INTRODUCTION

Saint Leo University is a private Catholic university steeped in the Benedictine tradition. The main campus is located in central Florida, and supports a learning community of more than 1000 undergraduate and graduate students. In addition, the university’s satellite, distance, and online programs serve another 13,000 students.

All incoming first-year students at Saint Leo University, as well as transfer students matriculating after beginning their studies elsewhere, are required to enroll in SLU100, Introduction to the University Experience. This course carries three credits for on-campus students, and covers basic information geared toward developing effective study habits, learning where to go for assistance with registration and academic issues, and acclimating to university life. The course also has a library component, which in the past was handled differently by each instruction librarian assigned to teach a library session, leading to an overall lack of consistency. In addition, the course includes a focus on core values based on Saint Leo’s history as a Catholic university in the Benedictine tradition.

Each fall the library accommodates approximately 25 sections of SLU100. Initially these sessions were taught by a core faculty of about four librarians. There was little uniformity, with each librarian focusing on different skills, covering different information, and requiring different levels of interaction and participation. For example, one librarian might spend the whole session teaching students to find books using the library catalog, while another might focus on showing students how to access full-text articles in the library’s databases. Additionally, the difference in session length was problematic—course sections following the MWF schedule would come in for one 50-min session, while those adhering to a twice-a-week schedule would have one session lasting 80 minutes.

These concerns, as well as a desire to increase student engagement in the lesson by incorporating active learning techniques, led the instruction department to begin redesigning the SLU100 library experience. The first revision attempt required SLU100 sections following the MWF schedule to attend two separate library sessions. The rationale was that by holding two sessions, for a combined instruction period of 100 min, librarians could cover at least as much information as they did during one 80-min session. Most SLU100 instructors were happy to bring their classes in twice, but the increased time allotted for library instruction did not enhance student learning; in fact, librarians had to review the information covered in the first session since absences often occurred and because some students did not retain the information over the break between sessions. This revision also increased the amount of time spent in the classroom—not a problem in and of itself, but covering 30 sessions as opposed to 15 made it difficult to schedule other non-SLU100 sessions given the small number of librarians available. This first attempt at revising the SLU100 library experience was problematic and did not provide the desired results, suggesting that a new approach was necessary. Knowing that a fresh perspective can often provide inspiration, I recruited a colleague with an education background to assist with the redesign. Our first step was to complete a thorough literature review to find out what strategies and methods other librarians were applying in order to teach information literacy to first-year students.

LITERATURE REVIEW

In reviewing the literature related to this project, three categories of research seemed to emerge: educational theory/best practices in education and library instruction, active and cooperative learning, and specific examples of library instruction incorporating these strategies.

Educational Theory/Best Practices

The following documents served as overarching guides in the process of redesigning the library component of SLU100: ACRL Information Literacy Competency Standards for Higher Education, ACRL Objectives for Information Literacy Instruction: A Model Statement for Academic Librarians, and the ACRL Characteristics of Programs of Information Literacy that Illustrate Best Practices. Many of the characteristics outlined in “Category 7: Pedagogy” of the latter were particularly relevant, including:

- Incorporates appropriate information technology and other media resources

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- Incorporates appropriate information technology and other media resources
includes active and collaborative activities

- Responds to multiple learning styles

- Links information literacy to ongoing coursework and real-life experiences appropriate to program and course level

These pedagogical characteristics are closely aligned with many of the best practices in education that are currently in use today, including those prescribed by Robert J. Marzano, a leading researcher in education, who was associated with Mid-continent Research for Education and Learning (McREL) Institute from 1981 to 2008. Marzano spearheaded the well-known McREL study, A Theory-Based Meta-Analysis of Research on Instruction (1998), which resulted in the identification of instructional techniques for more effective teaching.

Several categories of instructional strategies, which are described as having “a high probability of enhancing student achievement for all students in all subject areas at all grade levels,” were subsequently discussed in depth in Classroom Instruction That Works: Research-Based Strategies for Increasing Student Achievement (2001) by Marzano, Debra Pickering, and Jane Pollock. Some of these strategies include:

- Reinforcing effort and providing recognition

- Homework and practice

- Nonlinguistic representations (visual and kinesthetic renderings, modeling)

- Cooperative learning

- Setting objectives and providing feedback

- Generating and testing hypotheses

- Questions, cues, and advance organizers

Brabeck, Fisher, and Pitler later provided examples of classroom technology that would support these instructional strategies (e.g., presentation software like PowerPoint) and thereby help to ensure high-quality instruction. Marzano cautions, however, that these instructional strategies are “only part of a comprehensive view of teaching,” that not all strategies can be used in every class, and that teachers should be flexible in selecting and adapting the most appropriate strategies.

He believes that further research is needed in assessing student learning as a result of implementing these strategies and that one efficient way to accomplish this would be to have the students rate how much they learn in a particular lesson in the context of the strategies and technologies used.

