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Documenting Evidence of Practice: The Power of Formative Assessment



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Educational researchers have long recognized the benefits of formative assessment (Black and Wiliam 1998; Stiggins and DuFour 2009; Wiliam 2010). James H. McMillan asserts that classroom assessment “is the most powerful type of measurement in education that influences student learning” (2013, 4).

Educational researchers recommend that educators receive training in assessment literacy (Brookhart 2011; Campbell 2013; Popham 2013, 2014). School library researchers also recognize the importance of school librarians’ becoming proficient in assessment (Harada 2007; Hughes-Hassell and Harada 2007; Zmuda and Harada 2008). Formative assessment provides school librarians with a method to document student learning and provide tangible confirmation of librarians’ own practice—evidence of student learning. In addition to helping school librarians determine what students have or have not learned, formative assessment also gives school librarians opportunities to make significant contributions to school library research. Although there has been growing interest in identifying causal (as opposed to correlational) linkages between school librarians and student achievement (AASL 2014), there is still

no theory of action focused on what a school librarian does or does not do regarding instruction (e.g., teaching critical-thinking skills, inquiry-based learning, or information literacy) that explains what and how school librarians contribute to student achievement (Stefl-Mabry and Radlick 2017). The school library field desperately needs school library practitioners to share information about what happens within the context of their practice and therein lies the power of formative assessment.

Assessment Terms

Karee E. Dunn and Sean W. Mulvenon revealed that the lack of an agreed-upon vocabulary and the “vagueness of the constitutive and operational definitions” of formative assessment contribute to the lack of understanding of what is actually being studied (2009, 2). To ensure a common understanding of assessment vocabulary, below is a list of terms and how they will be used within this article. These definitions are based upon the seminal work of Mauritz Johnson (1967, 1976, 1977) and have been further refined by William E. J. Doane, Paul Zachos, and me (Zachos and Doane 2017; Stefl-Mabry and Doane 2014).

A *learning goal* is a capability developed through an educational program. Learning goals are broad statements aligned to local, state, national, and/

or professional standards. The Standards Framework for Learners in AASL’s 2017 *National School Library Standards* is anchored by six Shared Foundations: Inquire, Include, Collaborate, Curate, Explore, and Engage, which highlight the standards’ core educational concepts (AASL 2018). A one-sentence key commitment describes the essential understandings for each of the six Shared Foundations:

Inquire: Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.

Include: Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community.

Collaborate: Work effectively with others to broaden perspectives and work toward common goals.

Curate: Make meaning for oneself and others by collecting, organizing, and sharing resources of personal relevance.

Explore: Discover and innovate in a growth mindset developed through experience and reflection.

Engage: Demonstrate safe, legal, and ethical creating and sharing of knowledge products independently

while engaging in a community of practice and an interconnected world.

Each of the Shared Foundations is explained by three to five competencies for each learning category or domain.

Learning objectives describe the ends or the intended results. Ideally a learning objective has three parts:

1. verb representing a task that is measurable or observable,
2. important condition (if any) under which the performance is to occur, and
3. criterion for acceptable performance.

Instruction is anything that is intended to help the learner master the learning objectives.

Learning outcome is a product or activity that the learner performs at the end of a learning experience.

Core capabilities are proficiencies that contribute to concurrent and subsequent learning and/or have powerful application to the world outside the learning environment.

Assessment (the product or outcome) is information on the extent to which learning outcomes have been attained.

Assessment (the process and instrument) describes the means by which information about the level of attainment of learning goal is obtained.

Formative assessment describes a process carried out to form or inform an educational program for currently participating learners.

Summative assessment describes an assessment that is carried out when instruction is completed, and forming or informing an educational program for current learners is no longer possible.

Evaluation is the use of information to improve (increase the value) of an educational program.

Tests or testing refers to the aggregation of the results of assessments targeting multiple objectives (learning objectives) into an overall score.

Developing Formative Assessments

After the learning objectives have been articulated, formative assessments should be developed to determine students' level of attainment for each learning objective. W. James Popham has provided a useful working definition of formative assessment:

Formative assessment is a planned process in which assessment-elicited evidence of students' status is used by teachers to adjust their ongoing instructional procedures or by students to adjust their current learning tactics (2014, 290).

Formative assessment provides evidence of students' learning as well as the effectiveness of instructional practice. Formative assessments should be integrated seamlessly throughout instruction. They should not detract from instruction. Multiple forms of assessment provide opportunities for school librarians to document students' level of success in attaining the learning objective. Formative assessment also affords opportunities for students to validate their skills and understanding in numerous ways (e.g., oral and written expression, art, music, performance).

