



# SCHOOL LIBRARY IMPACT MEASURE

## S\*L\*I\*M

A Toolkit and Handbook For Tracking and  
Assessing Student Learning Outcomes Of  
Guided Inquiry Through The School Library

Ross J. Todd  
Carol C. Kuhlthau  
Jannica E. Heinström

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## SLIM

This product was developed in the Center for International Scholarship in School Libraries at Rutgers University (CISSL) through a research and development grant provided by the Institute for Museum and Library Services (IMLS) 2003 – 2005

### The CISSL Unit Team:

**Dr. Ross J Todd** Co-Principal Investigator  
**Dr. Carol C Kuhlthau** Co-Principal Investigator  
**Dr. Nina Wacholder** Investigator  
**Dr. Jannica Heinström** Research Associate  
**Nora Bird** Unit Manager  
**Muh Chyun Tang** Web Manager





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# **\*School Library Impact Measure (SLIM) Overview \***

## **Purpose**

**The School Library Impact Measure (SLIM)** is a toolkit that enables you to assess student learning through guided inquiry in the school library. It consists of four instruments that elicit students' reflections on their learning at three points in their inquiry process. The toolkit will enable collaborating school librarian – teacher teams to chart changes in students' knowledge and experiences throughout the process.

## **Inquiry Learning**

The school context for using the SLIM toolkit is an inquiry unit. An inquiry approach to learning is one in which students actively engage with diverse and often conflicting sources of information and ideas to discover new ideas, to build new understandings, and to develop personal viewpoints and perspectives.

## **Outcomes**

Using this SLIM toolkit, the school librarian – teacher teams will be able to show how students have developed knowledge and understanding of curriculum content. In addition SLIM will show their development of information seeking and using skills.

The SLIM toolkit will:

1. track changes in students' knowledge as they move through the inquiry process.
2. provide input for designing instructional interventions for effective information seeking and use.
3. enable school librarians and classroom teachers to provide evidence of the learning role of the school library, and to use this as a basis for dialogue among administrators, teachers, other school librarians, school boards, and parent communities.

## **\* Introduction to the SLIM (School Library Impact Measure) Toolkit and Handbook\***

### **How was the toolkit developed?**

The SLIM toolkit and handbook was developed by the Center for International Scholarship in School Libraries (CISSL) at Rutgers University (New Jersey) through a substantial Institute for Museums and Library Services (IMLS) funded research and development grant 2003 - 2005.

The purpose of this project titled “The Impact of School Libraries on Student Learning” was to give school librarians and teachers the means by which to provide sustained empirical evidence of the impact of their school libraries on student learning through an easy-to-use and reliable measurement toolkit to show the growth of student learning through inquiry units. The development of the toolkit was based on data collected from grades 6 to 12 students in 10 diverse public schools in New Jersey undertaking inquiry projects. It involved 10 teacher-school librarian teams, consisting of 10 school librarians working on 17 different curriculum units with 17 classroom teachers. A full report of this research is available at: [www.cissl.scils.rutgers.edu/imls](http://www.cissl.scils.rutgers.edu/imls)

The research sought to measure how students’ knowledge of their curriculum topic changed during the inquiry unit, and to track changes in interest and information seeking skills. A combination of qualitative and quantitative methods was used to examine and measure the students’ learning. The data were collected at three stages of the students’ inquiry process – at the initiation of the research task, midway during the task, and at the completion of the task.

The research showed that through inquiry units

- students’ initial knowledge underwent a significant conceptual change:
- students learned topical content in deep ways, shown in complex and coherent knowledge structures:
- students became more skillful and confident as information seekers:
- students became increasingly engaged, interested and reflective during their learning process, and saw information seeking as a constructive process of building both deep knowledge and deep understanding
- students became more critically aware of the broad variety of sources and their different purposes:
- students gained practical skills in independent information seeking, moving from fact finding to information analysis and synthesis:
- students showed increasing awareness of the varied quality of information, as well as of information as problematic and often contradictory.

Through applying the SLIM toolkit this research was able to provide substantial evidence that students had grown more knowledgeable about their curriculum topics and more information literate through their inquiry-based research tasks. The students valued the instructional interventions that helped them learn through complex information resources, and were able to demonstrate their learning in substantial ways. They showed evidence of developing deep knowledge and deep understanding of their curriculum topics, and ability to analyze and synthesize information in ways that reflected their new understandings.

The SLIM toolkit was further developed and refined from this process, including feedback from participating school teams, critical feedback from the school library research community and further verification from school librarian-teacher teams not involved in the initial research.

