasons for students’ inability or unwillingness to explore varied resources and to search for them in any ways other than the most superficial ones (3). The basic role of instruction is still essentially that of structuring opportunities for students to learn and being able to demonstrate their learning. However, the controlled, comfortable world of academic resources has given way to an open-ended, highly diverse, and often surprisingly rich universe of information. Using multiple resources has become a more complex and layered activity, but one that instructors can promote successfully when they are willing to move away from old customs. This is one of those unique instances where both instructors and students are learners (4).

### Applying this Teaching Method in the Classroom

For students to be able to use multiple resources, it is essential to help them acquire information literacy skills, to provide proper assignments, and for the instructor to serve as a coach as well as a teacher. Some simple actions can have a profound effect.

**Partner with a Librarian:** Librarians have become some of the most knowledgeable professionals in the field of information literacy, thanks to the remarkable transformation that academic libraries have undergone in response to the changing world of information. Libraries’

instructional services provide a variety of support—from assistance with the re-design of research assignments to the training of students in basic online search techniques. Collaborating with a librarian, especially one versed in your discipline, as you plan your courses is both practical and rewarding (5).

**Consider Problem-Based Learning (PBL):** PBL is an approach that introduces students to a problem or dilemma prior to studying the relevant material. PBL helps students become aware of the need for information, and it

prompts them to clarify their own information needs. The first two PBL tasks students face are “What do I need to know in order to address the problem?” and “Where will I find the information?” With PBL, students take ownership of their own learning, and therefore explore the problem more deeply (6).

**Create a Course Resource Bank:** Finding useful resources is challenging for students. Why not let them pool their efforts? Allow students to share resources with each other, and contribute resources you know to be credible and relevant. Point students to professional journals and prominent scholars in your field, while inviting (or requiring) your students to find and share relevant websites, news articles, and primary sources. During class, ask students to share how they found their contributions, and outline your own approaches for seeking information. And use student-contributed resources in your teaching, to validate your students’ effort and insight (7).

**Assign Annotated Bibliographies:** To help students learn to evaluate sources, have them create annotated bibliographies before they write their research papers. Ask students to summarize each source they include in their bibliographies, as well as to assess the source’s credibility and potential use in their papers. Provide students with feedback on their bibliographies, particularly on their assessments of their sources. If time permits after students have written their papers, have them revise their bibliography to detail why and how they used each source—or why they chose not to use a given source (8).

**Ask Students to Map the Big Picture:** Once students have curated a set of useful resources on a given topic, there’s still the challenge of synthesizing the information provided by those resources. Students can get lost in the details of a topic and miss the “big picture” that would help them accomplish this kind of integrative learning. Ask students to create visual representations of their topics, in which relationships among ideas and examples are shown spatially. Depending on the topic, the construction of a concept map, debate map, or timeline can help students see the forest for the trees (9).

## Applying this Teaching Method Online

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The Internet has made it easier than ever for students to access different kinds of resources relevant to their academic work, which means helping students make good use of those resources has become more challenging. Fortunately, digital technologies can also be useful tools

for meeting this challenge in online and blended learning environments.

**Social bookmarking tools** allow users to share their favorite Web pages with others. Students can use these tools to share with each other online resources they find that are relevant to a course or assignment. Tagging and commenting features of these tools provide useful organizational and discussion tools. When students see what their peers have bookmarked, they gain an appreciation of the variety of resources that can be useful for exploring a particular topic and start to see which resources are more useful than others. Social bookmarking tools are particularly useful in courses that address current events (10). Be sure to incorporate student bookmarks in class discussions, otherwise students might see their bookmarking assignments as “busy work.”

The term **Google jockey** refers to students whose role during synchronous class meetings (in person or online) is to search (using Google or some other search engine) for websites, articles, and other resources relevant to the lecture or discussion. When jockeys find relevant content of interest, they share that content with the class, either as they find it or at times designated by the instructor (11). Google jockeys can be used to help all students learn to evaluate the quality of resources, by making a discussion of the quality of their findings part of the sharing process or by directing your jockeys to resources you know to be credible.

As noted above, integrating information across multiple sources can be challenging for students.

**Collaborative documents**, such as wiki pages, Google Docs, or even shared concept maps (12), can help students learn to do this kind of integration. Give students an assignment in which they must collaboratively author a document, either as a class or in small groups. Be sure to structure the assignment so that students must edit and revise each other’s work, much like scholars do when co-authoring papers. This prevents the “divide and conquer” approach that limits the usefulness of these assignments. As students work with each other’s contributions to the collaborative document, they will see how different perspectives can be synthesized in useful ways.

Since part of information literacy is knowing when and who to ask for help, consider having students create personal learning networks (PLNs). Ask them to join Twitter or some other social network used by professionals or scholars in your field. Have students “follow” those experts, as well as others interested in course topics (including others at your own institution). As students

read the posts and other contributions of those in their PLNs, they will get a sense of who might be a potential resource down the road. Encourage students to interact (professionally, of course) with these individuals, asking questions and seeking help at appropriate times. See Richardson and Mancabelli (13) for more on the use of PLNs in education.

## Assessing this Teaching Method

Assessment of learning is best when it is continuous and when it provides students with useful and timely feedback. As in all successful instructional planning, the goals of the course, course execution, and learning assessment need to be aligned with each other. When learning to use multiple resources is a goal of the course, then the course's content and format should include opportunities for students to learn how to do it well, and assessment tools should be able to gauge how well they have learned it.

One approach is **to create a template based on the information literacy standards** developed by the Association of College and Research Libraries (2). As noted above, information-literate students are able to assess their information needs, search for possible sources of information, evaluate the credibility and quality of sources, and integrate information into their knowledge bases. Moreover, students should understand ethical and legal

issues relevant to the use of information. Assessment mechanisms should address each of these skills, either altogether in one assignment or spread out over multiple assignments.

A second, highly effective approach to assessing student use of resources is through **guided projects**. Rather than assign a comprehensive research project early in the term and expect the finished product at the end of the term, the instructor structures a process by which well-defined segments of the project are drafted and turned in for feedback and partial credit. These segments should address the information literacy standards mentioned in the previous paragraph.

Bear in mind that students will not “master” information literacy over the course of a single semester or term. These are skills that students must develop piecemeal and iteratively over time. Consider how your particular course fits into your students' developmental trajectory, and assess only those skills you have decided to target in your course.

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