When designing library instruction for college students, the strategies employed should also be informed by the information seeking behaviors of the student population. For example, the Project Information Literacy Progress Report, Lessons Learned: How College Students Seek Information in the Digital Age found that the majority of college students used course readings and Google for course-related research and turned to Google and Wikipedia for anything, research related to everyday life. In comparison, “far fewer students used library services that required interacting with librarians.” Students also indicated that they were overwhelmed by the number of resources that were available.

These findings support Nichols’ suggestion that librarians should consider their students’ information literacy experiences and the situations in which their students will need to look for and utilize information when developing a framework for instructional design. For example, the Three Directions model, developed using empirical research relating to students’ actions as they completed papers requiring library research, proposes that students progress along three major dimensions as they carry out the research process. These three dimensions include recording the uses of information as tangible products that will aid in the completion of a project (“Actions and Products Direction”), considering, interpreting, and analyzing information as it is collected (“Cognition Direction”), and progressing from the novice level to that of an initiated or knowledgeable member of the discipline being studied (“Participation Direction”).

An earlier study by Seamans, which looked at the process of first-year student information acquisition in terms of designing instructional programs for this specific group, offered some interesting insights that might be useful in creating meaningful instructional scenarios. Similarly, Orne agrees that information literacy is “contextual and depends on particular characteristics of an information seeker, an information need, and an information environment.”

Taking the discussion a step further, Orne mentions Christine Bruce’s work, Seven Faces of Information Literacy in Higher Education, and describes how Bruce’s “conceptions” of information literacy illustrate progressive categories that help explain how information literacy is a component of lifelong learning. Orne also suggests that different learning taxonomies and frames of reference (Bloom, Perry) might allow librarians to develop lessons that are not only constructed from first-year students’ experiences and points of reference, but that they apply information literacy skills in terms of the familiar and everyday occurrences that first-year students encounter. This “constructivist” approach will allow librarians to build foundations that will support “the type of lifelong learning that information literacy advocates have promised.”

Argenti and others concur that it is important for instruction librarians to understand educational theory and methods, such as behaviorism, cognitive theory and constructivism, and to be able to incorporate elements of these theories into library instruction as appropriate to the situation. They also propose that including active learning activities in lesson plans makes teaching more effective.

Active Learning/Cooperative Learning

Anything that students do in the classroom that goes beyond listening passively to a lecture can be considered “active learning.” This definition includes using listening strategies that are designed to help students absorb what they hear, and writing short reaction papers that ask students to apply course material to real life situations or problems. On the other hand, the concept of “cooperative learning,” a term often used interchangeably with “active learning,” covers an array of learning activities in which students work in groups of three or more in order to complete activities that are multi-step in nature.

In Cooperative Learning, Dr. Spencer Kagan delineates the six key concepts of cooperative learning: working in teams, the will to cooperate, the skill to cooperate, the acceptance of basic principles (positive interdependence, individual accountability, equal participation, and simultaneous interaction), and adherence to structures (frameworks for content activities). Marzano restates these concepts in Classroom Instruction that Works when he refers to the five components of cooperative learning as defined by David Johnson and Roger Johnson of the Cooperative Learning Center at the University of Minnesota. These include: “positive interdependence (a sense of sink or swim together), face-to-face promotive interaction (helping each other learn, applauding success and efforts), individual and group accountability (each of us has to contribute to the group achieving its goals), interpersonal and small group skills (communication, trust, leadership, decision making, and conflict resolution), and group processing (reflecting on how well the team is functioning and how to function even better).”

Similarly, Elmborg argues that instructional librarians need to focus on developing students’ critical thinking skills, rather than using
the “library” as subject matter. In doing so, he reminds us of Friere’s “problem-posing education” as opposed to “banking education.” By actively engaging students in problem-solving activities, librarians can guide them on the path of information literacy and encourage them to take part in the process of developing their own skills.

Problem-based learning (PBL), a type of collaborative learning that “uses active learning techniques to fully engage students” in a learner-controlled environment, forms the basis of the library orientation at Purdue University. The instruction team behind this library orientation developed hypothetical problems involving library research for which the students must then come up with logical solutions. Like the Purdue University team, Finkelstein, Kruse, and Loomis at the University of Wisconsin–Madison found that as their students became more actively engaged and participated in cooperative learning, the role of the librarians changed. “No longer do we mainly lecture and demonstrate: we now facilitate small group discussions and try to elicit responses from even the most restless students on a Friday afternoon.” At the University of Michigan, the redesign of library orientation is referred to as “infotainment,” an interactive, multi-modal orientation experience that engages the students and has been influenced by research on intrinsic motivation and Kolb’s model of experiential learning. Alexander, Gaither, and Tuckett, public services librarians at the University of Michigan, described the Net generation as students who learn best in “flexible learning situations which provide opportunities for collaboration and chances to engage their own often formidable critical thinking skills in active problem-solving situations.” They agree with Elmborg that librarians should be less concerned with presenting crucial information and should focus on presenting the library as an “engaging, dynamic information environment...worth coming back to.” Thus, the use of active and cooperative learning situations encouraged students to take part in the education process, leading to better retention and assimilation of the materials and information presented.

