Backward Design

A Must-Have Library Instructional Design Strategy for Your Pedagogical and Teaching Toolbox

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Library instruction sessions, courses, and programs benefit from a strategic and intentional instructional design approach. This type of approach can provide a framework for librarian discussions with collaborators, such as faculty or other stakeholders, and facilitate librarians' advocacy efforts for information literacy instruction in the curriculum. But in the midst of busy schedules and competing responsibilities, it can be difficult to find time and a strategy that works well for library instructional contexts. This column shares an instructional design strategy adopted by librarians to add intentionality to their instruction. This backward design instructional design process has proven to be an invaluable tool for designing instructional contexts ranging from one-shots to tutorials to semester-length courses.—*Editor*

An increased focus on accountability and assessment is driving changes in higher education. In addition, changing student populations require new approaches to teaching, curriculum design, and assessment. L. Dee Fink, in his book *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*, contends that "faculty knowledge about course design is the most significant bottleneck to better teaching and learning in higher education."[1] Therefore, focusing on how instructors design their courses, and not just on how they teach, should be a high priority when trying to improve teaching. However, often library instruction places more effort into showcasing library databases and information literacy teaching techniques and less into designing quality library instruction. Therefore, learning instructional design skills will become more important as librarians continue to strive to integrate the ACRL Framework for Information Literacy into their teaching practice. Instructional design skills using backward design methods can help librarians design instruction. Marrying instructional design models and frameworks with tools to help guide librarianship practice can help librarians adjust to changing times.

LITERATURE REVIEW

Backward design is a process of planning instruction that begins by reflecting about the end of the course and identifying first the learning outcomes you hope students will achieve. Then you move backward to design the course components aligned to these outcomes that will help attain the teaching objectives. This process, embedded in several course design models, helps to ensure that you are actually

teaching and measuring the learning outcomes you have established.[2] Although many librarians are familiar with the work of Wiggins and McTighe due to the implementation of the ACRL Framework, which references their work,[3] librarians have also begun to experiment with Fink's backward design process.[4] The visual nature of the alignment grid (appendix A), a backward design process tool, provides a representation of how the instructional plan can help identify gaps and redundancies during the instructional planning process.

Since this model focuses on student learning outcomes, and not on what the instructor is teaching, it is grounded in student-centered learning principles.[5] Evidence from the educational literature suggests that a student-centered approach engages students in the learning process.[6] Bonwell and Eison contend that designing instruction with active and student-centered learning components helps students connect theory to practice, reflect on their own learning, and construct new knowledge as they build upon prior knowledge and experience.[7]

As more focus is placed on demonstrating the value of academic libraries and how libraries impact student success, the literature on student-centered teaching is becoming even more integrated with the library science literature.[8] In addition, an increased demand for assessment and evaluation due to financial constraints and accreditation is also driving change in how academic libraries demonstrate value to the campus community. This will require new instructional design and assessment initiatives as well as more efficient and effective library instruction models.[9] These changes related to library value also mandate a shift in rethinking librarian roles and the need for instructional design, assessment, and evaluation.[10] Professional development in data management and data analysis for assessment is also needed if academic libraries are to adequately contribute to university missions and student success.[11] Learning new instructional design strategies could help equip librarians for this new quality-focused instructional context in higher education.

BACKWARD DESIGN

The backward design process is an instructional design strategy that is particularly useful for librarians because it can be easily applied in a variety of instructional situations, such as for individual lessons, a series of embedded library sessions, or an entire information literacy course. Because the backward design planning process aligns learning outcomes, learning activities, and assessment, it helps librarians ensure that instruction is directly supporting learning outcomes, regardless of the instructional context. Backward design can help librarians manage and prioritize their time, especially in one-shot instruction, when librarians commonly have as little as fifty minutes to make an impact. Backward design forces the librarian to plan out lessons in advance, focusing not on what tools or skills are to be covered but rather on what learning will be achieved. This process helps the librarian use time wisely by honing in on the most impactful activities to achieve the identified learning outcomes. It makes one's rationale visible to ensure that the designed activities are truly supporting learning goals and also helps identify potential gaps or redundancies in lesson planning. The backward design process is also helpful in longer-term instructional scenarios, including instruction delivered across multiple sections, sessions, or modalities. Whether a librarian is teaching a one-shot workshop or a for-credit information literacy course, the principles of backward design will help the librarian ensure that their teaching is directly aligned to student learning outcomes.

