Epistemology of Teaching Librarians: Examining the Translation of Beliefs to Practice

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How do the personal epistemological beliefs of instruction librarians inform their teaching practices? By learning about their personal beliefs about knowledge acquisition, are librarians better equipped to create an environment more conducive to student learning? These questions informed a mixed-methods research study. Using the Approaches to Teaching Inventory, 283 teaching librarians answered 22 questions about their teaching practices and how they believe students learn. We interviewed 12 of these librarians to learn more about their teaching practices and epistemological beliefs. Seven themes emerged as influences on the instructional practices of librarians that ranged from learning biases to classroom tensions.

Introduction

In 2017, we conducted autoethnographic research on academic librarians' teaching identities. The results are published in the chapter "Carving Out a Space: Ambiguity and Librarian Teacher Identity in the Academy."[1] We discovered both commonalities and differences in individual pathways to uncovering and developing teacher librarian identities as well as hindrances to it, such as juggling multiple responsibilities, faculty expectations and misperceptions, and lack of teacher training.[2] From this previous research, we wanted to understand how other academic librarians' pathways arose, specifically how teaching styles may be measured beyond stated preferences, the limitations of the typical one-shot session, and other academic constraints. This article outlines our research into these questions.

We want to expand on and promote teaching self-awareness, critical self-reflection, and risk-taking in information literacy (IL) teaching. We identified Trigwell and Prosser's Approaches to Teaching Inventory (ATI) as a tool for measuring teaching approaches and used this as part of our research framework. After modifying the ATI to make it relevant to teacher librarians, we surveyed 283 librarians and interviewed 12. We hoped the data would reveal if librarians practice what they believe about learning, their epistemological beliefs, and, if they do not, what barriers, perceived or real, prevent them from doing so.

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Literature Review

This study aims to examine the ATI as a tool for librarians to reflect on their beliefs about teaching. This research builds upon scholarship on epistemological beliefs, teaching practices of librarians, communities of practice, and the barriers librarians encounter with teaching IL.

Epistemological Beliefs

The research on epistemology spans a variety of disciplines. For the purposes of this study, we explore the literature on epistemology in educational psychology using Hofer and Bendixen's definition of "how beliefs about knowledge and knowing are related to learning and achievement."[3] Hofer finds that personal epistemology and academic performance are linked. Academic performance depends on a variety of factors, some inside and some outside the teacher's control.[4] Teaching strategies are one factor teacher librarians may use to improve academic performance; however, librarians are at a disadvantage in situations in which they do not know their students. Vermunt and Verloop expand on how teaching and learning strategies may be at odds: "Between students' self-regulation and teachers' external regulation of learning processes, complex interplays may take place. Congruence occurs when students' learning strategies and teachers' teaching strategies are compatible; friction occurs when this is not the case."[5] Epistemological beliefs inform IL teaching strategies and deserve examination when "society's demand for new teaching models, aimed at developing students' ability to update their knowledge whenever necessary, is growing."[6]

While there is robust literature on knowledge acquisition and pedagogy, the research on teacher librarians' epistemological beliefs is scarce. In researching epistemology and instruction librarians, we found that only Morgan's "Information Literacy Learning as Epistemological Process" addressed similar questions to our study. Morgan defines epistemology as "the study of knowledge: what constitutes knowledge, how is it acquired, how is it structured socially, what might its limits be."[7] He recommends an open approach to IL instruction because of the nature of students' habits and postgraduation information access, meaning librarians should teach search skills, especially on the open web. Morgan also argues whether librarians are the best people to teach IL, positing that students usually learn better from their own instructors rather than a guest speaker.[8]

Swanson writes that personal epistemology consists of two areas, the first "best represented by King and Kitchener's Reflective Judgment Model, which uses a qualitative methodology" to describe how learners approach problems to which there are multiple solutions.[9] The second area relies on quantitative methodology, pointing to Schommer-Aikins' five dimensions of knowledge: "Certainty of knowledge, structure of knowledge, source of knowledge, control of knowledge, and speed of knowledge acquisition," which occur as multiple points in development and are impacted by experience.[10] Still, both areas draw on the learner's experience and prior knowledge and do not account for changing beliefs: "Beliefs tend to act as filters for information that reinforce existing knowledge and thinking. Changing belief in adulthood is relatively rare, especially in terms of worldview and core belief."[11] If change in adults is rare, are teacher librarians sticking to what they believe works for IL instruction or do they believe that barriers prohibit them from teaching the way they want? How does epistemology develop in teacher librarians and does it translate in the IL classroom?

