

# HOW THEY LEARN/HOW YOU TEACH: BUILDING LIBRARY INSTRUCTION SESSIONS FOR MULTIPLE LEARNERS

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## INTRODUCTION

Learning information seeking skills in a wired classroom presents the learner and instructor with an array of cognitive, environmental and pedagogical challenges that can either enhance or hinder the learning experience. Many library instruction sessions contain an inherent disconnect between goals and motivations: the instructor is attempting to build information seeking skills while the learner is focused on the act of finding material. Teaching the search process in a one-shot session reveals a complex set of design considerations including time, task complexity, quantity of content, and user demographics. This paper utilizes cognitive load theory and learning style theory to posit a model of pre-assessment known as SCILL: Subject knowledge, Community, Information technology competency, Library and internet awareness and Learning style. Each of these facets are interdependent and distinct and provide a way for the instructor to determine the level of instruction, appropriate content and suitable instruction technique for a given audience.

## SUBJECT KNOWLEDGE

The ability to formulate, structure and reformulate keywords is of primary concern when working with an information retrieval system such as a database of abstracts or a search engine. The subject knowledge, or domain knowledge, of students in the class is an important consideration for instructional design. Wildemuth (2004) and Anghelescu (2005) show that as a student's domain knowledge increases so does a student's ability to formulate and use different search terms in their online searches. The importance of domain knowledge is heightened in the one-shot library session. When designing a session for teaching searching skills in a computer-based environment it is important

to take the students' domain knowledge into account as students will combine what they learn in your session with their existing domain knowledge to find materials for their academic activities. This process of knowledge application during the one-shot can be theoretically framed within Brown, Collins and Duguid's notion of cognitive apprenticeship which claims that:

The activity in which knowledge is developed and deployed, it is now argued, is not separable from or ancillary to learning and cognition. Nor is it neutral. Rather, it is an integral part of what is learned. Situations might be said to co-produce knowledge through activity. Learning and cognition, it is now possible to argue are fundamentally situated (Brown, Collins, Duguid, 1989, p. 32).

Students with a low level of domain knowledge will have large gaps in their understanding of the field. How can an information seeker specify a request to an information retrieval system describing what it is that he or she does not know—and therefore needs to retrieve (Ford, 2004, p.771)? These students may not have the ability to formulate initial keywords or to revise their search strategies. Conversely, students with a high degree of domain knowledge can be very competent with developing keywords and may not require instruction on how to develop and deploy keyword search strategies (Vakkari, 2003); these experienced students would instead benefit from instruction on advanced search strategies, relevance assessment or alternative resource selection. When working in settings where the students may not have a strongly developed vocabulary for their field the instructor can choose to reduce the cognitive load on the students by highlighting features of the search tool that require the lowest level of term development. Alternatively they can choose to focus a larger part of the session on how to identify tools that can help with term generation and selection.

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## COMMUNITY

The audience diversity in each library instruction session makes for a unique learning community. In this section community refers to the similarity or dissimilarity of your learners' characteristics. Research shows that people with different demographic characteristics conceptualize and engage in the information seeking process differently. While an entire class may all have a subject interest or course in common, similarity within this community likely ends there. Factors such as educational attainment, age, gender and English language skills demand sensitive instructional adaptation to these individual needs. The Millennial population may comprise a large portion of your academic library instruction audience, but some students may be older and their learning needs will be significantly different than their younger counterparts (Gold, 2005). Zhang and Chignell (2001) found that educational attainment effected how users approached information retrieval systems and determined their success in using information retrieval systems regardless of their familiarity with the material. Information seeking can also be impacted by factors such as gender (Mahar, Henderson & Deane, 1997) and age (Laguna & Babcock, 1997). Taking steps to accommodate the demographic characteristics of your class can enhance the learning experience overall (Whitmire, 2001). Gaining a demographic understanding of the potential audience of your library instruction session will allow you to target content and activities appropriately.

