Student Learning Outcome Information Literacy Instruction 2016-17

Parameters and Timeline

This study assessed the Applied Research Techniques ("r") skill, the goals of which are:

> *1. To identify and select the most appropriate investigative methods or information retrieval systems.*
> *2. To identify, locate, and retrieve information.*
> *3. To use information effectively to accomplish a specific purpose.*

A rubric assessing four elements mentioned in these goals (methods, systems, information retrieval and use) was applied to 50 annotated bibliographies. Four librarians and two members of the faculty worked together to create the rubric in November; the same six served as scorers for the bibliographies in December.

Survey Design and Methods

Courses whose completion confers the "r" on students range from first-year seminars to 300-level courses. There is also broad differentiation among research assignments: while some faculty assign several brief projects, others focus on one research paper. Finally, formats vary: applied research often leads to writing projects, but other results are oral presentations or creative work. Given this range, it was decided that annotated bibliographies would provide the best opportunity to determine student success in applying appropriate research techniques. 80 annotated bibliographies were collected from 9 courses; from these, 50 were randomly selected for the assessment.

Our team created a rubric (see Appendix I) using a set of annotated bibliographies collected in previous years. Rubric categories matched the ART skill's goals to the elements which we could find in evidence. Scorers determined that copies of the assignment for each course would be needed, to determine which exact requirements students were expected to follow. To allow for cases in which faculty did not require certain annotation elements, a rating of "N/A " was added to three categories.

Note that while the "r" is applied to courses at all levels, the courses which provided annotated bibliographies to this study were 8 First-Year Seminars and one non-FYS. The latter only provided one bibliography. Therefore, the results of our study are more accurately viewed as an assessment of the "r" as currently applied in FYS courses.[1]

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[1] A follow-up study in the spring examined a total of 12 annotated bibliographies across three courses. Because of the limited sample size, few conclusions can be drawn – however, results were similar to the results from FYS bibliographies. Students had

## Scoring and Inter-Rater Reliability

Raters met for one norming session before scoring commenced. Each scored three sample bibliographies, then the group discussed results to come to a better understanding of each category's meaning and parameters.

Once actual scoring commenced each bibliography was scored twice, and the scores were reconciled. If a score was uneven between two raters, a third score was solicited from another member of the team to break the tie. This last method was deemed necessary when 56 uneven scores occurred among the total of 200.

Used Appropriate Investigative Methods: Question 1 Results

- Not Applicable: 20
- Below Requirements: 11
- Meets Requirements: 12
- Excellent: 7

20 results from four courses received an "N/A" rating due to the professor not having required evidence of key words or similar investigative methods.

Investigative Methods

- Below Requirements
- Meets Requirements
- Excellent

37%
40%
23%
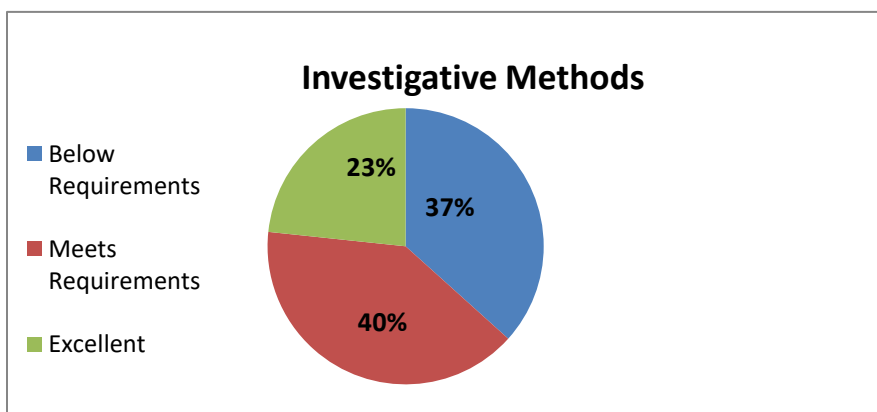
From the remaining 30 bibliographies, 77 % either met or exceeded expectations.

Annotations met expectations when any key words or other search terms had been included; work exceeded expectations when it showed evidence of students' using a variety of key words.

Such variation can show a student is exploring a complex topic; or she may be learning to use increased precision in choosing terminology. It could also mean she has recognized a need for more variation in source materials. Without additional data, it is impossible to determine cause.

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stronger outcomes in using appropriate investigative methods, using appropriate information retrieval systems, and identifying, locating and retrieving information, than in using information effectively to accomplish a specific purpose. See Appendix 2.

Used Appropriate Information Retrieval Systems: Question 2 Results

- Not Applicable: 15
- Below Requirements: 2
- Meets Requirements: 33
- Excellent: 0

15 results from three courses received an "N/A" rating due to our inability to determine whether the professor had required students to use any particular information retrieval system.