Teaching Practices of Librarians, the Framework, and Data Driven Instruction

A review of the literature shows a variety of instructional strategies employed by teacher librarians. Vossler and Watts use storytelling as a tool to invoke curiosity of the learner, aligning themselves with the Association for College and Research Libraries' (ACRL) Framework for Information Literacy for Higher Education (Framework) in that the learner's cognitive and affective domains should both be addressed during IL instruction.[12]

STEM librarians have contributed much of the scholarship of librarian teaching practices. The systematic review from Swanberg et al. about teaching methods of librarians providing instruction on evidence-based practice (EBP) found that learning is increased when librarians are offered multiple teaching sessions. Additionally, the study indicates that STEM librarians use a combination of teaching methods to facilitate EBP learning, including lectures along with hands-on practice.[13] In contrast, a systematic review of engineering IL instruction by Phillips et al. offers evidence on the use of traditional instructional methods such as lectures and database demonstrations finding "many librarians who are teaching are accustomed to this model and likely, it is still the most comfortable for many librarians."[14] While Phillips et al. could not determine learning intervention effectiveness (active vs. passive) due to the scope and limitations of their study, they did find that the "strongest indicator of effectiveness that emerged in the data was collaboration with disciplinary faculty."[15] This harkens back to Morgan's posit that students may learn better from their instructor.[16] Alternatively, could teacher librarians provide more effective instruction if faculty are fully engaged in IL lesson development through collaboration and communities of practice?

Collaboration and Communities of Practice

Many librarians point to collaboration with faculty to improve their teaching and understanding student learning. Wishkoski, Lundstrom, and Davis describe a librarian-led workshop designed to bring faculty and librarians together to design assignments.[17] They note that both faculty and librarians come with inaccurate assumptions: faculty incorrectly assume student skill level and librarians incorrectly assume what IL instruction should entail.[18] The faculty librarian collaboration model is the gold standard for most teaching librarians, yet it is one many have difficulty executing. Different collaboration models could be alternatives when those with teaching faculty are not available.

Wissinger et al. use a librarian team-based approach to design an IL nursing curriculum.[19] The authors argue that it will require librarians to embrace new definitions of expertise and cross-disciplinary collaboration to effectively "anticipate the complicated needs of interdisciplinary researchers."[20] By combining the expertise of librarians in four different practice areas, online learning, nursing, assessment, and IL, these librarians sorted the ACRL Information Literacy Competency Standards for Nursing outcomes by class standing and developed lessons that built upon each other. While collaborative efforts and communities of practice tend to be fruitful, many librarians have reported external and internal barriers to participating in these as well as to employing their preferred teaching methods.

External Barriers to Librarians

As librarians in higher education, we have particular teaching challenges that other teaching faculty may not. The literature is abundant in examination of these. Yearwood, Foasberg, and Rosenberg outline survey results of teaching methods and beliefs of their efficacy of librar-

ians in the City University New York (CUNY) library system.[21] The authors define teaching as in-class, one-shot sessions; research consultations; for-credit IL instruction; and embedded librarianship. Interestingly, "librarians' beliefs about which types of instruction are most effective did not necessarily reflect the types of instruction practiced on CUNY campuses."[22] While librarians considered one-on-one research consultations and for-credit classes the most effective, the authors noted reluctance to employ these because of the time commitment. One-shot sessions remain the most prevalent kind of instruction even though they are not regarded as being the most effective.

Scott uses the question-posing method and reflection to facilitate metaliteracy and metacognition so that she "could honor a faculty request for specific platform instruction while integrating process instruction to enhance learner engagement and ensure transferability."[23] Faculty frequently ask librarians to show students how to use databases, but honoring that request could be employed with teaching strategies other than demonstration.