**Activities/Games**

The literature contains many examples of techniques and activities designed to actively engage students in library instruction. Cornell describes several techniques used in an attempt to make bibliographic instruction more interesting, dramatic, and important. These include: using a common theme throughout the lesson, sharing personal information, incorporating analogies, providing rewards for participation, allowing for audience participation and interaction, and concluding with an activity that is fun, reinforces a skill, and checks comprehension.

For example, in redesigning the library component of the library instruction program at Niagara University in order to make it more interactive, the librarians developed the “library mystery tour,” which made the process of exploring the library more interesting and included direct interaction with library faculty. The librarians found that by using a mystery to motivate their library exploration, and by including history in the tour, students were excited to participate. Prizes were awarded based on fastest accurate completion. Similarly, Maginn engaged students during their library session by changing the order to help students review materials presented. The librarians found that by including history in the tour, students were excited to participate.

In Spring 2010, we also acquired the Classroom Jeopardy system and conducted a pilot test of the new game. Plans for Phase 4 (Spring 2010) included revising various segments of the SLU100 library session including the pre-session videos, group library activity, and Classroom Jeopardy game and to create assessment tools. To create a useful assessment form we consulted with the university’s Associate Vice President of Academic Affairs; his experience in the field of assessment and institutional research ensured that our planned learning objectives were quantifiable and that the tools we planned to use actually measured students’ assessment of their own performance. Phase 3 (Fall 2009–Spring 2010) involved the actual implementation of the modified SLU100 library session and an analysis of the modifications needed to ensure success.

**Project Timeline**

In planning the revision of the SLU100 library session, a timeline was useful in establishing structure and organization (see Fig. 1). The timeline consists of five phases. In Phase 1 (Fall 2008), we consulted the Director of Academic Support Services, who supervised SLU100, in order to make her aware of the revisions that we planned to implement. Our preliminary planning involved a review of the literature and a great deal of brainstorming which resulted in a lesson plan outline. During this time we also drafted a sample group library activity and tested it on a group of students during a library instruction session. In Phase 2 (Summer 2009), the Instruction Program and Information Literacy Librarian attended a training session for the instructors of SLU100 and informed them of the changes that would be implemented in the upcoming fall semester. By explaining the objectives and theoretical foundations of the redesign, we hoped to encourage SLU100 instructor buy-in, making our implementation plan easier. The summer months also provided us with the opportunity to complete the pre-session videos, group library activity, and Library Jeopardy game and to create assessment tools. To create a useful assessment form we consulted with the university’s Associate Vice President of Academic Affairs; his experience in the field of assessment and institutional research ensured that our planned learning objectives were quantifiable and that the tools we planned to use actually measured students’ assessment of their own performance.

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**Introduction to Lesson Plan**

Following a review of the literature which provided many examples of instructional theories, strategies and activities in library instruction, three components emerged that would form the basis of the redesign for the SLU100 library session; these included the ACRL Information Literacy Competency Standards for Higher Education, the McREL instructional strategies, and concerns regarding the SLU100 library session in its original form. In addition, our process incorporated Gilchrist’s “assessment as learning” framework which asks instructors to consider the lesson’s outcomes in order to plan
As an introduction to the library and its resources, we determined that it would be best for the new SLU100 library session format to focus on certain aspects of ACRL IL Standards one and two:

1. The information literate student determines the nature and extent of the information needed.
2. The information literate student accesses needed information effectively and efficiently.

We then decided to implement these standards by incorporating best practices in education as outlined by the nine McREL instructional strategies previously discussed:

- Identifying similarities and differences
- Summarizing and note taking
- Reinforcing effort and providing recognition
- Homework and practice
- Nonlinguistic representations
- Cooperative learning
- Setting objectives and providing feedback
- Generating and testing hypotheses
- Cues, questions, and advance organizers

Keeping in mind the concerns regarding the SLU 100 library session (time constraints, staff limitations, uniformity/consistency, student engagement/active learning), we developed specific objectives for a new version.

The process of redesigning the SLU100 library experience required a careful consideration of the specific skills that should be included in the lesson. Often librarians attempt to cover too much in too short a time, due largely to the fact that most librarians want to provide their users with as much information and as many information access skills as possible. While this is a laudable goal, expecting students to retain too much information relating to the location and accession of information can lead to information overload, and is likely to cause anxiety in students rather than assisting them in navigating through the information landscape. To this end, the library session redesign team chose to focus on four main learning objectives, and one overarching goal. The learning objectives included:

- Navigating the library homepage in order to locate relevant resources
- Recognizing appropriate information resources in order to complete research assignments
- Performing basic searches in the library catalog in order to identify useful titles
- Constructing database searches in order to access relevant articles

The redesign team decided that the one goal that informed the revision of the SLU100 library experience was to teach students to seek research assistance when necessary. This was considered of paramount importance, so that even if students left their sessions

Figure 1
This timeline indicates the stages of project development from the fall 2008 through fall 2010.
Segments One and Two: Videos and Review

To ensure uniformity among all sessions of SLU100, we developed a lesson plan with three main segments. The first of these segments required SLU100 instructors to show their students three short videos and to distribute a worksheet (see Fig. 2) designed to guide the students through the videos and to make sure that they were on-task while viewing the videos.

