

Understanding the Research Practices of Incoming Students: An Institutional and Inter-Institutional Profile of Student Perceptions, Experience, and Proficiency

Introduction

The Research Practices Survey was developed to provide baseline information about the information literacy experiences, attitudes, approaches, and skills of incoming first-year students in liberal arts institutions. Results from this survey powerfully reinforce existing findings on teenagers' information literacy skills: using a computer, and using a computer to search for relevant information effectively and efficiently, are two distinct skill sets. Though comfortable engaging an electronic interface, an overwhelming majority of incoming college students in the liberal arts institutions that participated in this project are not proficient in the technical aspects of searching. Below is a summary of the results from the Fall 2006 administration of the survey, including a side-by-side comparison of your students' responses with those of the comprehensive sample of students from all institutions who participated.

This report is thematically organized in three sections to provide an overview of incoming students' information literacy skills. The first section is comprised of six benchmark scores profiling of incoming students' experiences with research and baseline information literacy skills; the second section identifies which tasks associated with accessing and using source materials students perceive to be most (and least) challenging. Finally, the third section compares students' perceptions of what is challenging to evaluations of their actual ability as measured by the survey, highlighting the relative inaccuracy of incoming students' self-perceptions and underscoring the need for information literacy instruction.

Information Literacy Benchmarks: Experience and Proficiency

Information literacy is not a single skill but a set of skills along with relevant knowledge and informed beliefs about research. Below are six benchmark scores that summarize incoming students' level experience conducting research, their approach and attitudes toward the research process, and their ability to apply what they know. Together, these benchmark scores provide a profile of incoming students' level of information literacy.

The tables below show the mean scores of your institution's sample and the comprehensive sample for each benchmark. Based on his or her responses to the survey items, each student received a summary score: a percentage of the total number of possible points received on the questionnaire items incorporated in each benchmark. These scores were averaged over all students who completed the survey and those mean percentage scores are reported below. Higher scores correspond with higher levels of experience, greater sophistication of beliefs about research, and students' increased ability to apply what they know about research and source materials.

The table below provides a side-by-side comparison of your institution to the comprehensive sample; any significant differences at the 0.05 or 0.01 level between your institution and the

comprehensive sample are also noted. A description of each dimension immediately follows the table; the specific items used to calculate the benchmarks are listed in Appendix 1.

**Average Benchmark Scores as a Percentage of Total Possible Points Received:
Experience, Attitudes and Approach, and Application of Skills¹**

	Items	College of Wooster		Comprehensive Sample	
		N	%	N	%
EXPERIENCE	<i>Utilization of sources</i>	137	57%	4,327	59%
	<i>Consultation with instructors and librarians</i>	132	47%	4,289	47%
ATTITUDES AND APPROACH	<i>Time management in pacing research</i>	137	61%	4,351	65%
	<i>Enjoyment of research</i>	137	37%	4,363	40%
	<i>Conceptual sophistication of beliefs about research</i>	136	34%*	4,352	36%
APPLICATION	<i>Competence in applying research skills</i>	137	51%	4,363	53%

Experience: Utilization and Consultation

Incoming students' experience conducting research can be conceptualized as two distinct types of experience: there is the amount of research, source work, and writing the student has done in her senior year of high school and there is also the extent to which the student has engaged teachers and librarians in conversations about research and research assignments. The first kind of experience, **Utilization**, is more technical and reflects the amount of work the student has completed independently; the other type of experience, **Consultation**, is more social and reflects the extent to which the student has actively sought help and advice as part of her research process.

Attitudes and Approach: Time Management, Enjoyment of Research, and Conceptual Sophistication

Successful **Time Management** entails starting research projects early and using the full time allotted to complete the assignment; **Enjoyment** is simply the extent to which incoming students say they enjoy doing research. Incoming students' **Conceptual Sophistication** of beliefs about research reflects the extent to which students understand that doing research well is a learned ability and a fluid and flexible process. The hallmark of good research is rigor and a careful, systematic approach; it is not defined by "right" or "wrong" answers.