Internal Barriers to Librarians

While external barriers such as time and faculty requests may hinder employing active teaching strategies, there are also internal barriers that may hinder teaching style changes. The ATI offers a first step into making changes through reflection. Trigwell and Prosser conducted a study of academic science faculty approaches to teaching in first-year science classes to discover the connection between teaching strategies and intention.[24] They identified a connection between these two, a "Student-focused Strategy," dependent on "Conceptual Change Intention," and "Teacher-focused Strategy," dependent on "Information Transfer Intention."[25] Using transcripts from their interviews of these faculty, they developed the ATI. The researchers determined that the "strategy adopted by these teachers matches the intention they have for their teaching," but mere awareness of motives is not enough and that "associated intentions or motives will need to be addressed."[26]

Harshman and Stains conducted a study using two versions of the ATI on chemistry faculty. While they note significant limitations of the ATI's methodology, they recognize it as an exemplary "first generation of measurement of approaches to teaching."[27] Other researchers have examined context and the ATI and discovered that teachers may adopt different approaches based on their context and therefore comparing means of student-focused and teacher-focused scores across multiple contexts may prove more meaningful.[28] We note commonalities in context and working conditions between our faculty colleagues and ourselves as teacher librarians.

Methodology

We used a mixed-method study design that included an online survey and follow-up interviews using video conferencing software. The survey consisted of a combination of demographic questions, a modified version of the ATI, and open-ended questions.[29] We phrased these questions to explore participants' beliefs about their teaching practices and to uncover connections between demographic data we believed to be valuable. Additionally, the survey solicited volunteers for the follow-up interviews. Interviews were intended to explore survey data and questions in greater detail.

We distributed a Qualtrics survey to the ili-l, collib-l, and uls-l ACRL Discussion Lists in the fall of 2017. We chose these lists because we felt this would reach a wide variety of instruc-

tion librarians while avoiding redundancy in requests. The survey included demographic questions, and a modified version of the ATI followed (see appendix A). Modifications to the ATI included removing six questions that we deemed repetitive or irrelevant to IL instruction and modifying the generic subject language of the original ATI to reflect IL instruction. Because of this, it must be noted that the results of this study cannot be compared to previous usages of the ATI.

Participants were prompted to answer up to four open-ended follow-up questions. If a participant responded that a statement on the ATI was "frequently true" for them or "almost always or always" true in response to the questions in table 1, they were asked to explain why the statement was important. We chose these four questions based on what we believed most closely represented the two types of teaching approaches and to provide more context for interview selection.

TABLE 1
Follow-Up Open-Ended Survey Questions

Teacher-focused Questions	Student-focused Questions
It is important to present a lot of facts to students so that they know what they have to learn.	I set aside some teaching time so that the students can discuss among themselves key concepts and ideas.
I should know the answers to any questions that students put to me.	My teaching in this subject should help students question their own understanding of IL.

Survey data was downloaded in Excel and SPSS, both used for analysis of numeric data. Using the scoring method outlined by Trigwell and Prosser, we calculated participants' teacher-focused and student-focused scores. We ran descriptive statistical analysis, correlation tests, reliability tests, and factor analysis.[30] Finally, we calculated a score difference in participants' ATI totals (Student-focused score—Teacher-focused score = Difference). The higher the score difference, the more student-focused a participant scored; the lower the score difference, the more teacher-focused a participant scored. Score difference was used to help select interviewees.

In addition to using this calculated score, we examined participants' responses to the open-ended questions from table 1 to further narrow down interviewees. Twelve librarians were selected to participate in follow-up interviews: Five librarians from the high range of the student-focused group; four librarians from the middle of the score difference range; and three librarians from the lowest range of the teacher-focused group.

We asked interviewees 12 questions via phone or conferencing software about how they learned to teach, their learning style, and methods of teaching (see appendix B). To test the validity of the ATI survey, we gave interviewees their ATI score, explaining how the survey worked and how to interpret the score, at the end of the interview. At this point, the interview questions had encouraged reflection on their teaching practices, and we asked them if they agreed with the score.

Following the interviews, we uploaded the audio recordings and cleaned transcripts to a shared folder accessible to the whole team for analysis. We used Trello to begin open-coding and listing themes across all participants, areas of divergence, key quotations, and notable information they individually identified while reviewing the transcripts. To check for inter-

rater reliability, we met as a group after creating the Trello boards individually to discuss each board, where our findings diverged and overlapped, and created a final list of themes from the interviews.

