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Information literacy in the active learning classroom

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Introduction

Indicated by inclusion in a number of accrediting standards of various disciplinary associations in Australia, Canada, the United Kingdom, and the United States (Bradley 2013), information literacy has moved beyond the sole interest of the academic library community in higher education. Placing information literacy education in the disciplinary classroom would address calls to teach students to use information within the context of learning about a subject, an approach considered more likely to prepare learners for future endeavors (Bruce, 2008). We suggest that there are important advantages to be leveraged by librarians and classroom teachers working together to develop information literacy

education. In moving away from traditional lecture-based instruction methods, teachers are adopting active learning approaches that require students to engage with information in ways that are new to them. Conversations about active learning provide opportunities for librarians to engage in meaningful dialogue about student learning with teachers. However, playing a consultative role with teachers may prove challenging for many academic librarians. It requires understanding the disciplinary information literacy perspectives teachers bring to the discussion. To address this concern, our study investigates how higher education teachers have their students use information in active learning courses.

Using thematic analysis, a method for identifying themes and patterns (Boyatzis, 1998), we examined transcripts from interviews with eleven teachers from ten different fields. Each of the teachers had previously participated in a development program focused on making their courses more student-centered, which includes the adoption of active learning activities. Among a number of educational practices, the teachers were introduced to information literacy during the semester-long development program. In the interviews, the teachers were asked to describe what they considered important for their students to learn about using information and how they taught students to use information. The analysis revealed that teachers' ways of having their students engage with information in active learning environments may be associated with three themes: 1) *Information skills students should know*, 2) *Part of the process (of learning)*, and 3) *Empowered by disciplinary information practices*. Drawing insights from the findings, we conclude with recommendations about how librarians can identify how teachers perceive the relationship between information, subject content, and disciplinary approaches or tools.

Information literacy and active learning

Adopting active learning approaches in higher education has been shown to be beneficial to student learning and engagement in various disciplines (Michael, 2006; Prince, 2004). Associated with the educational theory of constructivism, active learning may support using current knowledge to construct new knowledge in a self-aware, metacognitive way (Anthony, 1996). The new *Framework for Information Literacy for Higher Education* (ACRL, 2015) emphasizes the relationship between using information and the creation of new knowledge (p.3). There is a substantial body of research focused on applying active learning techniques in the teaching of information literacy (e.g., Jacobson & Xu, 2004). While many active learning approaches involve students using information in ways that align with the concepts described in the *Framework*, there is little scholarship that discusses how information is used within active learning techniques.

Active learning pedagogies such as problem-based learning, which involve students working in teams to gather and use information to inform solutions to complex problems, have been shown to enhance learners' abilities to use information (Dodd, 2007). Highly effective educational practices, such as undergraduate research or service learning, tend to be active in nature and typically involve using information in specific ways (Riehle & Weiner, 2013). In fact, learning to use information in specific ways is often identified as a goal in projects using these approaches. For example, an aeronautical engineering class might ask students to research the geopolitical aspects of fuel for an engine design project or team-based learning exercise. This may take previously known information, such as how much crude oil is required to create jet fuel, and tasks students to engage with that information in new ways in order to achieve a learning outcome.

Students independently engaging with sources may be seen as representing an alternative to the traditional dissemination model of teaching in which course materials are vetted by the professor (Breivik, 1998). As such, using information may in itself be considered a type of active learning. However, not all students use information within a learning environment in the same way (e.g., Limberg, 1999; Lupton, 2008; Maybee 2006). When completing assignments, whether considered active or not, some students focus primarily on procedural aspects of using information. They make a distinction between searching, analyzing, and so forth, and what they perceive to be “learning” about a subject. This growing body of research into the student experience of information literacy has shown that students use information with more complexity and versatility when they associate it with learning about course content.

