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# Navigating the Assessment Current:

## Developing an Information Literacy Assessment Program

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### ABSTRACT

This article begins with an introduction to the concepts and terminology frequently used in the literature of assessment, especially as it applies to the assessment of information literacy by academic librarians. The article then describes the benefits and drawbacks of various techniques used to assess information literacy, with the recommendation that a comprehensive assessment plan must include multiple forms of assessment to balance the drawbacks of individual techniques. After a discussion of information literacy efforts at Azusa Pacific University, the author offers advice to librarians just beginning the process of developing an information literacy assessment plan.

Assessment. The very word may inspire fear, loathing, and dread in instruction librarians. But assessment is simply the practice of proving that students are learning what teachers claim to be teaching. Richard Frye (n.d.) defined assessment as measuring “what ... students know that they didn’t know before, and what can they do that they couldn’t do before” instruction (as cited in Dugan & Hernon, 2002, p. 377). If assessment is reduced to this definition, it may be the case that many librarians are already practicing informal assessment on a regular basis without even realizing it. Many others have even been collecting data on the inputs and outputs of their instruction programs for years – i.e., number of sessions taught, number of students reached, number of lab computers, etc. These numbers have traditionally been included in accreditation reports as evidence that the library is a good steward of time and resources.

However, in recent years regional accrediting bodies have been moving away from this input/output model toward a “student-centered” model that requires universities to prove how well their students are achieving specific student learning outcomes (Dugan & Hernon, 2002, p. 379). The emphasis on student learning outcomes is fundamentally different from the traditional input/output model of assessment, and the shift can be challenging for instruction librarians.

So, why do assessment, especially if it requires a significant change in thinking and investment of time and effort? The shift in accreditation practices, which often require librarians to provide evidence of authentic student learning, may provide one answer. But while accreditation may be the library’s primary motivation for developing an assessment program, there are other reasons to do so.

First, academic librarians who do information literacy instruction often care deeply about teaching students effectively. A desire for feedback is a natural part of the teaching

process, and assessment data can help librarians determine the effectiveness of curriculums and instructional techniques. In addition to providing feedback that can drive instructional improvement, assessment data can help librarians demonstrate the importance of information literacy instruction to skeptical administrators. Establishing a baseline of how much students know (or don’t know) can alert deans and faculty members to the need for expanded research instruction programs. The very practice of assessment can also increase the status of the library in the eyes of administrators. Sandra Blackaby (2007) explained, “Librarians who want to gain the support of administrators need to speak the language of outcomes. ... Administrators want to know ... how the library staff know that they meet patrons’ needs” (p. 299).

### The Assessment Cycle

Assessment is often described as a cyclical process, and ideally it should be. Accreditation may be the main impetus for developing an assessment program, but assessment data must drive real program change to be worth the time and effort it requires. The George Washington University Office of Academic Planning and Assessment web site (2005) contains an excellent diagram that illustrates the four phases of the assessment cycle that drives program change: creating objectives, planning, implementing, and using data to refine the original objectives. The first step in the assessment process is to set goals and objectives. These objectives take the form of student learning outcomes – what students should know and be able to do as a result of information literacy instruction.

Once learning outcomes have been established, the next step is to come up with ways to meaningfully assess whether students are achieving those outcomes. Implementing the plan is the third phase of the cycle, and it occurs when assessment techniques are put into practice and data is collected. Step four consists of using that data to identify ways in

which instruction curriculums, practices, and programs can be improved. The assessment cycle does not end with step four, however. Assessment is an ongoing process! Librarians should continually be in the process of using assessment results to refine their goals and objectives, as well as identifying new and improved assessment strategies.

### **Direct vs. Indirect Assessment**

The literature on assessment often draws a distinction between direct assessment and indirect assessment. Direct assessment measures actual student performance on a task. It tests what students can do, rather than what they think about their own learning. As Cecilia López (2002) explained, “Direct measures of student learning are performance-based, focusing on the actual work students have produced” (p. 362). One example of direct assessment would be using a task worksheet to determine whether students are able to complete research tasks.