Results
Participants
The Qualtrics survey received 283 responses, with 261 participants completing the entire survey. The number of participants is a convenience sample based on self-selection through the listserv call for participation. For the purposes of statistical analysis, only the completed survey results (n = 261) were analyzed.

Participants work at a variety of institutions (see table 2), but nearly half (42.7%) work at doctorate-granting universities. Teaching duties, which included both teaching itself and instructional development, varied across participants, but the majority (68.7%) identified it as composing between a quarter and three-quarters of their workload as a librarian (see table 2). Most respondents (n = 228, 87%) described teaching IL as "extremely important" or "very important" to their librarian identity.

Participants reported what year they completed their library degree. We used this to group participants by which IL document they potentially learned about in library school: the

TABLE 2 Demographic Survey Results				
	Frequency	**Percentage**	**Mean**	**Median**
Institution Type				
Doctoral university	112	42.7%		
Master's college or university	62	23.7%		
Baccalaureate college	45	17.2%		
Associate's college	31	11.8%		
Other	10	3.8%		
No response	2	0.8%		
Percentage of Job for Teaching				
1–24%	46	17.6%		
25–49%	93	35.5%		
50–74%	87	33.2%		
75–100%	36	13.7%		
Year Completed Library Degree			**2006**	**2010**
1994 or Prior	35			
1995–1999	20			
2000–2009	73			
2010–2015	104			
2016 to Present*	26			
Missing	2			
Years Teaching as Librarian			**9**	**6**
*The survey was open to participants November and December 2017.				

ACRL Information Literacy Competency Standards for Higher Education, the Framework, or neither. This assumes that participants learned about these documents during library school. These groupings are outlined in table 2. Participants completing degrees before 2000 would not have had instruction on either IL document; participants in the 2000–2009 period would have had instruction on the ACRL Standards; participants from 2010 to 2015 would have had instruction on the revision drafting process of the Framework; and participants completing degrees after 2016 would have had instruction on the Framework.

Survey Results

The ATI allowed for total scores in each of the teacher-focused and student-focused categories to range from 8 to 40. In our sample, teacher-focused scores ranged from 10 to 39 and student-focused scores ranged from 10 to 40. This represents all librarians sampled as the survey assesses both approaches; however, when looking at the calculated score difference (Student-focused score—Teacher-focused score = Difference), the sample range is –15 to 24. The highest possible calculated score difference for teacher-focused is –32 and for student-focused is 32.

How participants thought about their teaching as part of their librarian identity had a significant relationship with multiple variables in the survey. It was positively correlated with student-focused scores (0.352; $p = 0.000$) and percentage of time teaching as a librarian (0.227; $p = 0.000$), meaning those who value teaching as part of their librarian identity scored higher on the student-focused scale in this sample. It follows that this was also positively correlated with the calculated score difference, skewing toward student-focused.

A few variables did not reveal any statistically significant relationship between them. Most notably there was no statistically significant relationship between teacher-focused scores and student-focused scores, and any relationship between years teaching as a librarian and ATI scores.

To determine the reliability of the ATI, we calculated Cronbach's alpha for both teacher-focused and student-focused subscales. Internal consistency for teacher-focused questions was acceptable ($\alpha = 0.760$) and student-focused questions were good ($\alpha = 0.807$).

To determine construct validity, factor analysis was conducted and can be seen in table 3. Components loading below a total eigenvalue of 1.0 were not included. Component 1 had a total eigenvalue of 3.75; component 2 had a total eigenvalue of 3.05; component 3 had a total eigenvalue of 1.27; and component 4 had a total eigenvalue of 1.15.

Factor analysis tests whether the version of the ATI used in this study upheld the constructs (student-focused and teacher-focused) measured by the original ATI. Full construct validity would result in only two components in table 3, with all SF questions grouped together in one component and TF questions grouped together in another component. The components generally loaded together based on student-focused and teacher-focused items. Interestingly, SF8, "My teaching

				TABLE 3 ATI Factor Analysis Results	
	Component			
	1	**2**	**3**	**4**
SF1				
SF2	.771			
SF3	.599			
SF4	.714			
SF5	.594			
SF6	.779			
SF7	.778			
SF8				.736
TF1		.436	.498	
TF2			.640	
TF3			.696	
TF4			.655	
TF5		.575		
TF6		.673		
TF7		.715		
TF8				.755

should include helping students find their own learning resources" and TF8, "I present material to enable students to build an information base" loaded together. This could indicate a connection between these two statements specific to the IL context.