## INFORMATION TECHNOLOGY COMPETENCY

One of the major considerations of teaching in a wired classroom is your students' skill level with the various technologies being used. Learning information seeking skills in a technologically mediated setting is a cognitively challenging activity. Using a computer and navigating the interfaces of databases and library websites all require cognitive complexity to perform multiple tasks simultaneously. Learning activities such as problem-based learning place a high cognitive load demand on novice searchers. Chandler and Sweller (1991) showed that though students can display in-class success when engaged in problem-based learning the high cognitive load demands imposed by engaging in the activity “, were ineffective as learning devices. The extraneous cognitive load imposed by the problem solving strategy interfered with learning (294).” Each individual is only capable of supporting a certain level of cognitive load before short term memory is overwhelmed and learning halted. To enhance the potential learning in your session it is important to anticipate areas of your sessions that can increase cognitive load. If these areas are not directly related to what you are teaching their inclusion should be reconsidered. When planning activities for high cognitive load situations the use of step-by-step instructions and examples that lead to full or partial solutions are more effective in facilitating learning (Merrienboer et al 2002, 13).

## LIBRARY AWARENESS AND ANXIETY

Jiao and Onwuegbuzie's research on demographic aspects of library usage trends revealed much about gender, ethnicity and academic experience as related to library usage and anxiety (2000;

1997). By knowing what library awareness your students already possess you will spend less time telling people things they already know and can instead focus on dispelling any myths if necessary. Kuhlthau's model of the library search process with respect to library awareness or anxiety outlines considerations for librarians preparing to teach the one-shots. Library anxiety implications can persist in any of the six search stages: task initiation; topic selection; pre-focus exploration; focus formulation; information collection; and search closure (1991). Depending on the subject of the workshop and the characteristics of the students, certain strategies that focus on alleviating potential library anxiety can be anticipated. Contextualizing each one-shot session may reveal that the greatest potential for library unfamiliarity or anxiety is, for example, in the information collection stage.

## LEARNING STYLES

Learning theory is a vast field of research in which many learning style theories exist. Some of the more popular approaches include: Kolb; Dunn and Dunn; McCarthy; Gregorc; and, Grasha and Riechmann. Despite the multitude of competing theories, most scholars agree that in the very least “[s]tyles are people's preferred modes of processing information” (Sternberg & Grigorenko, 1997). There is no unifying theoretical framework for learning styles in general or for library instruction specifically, but there are generally accepted best pedagogical practices based on constructivist teaching and learning theory. These include: authentic time-on-task; ample feedback; varied and adaptable instruction; awareness of learning and teaching theory; making learning a social activity; presenting material in manageable components; and building on prior knowledge. These best practices are based on the acknowledgment that learning and teaching are reciprocally connected, and that as there is no single way to learn there can be no single way to teach. Very simply, learning improves when instruction improves. While each approach is unique, much commonality exists such as recognition that some students prefer to observe, while others are visual, some are tactile, some like group work, while others prefer independent learning. Fenstermacher & Goodlad prudently observed that “[d]iversity among learners complicates the task of reaching common goals for all learners” (1983, p. 7); making our task doubly difficult when we consider the instructional challenges inherent in one-shot library sessions in a wired setting. . In their work on teaching web page creation Chou and Wang (1999), have demonstrated that there is a positive correlation between Kolb's learning styles and instruction format and task success and computer anxiety. Targeting your instructional technique to the learning styles that will be present in your class can have an impact on the quality of student learning and reduce computer anxiety.

## CONCLUSION

The SCILL model outlines a series of considerations that should be taken into account when planning a one-shot session in a wired classroom setting. Pre-assessing your audience's individual characteristics can help you maximize the effectiveness and relevance

of your instruction. Asking registrants or potential audiences to fill out a pre-class questionnaire can provide useful information about what kind of activities will deliver the most impact as well as information about which aspects of the class are likely to be problematic. These surveys can be automated using web-based survey software such as Survey Monkey or using the survey modules of course management software available on your campus. By utilizing the SCILL set criteria you can build instruction modules that cater to your audiences, needs, concerns, learning styles and skill level while ensuring that their weaknesses do not hinder the learning moment.

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