While not focused specifically on active learning, there has been scholarship to determine how teachers in higher education understand information literacy. Some studies have framed information literacy using the ACRL standards (2000) or some other pre-existing model (Gullikson, 2006; Leckie & Fullerton, 1999). These studies do not uncover how teachers have their students engage with information, so much as indicating the acceptance of information skills highlighted in the *Standards*. However, a few studies have used inductive methodologies designed to reveal how educators in higher education understand information literacy from their own perspectives. These studies reveal a range of teachers’ experiences with information literacy (Bruce, 1997; Webber, Boon & Johnston, 2005), which may also be shown as focused on either procedural aspects of using information or on learning about a subject.

A study of teachers of marketing and English showed that these teachers may focus on developing information skills, such as using technology, or accessing information online or in print (Webber, Boon & Johnston, 2005). However, marketing and English teachers may also focus on having their students engage with information to learn about the subject of their courses by adopting a critical stance, or in the case of the marketing teachers, use information to accomplish goals beyond the classroom or as part of developing a professional identity. With the aim of students being able to use information with more complexity and versatility, Bruce (2008) suggests that teaching should provide students with learning experiences that allow them to engage with information as they learn course content.

Teachers’ requirements for how their students use information has been shown to influence what students are able to learn about a topic (Maybee, Bruce, Lupton, & Rebmann, in press). The teacher of an undergraduate writing course enabled her students to see a language and gender issue as something that evolved through research studies rather than seeking to support their existing perspective on the topic. To accomplish this, the teacher had the students write a paper in which the thesis needed to reflect the evolution of the topic as well as where it may be headed based on that trajectory. Accounting for how information is used in a learning environment is important for designing meaningful learning experiences.

Active learning provides opportunities for librarians to partner with higher education teachers to integrate information literacy into coursework (Fosmire & Macklin, 2002; Spence, 2004). Development programs that focus on enhancing higher education courses often support teachers incorporating active learning into courses (e.g., NCAT, 2005). Participation in these types of programs may provide entrée to librarians to develop relationships with classroom teachers. In order for librarians to work with classroom teachers to create active learning environments that integrate information literacy, they must develop shared goals (Flierl, Maybee, Riehle, & Johnson, forthcoming). Partnering in this way requires an understanding of

how higher education teachers have their students engage with information within the active learning environments they have designed.

Methods

The research question guiding our study asks, “How do higher education teachers have their students use information in active learning courses?” Recognizing the opportunity that the adoption of active learning holds for information literacy (Fosmire & Macklin, 2002; Spence, 2004), our investigation aims to support librarian-faculty collaborations by providing librarians with an understanding of how higher education teachers have their students use information in active learning classroom environments.

Participants

We used a purposive sampling method in which the teachers at a large research institution were invited to participate specifically because of their ability to provide data that would inform the research question (Patton, 2002). All of the teachers had participated in a faculty development program called IMPACT (Instruction Matters: Purdue Academic Course Transformation). The program focused on bringing active learning into foundational courses. Meeting weekly across a 14-week semester, the teachers worked with a team comprised of an instructional designer, an instructional technologist, and a librarian. In the weekly meetings, the teachers were introduced to a variety of educational frameworks and tools intended to help them make their courses more active and motivating for students. They were also introduced to information literacy. Although the decisions regarding changes made to the course ultimately resided with the teacher, librarians on the team regularly made faculty aware of how students may need to use information to successfully complete learning activities and assignments. As outlined in Table 1, participants were either continuing lecturers, meaning that their primary job duties were teaching, or professors, who conducted research in addition to teaching. The participants represented a number of disciplinary areas.