Competence: Application of Knowledge and Research Skills

The benchmark measuring incoming students' **Competence** is comprised of 14 items which require students to identify appropriate search techniques and strategies, demonstrate their familiarity with different types of sources and source documentation, and distinguish between scholarly and non-scholarly sources.

Among these items, results again showed remarkable similarity across institutions, with incoming students routinely having difficulty with similar items. Students were generally unfamiliar with Boolean logic and with employing search strategies that would be most effective in identifying a relevant list of sources, namely using the advanced search capabilities of

¹ Statistically significant differences between your institution's benchmark scores and those of the comprehensive sample are identified by single and double asterisks: a difference significant at the .05 level is identified by "*"; differences significant at the .01 level are identified by "**".

academic databases and electronic indexes. In general, students also had difficulty distinguishing between academic journals and popular magazines as valid and reliable sources for research. Only one-third of the students who completed the survey correctly identified criteria appropriate for distinguishing between academic journals and popular magazines. Almost half of the students who completed the survey (46%) identified popular magazines such as Time and Newsweek as scholarly sources; 40% of students failed to correctly identify a peer-reviewed academic journal as a scholarly source.

Student Perceptions of the Challenges of Research

Across institutions, students had remarkably consistent perceptions about the challenges associated with accessing, using, and documenting sources: an overwhelming majority of students perceive these tasks to be easy. Below are three separate tables summarizing students' attitudes in each of these three domains. Within each domain the relevant survey items are rank-ordered according to what students at your institution perceive to be the easiest. The task or skill students identified by the most students as "somewhat" or "very" easy is listed first.

Identifying/Retrieving Sources

Results suggest that incoming students are most comfortable using an electronic interface to access research materials. Four-fifths of students (79%) are confident in their ability to navigate a library catalog which is often found online. Using a print index to identify and retrieve sources was consistently identified as the most challenging task by incoming students, but even then more than two-thirds of students view this as a straightforward task.

**Percentage of Students Rating the Task as Either "Somewhat" or "Very" Easy:
Identifying/Retrieving Sources**

Items	College of Wooster		Comprehensive Sample	
	<i>N</i>	%	<i>N</i>	%
13b. Challenge of identifying/retrieving sources - Using an electronic index	117	84%	3793	84%
13a. Challenge of identifying/retrieving sources - Using a library catalog	123	77%	3999	79%
13c. Challenge of identifying/retrieving sources - Using a print index	67	57%	2422	69%

Documenting Sources

Approximately three-quarters of all students find documenting sources to be a "somewhat" or "very" easy component of the research process; more than two-thirds of students are confident that they know when and how to correctly document sources.

Students' confidence is at odds with students' reported level of experience: less than half of all students (48.5%) completed five or more papers their senior year which required at least three citations.

**Percentage of Students Rating the Task as Either "Somewhat" or "Very" Easy:
Documenting Sources**

Items	College of Wooster		Comprehensive Sample	
	N	%	N	%
12f. Challenge of research components - Documenting your sources	136	75%	4319	74%
14c. Challenge of using sources - Knowing when to document a source	135	70%	4312	69%
14d. Challenge of using sources - Knowing how to document a source	134	64%	4308	68%

Using Sources and Conducting Research (Paper-writing)

According to students the *easiest* components of the research process are some of the first steps, and those that from an information literacy perspective are arguably the most critical: developing a list of appropriate sources, evaluating sources for inclusion, and selecting relevant information. This pattern is consistent across institutions and students' overwhelming confidence is misleading, reflecting their relative inexperience and unfamiliarity with college-level resources. The print and online sources students report using most frequently include encyclopedias and dictionaries, and online popular search engines such as Google or Yahoo!. Seven percent of students who completed the survey had not used books or academic journals in print the last academic year; for 10% of students their only online source work was either generic internet searches or usage of the electronic library catalog. Less than half of students report ever having used an academic journal.

According to incoming students, actually writing the paper is considered to be much more challenging than the source work that necessarily precedes it. Students found sufficiently narrowing their research topic, developing a thesis statement, and composition to be among the most difficult tasks associated with conducting research.