The use of videos to introduce information allowed us to cover more during the session since introductory facts and basic concepts could be included in the videos rather than incorporated as part of the in-library session. For example, rather than taking students on a guided tour of the library during the session, we created a library tour video that shows students where specific resources are located, and explains where to go for assistance with circulation and reference issues. This video is approximately 5 min in length, and provides the basic information that students will need in order to navigate the library's physical space.

The second video we created is a 12-min segment that shows students how to navigate the library's homepage, access the library catalog and perform basic research, and how to log into and use one of the library's most accessible article databases (ProQuest). In order to tie the videos in to the SLU100 curriculum, we demonstrated searches using subject matter relevant to the course. The course itself includes instruction on Benedictine Values, and the university has recently adopted a focus on social justice; to this end we used keywords relating to these topics areas, stressing that not only are these subjects important, but that they can be applied to a wide array of research areas.

The final video we created is a 3-minute sample reference interview. We decided to include this video in order to teach students how they can help reference librarians give them the best assistance possible; we thought that modeling the behavior that we feel leads to successful reference interviews might help students understand how librarians use their responses to assess potentially useful reference resources, and provide suggestions based on assignment parameters. All together the three videos total approximately 20 min; we asked SLU100 instructors to show these videos to their students in the class period right before their scheduled library session so students would be more likely to retain information gleaned from the videos. We also included questions in the Library Jeopardy game that asked students to think back to the videos since we felt the concepts introduced were important to the overall SLU100 library experience.

Having covered much of the basic information prior to the library sessions by utilizing web-based videos, we were able to spend some time during the session briefly reviewing library concepts and focusing on the more advanced research techniques. For the second segment of the lesson plan we created a very short PowerPoint presentation outlining the plan for the session, explaining the desired learning outcomes, and introducing some key searching techniques, which we then demonstrated using examples relating to global warming, a concept associated with the Benedictine Value of Responsible Stewardship. We also explain the CAARP test (a method of evaluating whether a given website might be acceptable to use as a scholarly resource by assessing currency, accuracy, authority, reliability, and purpose), and demonstrate how Boolean searching works using an activity in which students respond to questions like “raise your hand if you are wearing jeans OR sneakers,” “raise your hand if you are wearing jeans AND sneakers,” “raise your hand if you are wearing jeans AND sneakers but are NOT male/female.” This live demonstration was designed to help students understand how these terms work together to expand or narrow search terms.

Overall, the review portion of the lesson was designed to last no more than 10 min, ensuring that in the 50-min session students have around 15 min to work on their group searching activity before coming together to compete at Library Jeopardy.

Segment Three: Activities

Following the review of library resources, we moved into the third segment of the lesson plan. The students began the first of the active learning activities by completing a worksheet that required the use of the library’s resources. This group library activity was intended to encourage cooperative learning among the members of each team, although the librarians were available to provide guidance during this time. Students were given the option of working on each question together, or splitting the questions among the members of the group and then coming back together to review the answers collected. The worksheet included items relating to the topics covered in the pre-session videos and the in-library review and incorporated questions about library locations, the catalog, ProQuest, citation styles, subject research guides, and evaluating Internet resources (see Fig. 3). When possible, the questions were built around the theme of the environment, e.g., global warming, energy, etc. The time allotted for this activity ranged from 15 to 25 minutes depending on the length of the class. At the end of this segment, students returned to the instruction area so that the librarians could review the correct responses for each item.

The culminating activity was the Library Jeopardy game. Originally, we had planned to create a Library Millionaire game, but while doing some research on the Internet, we discovered an online Flash Jeopardy Game at www.superteachertools.com that seemed to suit our needs and provided the dynamic visual representations we wanted to include. Initially we created the Library Jeopardy game with four categories (Places in the Library, LeoCat, Databases, and Welcome to Saint Leo), but later removed the last category due to time constraints. We did not include a Double Jeopardy segment, but we did conclude the game with a Final Jeopardy question. In creating the questions for each category,
we decided to incorporate Bloom's taxonomy as we moved from simple to more complex questions so that each consecutive question in the category would correspond to knowledge, content, application, analysis, and synthesis, respectively. Before playing the game we reviewed the rules with the teams, primarily because this version of Jeopardy differs somewhat from the television version:

- Question followed by answer (we did not require the response in a question format)
- Raise hand with Team Card to indicate desire to respond to question
- Simultaneous "ring in:" team with the lowest score answers
- Only one answer per question (the setup used did not easily permit multiple attempts at answering question)
- Team responding chooses next category and value, regardless of whether the response is correct

For the majority of the SLU100 classes, two instruction librarians were available to teach the class as a team. This was especially helpful during the game segment, as one librarian would act as the emcee and the other librarian would serve as the judge. When possible, we also solicited the assistance of the SLU100 instructor as another pair of eyes to help decide which team “rang in” first. The students remained with their original activity groups to play the game and one person was chosen to act as the “responder” for the group. If a question were answered incorrectly, the librarians would offer an explanation and provide the correct response. For Final Jeopardy, each team was allowed to wager as much as the team with the highest score, even if that team had a negative score at that point. By allowing each team to participate in Final Jeopardy we ensured that each team stayed in the game, and discouraged losing teams from tuning out. The team with the highest score received a prize and every student received a bookmark with library contact information as a parting gift.