Table 1: Participant characteristics

	Teachers interviewed N=11
Sex	7 - Female 4 - Male
Field	1 - Biology 1 - Computer science 1 - Education 2 - Engineering 1 - General studies 1 - Management 2 - Nursing 1 - Statistics 1 - Technology
Role	4 - Continuing lecturer 7 - Professor

Data collection

Semi-structured interviews are often used in qualitative research to gather data (Kvale & Brinkmann, 2009). Semi-structured, audio-recorded interviews lasting approximately 60 minutes were conducted with each participant. Most of the interviews were held in the neutral environments of library meeting rooms, but by request, some interviews were conducted in teachers' offices. Aligned with the inductive nature of the study, the interview prompts were open-ended. The interviewers (two of the authors) practiced "bracketing" during the interviews, an interview technique in which the interviewers engage in empathic listening and silence one's own concerns and judgments (p. 27). Six questions were used in the interviews, although the data related to two questions about the use of classroom spaces were not included in this analysis. There were four interview prompts guiding this part of the study:

- 1) Tell me about your course redesign.
- 2) What do you think are the most important things your students need to learn about using information to do well in your IMPACT course?
- 3) How did you teach the students to use information in the IMPACT course you taught?
- 4) How has IMPACT changed how you teach your students to use information?

These questions were typically followed up with clarifying questions, such as: "Why is that important?" or "Can you tell me more about that?" Question 3 also had a number of possible follow-up questions that could be asked depending on the original answer. These questions focused on changes from how the teachers taught the course previously, expectations of students at the beginning of the course, and specific learning and assessment activities.

Data analysis

Thematic analysis, a method for identifying themes and patterns, was used to analyze the interview transcripts. The thematic analytical technique described by Boyatzis (1998) was adapted. It involved each author individually reading and coding each transcript and then clustering the codes into groups with similar themes. In the next phase of analysis, the authors worked together to develop larger clusters of highly conceptualized groups. Finally, through an exhaustive process of analysis and comparison back to the original transcripts, data were clustered into the major themes. The process was concluded when analytical saturation was achieved, meaning that no new themes emerged.

Findings

The analysis of the teacher interviews revealed three major themes (outlined in Figure 1) related to how higher education teachers have their students use information in active learning courses.

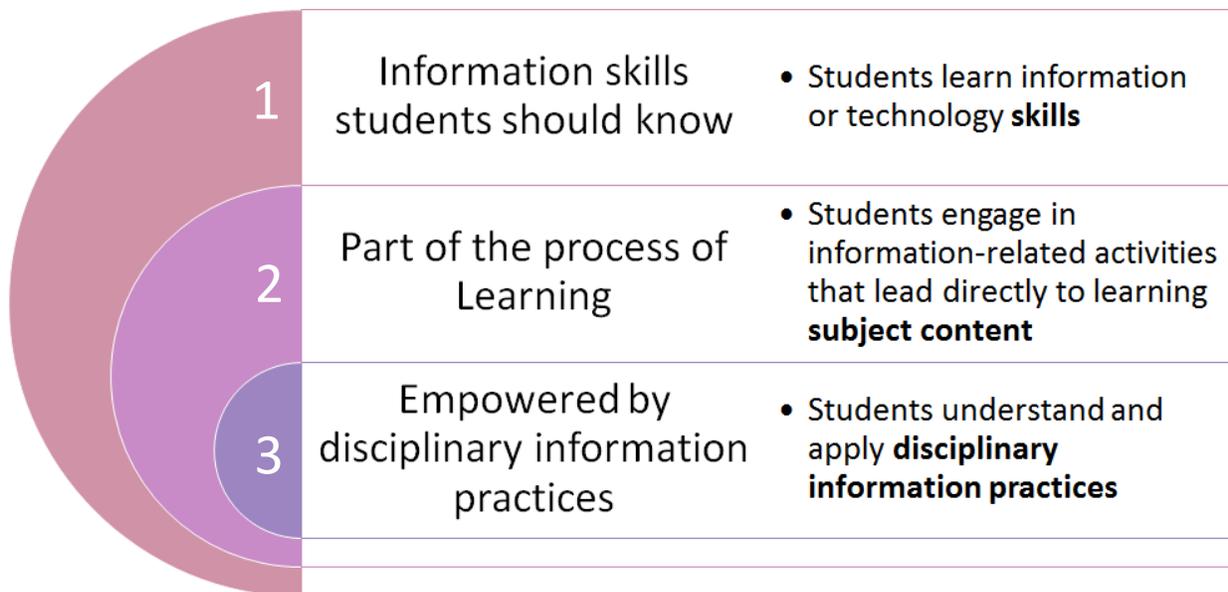
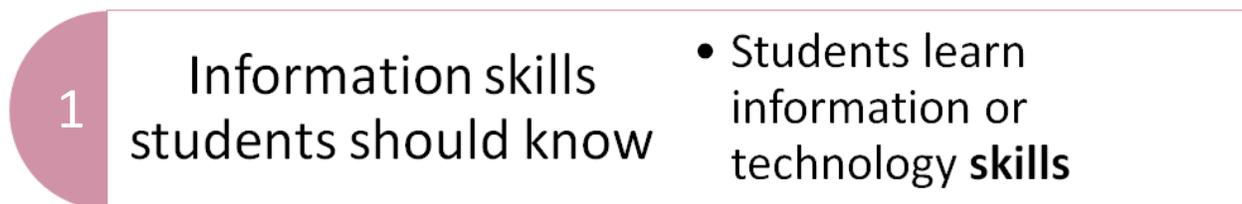


