

# KNOWLEDGE-BASED ASSESSMENT FOR LIBRARY INSTRUCTION

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Librarians have long been involved in user instruction, whether informally guiding patrons through search strategies and evaluation of results at the reference desk or through instruction that is formally integrated into a school or university curriculum. However, engaging in instruction does not by itself guarantee that students are achieving the skills and competencies they are being taught. In addition to providing instruction for information literacy, librarians should be engaged in assessment, or the process of measuring progress toward predetermined learning outcomes. Assessment is an important aspect of library instruction as it provides the evidence libraries need to demonstrate gains in student learning and, by extension, the library's contribution to the teaching and learning goals of its institution. Further, it allows instructors to gauge student progress, pinpoint gaps, and improve engage in continuous improvement of instruction sessions. As such, assessment should be considered an integral part of library instruction, as "inseparable from teaching" (Oakleaf, 2009).

Despite a long history of instruction and the many reasons for practicing assessment, there does not seem to be widespread engagement in assessment by librarians. Rather, "most of the published evidence of the impact of libraries on student learning is sporadic, disconnected, and focused on limited case studies" (Oakleaf, 2010, p. 14). In the arena of library instruction, the outcomes on which assessment should center are student learning outcomes, which can be defined as "abilities, habits of mind, ways of knowing, attitudes, values, and other dispositions" (Maki, 2004, p. 3) necessary to succeed

in work, school, and personal life. Thus, librarians first need to establish what students should know, understand, or be able to do by the end of a course or program of instruction, and then choose an assessment method or tool to measure achievement. This paper focuses on direct assessment as an authentic form of measuring student learning.

## BACKWARDS DESIGN

Backwards design, sometimes called backwards planning, is a pedagogical method that redirects attention from teaching and content to a focus on student-centered learning. Traditionally, teachers have approached instructional planning by identifying content to "cover" and designing activities and assignments based on content. This approach often results in a rush to pack in as much information as possible. Activities might be enjoyable and engaging, but are not always designed to promote deep learning because they are designed with content rather than learning in mind (Wiggins & McTighe, 2005). With backwards design, as the name implies, instructors begin by identifying the end goals of the course: what should students know, be able to do, and/or understand as a result of the instruction? Only after these learning outcomes have been identified does the instructor consider the activities students will engage in to build toward the learning goals, and the artifacts, tests, assignments or other measures will be used to assess the learning.

For library instruction, backwards design means that instead of focusing on which databases students need to be introduced to, or all of the search strategies they need to learn, librarians should begin by determining what students will know or be able to do by the time the library session ends. For instance, after a brainstorming as a group, participants in the interactive session suggested that students in a library instruction

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session might be able to distinguish between scholarly and popular journal articles, or move from a general paper topic to a manageable research question. Establishing these learning outcomes at the beginning of instructional planning keeps the focus on student learning and allows the instructor to align all activities and assessment measures with these outcomes, so the instruction session is coherent and consistent.

However, initial learning goals tend to be broad and do not necessarily account for the varying backgrounds and abilities of students. In addition, they establish only a single point by which to measure student learning. On the other hand, rubrics allow instructors to describe learning outcomes at a more granular level by identifying tiers of learning at novice, intermediate and advanced levels. Essentially, learning outcomes are binary—either a student can distinguish between scholarly and popular articles, or she cannot. With rubrics, instructors can define different levels of knowledge, understanding, and ability. For instance, perhaps in the beginning a student will simply understand that some articles are scholarly, and might be able to differentiate between examples of popular and scholarly. At more advanced levels, students might begin to consider the credentials of authors, influence of funding bodies, or the relative merits of different methodologies for research. The participants in the interactive session broke into groups to develop a rubric for one of the learning outcomes they had identified. Through the small and large group discussions, certain ideas emerged for how best to handle rubric development. For instance, one group noted they found it easier to identify the “advanced” or highest level of learning first. Once they had described all of the characteristics for an advanced level, they could then modify those to suggest the less advanced levels of attainment. Further, while the descriptions of learning levels should be measurable, some participants believe it is best to avoid numerical counts within the descriptions. For instance, some instructors will give assignments requiring students to find five scholarly journal articles to include in a paper. These participants note that such counts are arbitrary, and what should be considered is the overall quality of the articles students choose, rather than the number. Library and information science literature offers many examples of the use of rubrics in different settings and for different types of courses and fields (see e.g., Knight, 2006; Oakleaf, 2009, 2008; and Project Rails, <http://railsontrack.info>).