**INCORPORATING ACRL INFORMATION LITERACY STANDARDS**

The abundance of information available today requires that students carefully consider the information they find before applying it to the projects that they are assigned. ACRL’s *Information Literacy Competency Standards for Higher Education* provides a framework for the skills that will assist students in learning how to use information appropriately, and describes a set of abilities that students need to
develop in order to recognize an information need, locate information that satisfies that need, evaluate the information discovered, and then use the information to fulfill their original need. These skills include:

- Determining the extent of the information need
- Accessing information effectively and efficiently
- Evaluating information critically before use
- Incorporating information into a personal knowledge base
- Using information to accomplish a specific purpose
- Understanding the economic/social/legal issues surrounding information use & using information accordingly

Rather than redesigning the SLU100 library session to reflect the skills identified in the ACRL document, we decided to incorporate the standards, performance indicators, and learning outcomes that were relevant to each particular section of the revised lesson plan; thus, we did not just adapt the different activities included in the plan to show consideration of the standards, we wrote descriptions of each segment of the new plan in our own language and then discussed how our descriptions matched up to the standards, performance indicators, and learning outcomes as laid out in the original document.

For example, we designed the pre-session videos developed to introduce students to basic concepts such as library layout, homepage navigation, and basic reference desk interaction as a way of showing students that the library itself (as both a physical place and an online destination) is a point of embarkation for reference projects. While the library might not be able to help students “determine the nature and extent of the information need,” as standard one is defined in the ACRL document, understanding how the library functions as a storehouse of facts and as a portal to begin exploring any given topic allows students to start looking for materials and resources that enable them to define their own information needs. We spent quite a bit of time discussing how our teaching styles within the videos would affect which particular learning outcomes could be reasonably included in our detailed plan; there is always some amount of interpretation in regard to what each standard, performance indicator, and learning outcome means to a specific instruction plan, but overall we decided that items 1.1.a, 1.2.a, 1.2.b, and 1.2.c would be used as the foundation for the pre-session video development (see Fig. 4a).

Building on the concepts introduced in the videos, the in-library review portion of the lesson was designed to briefly summarize the main ideas presented in the videos, and then discuss a few selected searching strategies that we believed would make students’ initial research attempts more successful. Constructed around ACRL IL standard 2 (“the information literate student accesses needed information effectively and efficiently”), the review section of the lesson plan includes descriptions of the resources available in the library and on the library website, real-time demonstrations of the resources with modifications being made as results were returned and usefulness of the results was assessed, and suggestions for improving the effectiveness and efficiency of searching techniques. Thus, as a whole, this part of the lesson specifically included items 2.1.c, 2.1.d, 2.2.b, and 2.2.b (see Fig. 4b).

The challenge of designing an activity and game that not only engages students, but that also incorporates solid theoretical founda-
tions led us to consider how many of the IL standards could be feasibly introduced during a 50-minute, one-shot session. Although some of the SLU100 sessions met during the longer, 80-minute period, for uniformity, we chose to design the session to be completed within the shorter period. To make use of the extra time available during the longer class sessions we routinely increased the time allotted for the group library activity to 25 minutes; however we made a concerted effort to maintain uniformity by not including instruction on additional resources not covered in the shorter sessions. Thus, although we wanted to introduce several other resources, search hints, and IL concepts, we realized that the overarching goal of the redesign process was to teach students to seek reference help when necessary; as a corollary, we believed it was important to foster a sense of comfort in interacting within the library setting with librarians and peers. To this end, we decided to create a library activity designed around standards one and two rather than pushing ahead and providing more instruction that would likely lead to information overload. Our session exercises—the group library activity and the Library Jeopardy game—were designed around the first two IL standards using Bloom’s taxonomy, although we did ask students to think about the process of evaluating information—the subject that comprises the bulk of standard three—by introducing the CAARP model and suggesting that students consider why it might be important to evaluate information before using it. Our guiding principles for the in-session activities, then, included 1.1.a, 1.1.e, 1.4. a, 1.4.b, 2.1.b, 2.2.d, 2.2.e, 2.3.a, 2.3.b, and 2.4.c, as well as a brief mention of the process of evaluating information after locating it (see Fig. 4c).

**INTEGRATING McREL STRATEGIES**

In creating the lesson plan for the SLU100 library session, we also incorporated the nine McREL instructional strategies designed to enhance student performance across all disciplines and grade levels. The McREL strategies offer practical methods for delivering instruction based on ACRL IL standards thus combining best practices in education and information literacy theory. The nine strategies and examples of how they were incorporated into the lesson plan are described below.