Figure 1: Using information in active learning environments

For each of the three themes, five characteristics are described, including: 1) how using information is understood, 2) the purpose of learning to use information, 3) the relationship between using information and the subject of the course, 4) what makes learning to use information relevant to students, and 5) what counts as information.

Theme 1: Information skills students should know



The theme of *Information skills students should know* focuses on enabling students to learn information or technology skills separate from learning about course content. The analysis of data from two teacher interviews provided the basis for this theme, although data drawn from two other teacher interviews contributed. The key characteristics of the theme are outlined in Table 2. A primary emphasis of this theme is that the activities the teachers described using to enable students to learn information skills were not related to the content of the course. Instead, learning information skills is a separate learning activity. Although most of the teachers focused on students learning information skills, such as developing keywords for searching or finding library materials, the teacher of an introductory technology design course described teaching students to use information technology. This teacher developed activities to teach students to create and post videos to communicate information to others and taught them to use a learning management system in order to engage with information.

The purpose of learning information skills in this theme was typically so that those skills could be applied to complete an assignment later in the course. Some teachers also considered learning information skills to be useful in general, as academic skills. For example, the teacher of an introductory evidence-based practice course in nursing had students complete exercises aimed at learning to search databases and use controlled vocabulary. The teacher described the purpose of the students learning these skills as:

...they chose these four databases relevant to nursing. How do you find this article in EBSCOhost? So, can [they] solve like that? Then teach them about control vocabulary for instance, this is the most confusing part.

Although the teachers whose responses aligned with this theme noted the importance of learning information skills, they were concerned that the students would not see the value. To address this concern, one instructor who taught another section of the nursing course linked searching for academic information to ways that students might search in their personal lives. This teacher created hypothetical scenarios in which the students searched for consumer information for a trip to “Bora-Bora for spring break,” which they had to defend to their parents. The purpose was for students to make a connection between being consumers of products and services, such as flights and accommodations, and being what the teacher referred to as “consumers of research.” Following this exercise, a librarian would visit the class and provide a lesson on using PubMed and other medical resources.

Two of the teachers whose descriptions of information literacy pedagogy aligned with this theme also described activities associated with the *Part of the process (of learning)* theme. For example, the teacher of an educational technology course described having students locate and analyze lesson plans online to develop criteria for developing their own lesson plans. However, the same teacher described having students engage in general information skills activities not associated with the subject of the course. This included a “treasure hunt” event in which students had to find a book in one of campus libraries with a select quote. By forcing them to distinguish between resource types, the activity was intended to familiarize students with physical materials available in the Purdue libraries.