Retrieval Systems

Below Requirements — 6%
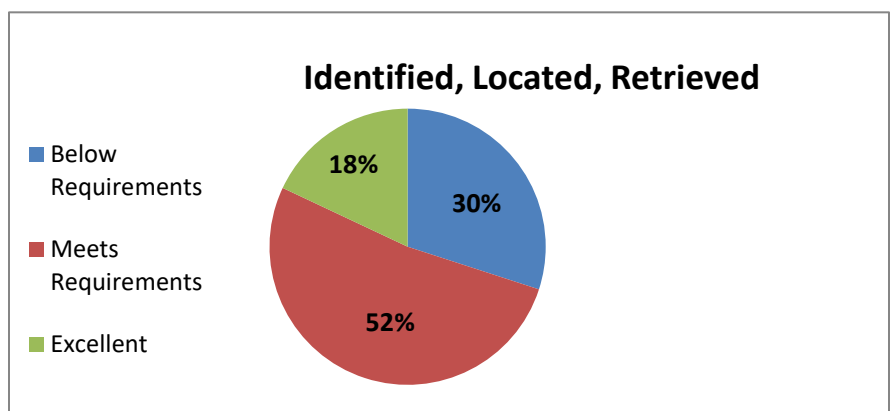Meets Requirements — 94%
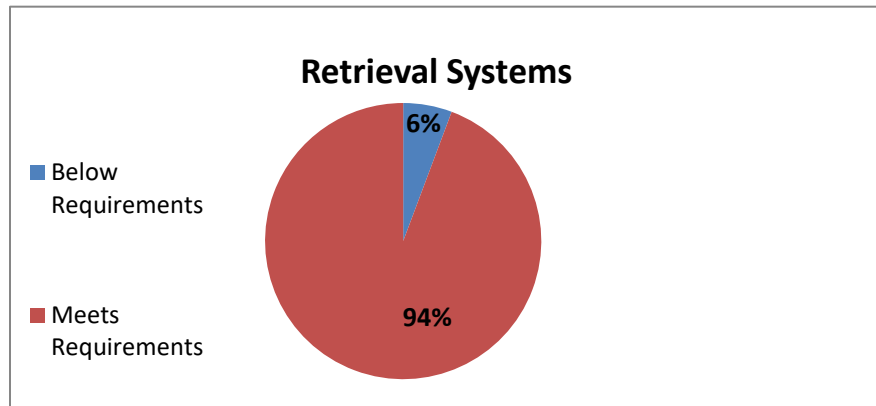
From the remaining 35 bibliographies, 94% met the requirement for systems. No bibliography received a rating of "Excellent," which raters had determined would require a student to use three or more appropriate information retrieval systems.

It should be noted that this category is problematic as a determinant of student success in research, especially in the first year. For more on this, see "Limitations."

Identified, Located and Retrieved Information: Question 3 Results

- Not Applicable: 0
- Below Requirements: 15
- Meets Requirements: 26
- Excellent: 9

Since all of the assignments specified a required number of sources, all bibliographies were scored in this category. If particular formats were required, this also became a consideration for scoring.

Identified, Located, Retrieved

Below Requirements — 30%
Meets Requirements — 52%
Excellent — 18%

To receive an "Excellent" a student's bibliography had to include more than the minimum required number of appropriate sources. 70% of bibliographies either met or exceeded the professor's requirement for identifying, locating and retrieving appropriate sources.

Used Information Effectively To Accomplish a Specific Purpose: Question 4 Results
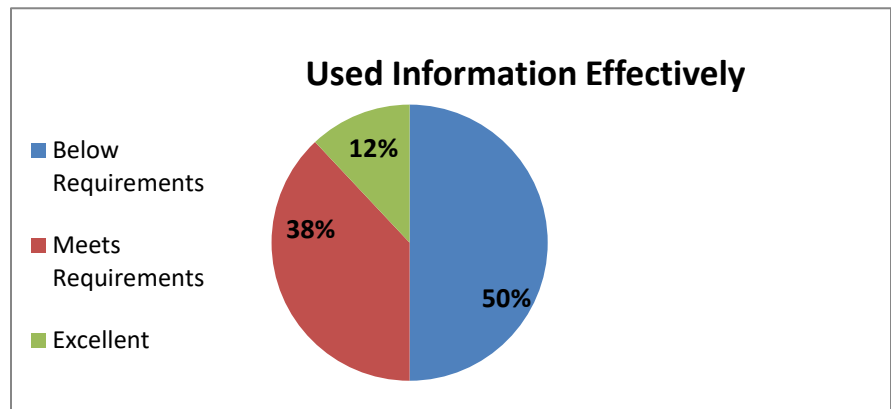
Below Requirements: 25

Meets Requirements: 19

Excellent: 6

All bibliographies were scored in this category, which considered the execution of annotations. To meet expectations, a student had to address all of the elements required in her assignment; a score of "Excellent" required her to do so with particular clarity and depth.

Used Information Effectively

- Below Requirements
- Meets Requirements
- Excellent

12%
38%
50%

Half of the bibliographies were scored "Below requirements," while half either met or exceeded.

Limitations

There are limits to what one can infer from the results of this study. First, the "r" is a standard that provides some challenges to those charged with its assessment:

- Investigative methods are rarely evident in students' final work. Unless a professor assigns a research journal or a similar reflective component, it is almost impossible to derive this information from a speech, a paper, or even an annotated bibliography.