The backward design process can also help librarians communicate the value of information literacy instruction to internal and external stakeholders. Backward design produces an artifact clearly delineating the relationship between activities and learning outcomes. By sharing the backward design alignment grid with library instruction coordinators, collaborating instructors, and students, librarians can help these stakeholders understand the purpose of library activities and the terminal learning objectives. For example, librarians can use the alignment grid to support efforts to make library instruction programs more programmatic and intentional. Because it clearly delineates the outcomes and activities involved in an instructional opportunity, librarians can use the alignment grid to map instructional outcomes across an instruction program to identify gaps and points of overlap and to support efforts to advocate for additional instruction time. The librarian can adapt the alignment grid to include course outcomes or department/program outcomes, creating a document that maps the direct relationship between information literacy learning outcomes and the instructor's own objectives. Because assessment is a key element of the alignment grid, the librarian can use the grid to demonstrate how incorporating information literacy instruction into a course will not only help instructors meet their course learning outcomes but will also help them meet department and administrative mandates. A successfully-executed alignment grid can be a powerful tool when advocating for information literacy integration into a course because it can very clearly articulate how the information literacy instruction directly supports the course and or departmental learning outcomes.

INTRODUCTION TO THE FINK BACKWARD DESIGN PROCESS

The backward design process based on Fink's course design model can be broken down into a three-step process that guides the librarian from large-scale, long-term thinking down to the granularity of learning activities and classroom equipment. By following these three steps, the librarian

can design instruction that will directly contribute toward achieving those long-term student learning goals.

Step 1: Dream Exercise

The Dream Exercise is the first step of the backward design process, and its function is to orient the instructor's perspective to the long-term. It asks instructors to imagine a conversation with their students a year or two into the future and then to consider what they would want their students to know, be, or be able to do at that point in time. This exercise guides instructors to think not about the end of a one-shot or the result of an information literacy course, but instead to focus on longer-term student outcomes.

As part of the Dream Exercise and reflection about instructional outcomes, librarians should also consider what Fink calls "situational factors" to make sure the dream, outcomes, assessments, and teaching and learning activities align to the instructional context.[12] The situational factors help librarians think about the context of the teaching/learning situation, the nature and scope of the subject, the characteristics of the learners in front of them, and their own teaching philosophy. By considering these factors, the librarian can customize the instruction to meet the needs of the learners based on the format, delivery mode, and context of the instruction.

Step 2: Learning Outcomes

The concept of learning outcomes is familiar to many librarians. Learning outcomes, like the Dream Exercise, are a powerful instructional design tool because they help the librarian design the lesson based upon what the student will do, not on what the librarian does. To create learning outcomes, the librarian takes the broad Dream Exercise goals and breaks them down into concrete learning outcomes. A single goal from the Dream Exercise may have a number of learning outcomes associated with it. Each learning outcome should be measurable, student centered, and focused on different levels of learning. The librarian should craft their learning outcomes carefully, employing action verbs that lend themselves to assessment so they can evaluate whether a student has achieved the outcome. For example, it is common to instinctively want to use verbs such as "know" or "understand" when writing learning outcomes; for example, "At the end of this class, students will understand how to use Boolean operators." But it is extremely difficult to quantify understanding. To make the learning outcome measurable, the librarian can replace "understanding" with another verb that is more easily assessed; for example, "At the end of this class, students will be able to design a search that incorporates Boolean operators." This revised learning outcome depicts the task at hand that students need to perform, which could be easily assessed through simple observation.

In addition to measurability, learning outcomes should focus on different levels of learning. The classification hierarchical framework of Bloom's taxonomy of learning and the updated version by Krathwohl et al. have become the standard frameworks used for designing learning outcomes.[13] They are used for assessment and evaluation of learning, as well as for writing learning outcomes. Designing learning outcomes using terminology from Bloom's taxonomy helps articulate how students will learn and shows how students will be engaged at different levels. Bloom's taxonomy levels include Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating.[14] Fink's model also contains a learning taxonomy. The Fink Significant Learning Taxonomy contains six levels of learning: Foundational Knowledge, Application, Integration, Human Dimension, Caring, and Learning to Learn.[15] The Fink taxonomy is not hierarchical and intended to be used in a way in which levels of learning overlap and integrate with each other. It is the interaction or intersection of several outcomes that Fink defines as the "Significant Learning" experience. For example, helping students apply the skills they learn during a library research session to their research paper assignment can also help students see how the skills they are learning in one place can be integrated with other academic projects and in other courses.