Table 2: Characteristics of Information skills students should know

Characteristic	Description
Using information is...	Skills (information or technology), e.g., learning to use controlled vocabulary
Purpose of learning to use information	Use in the course or general academic skill development
Relationship to subject of the course	Information skills are taught in separate lessons or assignments, e.g., one shots
Relevance to students	Useful skills they will eventually be required to use
Information is...	Scholarly materials, e.g., peer-reviewed journal articles

With the exception of the technology design course, information in this theme referred to scholarly materials. The teachers whose descriptions of their coursework aligned with *Information skills students*

should know typically focused on having their students learn to find library materials, either physically or online. Learning to use information was seen as separate from learning course or disciplinary content.

Theme 2: Part of the process (of learning)



**Part of the process
of Learning**

- Students engage in information-related activities that lead directly to learning **subject content**

The theme referred to as *Part of the Process (of learning)* is characterized by information-related activities that lead directly to learning about the subject of the course. The key characteristics of the theme are outlined in Table 3. The analysis of data from eight of the teacher interviews was used in the development of this theme, although three of the teachers also described activities associated with other themes. Using information in the *Part of the Process (of learning)* theme is considered a part of the active learning activities the teachers used in their courses. A variety of the active learning activities described by the teachers included using information. These activities were always focused on learning about a subject, not solely about learning information skills.

While learning to use information in these courses was directly focused on understanding course content, teachers also expressed a desire for students to apply the same learning strategies to different scenarios in the future. This was particularly true for three courses that focused on developing students' general skills (i.e., career management, basic software, and study skills). For example, the teacher of the general studies course focused on developing study skills and emphasized a decision-making process. She tasked her students to share their weekly schedules with a peer group. The students analyzed each other's schedules to determine criteria for the most effective schedule for student academic success. This teacher described how students might not find certain aspects of their course interesting in the present moment, but highlighted its relevance to students for years after the class finished. The teacher of the course focused on basic software, such as Microsoft Excel, and had students learn approaches to analyzing and communicating the data used to inform decisions in business or other fields. This teacher suggested that the strategies learned in class may be relevant to students in the future in a variety of ways:

I get, starting in the fall, feedback from [the business school] on types of problems they want the kids to be able to solve. I'm tying them forward, so that when they go to the next accounting class, where they expect them to use... or finance class, they expect them to be able to use Excel, to analyze data and extrapolate, they've done it.

In the *Part of the Process (of learning)* theme, the teachers were concerned that students found class assignments irrelevant to them. Therefore, the teachers would select topics for assignments that they believed would be of interest to the students. For instance, the teacher of a marketing course assigned a specific company for students to research; while an environmental engineering teacher selected a current environmental problem to solve with which he believed his students would be concerned.

Although general information-related activities described in the interviews aligned with this theme, some teachers' comments suggested a connection to disciplinary practices. In the environmental engineering course, the teacher stressed critical thinking and viewed engaging with information as one aspect of adopting a critical stance. While critical thinking may be considered a broad framework for learning, the teacher in this case considered it applicable and important for understanding engineering problems. This teacher told the story of straying from his lesson plan to share a video with students of a recent panel discussion on hydraulic fracturing in which one scholar on the panel turned out to be an industry consultant. The teacher asked the students to consider their responsibility in determining credibility. The active learning activities developed by the teacher of the medical engineering course focused on identifying problems and a report writing process. The problem identification and writing processes were general, yet they were applied to learn about an engineering problem. Emphasized more explicitly in the *Empowered by disciplinary information practices* theme, this teacher, referencing a jigsaw activity, suggested that “engineering techniques” might be the same as information literacy:

...I give them engineering, what I consider engineering techniques, which might be information literacy techniques. You ask why, five times, and if you are still not done, you keep going, right?

Table 3: Characteristics of Part of the process (of learning)

Characteristic	Description
Using information is...	Part of learning strategies
Purpose of learning to use information	Use in the course or beyond
Relationship to subject of the course	Integral (information is used to learn about the subject)
Relevance to students	Interesting topics (determined by instructor)
Information is...	Subject to change, dependent on subject-focused learning outcome (e.g., blogs, wikis, standards, etc.)