Interviews

Survey participants were given the option to volunteer for follow-up interviews of which 60 individuals volunteered. From this list we selected 33 individuals for interviews based on the distribution of the difference between their student-focused and teacher-focused scores (11 student focused, 11 middle, and 11 teacher-focused).

	TABLE 4		
	Interviewee ATI Scores		
Interviewee*	**Student-Focused (SF) Total**	**Teacher-Focused (TF) Total**	**Difference between SF & TF**
James	21	36	-15
Emma	35	11	24
Rachel	34	11	23
Jen	39	20	19
Kate	35	14	21
Laura	36	16	20
Sarah	33	38	-5
Mary	19	27	-8
Abby	28	27	1
Elizabeth	29	21	8
Kim	34	30	4
Linda	34	30	4
*All participants have been assigned a pseudonym.			

From this list, 12 librarians agreed to an interview. The mean years of teaching IL was seven years. Participants were primarily women with a gender ratio of 11:1. Each librarian is listed by a pseudonym and their ATI score totals and score difference in table 4.

We identified seven themes about teacher librarians' personal epistemologies and teaching practices through analyzing the interview transcripts using open coding.

Bias toward teaching to their own learning style preference

> Elizabeth. I do think more students learn the way I learn [reading/from expert] than current literature seems to indicate. … I think there are students who definitely learn from group work, but I think there are a lot of students who don't. It's so pushed in academia at the moment. And while I know that's the "correct" way to do things now, that's not something I push.

In our own teaching, we recognize that we can easily fall into the trap of thinking students learn the way we learn.[31] In our interviews, we found several librarians also expressed a bias toward teaching to their own learning preferences. One librarian was explicitly aware of her

learning preference bias but still felt students learn best the way she does. Some interviewees recognized that, even when literature and best practices advocated for alternative teaching practices, they still teach to their own learning preferences.

There is tension between what librarians want to teach and what we must or are expected to teach

> James. There are certain things—large scale that I want them to wrestle with. [But I] have to factor in what the professor wants. They often have a fixed idea of what library instruction should look like. And usually that's bibliographic instruction.

Instruction librarians often articulate a tension between what they want to teach—or feel are the most important concepts to teach—and student and faculty expectations.[32] Our interviewees expressed similar feelings. While they expressed a desire to teach higher-order critical-thinking skills, faculty often request something similar to bibliographic instruction (database and library website demonstrations).

The goal of IL instruction is lifelong learning

> Linda. I try to convey to [students] that information literacy is…important for their entire life. So information literacy is part of how like, you know, being information literate can help you in a job interview, or can help you in a social situation, like it's relevant just to your daily life…

We asked each interviewee to describe their teaching philosophy and goal of IL instruction. Their responses often dovetailed with their frustrations over what they wanted to teach and what they are expected to teach. Interviewees discussed their goal of IL in terms of a set of lifelong dispositions that relate to each area of a person's life.

Reflection is central to learning and teaching practices

> Emma. I think the value of reflection for me as a teacher to constantly improve what I'm doing is really at the heart of my teaching philosophy, but also helping students slow down and do that reflecting as much as I can as well… I think that everyone benefits from that—slowing down, taking a pause.

Librarians and students benefit from reflective practice. When asked about how she learns best, one of our interviewees discussed needing time to process and reflect. Since much of a librarian's instruction is one-shot, front-loaded in the term, and fast-paced, it is often hard to build in time to think and reflect. But not only is reflection a theme about how instruction librarians and their students learn, it is also important to becoming a better teacher, by reflecting on what teachers do and the impact it did or did not make.[33]

Interviewees learned to teach through experience

> Kim. I think primarily learning [to teach] by doing.… I have taken a couple instructional design courses and I do reading on what other people do, but a lot of it is sorta learning by doing rather than formal training.

