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Audience Analysis: Learning About Student Motivations and Instructional Preferences

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CHAPTER 1

The ARCS Model and Audience Analysis:

Learning About Student Motivations and Instructional Preferences

Krista Reynolds

Introduction

The energy level in the room is high. Students work together diligently, examining their computer screens and sharing ideas to try to solve a problem. When the instructor asks them to share their findings, several students raise their hands and offer insightful observations. After the session is over, a couple of students take the time to tell the instructor the value of what they learned in class and how helpful it will be to them. This scenario is what we instructors strive for—that our students will be engaged in our sessions and leave feeling their time was well-spent.

I began reflecting on and studying the role of motivation in library instruction after several years of teaching one-shot information literacy (IL) sessions and experiencing classes where some students were interested in learning and some students were reluctant to participate. Librarians who teach one-shots face unique challenges. Librarians Latham and Gross, in their paper on instructional preferences of first-year college students, stated, “In the case of the standalone workshop, students often fail to see the relevance of instruction to their academic work or their personal lives, and the resulting lack of interest and low motivation create obstacles to learning.”¹

Moreover, librarians often meet students in a one-shot session on the day of instruction. We lack the advantage of being able to develop relationships with students over time and determine what motivates them and what instructional strategies might work best with the group. Students are often unclear about what librarians do and how they can help. Students who have grown up using computers and search engines daily also often assume they have the requisite skills to perform academic research.² All of these factors might impact students' motivation and desire to actively participate in library instruction, and I endeavored to explore and address these potential impediments through my own study of undergraduates' motivations to learn research skills. A literature review revealed that Keller's³ ARCS motivation model, originally developed and described in the 1980s, has been applied most frequently in a library instruction context. ARCS stands for attention, relevance, confidence, and satisfaction, and these four variables were derived from well-established motivational theories, such as Wigfield and Eccles' expectancy-value model.⁴ Keller, an educational psychologist, asserted that these categories encompass the major aspects of learning motivation, and he emphasized the need to address all four categories in instructional design. More recently, Keller created a second model to account for people's intentions and commitment to achieving goals and their self-regulation strategies—"behaviors and attitudes that are related to persistent effort to accomplish a goal."⁵ Keller's *Motivational Design for Learning and Performance* offers a full description of the ARCS model and the newer MVP model.

In this chapter, I build on librarians' previous work using ARCS in library instruction and share how I gained a greater understanding of student characteristics at my institution to design motivational instruction using the ARCS model. I wanted to learn whether students were motivated to learn research skills and why, and to determine whether they preferred the pedagogies that other researchers have identified as motivating. My ultimate goal was to use this information to create more relevant sessions—regarding content and pedagogy—and increase intrinsic motivation. I provide information on my research as a guide for other librarians who might wish to undertake similar studies at their institutions. I offer instructional content that aligns with each ARCS component (attention, relevance, confidence, and satisfaction) so information literacy instruction can be more relevant to students.

Literature Review

Current educational systems in the US stress extrinsic motivational strategies. Student achievement is often focused on grades, scores on standardized exams, pleasing the teacher, and attaining external rewards and honors.

Students internalize extrinsic motivators, and these become a part of their self-regulation process.⁶ They become motivated to achieve rather than to learn.⁷ Thus, it is no surprise that students' intrinsic motivation declines as they progress through school and that a high number of students have low intrinsic motivation.⁸ However, many students view instructional relevance through the lens of utility value, such as learning's applicability to future academic and career goals. Instructors, then, must demonstrate how its value relates to these extrinsic motivators. But students will be more deeply engaged in instruction if they can also see how it connects to their existing skills and knowledge and how they are valued as learners.⁹ In his discussion of making instruction more personally relevant, rather than relying solely on extrinsic motivators, Keller stated, "To stimulate the motivation to learn, it is best to build relevance by connecting instruction to the learners' backgrounds, interests, and goals."¹⁰ Even though students' expectancy for success in a specific academic setting is derived from many factors, including factors out of an instructor's control, librarians must communicate an expectancy that students will succeed in completing research tasks. Students missing the basic facets of a positive expectancy for success and perceived value of instruction may not attempt learning tasks or otherwise engage with instruction.