Information in the *Part of the Process (of learning)* theme referred to various types of materials, including student schedules, lesson plan, blogs, wikis, and educational standards, as well as data and scholarly articles. The teachers whose descriptions of their coursework aligned with this theme were focused on a learning or communication process, and useful information was defined by the context of the course and the goals for learning.

Theme 3: Empowered by disciplinary information practices

3	Empowered by disciplinary information practices	• Students understand and apply disciplinary information practices
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The *Empowered by disciplinary information practices* theme focuses on students understanding and applying disciplinary information practices. Data from two of the teacher interviews form the basis of this theme. The key characteristics of the theme are outlined in Table 4. Rather than describing a general process aimed at enabling students to learn about a subject, using information is viewed as engaging in disciplinary ways of knowing. For example, the teacher of an introductory biology course desired for her students to engage with biological scholarship for the purpose of understanding how biologists conduct research and report their data. The teacher of a statistical literacy course for non-STEM majors developed an assignment that had students evaluate the statistics presented in research that they encountered in popular news sources.

The purpose of learning to use information in the *Empowered by disciplinary information practices* theme went beyond work within the course or future courses. In this theme, the purpose was to approach problems and issues in fresh ways, drawing from disciplinary tools and information. In contrast to the other themes, information literacy was viewed as an explicit outcome of these courses because disciplinary information is fundamental to the discipline. This is exemplified by the statistics teacher who wants her students to become critical consumers of the statistics they encounter in their daily lives. For this teacher, statistical literacy and information literacy were synonymous:

In the world of statistics education, statistical literacy has a pretty specific definition and it matches information literacy. I'm sure there are people in other fields who read the definition and see something else. But to me they just are the same...

The teachers whose coursework aligned with this theme designed their activities to encourage students to find personal relevance by using disciplinary information for specific purposes. The biology teacher expressed concern for her students to be able to make a connection between biology and their personal interests. As with the theme of the *Part of the Process (of learning)*, teachers whose views aligned with the *Empowered by disciplinary information practices* theme selected topics as examples that they hoped the students would find relevant. To this end, the instructor for a statistical literacy class described getting rid of irrelevant aspects of her course:

...why would these liberal arts students, who don't like math anyway, and won't be using statistics in that way, why were we spending a week with them doing correlation calculations by hand?

These teachers also allowed their students to select their own topics for some assignments, in the hopes that the students would be able to select a topic they found personally interesting. The biology teacher suggested that it was beneficial to have students investigate different topics, as it meant that the students would be exposed to more examples of a concept:

...if I tell forty students, go off and find an example, they are probably going to find forty different examples. And that way they can each look at their own example and we can talk about the generalization of classes. (Interview 9)

Table 4: Characteristics of Empowered by Disciplinary Practices

Characteristic	Description
Using information is...	Disciplinary information practices (i.e., using information like a biologist or statistician)
Purpose of learning to use information	Using information to learn within a disciplinary context
Relationship to subject of the course	Integral (information is used to learn about the subject)
Relevance to students	Personal interest (determined by instructor or students)
Information is...	Disciplinary information

Information in the courses that exemplified the *Empowered by disciplinary information practices* theme included biology scholarship and statistics. Focused on disciplinary ways of knowing, useful information was disciplinary information that could be used to explore an issue from a disciplinary perspective.

Discussion

The three themes that emerged from the analysis describing how higher education teachers have students use information in active learning environments are similar to earlier studies into teachers' experiences of information literacy (Bruce, 1997; Webber and Johnston, 2005). The theme of *Information skills students should know* aligns with the information and technology skills focus found in other studies. Teachers who have their students engage in learning activities that align with the theme of *Information skills students should know* are not having students use information to learn about the subject of the course. Some exercises, such as the nursing instructor who had her students search for items for a vacation in Bora Bora, may be considered to be using active learning to foster information literacy skills. However, using information was not part of active learning activities intended for the students to learn about course content.