**Percentage of Students Rating the Task as Either "Somewhat" or "Very" Easy:
Using Sources and Conducting Research**

Items	College of Wooster		Comprehensive Sample	
	N	%	N	%
14a. Challenge of using sources - Determining whether a source is appropriate	135	85%	4325	88%
14b. Challenge of using sources - Deciding what information from sources to integrate	135	77%	4327	78%
12b. Challenge of research components - Developing a list of sources to investigate	135	72%	4313	79%
12a. Challenge of research components - Narrowing your topic	136	71%	4340	73%
12e. Challenge of research components - Writing the paper	135	65%	4335	70%
12d. Challenge of research components - Developing your main argument or thesis statement	136	64%	4338	60%
12c. Challenge of research components - Revising your search strategy as necessary	133	60%	4256	70%

Relationships Between Perceptions, Experience, and Proficiency

In general, incoming students who have had some experience navigating print and electronic resources are generally more confident in their abilities than their peers. Not surprisingly, results also suggest that students become more comfortable more quickly with online and internet resources versus those in print or hard copy. Overall, students who visited their high school library at least once a month to do research or work on school assignments were no more likely than their peers who rarely visited the library to have confidence in their ability to physically locate library sources. In contrast, students who used a library catalog even *once* during their senior year were two-thirds again as likely to say that using a library catalog is "somewhat" or "very" easy as compared to their peers who reported never having used one. Similarly, students who report having used an online index or database at all during their senior year are 45% more likely than their peers to be confident in their ability to use an electronic index.

It may not be surprising that experience and familiarity with different types of sources and resources might improve students' confidence. For the purposes of instruction, however, the most important question is the linkage between experience, perceptions, *and ability*: can students evaluate, access, and use print and electronic resources, and can they also assess themselves accurately and demonstrate an understanding of what they do and don't know?

The series of four tables below illustrates the extent to which students are accurate in their information literacy self-assessment, and provides a side-by-side comparison between responses from students at your institution and those from the comprehensive sample. Within each sample, students are classified according to their competence in applying research skills (Competent/Not Competent) and the perceived challenge of associated information literacy tasks (Easy/Difficult); students who perceive tasks to be easy and demonstrate competence and students who do successfully apply research skills but perceive the tasks to be difficult or have no relevant experience are accurate in their self-perception. Appendix 2 lists the specific items used to construct each of the tables and provides additional explanatory text.

Developing a list of sources

Nearly 80% of all students indicated that developing a list of sources to investigate is a "somewhat" or "very" easy task, but those who perceive this task to be simple and straightforward are only 25% more likely than their peers to demonstrate proficiency in the advanced search techniques required to develop a list of sources. Students are generally unfamiliar with Boolean logic or truncation of words in key searches; their search strategies are neither efficient nor are they likely to be complete.

**Percentage of Students Rating the Task as "Somewhat" or "Very" Easy by Ability:
Developing a List of Sources**

	College of Wooster		Comprehensive Sample	
	<i>Easy</i>	<i>Difficult</i>	<i>Easy</i>	<i>Difficult</i>
<i>Competent</i>	17%	5%	19%	3%
<i>Not Competent</i>	56%	23%	60%	17%

Evaluating Sources

Again, an overwhelming majority of students reported that determining whether or not a source is appropriate is an easy task. Less than half of the students in the comprehensive sample had perceptions which matched their ability; more than two-thirds of those who believed the task to be "somewhat" or "very" easy did not effectively apply the necessary skills. Students had particular difficulty distinguishing scholarly versus non-scholarly sources.

Percentage of Students Rating the Task as "Somewhat" or "Very" Easy by Ability: Evaluating Sources

	College of Wooster		Comprehensive Sample	
	<i>Easy</i>	<i>Difficult</i>	<i>Easy</i>	<i>Difficult</i>
<i>Competent</i>	21%	6%	21%	7%
<i>Not Competent</i>	50%	23%	48%	23%

Knowing When and How to Cite

Although fewer students reported that knowing when and how to cite sources is an easy task, students who were confident in their ability to cite appropriately were only slightly more likely than their peers to correctly identify sources from the citations provided (15%) or to be able to provide a definition of a citation and recognize when a citation is not required (20%). In particular, when presented with three citations from three different types of sources, only one-fifth of students were able to correctly identify the source type in all three cases; 18% failed to identify any of them correctly.