## TOOLS FOR COLLECTING EVIDENCE

Learning outcomes and rubrics lay out what is expected of students to accomplish or learn by the end of instruction, but instructors still need methods to collect evidence of student learning to compare against the outcomes. At this point in the planning, instructors must ask themselves what activities students might engage in that would demonstrate their knowledge and understanding. On many campuses, instructors both inside and outside the library rely on indirect assessment or tools that attempt to measure perceptions of student learning, rather than the learning itself. Indeed, surveys and course or class evaluations are among the most popular tools used for library instruction, perhaps because they can usually be administered and analyzed quickly. Unfortunately, these tools

tend to focus on student satisfaction over learning. For instance, course evaluations often ask about the pace of instruction and amount of content, or ask students about the instructor’s level of knowledge and preparation. While this information may be useful in determining the environmental factors that are conducive to learning, they do not relate to the learning itself. Even when questions are directed at student learning, they generally only ask about the student’s perception of whether or not they have learned. As an example, some evaluation surveys ask students to rate their level of confidence in using library tools that were demonstrated during a session. Again, answers to these questions may offer the librarian some insight into how well their session allayed students’ feelings of anxiety, but they do not indicate whether the students have learned anything new.

The purpose of this interactive session was to help librarians move past these indirect measures to brainstorm other direct assessment approaches. Using the learning outcomes and rubrics as guides, librarians brainstormed activities and data collection tools that would allow students to demonstrate achievement of those learning goals. The ideas generated by the groups could be categorized as instruments, activities, and analyses.

## INSTRUMENTS

The initial activity centered on how the types of survey questions often used for evaluation of library instruction could be re-framed as direct assessment by testing student knowledge rather than focusing on satisfaction or perceptions. As an example, rather than asking students if they feel more confident about finding scholarly articles after a library instruction session, the instructor might give students a test which asks them to choose the best article from a list of citations, or to indicate from a multiple choice list which resource they would use when beginning research. Because they can often be adapted from existing evaluation instruments, tests can be a useful starting point for librarians new to assessment because they can often be adapted from existing session evaluation instruments. Further, tests can be administered relatively quickly, reducing the amount of class time spent on assessment. If a pre-test is given, instructors can develop a baseline of student skills which can then be compared to post-tests given after the session. While tests are sometimes criticized as being reductionist because they tend to test lower-order skills of knowledge and retention rather than higher-order skills of evaluation and synthesis (Oakleaf, 2008), they can include open-ended and short essay questions that require students to think more deeply and to reflect on and synthesize information from the instruction session. For example, rather than asking students to choose the best starting point for research from a multiple choice list, a test could ask students to briefly describe how their search strategy and explain why they would choose each resource.

Such open-ended questions share characteristics with certain other classroom assessment tools such as the minute paper and the critical incident questionnaire, which ask students brief, open-ended questions asking them to reflect and report

on what they have learned through their instruction session. One popular example of the minute paper asks students to list one or two new things that they learned during the session, and to describe the “muddiest point,” or any part of the session that remains unclear to them, or about which they would like more detail or clarification. The advantage of such questions is that, rather than allowing students to simply circle or check-off answers based on simple recall, they require students to reflect on and think about the session and to compare what they already knew before the session to what they know afterward. This change in knowledge or behavior demonstrates learning. In addition, the reflection may improve retention. Further, instructors can use the “muddiest point” to improve teaching in the future. If several students point to the same area as requiring clarification, the instructor knows that she has to work on that section. While the “muddiest point” is a standard example of a minute paper, the questions can be adapted or changed to focus on specific aspects of the session or points the instructor wants to emphasize or reinforce. The only requirement is that the questions should be able to be answered briefly, and should ask students to reflect on aspects of learning related to the learning goals previously identified as outcomes for the session. These assessment tools require students to engage more deeply with the material and to think about their experience of learning, but, as the term minute paper suggests, do not take much time to administer. As such, these instruments can be a good choice for a one-shot session, and can be easily combined with other assessment techniques.