For teachers whose view of information literacy aligns with the theme of *Part of the process (of learning)*, learning course content is an important focus of using information. Many of the strategies described focus

on an immediate concern, such as analyzing information sources to determine a plan for studying. However, using information may also be a part of learning strategies that students are intended to learn and apply in other learning situations. This was the case for a teacher broadly applying a critical thinking framework as a strategy for learning in an engineering context. While critical thinking may be considered a general learning framework, it is focused on learning within a disciplinary environment. This contrasts with the theme of *Empowered by disciplinary information practices*, which focuses on students adopting a disciplinary perspective. The theme of *Empowered by disciplinary information practices* does not emphasize a specific strategy, but rather involves drawing from disciplinary tools and information as necessary to achieve learning goals. Adopting a disciplinary perspective includes using disciplinary information, such as journal articles, but also applying disciplinary tools to analyze information, such as statistics encountered in media like newspapers.

As outlined in Figure 2, the themes that emerged from our analysis describing how higher education teachers have students use information in active learning environments may be seen as increasing in complexity. *Information skills students should know* is not integrated into the active learning activities intended to enable learning of course content. The theme of *Part of the process (of learning)* is integrated into active learning activities, and thus supportive of learning course content. In this theme, using information is not associated specifically with disciplinary information practices. While most of the active learning activities used in these courses focus on learning in the course, or in future courses, one course emphasized applying a general learning strategy within the discipline. Teachers whose activities aligned with the theme of *Empowered by disciplinary information practices* extended this idea, focusing more intentionally on developing disciplinary practices that students could continue to use in their future coursework, and to inform learning and decision-making in their daily lives.

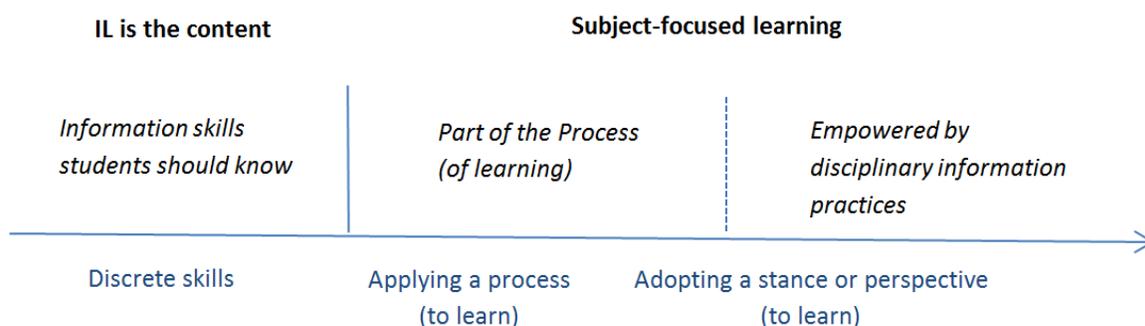


Figure 2: Using information in active learning environments

Recognizing a teacher’s view of information literacy in an active learning environment may provide a basis for productive collaborative efforts. Many factors may be involved in academic librarians’ ability to work with higher education teachers to embed information literacy into course curricula. Insight into an instructor’s view of information literacy may be used to suggest ways to augment student learning by focusing on how students use information within active learning environments. As information literacy is described and applied differently in various disciplines (Walter, 2007), it may be productive for librarians to shift conversations to center on active learning. Communicating information literacy concepts can be difficult. For instance, a seemingly benign question like “How do students interact with data in your

class?” can be problematic from a physical science perspective. While the intent of the question might be restated as “How do students use data to learn in your course?” this intent can be lost due to disciplinary or terminological differences between the librarian and instructor. The physical scientist could interpret the question in ways not thought of by the librarian. He or she might respond by saying that students should “use” data, not “interact” with it, thereby compromising its scientific integrity. The characteristics of the three themes identified in our findings may be used to create a set of structured questions librarians can ask teachers, helping the librarian to identify which theme best describes the teacher’s view of information literacy.