Percentage of Students Rating the Task as "Somewhat" or "Very" Easy by Ability: Knowing When to Cite

	College of Wooster		Comprehensive Sample	
	<i>Easy</i>	<i>Difficult</i>	<i>Easy</i>	<i>Difficult</i>
<i>Competent</i>	34%	11%	29%	11%
<i>Not Competent</i>	36%	20%	40%	20%

Percentage of Students Rating the Task as "Somewhat" or "Very" Easy by Ability: Knowing How to Cite

	College of Wooster		Comprehensive Sample	
	<i>Easy</i>	<i>Difficult</i>	<i>Easy</i>	<i>Difficult</i>
<i>Competent</i>	15%	9%	23%	9%
<i>Not Competent</i>	49%	27%	45%	22%

Appendix I - Information Literacy Benchmarks

1. *Utilization of sources:*

4. Number of papers requiring at least 3 sources
- 5c. Print sources used - Academic or research journals
- 6b. Online sources used - Journals, magazines, newspapers, or encyclopedias
- 6c. Online sources used - Library catalog
- 6e. Online sources used - Indexes or databases
7. Information management tools used in research (Summary Score)
8. Required to use specific format for sources in bibliography

2. *Consultation with instructors and librarians*

- 1a. Library Use - High School Library
- 9a. Sought advice – Teachers or professors
- 9b. Sought advice - Librarians
10. Talked with a librarian about a research assignments

3. *Time management in pacing research*

11. Which of the following best describes the way you pace your work on a research assignment: I do most of the work soon after an assignment is given; I divide the work pretty equally across the available time; I do a little work soon after the assignment is given, but I do most of it toward the end; or I do all of the work just before or on the due date?

4. *Enjoyment of research*

15. In general, how much do you enjoy doing research: Very much; quite a bit; some; or very little?

5. *Conceptual sophistication of beliefs about research*

- 16a. Beliefs about research - Skillful researchers know the best way
- 16b. Beliefs about research - A course in research skills would be useful
- 16c. Beliefs about research - When two researchers disagree, one must be wrong
- 16d. Beliefs about research - Successful researchers understand things quickly
- 16e. Beliefs about research - Careful researchers can ultimately get to the truth
- 16f. Beliefs about research - If a researcher cannot understand something quickly, she should keep trying
- 16g. Beliefs about research - Good research yields clear results, poor research yields ambiguous results
- 16h. Beliefs about research - Some people are just naturally better

6. *Competence in applying research skills*

17. Search that would retrieve the most results
18. Correct way to truncate a search word
19. Efficient way to find a comprehensive listing of other books
20. Distinguishing between academic journals and popular magazines
21. Recognizing the issue number in a reference
- 22a. Recognizing source type – Journal article
- 22b. Recognizing source type - Book
- 22c. Recognizing source type – Portion of a book
23. Distinguishing between primary and secondary sources
24. Identifying search strategy yielding most comprehensive/relevant sources
25. Defining peer-reviewed/refereed journal
26. Defining citation
27. Recognizing when citation is not required
- 28a. Distinguishing between scholarly and non-scholarly – Available online
- 28b. Distinguishing between scholarly and non-scholarly - Translated from another language
- 28c. Distinguishing between scholarly and non-scholarly - Published in a peer-reviewed journal
- 28d. Distinguishing between scholarly and non-scholarly - Posted on a political blog

- 28e. Distinguishing between scholarly and non-scholarly - Recently published
- 28f. Distinguishing between scholarly and non-scholarly - Lengthy list of references
- 28g. Distinguishing between scholarly and non-scholarly - Published by a university press
- 28h. Distinguishing between scholarly and non-scholarly - Published in Time, Newsweek or US News and World Report
- 29. Recognizing least appropriate source
- 30. Basis for source selection
- 31. Best way to determine whether to use a particular source

Appendix I – Ability and Attitude Crosstabulations

Developing a list of sources

Attitude Item:

Item 12b. Challenge of research components - Developing a list of sources to investigate