Step 3: Alignment Grid

The alignment grid is the third and final step of the backward design process. The alignment grid helps the librarian take the learning outcomes identified in step two and translate them into assessable activities. In its most basic form, the alignment grid asks the instruction librarian to record four elements: the learning outcome, an assessment method, a learning activity, and any resources or equipment necessary to complete that activity.

When completing the alignment grid, it is important to fill it out in order from left to right, beginning with the outcome. This means that the first step after the learning outcome is the assessment method. Although it may initially seem more natural to move from the learning outcome to the activity, Fink's method requires that the assessment method be determined before designing the activity. In order to successfully achieve the learning outcome, it is important to be able to identify if students have grasped the concept. The assessment need not always be formal or summative in nature. When thinking about the assessment box in an alignment grid, the librarian should ask the question "How will I know if this learning outcome has been achieved?" The librarian can use a simple formative check on learning for some learning outcomes, with a more formal, artifact-producing assessment method used at other points in the lesson.

Once the librarian determines the assessment method, it is time to craft the activity. It can be challenging to fit existing lesson plans and activities into the alignment grid, so it may be easier to craft an alignment grid for the first time when creating a new lesson plan with new activities. The alignment grid already provides the learning outcome and

the assessment, so the instructional delivery method and learning activity should derive directly from those elements. For example, when collaborating with a faculty member for a five-week embedded information literacy series in a business course, the course learning outcomes and assessment method (a group presentation) were predefined. However, the alignment grid helped to "chunk out" the library tasks and align to the Association of American Colleges and Universities (AACU) outcomes being used in the course. As a result, the library instruction was integrated and scaffolded across the semester. The process was graphically visible to both the librarian and faculty member and helped in the communication about and implementation of the library instruction.

The final column in the basic alignment grid is for listing resources needed to implement the lesson plan. That equipment may be a computer lab or a laptop cart. It could be having Zotero installed on all of the computers, or it could be a pack of flip-chart paper. Regardless of the format, the resources section provides a place to pull all external tools together. It is also important to note that additional fields can be added to the alignment grid to make the backward design process more scaffolded or more transparent for the librarian or their instructor colleagues. For example, adding another column to the alignment grid could help align the librarian's learning outcomes to the ACRL Framework or to an AACU rubric.

APPLICATION OF THE BACKWARD DESIGN PROCESS

A variety of instructional design models and frameworks have incorporated the backward design process. At the University of Utah, instructional designers used Fink's backward design process as the foundation for a campus-wide instructional design model called the Quality Course Framework (QCF).[16] This instructional design model contains four phases of instruction design: The Design Phase, the Build Phase, the Teach Phase, and the Revise Phase (figure 1).

The three steps of backward design described previously are integrated into the first phase of the QCF, the Design Phase. Once the alignment grid is completed in the Design Phase, librarians could then use the grid to build the learning materials in the Build Phase, plan the individual teaching activities in the Teach Phase, and reflect on the success of the teaching event in the Revise Phase. Librarians can also integrate learning theories such as the ARCS motivation model into the planning of teaching activities.[17] For example, when building a learning/teaching activity, thinking about how to engage students in that learning activity is just as important as the content of the activity. Using the ARCS model can help librarians intentionally consider how they can (1) grab the attention of the learners (A), (2) establish the relevance of the content you are teaching (R), (3) help build learner confidence (C), and (4) show how the learning is related to a real-world application to satisfy the learner (S). Therefore,