- **Identifying similarities and differences:**
  This strategy requires students to examine concepts using comparison, classification, metaphors, and analogies. In the SLU100 library session we used Venn diagrams to illustrate Boolean searching, compared and classified various types of library resources (e.g., catalog vs. databases, books vs. articles), and compared PDF and HTML formats.

- **Summarizing and note taking:**
  When students engage in summarizing they edit information by deleting, substituting, and/or keeping information; note taking also requires abstraction and restatement of important information. Opportunities for note taking in SLU100 were provided on the video worksheet, which students completed as they watched the videos prior to attending the in-library session.

- **Reinforcing effort and providing recognition:**
  It is important for teachers to demonstrate a connection between effort and achievement and to provide recognition. Students in the SLU100 classes received specific, contingent recognition and praise throughout the group library activity and the Library Jeopardy game. In addition, the team with the highest score in Library Jeopardy was rewarded with a symbolic token prize (a choice of either safari animal finger puppets or movable erasers), in keeping with the assertion that “recognition is most effective when it is abstract (e.g., praise) or symbolic (e.g., tokens such as coupons or stickers) and contingent on students’ attaining specific performance goals.”

- **Homework and practice:**
  In order for students to become competent in a given skill, they must be provided with opportunities to adapt these skills as they practice them. The group library activity worksheet provided SLU100 students with an opportunity for focused practice on library concepts. While we did not assign “homework,” additional activities requiring the use of library resources, as assigned by each instructor, extended the learning beyond the in-library session and reinforced the concepts that were introduced.

- **Non-linguistic representations:**
  Non-linguistic representations, as a mode of storing knowledge, can take several forms, including graphic images, physical models, mental pictures, and activities of a kinesthetic nature. Examples of non-linguistic representations used in the SLU100 library session include a kinesthetic demonstration of Boolean terms (AND, OR, and NOT), a flow chart illustrating the steps involved in locating full-text articles, a “Catalog Box,” a box filled with examples of resources that are contained in the catalog (e.g., books, reference books, audio-visual materials, newspapers and journals in print, and e-books), and a mental picture/description of PDF vs. HTML formats.

- **Cooperative learning:**
  The group library activity and the Library Jeopardy game incorporated elements of cooperative learning as described by Marzano, Pollack, and Pickering, including positive interdependence, face-to-face promotive interaction, individual and group accountability, interpersonal and small group skills, and group processing.

- **Setting objectives and providing feedback:**
  The objectives for the SLU100 library session were shared with students at the beginning of the class and were reiterated on the evaluation form completed by the students at the end of the session. Throughout the group library activity and the Library Jeopardy game the instruction librarians provided concurrent, specific feedback which included explanations of correct and incorrect responses.

- **Generating and testing hypotheses:**
  This strategy involves deductive reasoning, as well as problem solving and decision making. One example of this strategy: students were asked to predict whether the number of results would increase or decrease based on the use of specific Boolean terms during a Boolean searching demonstration.

- **Cues, Questions, and Advance Organizers:**
  Cues, questions, and advance organizers are designed to tap into the students’ prior knowledge (what students already know about a topic) and to provide a preview of what is to come. In the case of the SLU100 class, the pre-session videos and worksheet served as an advance organizer and provided an overview of material that would then be covered during the in-library session; we also referred to the videos several times throughout the in-library session. The instruction librarians also made an effort to ask higher order questions of an analytic nature, and several of these types of questions were incorporated into the Library Jeopardy game.

**ASSESSMENT**

Several assessments were built into SLU100 lesson plan following Gilchrist’s “assessment as learning” model. These assessments include the previously-mentioned video worksheet and the group library activity worksheet, and the Library Jeopardy game. While the Library
Figure 5
Table showing student evaluation results showing the mean score for 50- and 80-minute library sessions.