Indirect assessment, on the other hand, is based on observation. It tests students’ opinions and feelings about how well they’ve learned something. López noted that “indirect measures of student learning ascertain the *perceived* extent or value of learning experiences” (ibid., p. 361). An example might be adding questions about the library to student exit surveys. Indirect assessment can provide useful information, but direct assessment can be more “‘authentic’ in that students are required to grapple with solving realistic and unstructured problems with no ‘right’ answers” (López, 2002, p. 362). Because of this emphasis on students’ abilities, rather than their opinions, direct assessment will generally give the kind of results demanded by accrediting bodies.

### **Summative, Diagnostic, and Formative Assessment**

Assessment techniques may be summative, diagnostic, or formative, depending on how they are used. Summative assessment measures students’ overall knowledge, usually for the purpose of qualifying them for some achievement. Examples of summative assessment might include exit exams, or “opt-out” testing intended to allow students to test out of some kind of instruction.

Diagnostic assessment is the opposite of summative assessment. It is intended to establish a baseline of students’ abilities, and it “provide[s] information about the current level of students’ knowledge and competence” (McGuinness & Brien, 2007, p. 22). Diagnostic assessment could, for example, be used with first-year students to determine areas for which intensive instruction might be required.

Formative assessment involves students in the assessment process. It offers students feedback on their learning in order to help them improve their abilities, and “enables students to understand their strengths and weaknesses, and to reflect on how they need to improve over the course of their remaining studies” (Maki, 2002, p. 11). The iSkills assessment would be an example of formative assessment, since it gives students detailed feedback on their information and communication technology skills. Interactive online tutorials that provide step-by-step feedback on information literacy tasks would also function as formative assessment tools. Formative assessment is often seen as the “gold standard” because it involves students in the assessment process and makes them aware of their own educational progress.

### **Qualitative vs. Quantitative Assessment**

In addition to understanding the distinctions between summative, formative, and diagnostic assessment, any librarian developing an assessment plan should be aware of the difference between qualitative assessment and quantitative assessment. Qualitative assessment is narrative-based, and uses non-numerical indicators to evaluate student learning. An example of this might be reading student research journals to assess how well students are learning research strategies. Because qualitative assessment deals with words, it can be subjective, even when “quantified” with rubrics. An advantage of qualitative assessment is that the process of creating narratives and writing feedback can encourage self-reflection among students and teachers (McGuinness & Brien, 2007).

Quantitative assessment, on the other hand, deals with numbers. It is objective, and quantitative data may therefore be more convincing when talking with administrators or accrediting bodies. Elizabeth Carter (2002) explained that,

“To be meaningful ... assessment must collect hard data, and librarians must use that data to evaluate their programs and make changes necessary to improve those programs” (p. 41). Properly-normed quantitative assessment techniques, such as standardized tests, can provide the hard data on student learning that is necessary for program reviews and proposals. Ideally, an information literacy assessment program will include both qualitative and quantitative assessment instruments, since the combination of numbers and narrative can provide a more detailed snapshot of instructional effectiveness and student learning than one type alone. But, given the reality of time and personnel limitations, quantitative assessment techniques may provide more “bang for the buck” with regard to accreditation and program evaluation.

### **Program vs. Classroom Assessment**

Assessment of information literacy outcomes can take many different forms, but in general there are two levels of assessment: program-wide assessment and classroom assessment. Program-wide assessment refers to efforts to establish baselines and evaluate learning progress across the entire student population. It “uses the department or program as the level of analysis” (Office of Academic Planning and Assessment, George Washington University, “Assessment Glossary,” 2005) and attempts to provide a comprehensive picture of how well all students (or, a representative sample of students) at an institution are learning. Program-wide assessment data can help librarians evaluate the effectiveness of their curriculum and overall instructional programs. Examples include administering large-scale standardized tests, reviewing a sample of student portfolios or bibliographies for a mandatory general studies course, and delivering standardized pre/post tests or web-based assessments. The key, of course, is to link these assessment tools to the library’s student learning outcomes so that program-wide data can be collected on how well students are achieving those outcomes.

Classroom assessment consists of the instruction librarian assessing the learning of students within the specific context of an individual class. Generally this type of data is used to

assess teaching, for student self-assessment, or to assess specialized student learning outcomes, such as discipline-specific outcomes. In other words, classroom assessment is used when it is not possible or desirable to collect data about the entire instruction program. Some examples include worksheets intended to assess specific skills, and “one-minute papers,” in which students write for one minute about what they have learned, what they will do differently as a result of instruction, or what remains unclear to them after instruction (Angelo & Cross, 1993, p. 148).