Unfortunately, the concept of formative assessment is often misunderstood by school librarians and other educators who often view tests as synonymous with formative assessments. Tests are **NOT** formative assessments as they target numerous learning objectives. Typically, tests (summative assessments) occur at the end of a unit or semester and leave no opportunity for re-teaching or re-learning. Carefully designed formative assessments allow school librarians to document student

learning as it evolves within the context of practice.

Learning Segment: News You Can Trust?

To help readers understand how the content presented in this article can be used in actual practice, a learning segment is highlighted; this learning segment focuses on teaching students how to establish the credibility of online news sources. This is an important concept; researchers recently revealed that young people have a difficult time determining the credibility of online information (Donald 2016; Stanford History Education Group 2016).

The learning goal is aligned to three of the Shared Foundations and Domains and Competencies of the AASL Standards:

II. INCLUDE: Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community.

A. THINK: Learners contribute a balanced perspective when participating in a learning community by:

2. Adopting a discerning stance toward points of view and opinions expressed in information resources and learning products.

IV. CURATE: Make meaning for oneself and others by collecting, organizing, and sharing resources of personal relevance.

A. THINK: Learners act on an information need by:

1. Determining the need to gather information
2. Identifying possible sources of information
3. Making critical choices about information sources to use.

B. CREATE: Learners gather information appropriate to the task by:

1. Seeing a variety of sources
2. Collecting information representing diverse perspectives.
3. Systematically questioning and assessing the validity and accuracy of information.

D. GROW: Learners select and organize information for a variety of audiences by:

1. Performing ongoing analysis of and reflection on the quality, usefulness, and accuracy of curated resources.

VI. ENGAGE: Demonstrate safe, legal, and ethical creating and sharing of knowledge products independently while engaging in a community of practice and an interconnected world.

A. THINK: Learners follow ethical and legal guidelines for gathering and using information by:

3. Evaluating information for accuracy, validity, social and cultural context, and appropriateness for need.

Learning Objectives: The Need for Specificity

It is impossible to teach the new standards in one lesson; therefore, they must be broken down into specific learning objectives if they are to be of practical value at the classroom level. Using Ahmed A. Bakarman's (2005) ASK model, which categorizes learning as attitudes (affective learning domain), skills (psychomotor learning domain), and/or knowledge (cognitive learning domain), school librarians should ask themselves:

1. What do I want students to believe and/or feel about the topic by the end of the lesson? [Attitudes/Affective]
2. What do I want students to be able to do/demonstrate by the end of the lesson? [Skills/Psychomotor]

3. What do I want students to understand about the topic by the end of the lesson? [Knowledge/Cognitive]

Although the questions look deceptively simple, answering them requires a great deal of thought. Focusing on the learning goal ("Students will become cautious consumers of online news"), below are four proposed learning objectives that will be used to frame the lesson. Note that each learning objective contains a verb and a condition under which the performance is to occur, and will be accompanied by criteria for acceptable performance. The criteria to help the students identify credible articles must be clearly articulated by the school librarian and shared with the students through instruction and also in a tangible way, perhaps in the form of a checklist, so that students know exactly how to evaluate information. If we, as educators, cannot describe how to verify the legitimacy of online information, how can we expect students to?

1. Students will recognize the difficulty of using online news sources when verifying claims about a controversial topic as they select sources for their public service announcement. [Attitude and Skill]
2. Students will be able to determine the reliability of an online news source by verifying the source by using a variety of authentication resources (News Literacy Project and Checkology n.d.). [Skill and Knowledge]
3. By comparing articles from a variety of sources and written on the same topic, students will understand that the Internet can be used to both fact-check information and to spread bias and disinformation. [Skill and Knowledge]
4. Students will use a checklist to determine the reliability of the sources used by their peers in the

public service announcement.
[Skill and Knowledge]

Learning Outcome

The learning outcome selected for this lesson is a student-designed multimedia public service announcement (PSA). The purpose of the PSA is to outline precautions that people should take when considering online news sources. Students may choose to design their PSAs for a specific population such as elementary school, middle school, or high school students. A detailed checklist and/or rubric should be provided to students at the beginning of the learning segment so that students know exactly what elements the final project should contain. The checklist/rubric should describe each component of the project and detail the criteria that will be used to judge the quality of the PSA. Components are likely to include the number, type, and quality of sources used; the quality of the written narrative; the effectiveness of oral expression; the nature of group interactions; project design; peer feedback; self-reflection, etc. The more clearly school librarians express what they want students to do, the more easily students will be able to meet expectations for the project.

Core Capabilities

Learning objectives should address core capabilities. Learning how to tell a reliable news source from an unreliable one has value beyond one particular lesson. This core capability extends far beyond Pre-K–12 to contribute to college- and career-readiness as well as to life in general.