Of the 12 librarians we interviewed, only five had some type of training prior to becoming instruction librarians. Two were teachers prior to becoming librarians (K–12 and undergraduate writing) and three took a library instruction course in graduate school. Four of the librarians we interviewed attended workshops after becoming librarians to gain more formal training in instruction. Even with this training, many of them felt unprepared to teach when entering the profession. In preparing themselves to teach, or to become better teachers, there was an emphasis on learning on the job by teaching or observing IL sessions or through professional development opportunities. One interviewee highlighted that the practice of learning to teach through peer observation can be problematic considering the cisgendered whiteness of librarianship.

Activities and discussion are essential to learning because they provide context and practice

Kim. When you give students a problem and get them together to solve it, … they learn more from doing it that way, even if they just work by themselves for the most part… as they are talking out the problem [it] will stick with them longer than if I just showed them a trick without the context of trying that.

Each of the interviewees talked about the importance of demonstrating the relevance of concepts through active learning. This could be open discussion, small-group work, problem-solving, or hands-on experience using resources. Whatever the approach, librarians recognized that helping students make connections by providing context and practice proved to have the most impact on student learning.

There is a complicated relationship among authority, expertise, and peer relationships

Emma. I didn't feel that I could trust them with my own vulnerability. I couldn't admit to them that I didn't know something. Because perhaps of that unwillingness on their part to seem vulnerable. Because they presented themselves as the expert, I didn't feel like I could present myself as anything less.

Recognizing that authority is often considered an important element to establish trust in a teacher, we asked interviewees several questions about preferences toward learning from peers and experts. The answers indicated a complicated relationship among authority, expertise, and peers. Interviewees questioned whether authority and expertise are the same, and if librarians ask students to question authority, how can librarians then establish themselves as an authority? For some interviewees, they recognized that peers can also be experts, but they did not know if students also made this connection. Almost all interviewees recognized that teaching librarians go to their colleagues for advice (seeking their expertise), and that students also go to each other for similar information, but at what point does one see a person as a peer and another as an expert?

Discussion
Active Learning and Differentiated Instruction
Education research has established active learning as an essential part of education for many

years now. The seminal work "Seven Principles for Good Practice in Undergraduate Education" promotes active learning techniques as essential to improving undergraduate education.[34] In his analysis of the 2003 National Survey of Student Engagement, Kuh affirms "students were frequently engaging in certain forms of active and collaborative learning" and that the more students practice and get feedback on their writing, analyzing, or problem solving, the more adept they become."[35]

Further, we recognize that most interviewees learned to teach by experience, even those who reported a more teacher-focused teaching style. Yet in both the literature we examined and in the conversations we had with the interviewees, we found both externally imposed and self-imposed barriers to librarians implementing active learning. We discussed the need to have multiple approaches to delivering content based on several factors. Having multiple approaches to teaching IL content is essential, and a librarian's decision to implement one teaching approach over another is context-driven. Although we assigned numeric values in this study, it should not be interpreted as favoring a particular approach, despite the use of positive and negative numbers. Both teaching styles are valuable when used in meaningful, context-specific ways. If a teacher librarian is a skillful lecturer, they should continue to incorporate this teaching strategy in addition to learning new pedagogy. One teaching style is not superior to another, but employing a variety of methods during a session offers expanded learning opportunities to students.

Differentiated instruction, providing multiple ways of delivering the same material, is ideal, albeit difficult to achieve in higher education according to Jackson and Evans: "We struggle in this journey due to the demands of ensuring that all students exit the course with the required content and application of knowledge in a classroom setting."[36] Teacher librarians usually have more freedom than the classroom instructor. Librarians do not have the pressure of even knowledge application, knowing their students come into the IL session with widely varied IL skill sets. In fact, the Framework informs librarians that learners do not learn IL linearly; rather, information literacy is learned "throughout students' academic careers and as converging with other academic and social learning goals."[37] Librarians have more freedom to introduce new teaching strategies like group work, knowing that those students who have a better grasp of IL should bring along in their learning those peers who do not have as good a grasp.

Lack of Formal Training Creates Tension
Most of our interviewees became instruction librarians without any formal training in teaching, learning through experience instead. This lack of training creates tension, especially when trying to establish trust in the classroom. This tension is experienced on two different levels: between librarians and teaching faculty and between librarians and students.