### **Authentic Assessment**

One final concept librarians should keep in mind when developing assessment plans is that of “authentic assessment.” As Shika Sharma (2007) explained, authentic assessment “engages students in worthwhile and meaningful intellectual tasks that require high order thinking skills” (p. 129). In other words, authentic assessment requires students to demonstrate that they can apply the information literacy skills learned in library instruction classes to real-world information problems. Rather than assessing whether students can repeat what they are taught without considering broader implications, authentic assessment seeks to evaluate true learning – i.e., whether information literacy instruction truly helps students become lifelong learners.

### **Assessment Techniques**

While any type of assessment can provide useful information, librarians should focus on assessment techniques that are direct, formative, quantitative, program-wide, and authentic whenever time and resources are limited. Unfortunately, however, there is no perfect assessment tool. The decision to select an information literacy assessment tool should take into account institutional culture, the level of support available from faculty and administrators, and the amount of time, money, and personnel available. The assessment techniques described below can be combined and adapted as needed to create an assessment plan that accommodates an institution’s unique constraints and opportunities.

## Portfolio/Bibliography Review

One type of program-wide assessment commonly used by librarians is portfolio and/or bibliography review. With this type of assessment, librarians typically use a rubric to assess evidence of information literacy skills within samples of student work (Knight, 2006). Because it deals with narrative work, portfolio/bibliography review is a qualitative assessment technique, although use of a rubric that assigns point values for different skill levels can quantify these results. Often this is done as a form of summative assessment, in which librarians examine senior-level capstone projects in the context of an academic department or general education course. Portfolio/bibliography review can also be used as a formative assessment technique if done with undergraduates.

One advantage of this approach is that it can provide a comprehensive overview of students' ability to apply research skills to a particular task – in other words, it is a form of direct, authentic assessment. But assessing information literacy learning through portfolio or bibliography review does have drawbacks. This approach requires significant collaboration with other academic departments and programs. Reviewing student work is also time consuming, and assigning values can be a subjective process. The use of a rubric can help standardize the process of assessing qualitative work, especially if the rubric is mapped directly to the information literacy program's student learning outcomes (Knight, 2006, p. 45). Sample rubrics for bibliography or portfolio review can be found online, as well as in Lorrie Knight's (2006) article "Using Rubrics to Assess Information Literacy."

## Large-scale Testing

Large-scale testing consists of administering a standardized assessment tool to a large population of students. Generally, these tests are quantitative (although some may provide qualitative feedback), and many are normed and calibrated across a large population. Examples include the Educational Testing Service's iSkills Assessment, Kent State University's Project SAILS (Standardized

Assessment of Information Literacy Skills), and James Madison University's Information Literacy Test. Advantages of this type of assessment depend on the selected instrument, but in general, large-scale information literacy assessment:

- Provides a national benchmark against which to compare the progress of an institution,
- Can test how well students can apply skills to different situations,
- Will usually provide detailed feedback to students,
- And can be used for formative, summative, or diagnostic purposes.

Thus, large-scale assessment instruments can be direct, formative, quantitative, program-wide, and authentic, which makes them an excellent component of an information literacy assessment plan.

Unfortunately, there are some drawbacks to this type of assessment. Large-scale testing can be expensive (as much as \$35 per student), is labor-intensive for both students and librarians, and requires significant administrative support. Without financial support to purchase the test instrument and a statistically representative student population available to take the instrument, this type of assessment will fail. Recruiting busy college students to take a standardized test on a voluntary basis does not work, no matter how enticing the incentives! Recognizing these limitations, some universities have gone so far as to declare "formal assessment days" in order to ensure that they collect a representative and valid set of large-scale assessment results (Rockman, 2002, p. 192).