Suggested Formative Assessments

Assessment information should always be shared with students so that they can adjust (self-regulate) their learning. Proposed ideas for formative assessments for a *News You Can Trust?* learning segment include those listed below.

PRE- AND POST-ASSESSMENTS

A pre-assessment should be developed to determine students' attitudes, skills, and knowledge of a topic before instruction begins. Pre-assessment results provide a useful benchmark to identify and document what students know or don't know about a topic as well as any preconceptions and misconceptions they might have about the topic. Before the lesson is introduced, students could be given sticky notes in three different colors. Using one color for each question students should be asked to:

- list valid online news sources,
- note what they believe are spurious online news sources (depending on the age group, students might also be asked to rank the sources), and
- list one or more questions or concerns that they have about recognizing valid online news sources.

After the notes have been collected, the school librarian can review the responses, and compile a chart sum-

marizing students' prior knowledge, preconceptions, and misconceptions, and the types of questions raised. This information should be used to inform subsequent instruction. At the end of the project, conducting a post-assessment activity based on a similar set of questions will reveal what students have learned. Pre- and post-assessments provide concrete evidence of what students know at the beginning of the project and what they have learned as a result of the instruction given by the librarian.

GRAPHIC ORGANIZERS

Venn diagrams and other graphic organizers provide visual representations of students' conceptual understandings. For this learning segment, the school librarian can ask students to complete a Venn diagram illustrating a major news story of their choice as presented by three different online news sources. What details do the three sources have in common? What details are different? As the students work on their diagrams for this "Three Sources, Same Story" assignment, the librarian can walk around and

examine students' work. Taking photos of students' work and carefully analyzing the results is a way to determine whether additional instructional support is needed and identifies which students may need additional support.

PEER ASSESSMENT

Providing students with an opportunity to peer-assess enables them to use the attitudes, skills, and knowledge they have developed to review the work of their classmates. Peer assessment allows students to see how the same assignment can be interpreted differently and, oftentimes, how they can make improvements to their own work. Students can be asked to use the checklist/rubric to evaluate the work of their peers and to provide suggestions to help improve their classmates' projects. It is typically easier to identify errors and weaknesses in other people's work than to see weaknesses in our own work. The heightened sense of awareness learners get when they give and receive constructive feedback helps them to become more reflective

Student	Three Sources, Same Story Assignment	Self-Assessment	Peer-to-Peer Assignment	Public Service Announcement
Anna	0	1	2	2
Mathis	1	1	2	2
Natasha	0	1	2	2
Druv	2	1	2	2
Raul	1	1	2	1
Dev	1	1	2	2
Shannon	0	1	2	1
Lauren	0	1	2	2
Kayla	1	1	2	2
Kendra	0	0	1	1

Table 1. Student assessment data on multiple assessments.

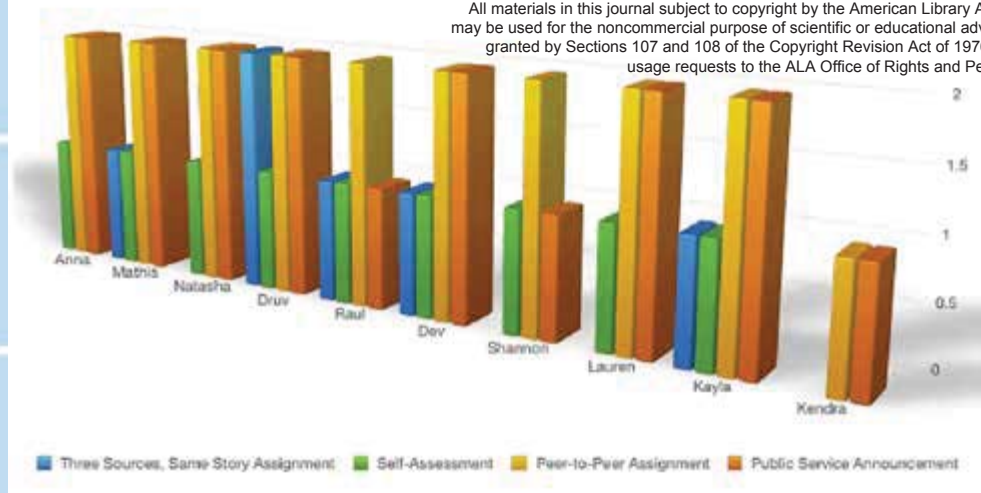


Figure 1. Student assessment results on multiple assessments.

of their own work, and the peer-review process may also provide them with examples to emulate.