The ARCS model is applicable to one-shot library instruction because it is customizable to any learning scenario and flexible for motivational analysis and design. An instructor uses what he or she knows about his or her audience to select "motivational strategies that are compatible with the learners, instructors, and learning environment."¹¹ Keller asserted that even a general knowledge of audience characteristics is helpful, which is often the only information librarians have about students in a particular session. Because librarians often meet a group of students for the first time on the day a one-shot session takes place, they know they must build rapport with students quickly to create a welcoming classroom environment where students are comfortable sharing and participating. Many ARCS instructional strategies center on instructor behaviors that meet that need. Because students may have trouble understanding how library instruction can be applied beyond the classroom, the relevance piece of ARCS is useful for addressing that issue. Kuhlthau's groundbreaking work on the information search process (ISP)¹² and Head's¹³ more recent study on freshmen attitudes about research highlight the affective side of research; students exhibit various emotional states including confusion, anxiety, and a lack of confidence as they plan for and conduct research. The ARCS model incorporates strategies that address the affective side of learning, particularly confidence and satisfaction. Moreover, these affective pieces correlate with the dispositional outcomes of the Framework for Information Literacy¹⁴—those outcomes that include students' values, motivations, and attitudes about research. Librarians want students to

develop positive feelings and beliefs about research, so the model may help librarians accomplish goals outlined in the framework as well.

Librarians can intentionally design their sessions using instructional techniques based on the four ARCS components to increase student interest and engagement. Ruth Small, librarian-researcher at Syracuse University, brought attention to the ARCS model in the 1990s¹⁵ and early 2000s¹⁶ and published several studies related to librarians' use of motivational strategies. In their book *Motivating Students in Information Literacy Classes*, Jacobson and Xu¹⁷ also used the ARCS model extensively to recommend pedagogies for term-length and one-shot library instruction.

Keller stressed that instructors need to know the motivational attributes of their audience, such as attitudes, probable attention level, perceptions of relevance, and confidence levels to select the most effective motivational strategies¹⁸ and to make instruction most relevant to students. Citing Keller's ARCS model, Muddiman and Frymier questioned whether college students believe the relevance tactics instructors intentionally use are actually motivating since previous research on relevance-designed instruction had yielded mixed results.¹⁹ When surveyed about content relevance tactics that their faculty used, students discussed many of the same relevance-increasing strategies Keller promoted, such as connecting with students' interests, future lives, and popular culture, and using discussions and participatory activities.²⁰ Students' proclivity for these tactics reinforces their potential effectiveness. However, in contrast with Keller, Muddiman and Frymier suggested that "perceived relevance is an *outcome* of effective teaching rather than a *component* of effective teaching."²¹ Regardless, their research draws attention to the importance of relevance in instruction. For librarians who teach one-shot sessions, determining audience attributes and appealing content is particularly challenging because often our first experience with a group is on the day instruction takes place. However, Keller suggested that even a general sense of audience characteristics would be helpful,²² and Muddiman and Frymier's work as well as the research cited below provides useful insights about college students' instructional preferences. In the spring of 2015, I undertook a study to discover what generally compelled Concordia University undergraduate students to learn research skills. My goals were to gain greater understanding of their motivations and to learn which instructional methods might appeal to them.

Undergraduate Student Survey

The goals of this survey were to gather information from CU undergraduate students to describe and better understand their motivation to learn research skills, their confidence and anxiety levels related to completing a research as-

signment, and their attitudes about various classroom instruction methods that have been shown to motivate students. Further, I wanted to understand student perceptions of the utility or value of learning research skills. With this information, I could use the ARCS model more effectively to plan and customize my one-shot sessions to meet students' pedagogical needs and preferences. As Keller suggested, knowing a group's goals, attitudes, and motivational attributes allows the instructor to choose appropriate ARCS instructional strategies and to determine which of the four components might require more (or less) emphasis. For example, if students generally believe learning research skills is relevant to them upon arriving at a session, an instructor need not spend as much time helping students come to that conclusion. Ideally, one would obtain this information from every group of students; since this is not practical for one-shot sessions, having a general idea of student characteristics is more realistic. While my survey questions were not selected based on the Framework for Information Literacy, the information I gleaned relates particularly to the dispositional outcomes of the framework—those that include students' values, motivations, and attitudes about various aspects of research.

I sought a validated instrument related to college students and library instruction, motivation, or attitudes through a literature review but was not able to locate an instrument that matched my precise needs. Thus, I developed survey questions based on Latham and Gross's²³ study on instructional preferences of college students, Christophel's²⁴ work on student motivation and teacher immediacy behaviors, Jacobson and Xu's²⁵ recommendations for motivating students in information literacy instruction, and Small et al.'s²⁶ interview questions used in their study of student motivation at community colleges. I consulted question development best practices outlined by Robson²⁷ to minimize problems with question wording and bias in results.