## Pre-test/Post-test

The practice of testing students before and after instruction as a means of measuring how much they have learned is a familiar one to many librarians. In the context of assessing information literacy instruction, this could take the form of situational testing, in which students approach a research problem before and after instruction and librarians evaluate the difference; multiple-choice tests, in which students are tested on their knowledge of

research terminology and concepts; or self-evaluation, in which students are asked how they feel/what they know both before and after library instruction (D'Angelo, 2001, p. 285-286). Thus, pre- and post-tests can be quantitative or qualitative, direct or indirect, and program-wide or classroom-based, depending on how they are designed.

Testing students before and after information literacy instruction allows librarians to isolate the effects of instruction and directly observe how students' knowledge and behavior have changed as a result of a teaching session. But this isolation is also a potential problem, as Ilene Rockman (2002) argued: "Although these measures (e.g., multiple choice, true/false) can be used to establish benchmarks of knowledge or to provide a snapshot of performance at a certain point in a student's academic career, they are not necessarily linked to performance objectives, and do not demonstrate how well a student has actually learned to navigate through a search strategy process to find, evaluate, use, and apply information to meet a specific need" (p. 193).

### **Web-Based Assessment**

The distinction between large-scale testing, pre- and post-tests, and web-based assessment may be a little hazy. The term "web-based assessment" is used here to refer to the online tests, usually locally developed, that many librarians are using to assess information literacy learning. Libraries may share and adapt these kinds of instruments, but there is a difference between these locally developed web-based assessment tools and full-scale, nationally-normed standardized tests like the iSkills assessment. The Texas Information Literacy Tutorial is a well-known example of a qualitative web-based assessment instrument that combines instruction and assessment in a single tool. Other librarians have taken a more qualitative approach to web-based assessment by asking students to fill out web-based forms describing their research processes (Samson, 2000; Smalley, 2001). Azusa Pacific University is also in the process of developing web-based tutorials with integrated assessment tools that can be used to evaluate information literacy

skill, both in online courses and as a supplement to in-person library instruction.

Like pre- and post-tests, web-based assessments can serve a variety of functions. They can collect quantitative or qualitative information, use direct or indirect assessment techniques, and be used for program-wide or classroom-based assessment. Because they can combine teaching and assessment in a single instrument, web-based assessments are particularly useful for evaluating online instruction, and can be used diagnostically, summatively, or formatively. The main advantage of developing a web-based assessment is that it can be directly tied to a library's unique student learning outcomes, and can be linked to a database to allow easy collection and interpretation of quantitative assessment data.

The drawbacks to using locally developed or adapted web-based assessments are similar to those for large-scale testing and pre- and post-tests. Developing a customized assessment tool can be time-consuming and technologically challenging. This type of assessment can also be somewhat narrow, in that it doesn't necessarily prove that students can apply information skills to real-world situations.

### **Classroom Assessment**

As mentioned above, classroom assessment involves a librarian assessing the learning of students in an individual class. Some of the previously-described assessment techniques can be used in the classroom, but usually classroom assessment is somewhat informal and done on a smaller scale than program-wide assessment. This also means that data collected from in-class assessment is usually not valid for the development of university-wide information literacy benchmarks.

In-class assessment can provide immediate feedback on teaching effectiveness, and can help librarians determine whether students are paying attention (true learning is, of course, another issue entirely). It is especially useful when librarians work with the same group of students on a regular basis. Angelo and Cross's (1993) book suggests several different classroom assessment techniques of interest to librarians,

such as one-minute papers, “muddiest point” cards (in which students write down the one thing they are most confused about after instruction), focused listing (where students are given a prompt phrase such as “scholarly journals” and use their associative skills to list everything they can remember about that word), and memory matrixes (where students fill in a matrix with what they remember from the lecture). Another form of classroom assessment often used by librarians is the guided worksheet, which requires students to perform a series of research tasks or answer questions about the process.

Classroom assessment is usually simple, quick, and inexpensive. However, it may only really test how well students can recall information, not whether they are actually learning to apply information literacy skills to practical situations. This is especially problematic when assessment immediately follows instruction. Classroom assessment may provide an artificially inflated sense of students’ abilities because it assesses the information most fresh in their minds, before the students have had time to fully process what they’ve learned.