EXIT COMMENTARY

At the end of each class students should have time to anonymously write down questions, concerns, or comments they have about what has been taught and post their jottings to a common wall. Allowing students to review the comments of others often helps students to see that others have similar concerns. This activity provides school librarians the opportunity to see what students are thinking. School librarians should review, record, and characterize students' comments and then use the information gathered in subsequent lessons to acknowledge and address students' concerns. Validating

Score	Number of Students	Percentage
0	5	50%
1	4	40%
2	1	10%
	10	100%

Table 3. Summary of performance on Three Sources, Same Story assignment.

what students feel demonstrates that educators care about students and are willing to listen and address their questions. Tracking the type of problems students experience and when the problems arise helps school librarians to strengthen their instruction when students need it most—while they are learning.

WORK SHEETS

Purposefully designed work sheets can reveal students' attainment of the learning objective(s). If the learning objective calls for students to use specific criteria to distinguish between authentic and fake information, students could be asked to rate and rank a list of online resources using the criteria. Identifying what students know and what they don't know enables school librarians to adjust future instruction to address gaps in knowledge and/or misconceptions.

GOOGLE FORMS

Google forms is a useful online tool to gather assessment information. However, educators must remember that the purpose of an assessment is

NOT to test or assign a grade, but rather to determine students' level of attainment of the learning objectives. The assessment should be designed to collect information related to a targeted learning objective; the information gathered should be used to help students learn and to improve instructional practice.

Scoring Formative Assessments

It is best to have a simple scale to score student attainment of learning objectives. Here is a suggested scale:

- 0 = no level of attainment
- 1 = some level of attainment
- 2 = full level of attainment

Table I presents hypothetical students' assessment results for four formative assessments associated with this learning experience: the "Three Sources, Same Story" assignment, the self-assessment, the peer-to-peer assessment, and the PSA.

While an overall pattern of student performance can be seen in figure

Student	Three Sources, Same Story
Anna	0
Mathis	1
Natasha	0
Druv	2
Raul	1
Dev	1
Shannon	0
Lauren	0
Kayla	1
Kendra	0

Table 2. "Three Sources, Same Story" student assessment results.

1, if the school librarian digs deeper into the data, a more detailed picture of student performance unfolds. Table 2 provides individual students' performance data only on the "Three Sources/Same Story" learning activity.

Now a more detailed picture of student learning emerges. Note in table 3 that five out of the ten students (50 percent) experienced difficulty completing the assignment.

These results should not be interpreted as a failure on the part of the students, but rather as an indication that students may have experienced problems, which could include difficulties in:

- 1) finding three articles on the same topic,
- 2) reading the articles,
- 3) understanding the content and/or context of the articles,
- 4) identifying critical elements of tone or bias within the articles, and/or
- 5) interpreting the instructions.

Of course, it is possible that some students experienced a combination of all five. Therefore, it is important that educators continuously assess, at the individual level while instruction is taking place, what students are learning and identify when and why students are experiencing difficulty.

If presented with results similar to those in table 3, the school librarian should work with students to identify the problem(s) and address the issues before moving ahead to the next phase of the lesson. This is the point at which the school librarian should reflect upon and improve his/her instructional practice. Part of the solution may involve reworking the instructions and/or providing access to a variety of articles that the school librarian knows students are capable of reading. It is also critical not to penalize the other 50 percent

of the class by having them repeat an assignment that they have already mastered. Therefore, in redesigning the assessment the librarian should include activities to allow students who were successful the first time to expand their skills and competencies. For example, students who successfully completed the "Three Sources, Same Story" assignment could be asked to find articles that present a neutral and/or balanced tone. Or they could search for additional articles and rank them in terms of credibility. In this way, all students benefit from the learning experience.

It is also important to note that before moving on to the creation of the PSA that all students demonstrate that they have mastered the learning objective: that they understand that the Internet can be used to both fact-check information and to spread bias and disinformation.

Evaluating the School Library Program

At the time a formative assessment is done, its primary value is helping learners and educators to determine what has been learned, what hasn't, and to identify learning objectives that students must re-learn and that educators must re-teach. In addition, formative assessment information, systematically collected and analyzed over time, allows school librarians to record:

- what students have learned and developed (attitudes, skills, and knowledge)
- concepts and/or skills that students struggled with, and
- instructional techniques and activities that have been successful (or not).

The systematic use of formative assessment provides school librarians with vital information that can be used to document evidence of their practice, and

evaluate and increase the value of their school library programs.

Conclusion

The field of school librarianship has long called for stronger evidence related to school libraries and student achievement (Steffl-Mabry and Raddick 2017; Steffl-Mabry et al. 2016; Morris and Cahill 2017). This article outlines a systematic method for school librarians to document student learning and provide tangible confirmation of their practice—evidence of student learning. Well-written learning objectives make core capabilities visible to school librarians, students, parents, and administrators. Systematically documenting evidence of practice by using formative assessment provides tangible evidence of what and how school librarians contribute to student achievement.



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