The tension between librarians and faculty involves balancing faculty expectations for an IL session and covering what librarians believe should be covered in classes. Just as librarians are not always aware of what teaching faculty cover in their classes, teaching faculty are often not aware of what instruction librarians are able to cover. While librarians wish to teach higher-order critical-thinking skills and move beyond bibliographic information sessions, this is not always possible. Library instruction is unique, and faculty do not necessarily understand the teaching role of librarians.[38] Davis also found the amount of information librarians are expected to cover and the lack of formal training as a teacher plays a role in teaching anxi-

ety. If faculty do not understand the instructional role of librarians, how would they know what type of partnerships librarians can have with them in the classroom? Instead, a cycle is created between faculty and librarians resulting in an "us" and "them" mentality. Without a mutual understanding of what each brings, there is no way to curb the amount of information librarians are asked to cover; and, without training on teaching practices, librarians do not necessarily have the ability to negotiate.

The second area in which librarians experience tension within the classroom is establishing trust with students. One-shot instruction does not provide librarians the opportunity to build relationships with students, so failing in front of students and faculty is a higher risk. Imagine this teaching scenario: A student raises their hand and asks a question you cannot answer. You have four choices: Try to answer it in some way; deflect and say, "I'll get back to you"; throw it to the professor; or say, "Let's look it up," to demonstrate the research process. Our interviewees expressed difficulty trusting others with their vulnerability in teaching. Librarians want to be seen as having authority within the classroom without having built a prior relationship with students or a faculty member. This can be very difficult, especially if they already feel anxiety from their lack of training and faculty expectations for the session. Instead, librarians could focus on the ways in which they may establish trust with students through teaching methods that also inform the practices of experts, such as collaboration and reflection.

Reflection and Peer Discussion

Many interviewees in our study showed a propensity to favor teaching in a style they felt they learned best. This teaching-style bias revealed itself less explicitly in another aspect of teaching, too: the use of reflection and peer discussion in the learning process.

As professional development tools, reflection and peer discussion do not need to exist separately. Incorporating more time for reflection in teacher librarians' work and allowing the time and space—whether in meetings or through a community of practice—creates "the conditions for adopting new instruction practices."[39] We recognize that not all teacher librarians work in an environment with multiple instruction librarians and that local communities of practice may not be available. In cases where a local network is unavailable or unsupportive, teacher librarians could turn to the scholarship of teaching and learning literature as a place to apply their individual reflective moments to the learner-centered practices of other instructors and teacher librarians.[40]

Interviewees described the value of reflection and peer discussion when teaching IL in the classroom as well. Not only does time in the classroom become an issue when incorporating reflective activities, but belief in its potential as a teaching technique is essential to its success. As Emma said during her interview:

> You have to take the time to do it. Sometimes, I know that I won't always do it on my own, but I need someone to say this is the time you're going to do this. I'm giving you this time to reflect on this because you need it and you won't take it on your own. I think a student has to be willing to take that time, and in order to be willing to take that time, you have to think that it would be valuable to take that time. So, I think you have to understand that sitting with an idea and reflecting on it is a good thing to do.

It appears this belief in student learning derives from teacher librarians' use of reflection and their peers in their own professional development as teachers. By valuing reflection as a learner, teacher librarians can demonstrate its value when using it during IL instruction.

The ATI as a Snapshot in Time

The mixed methods approach of this study allowed us to witness how the ATI represents a snapshot in time rather than a stable measurement of an instructor's teaching approach. Because we asked survey respondents if they would participate in a follow-up interview, we noticed some librarians responded to the survey multiple times. Each time they completed the ATI, their student-focused, teacher-focused, and difference scores varied. Not only does this call into question the reliability of the ATI, but it also emphasizes the ebb and flow of how librarians think about their instructional practice over discrete periods of time. Sarah, who completed the survey twice with different results, explained this as, "…I think it depends on when you grab me and whether I've just taught a class or not…" The one-shot nature of library instruction demands sporadic teaching throughout the semester as well as few opportunities for witnessing student success after the IL session. A session a librarian deems as successful might improve the likelihood of a score they feel matches their desired teaching approach.