## **\*Planning To Implement the SLIM Toolkit\***

This section provides a summary of the key components for implementing the SLIM toolkit. It overviews:

- (a) The learning environment: Leading learning through Guided Inquiry
- (b) The characteristics of Guided Inquiry
- (c) The Information Search Process
- (d) Partnerships: School librarian-classroom teacher teams

### **(a) The learning environment: Leading learning through Guided Inquiry**

This toolkit is designed to be used in classroom contexts where students are required to actively engage with diverse and often conflicting sources of information and ideas to discover new ideas, to build new understandings, and to develop personal viewpoints and perspectives, and to present their learning in some format. Typically these learning experiences are planned and implemented jointly by the school-librarian and a classroom teacher, and based on carefully chosen curriculum standards and information literacy standards.

A key characteristic of these inquiry units is carefully planned, closely supervised targeted interventions that guide students through their inquiry, enabling them to first develop background knowledge of their topics, formulate a clear focus, select and engage with pertinent information sources, evaluate, analyze and synthesize information to build a deep knowledge of their topics, and to deal with conflicting ideas and viewpoints as they build their own understanding and present their new understanding of topics. Through these interventions, students develop a range of information seeking and using skills that enable them to work independently and successfully on their research topics.

In this toolkit, this learning approach is labeled *Guided Inquiry*. Guided Inquiry is grounded in a constructivist approach to learning, based on the Information Search Process (Kuhlthau, 2004<sup>1</sup>), for developing students' competence with learning from a variety of sources while enhancing their understanding of the content areas of the curriculum.

**Guided Inquiry is carefully planned, closely supervised targeted intervention of an instructional team of school librarians and teachers to guide students through curriculum based inquiry units that gradually lead towards building deep knowledge and deep understanding of their topics and growing independence and ownership of their learning.**

Guided Inquiry is grounded in a constructivist approach to learning. John Dewey<sup>2</sup> described constructivist learning as:

- an active individual process, not something done to someone but rather something that a person does;
- involving individual acting and reflecting on the experience and its consequences: *reflective experience* and *reflective thinking*: and
- enlisting natural curiosity and interest: and
- enriching the current lives of students as well as preparing them for work, citizenship and living in a free and democratic society.

## (b) The characteristics of Guided Inquiry

Planning and Implementing a Guided Inquiry unit is based on 6 key principles:

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<sup>1</sup>Kuhlthau, C.C. (2004). Seeking Meaning: A Process Approach to Library and Information Services. 2nd ed. Westport, CT: Libraries Unlimited.

<sup>2</sup>Dewey, J. (1933). How We Think. Lexington. MA: Heath.

*1. Effective inquiry is guided and structured.*

Students are guided and supported through all stages of inquiry that engages them in questions about the topic being studied:

- What do I already know?
- What questions do I have?
- How do I find out?
- What did I learn?

This guidance and support helps students learn to think through topic content rather than simply trying to find the right answer or repackage specific facts. They are guided through a process of knowledge construction to help them build on what they already know and to come to a deeper knowledge and understanding of the concepts and their complex relationships underlying the topic.

*2. Guided Inquiry revolves around mediation and intervention.*

Mediation and intervention are key mechanisms of Guided Inquiry. Students are not left on their own to complete their research.

Mediation is defined as the “human intervention to assist information seeking and learning”. A mediator implies a person who assists, guides, enables, and otherwise intervenes in another person’s information search process. A mediator is different to an intermediary, the latter being something that “intercedes between the information and the user, but this interchange may not involve any human interaction” (Kuhlthau, 2004, p 107). Intervention centers on the way in which “mediators become involved in the constructive process of another person … in information seeking and use” (Kuhlthau, 204, p. 127).

Through carefully planned and contextualized instructional mediation and intervention, students come to learn a diverse range of competencies and skills needed to work with information to build their own new understandings and viewpoints of their topics. These competencies and skills are derived from reflecting on the learning needs and progress of students, rather than imposing some pre-determined information literacy program on the students.

*3. Guided Inquiry is built on an understanding of how students seek and use information.*

The Information Search Process, developed by Carol Kuhlthau through extensive research (1985-2004), provides a useful framework for understanding the students’ journey of information seeking and use, and a

basis for determining the necessary instructional interventions to enable students build deep knowledge of their topics. The Information Search Process describes the thoughts, actions and feelings commonly experienced by students in each stage of the inquiry process as they search for and engage with information to build personal knowledge and understanding.