## ACTIVITIES

In fact, tests and minute papers may function best as supplemental assessment measures, used in addition to activities and assignments. Like surveys and course evaluations, tests and minute papers have certain limitations. As noted above, tests are often limited to questions of recall and other lower-order skills. While minute papers require more reflection on the part of the student, they are still essentially self-reporting and as such may be subjective. Also like tests, minute papers are usually limited to recalling and describing learning, rather than actually implementing new knowledge. Activities, on the other hand, allow students to use new skills and knowledge, and therefore demonstrate learning. Like any other assessment, activities or assignments should be designed with the previously developed learning outcomes in mind. As such, examples will vary depending from one session to another, but LOEX participants generated some engaging ideas. If, for instance, one outcome would be for students to understand how to find and select scholarly materials for a paper, the librarian might give the students time within the session to locate titles they deem appropriate for their research. This activity would let students practice search skills, as well as having them apply selection criteria to choosing a database and then an article from among the results. Finally, students would demonstrate their understanding of the difference between popular and scholarly articles through their choices of materials. Librarians could ask students to print out the citations of articles they have chosen and annotate them with a few sentences explaining why they chose those articles, thereby giving the librarian further insight into

their thought process, and allowing the librarian to determine if they have chosen the articles based on sound reasoning. Another possibility would be to have students search and select an article at the beginning of the session, before any instruction has taken place. At the end of the session, students might be asked to conduct another search and to compare their results and choices of materials, and explain what they have changed and why. Such an activity gives the librarian and students a baseline against which they could chart changes in knowledge or behavior occur by the end of the class, as well as measuring progress against the predetermined learning outcomes.

## ANALYSES

In the examples of activities above, librarians would be able to analyze the results or products of student work produced during the session. A final type of assessment is for librarians to analyze student work produced outside of the session. Librarians are often brought into the classroom to instruct students on finding, evaluating, and using information in relation to a specific assignment or project. In those cases, the project that students produce might give insight into how well they learned and applied the concepts from their library instruction sessions. With the cooperation of the faculty member, librarians could review and analyze student work to look for evidence of such application. One possibility would be for librarians to review the bibliographies of term papers, to determine if students have chosen scholarly, current, and relevant resources. It might also be possible to determine if students have used library databases to access materials, as opposed to the general web. Names and other identifying information could be removed from the bibliographies in order to protect student privacy, and faculty would have to agree to share the students’ work, but these artifacts can give librarians useful information about how students choose and use information for research.

## CLOSING THE FEEDBACK LOOP

While implementing assessment measures is an important step for librarians, it is important to remember that the assessment instruments are not an end in and of themselves. Rather, the data collected through assessment must be analyzed and used to inform decisions that will improve teaching and learning. If, for instance, several students indicate on a minute paper that subject searching is the “muddiest point,” the librarian might decide to spend more time on that topic in future sessions, change her approach in describing and demonstrating the concept, or design an activity that will allow students to practice subject searching while she assists them individually. Likewise, if the list of annotated citations produced by students shows they are not choosing reputable sources, the librarian will know that the distinction between scholarly and popular needs further work. On the other hand, if students are asked to choose citations at both the beginning and the end of the class, and the librarian finds that the students were choosing good sources from the beginning, she might be able to move forward to a more advanced topic the next time. Whatever the decision, it should be informed by the data and what those data show about student progress toward predetermined learning outcomes, thereby

laying a foundation for continuous improvement of teaching and learning.

Finally, librarians might consider sharing their assessment results and analysis with faculty. It is likely that faculty and librarians are focused on different learning outcomes when analyzing student work, and thus librarians might notice areas for improvement that faculty have not. By bringing feedback to the faculty, librarians might help the faculty provide clearer or more practical directions for assignments. In addition, this communication could be an opportunity for librarians and faculty to engage in deeper dialogues and move toward greater collaboration. Ideally, eventually librarians and faculty will work together to set the learning goals related to information literacy, design the rubrics for those learning goals, and create and analyze the activities leading to evidence of learning.

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