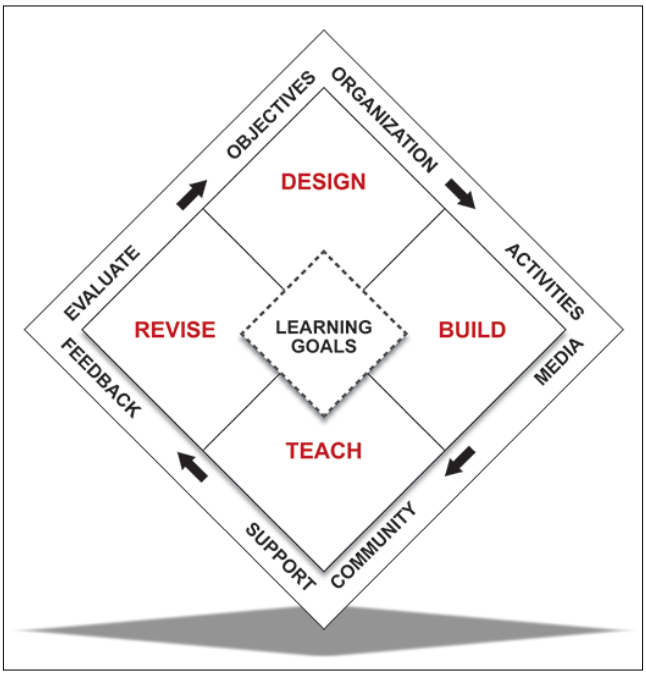

Figure 1. The Quality Course Framework

As Instruction Librarians We Value:	*Faculty Partnerships and Collaboration*	*Effective Instructional Practices*	*Supportive and Shared Learning Environments*	*Professional Responsibility*
Phase 1: DESIGN Instruction **Librarian as Instructional Designer**	• Contact the professor before the scheduled class (in person, email or on the phone) to identify class needs, goals, and outcomes for the session(s) • Plan the session length and content based on professor and student needs	• Design a coherent lesson plan that includes: outcomes, assessments, and teaching and learning activities • Align lesson plan to the course syllabus. Ask for a syllabus in order to see what is included in the readings and what the projects will be. This will help shape and integrate your library instruction presentation. • Align lesson plan to the ACRL framework and/or AACU LEAP outcomes (review the Framework for Information Literacy prior to developing an instructional plan) • Align lesson plan outcomes to the GUS Information Literacy Outcomes	• Compile a variety resources (tutorials, handouts, examples) to incorporate into lesson planning to support student learning • Use relevant or real-world examples if possible to help engage students in the session	• Use professional experience and teaching expertise to select appropriate content for library sessions

Figure 2. The Teaching Guidelines, Phase 1: Design

going through the QCF process can not only help scaffold the instructional design, but also help librarians plan and deliver effective and impactful content for a variety of instructional contexts, from one-shots to full information literacy courses.

Once librarians have used their Fink alignment grid to lay out the instructional plan, they can use that grid to facilitate discussions with faculty partners and demonstrate how library outcomes and learning activities can also align to the overall course outcomes, assessments, and learning activities. To help librarians talk about instructional planning with faculty, a project was undertaken at the University of Utah to create teaching guidelines. The guidelines were built upon the four phases of the QCF and were organized by values identified through brainstorming and discussions with a group of Education Services librarians.[18] In addition, the teaching guidelines matrix document emphasizes the librarian role at each phase of the QCF. In the Design Phase, librarians act as instructional designers. In the Build Phase, librarians could act as instructional technologists and build instructional components for teaching. In the Teach Phase, librarians act as teachers and context experts, and in the Revise Phase, librarians should act as researchers and evaluate the library teaching and learning experience. The teaching guidelines can help librarians think through their different roles at these four phases of instructional design, teaching, and assessment and provide guidance on how they could work with faculty partners at these various phases. For example, figure 2 demonstrates guidelines for how librarians can interact with faculty when designing library instruction. The four columns were values identified by librarians, and bullets in each column are suggestions for how librarians can help facilitate faculty partnerships, design effective instructional practices, create supportive and shared learning environments, and display professional responsibility as they design instruction. A similar process applies to each of the other three QCF phases.[19]

CONCLUSION

By incorporating backward design principles when designing library instruction, the librarian can ensure that instruction is student-focused and that each lesson, whether it is a one-shot workshop, an online module, or a full for-credit information literacy course, meaningfully contributes toward the achievement of information literacy learning outcomes as well as course, departmental, and university learning objectives. Backward design's focus on alignment and assessment allows the librarian to not only improve the quality of instruction for current students, but also helps the librarian demonstrate value and impact to instructors and administrators, lending itself as a powerful advocacy tool for new instructional opportunities. In addition, integrating backward design processes with an instructional design model and reflecting on librarian roles during the design, implementation, and assessment of library instruction can help enhance the value of thinking backward during instruction design and improve the quality and intentionality of library instruction.

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APPENDIX A

Sample Alignment Grid for Aligning Outcomes, Assessment, Teaching and Learning Activities and Resources, Modified by Donna Ziegenfuss from Fink's Worksheet.

Objective/Activity/Assessment Alignment Grid

Learning Objective/Outcome	How Learning Will be Assessed	Teaching/Learning Activity	Technology Resources