### **Assessment at APU**

Azusa Pacific University began the process of building an information literacy assessment program in January, 2006 by developing a set of student learning outcomes for all APU students (i.e., what APU students should be able to do with regard to information literacy by the time they graduate). The Information Literacy Instruction Committee (ILICom) started by reviewing the ACRL Information Literacy Competency Standards for Higher Education, then moved on to collect and study the student learning outcomes created by other universities, particularly the California State University system. ILICom came up with a list of “dream” outcomes, then narrowed and refined the list. After adapting the outcomes to APU’s unique academic culture and needs, ILICom arrived at a list of 27 student learning outcomes for information literacy. These 27 outcomes were then divided into introductory and advanced outcomes, with the expectation that one day ILICom will develop a fully

scaffolded information literacy program that addresses information literacy at every stage, from freshman level through graduate level classes.

After developing the list of student learning outcomes, ILICom began to look for ways to establish the current levels of information literacy skill possessed by APU students. It was decided that the Educational Testing Service’s ICT Literacy Assessment (now called the iSkills Assessment), given to samples of freshman and senior students, would be the most efficient method of developing a snapshot of information literacy at APU. Although funding was available to purchase 400 copies of the ICT Literacy Assessment, no built-in test population was available. ILICom used marketing, incentives, and collaboration with classroom faculty to recruit volunteer test-takers, but in the end only 68 students completed the assessment – far short of the 330 required for a statistically valid sample.

Although the ICT Literacy Assessment was less successful than expected, the APU Libraries were able to get some useful information from the experiment. By mapping the ICT Literacy Assessment results to the Libraries’ student learning outcomes, it was possible to identify areas of information literacy skill and weakness among the test population. Unsurprisingly, students had the most difficulty with developing efficient search strategies and selecting quality sources. These findings helped direct a revision of the library orientation curriculum for all Freshman Writing Seminar classes, which was re-focused to emphasize search planning and resource evaluation.

Given the difficulties encountered in administering large-scale assessments, ILICom has decided to shift its focus (for the present) toward locally developed web-based assessment and in-class worksheets. These assessment tools will be used to gather program-wide assessment data within two existing library instruction partnerships: Freshman Writing Seminar and APU’s accelerated bachelor’s degree program, both of which require a library orientation of their students. Outcomes-based online tutorials and multiple-choice quizzes

have been developed for each program and will be implemented starting in Fall 2007 with the cooperation of classroom faculty. Additionally, qualitative assessment data will be collected for each program by means of guided worksheets. Adult students will complete search plan worksheets, and freshman students will complete a task-based worksheet in conjunction with the library instruction session content. This plan is expected to provide multiple types of assessment data which will contribute to a comprehensive understanding of the effectiveness of student learning and the information literacy instruction program. The plan is, of course, a work in progress; ILICom is continually looking for new ways to assess student learning, and adapting library instruction curriculum and teaching methods to respond to those findings.

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## Advice on Creating an Assessment Plan

Assessment of student learning in library instruction programs is necessary, despite the difficulties it can entail. But the development of an assessment plan can allow for quite a bit of flexibility and creativity, depending on institutional culture and needs. An assessment program can and should take multiple forms, since no assessment tool is perfect by itself. Three points bear repeating:

- Information literacy assessment plans must take into account an institution's culture and the historical relationship between the library and administration. Attempting to spearhead an assessment program without full support of partners outside the library will not work, even with the best of intentions.
- There is no such thing as a "perfect" assessment plan. Assessment of information literacy is an ongoing process of trial, error, and refocused energy, and no assessment tool by itself will provide all the required information. Using a variety of approaches is necessary in order to comprehensively assess students' information literacy abilities.
- Finally, every assessment tool used must be linked directly to student learning outcomes. Collecting data on individual outcomes is the only way to prove that those outcomes are being achieved come accreditation time.

Developing an information literacy assessment program from the ground up can be intimidating, but librarians can avoid feeling overwhelmed by starting small, and by taking advantage of the extensive literature on assessment. Instead of attempting to launch a full-scale assessment plan right away, librarians can test the waters of assessment by identifying student learning outcomes and developing techniques to assess one or two of them at a time. Librarians should also take comfort in the fact that many others have responded to the challenges of assessment and have published prolifically on their efforts. Additionally, many university libraries make their assessment materials freely available through the web. With all this help available, navigating the assessment current can be an exciting adventure rather than a treacherous ride through the rapids. Bon voyage! †

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