Conclusion

The teacher librarians interviewed in our study described the dynamic nature of teaching IL in higher education. Because of this dynamic nature, a static tool such as the ATI cannot be used or considered as prescriptive for instructors, nor was that its creators' intention.[41] The ATI provides an opportunity for teacher librarians to reflect on their teaching at the time in which they complete it. In this way, the ATI is a tool for reflection.

Teacher librarians have a variety of tools at their disposal to grow as instructors. Librarians interested in exercising their teaching muscles and expanding their horizons can also observe their peers, experiment in their teaching practice, read the scholarship of teaching and learning literature, participate in an instructional community of practice, or participate in other professional development activities. Reflection is only one piece of a large and dynamic professional development puzzle.

Acknowledgments

APPENDIX A. Adapted Approaches to Teaching Inventory

For each item, please select one of the numbers (1–5). The numbers stand for the following responses:

1: This item was only **rarely or never** true for me in this subject.
2: This item was **sometimes** true for me in this subject.
3: This item was true for me **about half the time** in this subject.
4: This item was **frequently** true for me in this subject.
5: This item was **almost always or always** true for me in this subject.

When you teach information literacy (IL)…

Question Number	Question	Rating
1	Students should focus their study on what I provide them.	
2	It is important that IL should be completely described in terms of specific objectives that relate to formal assessment items.	
3	It is important to present a lot of facts to students so that they know what they have to learn.	
4	I set aside some teaching time so that the students can discuss, among themselves, key concepts and ideas.	
5	I encourage students to restructure their existing knowledge in terms of the new way of thinking about IL that they will develop.	
6	I deliberately provoke debate and discussion.	
7	I think an important reason for teaching IL sessions is to give students a good set of notes.	
8	I should know the answers to any questions that students may put to me.	
9	I make available opportunities for students to discuss their changing understanding of IL.	
10	A lot of teaching time should be used to question students' ideas.	
11	My teaching focuses on the good presentation of information to students.	
12	I see teaching as helping students develop new ways of thinking about IL.	
13	My teaching focuses on delivering what I know to the students.	
14	My teaching should help students question their own understanding of IL.	
15	My teaching should include helping students find their own learning resources.	
16	I present material to enable students to build up an information base.	

Scoring the Approaches to Teaching Inventory

Question Number	Rating	Question Number	Rating
1		4	
2		5	
3		6	
7		9	
8		10	
11		12	
13		14	
16		15	
Total		**Total**	
	Information transfer/ Teacher-focused		**Conceptual change/ Student-focused**

APPENDIX B. Interview Questions

1. Current Position and Background
   a. When did you receive your library degree?
   b. How many years have you been teaching information literacy?
   c. What is the primary population that you teach?
   d. What is your current job title?
2. How did you learn to teach information literacy? For example, did you learn by doing, take classes, or have a teaching mentor?
3. Reflecting on your previous learning experiences, what qualities of an instructor built your trust in their expertise?
   a. Have you had an instructor whom you did not trust? Describe what created this lack of trust in the instructor.
4. How do you think you learn best?
   a. Can you give an example?
   b. Why do you think this is how you learn best?
   c. From whom do you learn best (for example, peers or experts)?
5. How do you think the students you teach learn best?
6. Do you have a teaching philosophy? If so, please describe it.
7. What is your core goal of teaching information literacy to students?
8. Have you ever had to generate student buy-in for an information literacy session? Please walk me through an instance when you generated buy-in.
9. Walk me through the most recent information literacy instruction session you taught.
   a. Would you consider this a typical information literacy session? Why or why not?
10. In the context of an information literacy classroom, whom do you feel students learn the most from and why?
    a. (If guidance is needed, prompt with you, their instructor, or their classmates.)
11. Give them their scores on the ATI.
    a. Do you feel your scores align with what you described during this interview? Why or why not?
    b. TF3: What do you feel are the core concepts, facts, or skills students need to learn related to information literacy?
    c. TF5: Can you recall a time when a student asked you a question that you didn't know an answer to? What did you do?
    d. SF1: From whom do you think students learn the best?
       i. How much time do you typically set aside for small group work?
    e. SF7: What attributes must a student have to be able to reflect on his/her own ideas/opinions?
       i. What aspects of your teaching encourage development of these attributes?
12. Closing demographic questions
    a. Please share with us your gender, race, and age,
    b. Do you feel your gender, race, or age inform your teaching beliefs/styles?

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