### c) The Information Search Process

**The Information Search Process forms the basis for developing a program of inquiry-based learning, and for guiding students in their inquiry. It provides a mechanism for teachers and school librarians to recognize those critical moments when instructional intervention and mediation is essential, and then to tailor interventions to enable students to achieve successful outcomes in their inquiry.**

The Information Search Process has been found to occur in seven stages: Initiation, Selection, Exploration, Formulation, Collection, Presentation, and Assessment as shown in the model in the ISP model. These stages are named for the primary task to be accomplished at each point in the process.

Tasks	Initiation	Selection	Exploration	Formulation	Collection	Presentation
Feelings (affective)	uncertainty	optimism	confusion frustration doubt	clarity direction/	sense of disappointment confidence	satisfaction or confidence
Thoughts (cognitive)	vague	-----	-----	focused	-----	increased interest
Actions (physical)	seeking relevant information exploring	-----	-----	seeking pertinent information documenting	-----	-----

1. **Initiation:** the teacher announces an invitation to research an engaging question derived from the instructional goals and standards of the curriculum. The question is designed to motivate students to undertake the inquiry process. The task of students in this stage is to contemplate the question and the accompanying assignment in preparation for the investigation ahead.
2. **Selection:** students choose what to pursue in response to the initiating question by considering what they already know and what they want and need to find out. Reflecting on what they know, students begin to form some questions about what they don't know.
3. **Exploration:** students explore these initial questions and begin to learn about the topic. They build their background knowledge further, and often encounter information that is inconsistent and incompatible with what they already know and what they expect to find. In all three of the beginning stages of the Information Search Process students often experience confusion, uncertainty, and apprehension, and often need guidance and instructional intervention in working with sources to help them undertake the complex information processes involved.
4. **Formulation:** students become aware of the various dimensions, issues, ramifications of the initiating question and begin to form their own focused perspective of the topic under study.
5. **Collection:** students gather pertinent information that defines, extends and supports the focus that they have formed. During Collection their interest and confidence commonly increases as they gain a sense of ownership and expertise in the topic. Students typically need guidance and instruction in structuring their ideas in meaningful ways to represent their new understandings, such as information analysis, synthesis, developing arguments, incorporating evidence, working with information in ethical and responsible ways.
6. **Presentation:** students are involved in the task of preparing to share what they have learned with the others in their learning community. They typically need guidance and instruction in communicating their ideas clearly and effectively.
7. **Assessment:** students reflect on what they have learned to discover what went well and what might be improved, providing vital feedback to enable school librarians and classroom teachers to document the learning outcomes, and inform the instructional interventions.

When the Information Search Process is used as a framework for developing and guiding inquiry, students move away from simply

collecting lots of facts and putting them together to please the teacher. Instead, right from task initiation, they are engaged and guided in a thinking process that requires extensive exploration of ideas and formulation of thoughts before moving on to the later stages of collecting and preparing to present. Allowing time for reflecting and formulating while students are exploring and collecting information ensure that students engage in critical learning stages of inquiry.

#### **d) Partnerships: School librarian-classroom teacher teams**

Guided Inquiry learning is enhanced by partnerships between teachers, school librarians, and all of the school community. It is not something done solely by the school librarian. In this partnership, the school librarian brings their information-learning expertise of knowing how students engage in seeking and using information, guided by the Information Search Process. This is carefully integrated with the disciplinary knowledge and skills of classroom teachers and the specific curriculum standards to be developed to create meaningful inquiry tasks, learning experiences and instructional interventions that actively involve students in discovering and constructing their new understandings to meet curriculum objectives and content standards.

For school librarians and classroom teachers, some important questions to ask in the planning process are:

- How do I guide students in their inquiry?
- When do I intervene?
- What is the nature of the intervention in terms of intellectual and affective scaffolds for enabling inquiry?
- How do I enable students to stay focused and not be distracted from the learning task at hand?
- How do I motivate and engage students who may perceive the searching task as primarily one of gathering information to a task of forming a focused perspective from the information encountered?
- How do I know what learning has taken place?
- How do I foster ongoing learning?

**Specific interventions are not prescribed. They are determined by the stage of the search process, the knowledge and experiences of the students, the affective, cognitive and behavioral needs of the students, and the curriculum standards and goals to be achieved.**

The Information Literacy Standards of AASL<sup>3</sup> provide a framework for developing specific interventions which will enable students to accomplish their tasks of inquiry. These are carefully chosen in light of the specific learning goals and particular learning needs of students.

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<sup>3</sup> American Association of School Librarians and the Association for Educational Communications & Technology (1998). *Information Literacy Standards for Student Learning*. Chicago: American Library Association.