A list of the survey questions is found in the Appendix 1A. The electronic survey included paired statements (see Appendix 1A, questions 17 through 30) which I designed to be opposite teacher behaviors or instructional strategies, and I asked students to choose the statement with which they agreed more. I selected these instructional strategies and behaviors because research shows that these factors relate to student motivation to learn,²⁸ and several are specific ARCS strategies or are based on other theories of motivation. Understanding whether those strategies resonate with students informs instructors about whether they should be used in future IL sessions. I report survey results only for those questions relevant to the scope of this chapter.

Survey review and administration

I asked the instructor of record for each class for permission to administer the survey and administered it using SurveyMonkey software in February

and March 2015 at the end of ten undergraduate library instruction sessions I taught.²⁹ One hundred forty students were potential respondents in the following courses: Introduction to Speech (ENG 202; three sections), General Biology I (BIO 211; four sections), Media & Culture in America (HST 331; one section), English Composition (WR 121; one section) and Senior Thesis Preparation for English, History, and Theology majors (ENG/HST/REL 492; one section). I asked students seventeen or younger not to complete the survey, and I asked those students who had already completed the survey not to participate again.

Data analysis

SurveyMonkey automatically recorded questionnaire results and the software calculated response percentages for closed-ended questions. In open-ended questions, I asked students to elaborate on why they did or did not feel motivated to learn research skills. I worked with another librarian to code open-ended responses to identify common themes and patterns using a process described by the Cerritos College Office of Research and Planning.³⁰ Results from the survey provide a snapshot of CU student attitudes toward learning information literacy skills and their attitudes toward various types of instruction.

Results

Quantitative responses

One hundred nineteen of 140 students who participated in ten instruction sessions completed the survey. Seventy-eight percent of respondents were women and 22 percent were men. The response rate was 85 percent. However, I excluded results from two sections of General Biology I from the data analysis because of my possible influence on their responses; I graded a lab assignment in two of those sections. Thus, I report on responses from 91 students in this chapter. Most of those 91 respondents (53, or 58.2 percent) indicated they had not attended a library instruction session previously during the current semester, and over one-third (34, or 37.4 percent) had attended one or two sessions. When asked how many library sessions they had attended in the last year, 37 students (40.6 percent) responded they had not attended any, while 45 (49.5 percent) indicated they had attended one or two sessions. Eight students (8.8 percent) had attended three or four sessions within the last year.

Interest level. When asked to rate their interest level in learning research skills that day, most students responded positively. (See table 1.1.) The majority of students (55 percent) said they were interested, and an additional 14.3 percent said they were very interested in learning research skills. A smaller group (24.2 percent) was neutral, while 6.4 percent of students indicated they

Table 1.1. Students' interest level, confidence, anxiety, and beliefs about transferability of learning research skills (n=91).

Question	Very interested	Interested	Neither interested nor disinterested	Not interested	Really not interested
Rate your interest level in learning research skills today	13 (14.3%)	50 (55%)	22 (24.2%)	3 (3.2%)	3 (3.2%)
	Very confident	Confident	Neither confident nor unsure	Unsure	Very unsure
When you arrived to class, what was your confidence level in being able to complete the research for your assignment on your own?	17 (18.7%)	43 (47.2%)	21 (23.1%)	9 (9.9%)	1 (1.1%)
	Very anxious	Anxious	Neither anxious nor relaxed	Relaxed	Very relaxed
When you arrived to class today, what was your level of anxiety regarding completing your research assignment?	2 (2.2%)	24 (26.4%)	29 (31.9%)	24 (26.4%)	12 (13.2%)
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Do you believe the information you learned today will help you complete your research assignment?	43 (47.3%)	41 (45%)	78 (7.7%)	0 (0%)	0 (0%)
Do you believe learning research skills will help you complete assignments in other classes?	53 (58.2%)	34 (37.4%)	3 (3.3%)	1 (1.1%)	0 (0%)

Table 1.1. Students' interest level, confidence, anxiety, and beliefs about transferability of learning research skills (n=91).

Do you believe learning research skills will help you solve problems in your life outside of school? When you arrived to class today, what was your level of anxiety regarding completing your research assignment?	48 (52.7%)	24 (26.4%)	18 (19.8%)	1 (1.1%)	0 (0%)
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were either not interested or really not interested in learning research skills. The relatively high interest levels may be because, for many students, this was their first library instruction session of the semester. Other researchers have shown that students who have had previous library instruction tend to be less attentive in subsequent IL sessions,³¹ but this factor did not seem to impact this group of students.