Library Session Student Evaluation Form and Results

<table>
<thead>
<tr>
<th>Evaluation Statements</th>
<th>Mean Score (50 minute session)</th>
<th>Mean Score (80 minute session)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 361; 50 minute N = 186, 80 minute N = 175</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Overall</td>
<td>Scale: 4.0</td>
<td>Scale: 4.0</td>
</tr>
<tr>
<td>In general, how satisfied were you with today's library instruction session?</td>
<td>3.58</td>
<td>3.56</td>
</tr>
<tr>
<td>2. Library Activities</td>
<td>Scale: 4.0</td>
<td>Scale: 4.0</td>
</tr>
<tr>
<td>The group worksheet activity gave me a chance to practice the library skills introduced.</td>
<td>3.50</td>
<td>3.59</td>
</tr>
<tr>
<td>I enjoyed playing the Jeopardy game.</td>
<td>3.48</td>
<td>3.59</td>
</tr>
<tr>
<td>The Jeopardy game was a good way to review the skills presented by the videos and the library session.</td>
<td>3.65</td>
<td>3.66</td>
</tr>
<tr>
<td>The Jeopardy game improved my understanding of how to use specific library resources.</td>
<td>3.54</td>
<td>3.54</td>
</tr>
<tr>
<td>3. My Skills</td>
<td>Scale: 4.0</td>
<td>Scale: 4.0</td>
</tr>
<tr>
<td>I am able to perform keyword and title searches using LeoCat (library catalog).</td>
<td>3.55</td>
<td>3.67</td>
</tr>
<tr>
<td>I am able to use the ProQuest database to locate peer-reviewed journal articles.</td>
<td>3.45</td>
<td>3.55</td>
</tr>
<tr>
<td>I feel comfortable asking the librarians for help.</td>
<td>3.69</td>
<td>3.70</td>
</tr>
<tr>
<td>4. Usefulness</td>
<td>Scale: 4.0</td>
<td>Scale: 4.0</td>
</tr>
<tr>
<td>I believe that I will need to use library resources during my first semester at Saint Leo.</td>
<td>3.63</td>
<td>3.73</td>
</tr>
<tr>
<td>What I learned will help me be successful at Saint Leo University.</td>
<td>3.62</td>
<td>3.70</td>
</tr>
<tr>
<td>5. Video Rating</td>
<td>Scale: 3.0</td>
<td>Scale: 3.0</td>
</tr>
<tr>
<td>Library Tour</td>
<td>2.47</td>
<td>2.48</td>
</tr>
<tr>
<td>SLU100 (Library Homepage, LeoCat, Database)</td>
<td>2.54</td>
<td>2.51</td>
</tr>
<tr>
<td>Reference Interview (Librarian/Student)</td>
<td>2.47</td>
<td>2.49</td>
</tr>
</tbody>
</table>

Figure 6
Evaluation form distributed to SLU 100 instructors attending the library session.

Fall 2009
SLU100 Library Session Instructor Evaluation

1. Were your students on-task during the pre-session videos (engaged in watching video and completing video worksheet)? Please circle one.
   - Yes
   - No

2. What were your students' library-specific questions after watching the videos and completing the worksheet?

3. What questions did you have after watching the pre-session videos?

4. Which library topics were covered sufficiently?

5. Which topics needed additional instruction?
Jeopardy game was not a formal assessment tool, it did provide us with some evidence of how well students were able to utilize library resources and respond to the questions.

In developing the student evaluation forms for the SLU100 library session, we thought it was important to seek out the assistance of the university's Office of Assessment and Institutional Research. We created a prototype of the form and brought this to the first meeting where we discussed the kind of information that we would like to collect. We went through several drafts before arriving at the final version (see Fig. 5) which included the categories of overall impression, video rating, library activities, skills, and usefulness. The instructor evaluation forms were less formal in design and contained open ended questions of a qualitative nature (see Fig. 6) regarding the library videos and material covered in the library session. It should be noted that the majority of the instructors for SLU100 were staff members, not faculty members, although all hold a minimum of a master's degree. The students' and instructors' comments were taken into account as we modified and revised the SLU 100 library session; in addition, future comments will be used to make changes as needed.

**Evaluation**

The library session evaluation forms were distributed at the end of each session and a total of 361 were completed; of these, 186 were from the shorter class (50 min) and 175 were from the longer class (80 min). The evaluations included the categories of overall impression, video rating, library activities, skills, and usefulness (see Fig. 5).

The ratings on the evaluations were consistently positive with mean scores ranging from 3.45 to 3.73 on a 4.0 scale. This was further supported by the rating on the overall satisfaction of the library session with a mean score of 3.58 (50 min) and 3.56 (80 min).

In particular, there were several items that stood out, based on their exceptionally high mean scores. In the category of "library activities," the Jeopardy game was rated as a good way to review the skills presented by the videos and the library session, with a mean score of 3.65 (50 min) and 3.66 (80 min). In the "usefulness" category, both items were rated highly. The statement "I believe that I will need to use library resources during my first semester at Saint Leo" received a mean score of 3.63 (50 min) and 3.73 (80 min) and "What I learned will help me be successful at Saint Leo University" received a mean score of 3.62 (50 min) and 3.70 (80 min). In the "my skills" category, the responses indicated that students believed they were able to perform keyword and title searches using the library catalog, with mean scores of 3.35 (50 min) and 3.67 (80 min). Finally, the statement which received the highest rating was "I feel comfortable asking the librarians for help," with a mean score of 3.69 (50 min) and 3.70 (80 min).

While these ratings were relatively consistent for both the 50 minute and 80 minute classes, ratings in the 80 minute classes were noticeably higher for six items by a factor of approximately 0.10 in each case. These items included the effectiveness of the group worksheet activity, enjoyment of the Library Jeopardy game, performing catalog searches, using the ProQuest database, and the usefulness statements described above. The higher scores may be attributed to the additional time that was available for these segments in the longer class.

The ratings of the videos were based on a 3.0 scale and were remarkably consistent across all categories in both the 50 and 80 minute classes with the mean scores ranging from a low of 2.47 to a high of 2.51.