## **\*Summary\***

### **Planning Checklist for implementing Guided Inquiry through the school library**

Guided Inquiry learning environments and instructional interventions will typically show many of the following attributes:

- ✓ compelling situations and questions derived from the curriculum which engage and challenge students in wanting to know more
- ✓ the task connects to real life contexts and enables students to solve intellectual and/or real-world problems
- ✓ students are able to exercise some choice over the specific questions they want to answer and the ways to present their new knowledge
- ✓ students know how to engage with diverse information sources to build background knowledge, formulate a focus and collect pertinent information – the focus is constructing new knowledge, not just gathering lots of facts
- ✓ instructional interventions help learners develop skills relevant to information seeking, problem solving and constructing deep knowledge. These are informed by the Information Search Process. These activities involve students in thinking, acting, and reflecting, critical analysis, and creating new understanding
- ✓ students are given opportunity to practice their new skills
- ✓ students have opportunities through the inquiry process to dialogue and get feedback from teachers and the school librarian about their learning
- ✓ students have opportunity to communicate and share their new understandings

**This checklist serves as a useful guideline for setting up a Guided Inquiry unit and developing the sequence of instruction and the time schedule for the unit.**

## **\*Suggestions for Dissemination of the Results\***

The SLIM toolkit provides a key opportunity to chart the development of student knowledge and skills through Guided Inquiry units. It is important to disseminate and share these outcomes with your school and community, as they provide concrete evidence of the learning-centered role of the school library. Here are some suggestions:

- Presentation of learning outcomes at Staff, Curriculum and Parent meetings – learning outcomes focus
- Sharing with school administrators
- Photo and commentary of Guided Inquiry units on school library web site, including student feedback of the inquiry process and learning outcomes, as well as their descriptions of what learning was meaningful to them
- Summary of outcomes of inquiry units in School Newsletter to parents
- Tell the story of the development of your Guided Inquiry unit and its learning outcomes at various topic association meetings
- Write up a story of student learning for your local community newspaper
- Focus on national and state themes: e.g. “No Child Left Behind” Legislation, and present your findings in relation to this.

## **\*Administration of SLIM Toolkit\***

### **What is SLIM**

The SLIM Toolkit to assess student learning through Guided Inquiry consists of three instruments which are planned for and incorporated into the inquiry unit to be undertaken by the students:

1. **Reflection Sheet 1** includes five questions which measure students' knowledge and experiences related to their inquiry tasks. The questions consist of a combination of open-ended questions and multiple-choice questions. Reflection Sheet 1 is administered at the beginning of the Guided Inquiry unit.
2. **Reflection Sheet 2** includes five questions which measure students' knowledge and experiences related to their inquiry tasks. It is administered when students have reached the formulation / focus stage (information-seeking process, see pages 8-9) of their inquiry task.
3. **Reflection Sheet 3** includes six questions of students' knowledge and experiences related to their inquiry tasks. The questions consist of a combination of open-ended questions and multiple-choice questions. Reflection Sheet 3 provides insights into what the students have learned both in terms of topical content, as well as attitudes and skills related to working with information and learning in general. This provides teachers and school librarians with important insights for development of further inquiry-based inquiry units. It is administered when students have completed their inquiry tasks. The instruments are available in this toolkit and can be copied for distributing to students, or downloaded from the IMLS-CISSL website: <http://cissl.scils.rutgers.edu/imls>

## **The length of the Guided Inquiry Unit**

The SLIM Toolkit is best suited for Guided Inquiry units which last a minimum of three weeks. This will ensure that students have the time to engage effectively in the inquiry task, explore their topic, build their background knowledge, formulate a specific focus that engages and interests them, and then work through the complex sources that provide the pertinent information to their focused topic, and enable them to create the products that represent their new knowledge gained.

1. The SLIM Toolkit works best with the following recommended timeline:
2. The inquiry unit is introduced to students, and students start their unit by choosing a topic for it.
3. The students complete Reflection Sheet 1 at the initiation of the unit. A suitable time is after they have had a few days to make an initial choice of a topic. It is important to note that Reflection Sheet 1 should be distributed before the students have moved into active information seeking to explore their topics. When the students do their information searches, the teacher and school librarian are present for guidance and support. During this time, instructional interventions typically focus on establishing information quality and relevance, and dealing with information conflicts.
4. The students complete Reflection Sheet 2 at the midpoint of the inquiry unit, after they have developed more background knowledge of their topics and are beginning to formulate a focus. Instructional interventions are targeted to providing the necessary skills to help students engage meaningfully in the search process and work on their inquiry tasks. During this time, instructional interventions typically center on helping students analyze, synthesize and construct their new understandings of their topics.
5. Students fill out Reflection Sheet 3 on the last day of their unit. At this time, the students have finalized their inquiry and have created their products that show their new knowledge about the topic.