Experience Items:

Item 17. Search that would retrieve the most results (Boolean logic) (Response 1 is correct)

Item 18. Correct way to truncate a search word (Response 3 is correct)

Item 19. Efficient way to find a comprehensive listing of other books (Responses 2, 3, and 4 should all be coded as correct)

Item 24. Identifying search strategy yielding most comprehensive/relevant sources (Responses 1 and 3 should be coded as correct)

Evaluating sources

Attitude Item:

Item 14a. Challenge of using sources - Determining whether a source is appropriate

Experience Items:

Item 25. Defining peer-reviewed/refereed journal (Response 2 is correct)

Item 28c. Distinguishing between scholarly and non-scholarly – Published in a peer-reviewed journal (Response 1 is correct)

Item 28h. Distinguishing between scholarly and non-scholarly – Published in Time, Newsweek, or US News and World Report (Response 2 is correct)

Item 29. Recognizing least appropriate source (Response 4 is correct)

Item 30. Basis for source selection (Response 1 is correct)

Item 31. Best way to determine whether to use a particular source (Responses 2, 4, and 5 should be coded as correct)

Knowing when to cite

Attitude Item:

Item 14c. Challenge of using sources: Knowing when to document a source

Experience Items:

Item 26. Defining citation (Response 2 is correct)

Item 27. Recognizing when a citation is not required (Response 3 is correct)

Knowing how to cite

Attitude Item:

Item 14d. Challenge of using sources: Knowing how to document a source

Experience Items:

Item 22a. Recognizing source type – Journal article (Response 2 is correct)

Item 22b. Recognizing source type – Book (Response 1 is correct)

Item 22c. Recognizing source type – Portion of a book (Response 3 is correct)

Additional Explanation/Interpretation: Knowing how to cite

Ideally – and not just for reasons of measurement - we would like for students to have an accurate self-perception of their research skills: we would like for them to know what they know *and* to know what they don't know.

The tables in Section Three are designed to show the extent to which students' perceptions of the difficulty of research practices are in line with their actual ability to perform those tasks correctly. To this end, each of the tables provides a side-by-side comparison of your institution to the comprehensive sample, and within each group the table divides the students into four groups:

- (1) *Students who "Know what they know"*: they perceive a particular task to be "Easy" AND have demonstrated competency in a related set of tasks
- (2) *Students who "Don't know what they know"*: they perceive the task to be "Difficult" BUT have demonstrated competency in a related set of tasks
- (3) *Students who "Don't know what they don't know"*: they perceive the task to be "Easy" BUT they have failed to demonstrate a level of competency on a related set of tasks
- (4) *Students who "Know that they don't know"*: they perceive the task to be "Difficult" AND they have not demonstrated a level of competency on a related set of tasks

To illustrate, each of these groups are labeled on the table below.

Percentage of Students Rating the Task as "Somewhat" or "Very" Easy by Ability: Knowing How to Cite

	Your Institution		Comprehensive Sample	
	<i>Easy</i>	<i>Difficult</i>	<i>Easy</i>	<i>Difficult</i>
<i>Competent</i>	(1)	(2)	23%	9%
<i>Not Competent</i>	(3)	(4)	45%	22%

In general, the results from the survey suggest that slightly less than half of the students who completed the survey have perceptions about information literacy tasks that are in line with their skill level. Across different research practices and across institutions, students appear to have perceptions that are not in line with their actual ability. Over half of incoming students either don't know what they don't know about research practices, which consistently comprises the greatest percentage of the student body, *or* they aren't confident in what they do know.

In the table above, only 23% of all students in the comprehensive sample said that it's "very" or "somewhat" easy to document sources appropriately and also demonstrated on the survey that they are able to do so; 22% of students had difficulty documenting sources appropriately and also recognized documenting sources as a "very" or "somewhat" difficult task. Nearly half of all students who completed the survey (45%) appear to not know what they don't know about how to document sources: they believe that it is "very" or "somewhat" easy to appropriately document sources, but when asked to recognize source types from citations, they fail to do so correctly. A minority of students perceived documentation to be difficult but demonstrated competency in the recognition tasks.