The evaluations provided a space for individual comments which ranged from the general (Thanks! Awesome job; It was fun!) to the specific. The comments were overwhelmingly positive and in agreement with the mean scores. Of the 39 comments received, 31 were positive, four were mixed, and four were negative. The Jeopardy game received many favorable comments ("I love Library Jeopardy;” “Great Game;” “Jeopardy game was fun”), as well as a few mixed comments from those that did not win (“I believe we should have won at Jeopardy. I was very sad I didn’t win, but I was glad we got a consolation prize;” “I am sad I lost. But better luck next time.”). Some of the students referred to the prizes they received (“I love bookmarks!;” “I love my elephant.”). Several students indicated that the videos needed some improvement ("The videos were kind of boring, but everything else was fun;" “SLU 100 Video too long, lose interest, maybe add music, more enthusiasm”), while others found them useful ("Videos were helpful."). Other comments referred to the overall session ("I really enjoyed getting to actively do things in the library, and I'm glad we won!" “Very good use of technology"; "It was very informative;” “I feel more comfortable using catalogs and talking to librarians"; “Fun, useful content.”).

The results of the evaluations are useful in providing feedback as to how we can improve and/or revise the SLU 100 library sessions in the future.

**Revisions**

As we continue to refine the model for the SLU100 library session and look ahead to future semesters, there are several specific areas that need consideration. The videos were produced using Polycom Video Teleconferencing Technology which allows for the creation of a split screen video showing both the live computer screen and the instructor. Taking into account feedback from the student and instructor evaluations, it is apparent that the pre-session videos need to be revised in several ways. First, the format of the videos should provide a full-screen view of the library Web pages for the audience, minus the “talking head” of the librarian which, when included, reduces the size of the live action screen. The videos will need to be updated to reflect changes in library resources; for example, we have recently acquired a new catalog interface (AquaBrowser) and an automatic citation generator (EasyBib) that will need to be featured. Also, in revising the videos, we will need to ensure that the answers to the questions on the video worksheet are still contained in the videos.

We were fortunate that the Internet and the Saint Leo server were functioning at all times during the SLU100 library sessions for the purposes of demonstration/review, the library group activity, and Library Jeopardy. However, there were a few occasions when the server was down or when the server was very slow. In order to handle these exigencies, we need to develop a back-up plan that will allow us to follow the same basic lesson with minimal interruption. One possible solution is to use other IP addresses to access various library resources using alternate routes or to create a PowerPoint with screen shots.

With regard to the library group activity, we will need to clarify several questions on the worksheet so that they cannot be misinterpreted, and to revise those questions that pertain to new library resources, such as the new catalog interface.

There are also logistical problems inherent in the online version of the Jeopardy game we used that need to be addressed. Additionally, we discovered that the online version of our Library Jeopardy game was missing when we tried to access it in a subsequent semester, requiring us to recreate it. Luckily, all of these issues will be resolved as we were fortunate enough to receive an emerging technology grant from the University which enabled us to purchase the official Classroom Jeopardy game; this game functions very much like the television version and includes wireless player remotes, automatic scoring, etc.

In order to better assess student learning, we plan to create a pre-test and post-test for the SLU100 library session, which could be administered by the instructors of SLU100 before and after the in-library session. We also hope to find a way to equalize the learning experience for the 50-min and 80-min classes. Finally, we will
increase our efforts to encourage all instructors to attend and actively participate with their class in the SLU100 library session since, despite asking each instructor to attend, some still chose to skip the session, sending a substitute—oftentimes a student—instead.

CONCLUSION

The redesign of the SLU100 library experience was initiated due to perceived concerns relating to lack of uniformity across all sessions, staff and time limitations, and minimal active learning opportunities for students. After reviewing the literature we decided that an approach combining the best practices in education as well as established information literacy standards would provide a strong foundation for redesigning the SLU100 library session.

The redesign process was guided by the “assessment as learning” framework and incorporated the ACRL II standards, the McREL instructional strategies, and the relevant SLU100 factors. What emerged was a lesson plan that included pre-session videos, an in-library review, and opportunities for students to engage in active learning situations that required them to actually use resources and synthesize knowledge.

Evaluations provided by students and instructors indicated an overall positive experience, and suggested that students felt comfortable asking librarians for assistance when necessary. Based on student comments and our observations, we have identified several areas for revision over the next few semesters. We plan to improve the existing pre-session videos in order to increase the production quality and to incorporate changes to the library’s catalog. To better assess student learning we will develop pre- and post-tests for the SLU100 library session; the results of these tests will be used to inform additional changes to the lesson plan and to the library session in general.

Beyond our own observations, further research is needed to determine whether the McREL strategies are effective in higher education; previous research using the strategies has been done only in the K-12 setting, suggesting that the time is ripe for such a study.

NOTES AND REFERENCES

8. Ibid., pp. 9.
12. Ibid., pp. 63–70.
21. Ibid., pp. 20.
22. Ibid., pp. 20.
29. Marzano, Classroom Instruction, p.7.
30. ACRL II Standards.
31. Ibid.
32. Ibid.
33. Ibid.
34. Ibid.
35. Ibid.
38. Ibid., p. 7.
43. Marzano, *Classroom Instruction*, p. 85–86.