  The solution applied in our study, assessment of the use of key words, is only one component of search methodology: while it is a worthy part, it is not a good substitute for the whole.

- Information retrieval systems also are rarely in evidence; nor are they necessarily good indicator of success. Some very good 5-page undergraduate papers can result from using only printed books and encyclopedias found via the library catalog, only articles from the JSTOR database, or only research papers and reliable websites found via Google.

  Some projects and disciplines will require the very broad range of sources that can only be gleaned from using many systems. By the time a student graduates she should certainly have learned this, but many FYS assignments do not operate on this level of complexity. It would be more appropriate to assess whether students recognize different types of information formats, rather than the systems in which they are stored.

- "r" is applied to courses at every level of the curriculum: student work might come from a first-semester first-year or from a senior. One cannot expect an equal amount of expertise from a student in her first semester and a student working on her capstone experience; combining their results to draw conclusions about how well our students are learning overall is a project which is flawed from inception. It is therefore a lucky accident that work assessed in this particular study came almost exclusively from FYS courses. This flaw should be kept in mind in future assessments.

Finally, even within the common format of annotated bibliographies gathered from courses at the FYS level, there was significant variation in the requirements of the assignments. Some faculty required only source summaries, while others expected students to evaluate their sources; some specified annotations of several paragraphs, while others accepted shorter work (or left length up to the student). These variations resulted in a broad spectrum of work. Across this spectrum, while difference in scores may be compared as an accurate reflection of which students were able to follow instructions, it is a much less certain method of judging the quality of their ability to successfully find and utilize sources.

Conclusions

Keeping in mind these limitations, the results of our survey demonstrate that a majority of students were successful in applying appropriate search methods (including the selection of search systems) to locate information for their research projects. It is worth noting that methods and systems are a significant focus of the library's instruction program: success in these categories can be seen as an endorsement of the research instruction time, jointly managed by faculty and librarians, mandated as part of the "r."

Students were less successful when asked to create effective annotations: half of the bibliographies collected were scored "Below Requirements" in the final area of assessment.

Annotations are an indicator of students' ability to articulate why they do research; they are also one predictor of the degree to which that students might successfully complete her researched speech, paper, or other project. Poor annotations indicate that while some first-year students are learning the first steps of doing research, they will continue to need practice with the complex process of using source materials effectively. Like learning, research and writing are both iterative processes; one interpretation of this final result might be that a standard designed to be addressed across all four years cannot be successfully achieved by all students in the first semester.

What is clear is that the effective expression of the purpose of research is a skill which should be addressed moving forward. Potential solutions can include having students practice source evaluation, summarizing, reflective writing, research journaling, and other skills involved in successfully producing appropriate and effective annotations.

Appendix I: Survey

As specified in the assignment, the student has:	Excellent	Meets Requirements	Below Requirements	N/A
Used appropriate investigative methods	Varied key words are used across the annotations.	Key words are included.	Key words are assigned but not included.	Key words are not required in the assignment.
Used appropriate information retrieval systems*	3 or more appropriate systems were used, exceeding the requirement as assigned.	Appropriate systems were used, according to the requirement as assigned.	Systems used are inappropriate for the assignment.	Systems are not required in the assignment.
Identified, located, and retrieved information	Exceeds number of appropriate sources required.	Meets minimum number of appropriate sources required, in total and type.	Number and/or types of sources are incomplete.	Source numbers and types are not required in the assignment.
Used information effectively to accomplish a specific purpose	Annotations communicate all required information about the source with coherence, depth, and clarity.	Annotations communicate all required information about the source, e.g. - Main ideas - Relevance to the topic - Quality of the source	Annotations are missing required components, or are poorly executed.	

*Examples of systems are catalogs, databases, bibliographies, or experts (noting that expertise is contextual, depending on field of study and the nature of the assignment.

Appendix 2

In the 2017 spring semester, three courses with the applied research skill provided a total of 24 student bibliographies for assessment. However, assessors found that only three of the fifteen bibliographies provided from Communication 101 were complete, thus greatly reducing the number of bibliographies that could be assessed. That left 12 assessable bibliographies, from the following courses.

- Communication 101: 3 bibliographies
- Business 100: 5 bibliographies (students worked in groups)
- Econ 211: 4 bibliographies (students worked in groups)

We decline to reach any conclusions based on the limited sample size, but we do find it interesting that results tended to echo the results from the larger study in the Fall of 2017.

Used appropriate investigative methods (56% met or exceeded requirements; 77% in fall)

- Excellent: 3
- Meets Requirements: 2
- Below Requirements: 4
- Not Applicable (students not required to submit evidence of their search methods): 3

Used appropriate information retrieval systems (89% met or exceeded requirements; 94% in fall)

- Excellent: 3
- Meets Requirements: 5
- Below Requirements: 1
- Not Applicable (students not required to submit evidence of systems used): 3

Identified, located and retrieved information (75% met or exceeded requirements; 70% in fall)

- Excellent: 1
- Meets Requirements: 8
- Below Requirements: 3

Used information effectively to accomplish a specific purpose (58% met or exceeded requirements; 50% in fall)

- Excellent: 3
- Meets Requirements: 4
- Below Requirements: 5