## **Time to complete**

It is important to introduce the SLIM Toolkit to students as an opportunity for them to reflect on their experiences in the Guided Inquiry unit, and present it as an integral part of the process of inquiry. Let the students know that the reflection sheets provide opportunities for them to reflect on their learning in ways that will help their teachers and school librarians develop the best learning opportunities for them. When administering the reflection sheets, the school librarian and

classroom teacher should carefully read through all the questions and encourage the students to ask for clarification if needed. Although the students will be asked the same question at three points during their units their knowledge and experience at the three stages are different. This may be an argument in case students object to answer similar questions multiple times.

There is no time limit for completing each of the reflection sheets. On average it is estimated that the completion of Reflection Sheet 1 requires 15 minutes, Reflection Sheet 2 requires about 20-25 minutes and Reflection Sheet 3 requires about 30 minutes.

The students fill out the SLIM instruments in the classroom or school library. The use of the electronic version of the SLIM Toolkit is encouraged, but if needed paper versions may also be printed out and used. The environments in which students fill out the SLIM should be comfortable, free of distractions, and should provide adequate lighting and quiet for the students to think and reflect.

The SLIM instruments are designed to be self-explanatory, but students should be encouraged to seek clarification if needed on any aspect of the instruments. Terms like research, learn, know etc may need clarification in some classes. Phrasing of the questions in SLIM may also be adapted to the student population in a particular class when needed. Similarly alternative layout solution may be chosen.

## **Overview of Questions in Reflection Sheets 1, 2 and 3.**

*Question 1. Take some time to think about your topic. Now write down what you know about it.*

This question seeks to capture the existing knowledge of a topic that the student brings to the task. It is important to encourage students to write in sentences, rather than writing down single words and phrases related to their topic. To help students focus on this task, you might want to clarify by saying to them: “Imagine that you have been asked to talk about your topic to a fellow student. What would you say?”.

*Question 2. How interested are you in this topic?*

The students should check the alternative that best describes their interest for the unit at this point of time

*Question 3. How much do you know about this topic?*

The students should check the alternative that best describes their topical knowledge at this point of time.

*Question 4. When you do research, what do you generally find easy to do?*

Here the students are asked to describe any aspect of their research work that they find easy to do.

*Question 5. When you do research, what do you generally find difficult to do?*

Here the students are asked to describe any aspect of their research work that they find difficult to do. The aspects that the students identify will provide a basis for helping them move along in the unit, and give the school librarian and classroom teachers an indication of the instructional interventions necessary to enable students to continue working. The students should be encouraged to provide honest feedback of their experiences of difficulty.

**Last question only in Reflection Sheet 3.**

*Question 6. What did you learn in doing this research unit?*

This question gives the students an opportunity to reflect on their acquired skills regarding information seeking and use. The students should be encouraged to bring forward any aspect of information behavior that they learned through the unit.

## Finding the Findings

### Interpreting the data collected in the SLIM Toolkit

The following section describes the process for making sense of the data you collect, and drawing out some conclusions in terms of the learning that has taken place through the Guided Inquiry unit.

The first stage of developing the findings is coding the student responses collected through the various instruments. The scoring sheets (appendices B & C) should be used for the actual scoring and creating your tallies. The tallies will enable you to make some comparisons between the first, second and third writing sheets to show the changes in knowledge.

The general coding process for each of the questions is:

1. Read through the student reply.
2. Code the student reply according to the coding instructions provided for each question separately in the SLIM handbook.
3. Fill out the scoring sheets provided for coding each individual question. The scoring sheets for all the questionnaires are found in appendix B and C. They may be copied or printed (available online at <http://cissl.scils.rutgers.edu/imls/>) for use in conjunction with each separate student questionnaire.
4. Read through the instructions for interpretation of the coding in the SLIM handbook and analyze the patterns emerging from the student reply accordingly.
5. Write down a brief summary statement of the interpretation of each the student reply on the scoring sheet.

This coding process will be carried out for each of the four questionnaires. After the students have completed all the questionnaires and you have interpreted them you may compare the replies obtained from all the students for a summary statement. The overall scoring sheets included in appendixes C and D may be used for this purpose.

Through this coding process, you will be able to identify some patterns in the knowledge building process of your students.

Each question should be coded individually according to the guidelines provided (appendix B). The students' answers can also be noted on the overall scoring sheet found in appendix C. This scoring sheet can be used both for tracking an individual student's progress as well as overall class patterns.