Table 5: Questions to ask faculty about their active learning activities

Characteristic	Question (directed towards teacher)	What a librarian can elicit from answers
Using information is...	Could you describe your active learning activity?	How (or if) information plays a role within the active learning activity
Purpose of learning to use information	Why did you choose this kind of learning activity instead of another?	Learning to use information prepares students for immediate coursework, future coursework or professional activities
Relationship to subject of the course	What learning goal(s) are you trying to accomplish with your active learning activity?	The relationship between subject content and information
Relevance to students	What choices are students able to make within the active learning activity?	If relevancy of information is determined by students or the teacher, and if there is a focus on disciplinary perspectives or tools
Information is...	What do students need to do to successfully meet your learning goal(s) for the activity?	What kinds of information students need to use to meet a learning goal

The description of the characteristics for each theme (Tables 3, 4, & 5) can be used to determine how an instructor views information literacy within an active learning environment. In answering the questions in Table 6, an instructor who discusses the need for students to learn information skills to find scholarly sources to complete future work in the course or for their academic development, may be identified as viewing information literacy as *information skills students should know*. An instructor who describes having students use information in specific ways to learn course content, but also to develop learning strategies that they can apply in this course and beyond may be identified as viewing information literacy as *part of the process of learning*. In contrast, an instructor who describes wanting students to know what kind of information is used, and how it is used, within the discipline may be identified as viewing information literacy as developing students to be *empowered by disciplinary information practices*.

Conclusion

Reporting the views of instructors from only one institution, this study provides the basis for further exploration into instructors' views of information literacy in relationship to active learning. Further investigation is also necessary to determine what is required to shift an instructor from one view of information literacy to another. However, the findings do suggest possible considerations for working with instructors to enhance active learning through the use of information. This may involve direct librarian support for the course, or consulting to determine specific ways that students may use information to learn subject content in an active learning environment. In making suggestions for integrating or enhancing how students use information within active learning environments, it is important for instructors to see information literacy as a shared educational goal, rather than something that is only of significance to librarians (Flierl, Maybee, Riehle & Johnson, forthcoming). This may be best approached by focusing on how using information supports the learning outcomes of an active learning activity, rather than introducing the benefits of information literacy for its own sake.

The findings suggest that the biggest difference in the themes is between the *information skills students should know*, which emphasizes information literacy instruction as separate from other learning goals for the course, and *part of the process of learning* or *empowered by disciplinary information practices*, in which information literacy is seen as part of learning course content. Librarians working with teachers who view information literacy as *information skills students should know* may want to highlight the ways that students are already using information within active learning activities, pointing out that this is a prime opportunity for students to learn to use information in applied ways that they will likely use again in the future. When working with instructors who view information literacy as *part of the process of learning* or students being *empowered by disciplinary information*, the challenge is different. These teachers already view using information as part of learning within the active learning environment they have created. In such cases, a librarian can highlight the utility of more reflective engagements with information. They may also focus on the benefits of enabling students to engage in disciplinary information practices with the intent of providing the students with tools they can use to learn and make decisions throughout their lives.

In both cases, librarians should be prepared to describe how using information is important to the active learning experience. An analogy can be made between information literacy and other things students need to learn through participation in active learning activities. For example, team-based learning (TBL) requires "team development," that is, instruction about how to function individually within and collectively as a team (Clark, et al, 2008). In the same way, if an active learning technique, like a think-pair-share, requires students to find information on their laptops or to provide data as evidence for their assertions, then time needs to be devoted to instructing students how to find appropriate data or discuss what counts as authoritative information. Information literacy instruction does not have to be perceived as additional content for a class. Rather, librarians can leverage how students are already using information, working with instructors to extend the learning afforded in active learning environments by specifically focusing on and extending information literacy.

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