Confidence and anxiety. Students provided a greater range of responses to the questions about confidence and anxiety levels in being able to complete their research assignment independently. (See table 1.1.) Almost half of the students (47.2 percent) reported feeling confident when they arrived at class, and 18.7 percent felt very confident. Almost one-quarter of students (23.1 percent) felt neither confident nor unsure, and 11 percent felt either unsure or very unsure. Interestingly, while students generally felt confident, a notable number of students reported feeling anxious at the beginning of class about being able to complete their research assignment. The greatest number of students (39.6 percent) rated themselves as relaxed or very relaxed. However, 31.9 percent of students chose neither anxious nor relaxed, and 28.6 percent of students reported feeling anxious or very anxious.

Motivation. A large majority of students (78, or 85.7 percent) felt motivated to learn research skills. When asked if they thought the information they learned during the session would help them complete their research assignment, most responded affirmatively. More than 47 percent of students strongly agreed with the statement, and 45 percent agreed. Almost 8 percent of students were neutral, and no students disagreed. In addition, students recognized the transferability of learning research skills. When asked whether they believed learning research skills would help them complete assignments in other classes, 58.2 percent of students strongly agreed and 37.4 percent agreed. Students did not agree as strongly about whether learning research

skills would help them to solve problems in life outside of school. Almost 53 percent of students agreed with that statement, but only 26.4 percent strongly agreed, and 19.8 percent were neutral.

The last group of questions in the survey asked students to select one of two statements with which they agreed more about instructional techniques or motivation. I included these questions to assess student attitudes about techniques that Small et al.³² identified as effective in keeping students on-task during library instruction. I share responses to questions 17 through 30 in table 1.3 and discuss those results later in this chapter.

Qualitative responses

Reasons for students' motivation or lack of motivation to learn research skills.

One hundred four students elaborated on why they were or were not motivated to learn research skills. I excluded twenty-five responses from General Biology I students, which yielded seventy-nine analyzed responses. Table 1.2 lists the broad categories that I identified from students' responses and the numbers of students whose responses fit into those categories. The table also shows which of those categories are related to intrinsic or extrinsic motivation. Most of the reasons students gave are based upon extrinsic motivations, such as accomplishing a general or specific goal. Of those students who were motivated to learn research skills, students cited academic reasons most frequently (thirty times). Specific motivations they mentioned (in descending order) included knowing the information would help them complete the current assignment or assignments in other classes (9, or 11.4%); become better writers or improve their papers (9, or 11.4%); become well-rounded students or improve general academic success (4, or 5.1%); and improve the quality, reliability or accuracy of their work (3, or 3.8%).

Table 1.2. Reasons students gave for their motivation to learn research skills (n=79)

Categories	Number of Students
Extrinsic Motivations	
Academic (complete assignments, become better writers, general academic success)	30
To improve their research skills (make research process easier, more efficient)	14
To use beyond academic life (future use, in other parts of life, helpful)	13
To acquire information (find scholarly or credible sources, investigate a topic)	8
To use in their career	5
Intrinsic Motivations (enjoy learning, interested in session content)	3
Related to Emotions (minimize frustration, improve confidence)	2

Examples of students' responses follow:

- Student 1: "I know that as I continue in college im [sic] going to have to do a lot of research papers, so learning to use it now will help me later on."
- Student 2: "It will help me write accurate pappers [sic] during my education."
- Student 3: "I believe that education is about learning through your exploration and experience of the material ...so learning how to research from reputable sources is very important to begin the process of actively learning."
- Student 4: "It is a crucial [sic] skill for academic success."

The second most frequent explanation students gave about being motivated to learn how to research was to simply improve upon their skills. Fourteen students (17.7 percent) wrote about this idea. Five students wanted to learn how to make the research process easier, four students mentioned wanting to know how to research or improve upon skills they already had, two mentioned making research more efficient or quicker, and two noted the influence of technology in research. One student discussed organizing information. Examples of students' comments follow:

- Student 5: "The more I learn about research the easier it will be to find and use information for classes and projects."
- Student 6: "I have some skills already. But I would like to improve them."
- Student 7: "i [sic] want to learn how to do better reaserch [sic] and have my reaserch [sic] be more centralized and simple."
- Student 8: "I feel motivated because technology is always changing and it is important to keep up with the changes."

The third most frequent category included broader reasons students were motivated. Thirteen responses (16.5 percent) related to this category. Seven students mentioned future use (unspecified) of the information they learned, four students thought it would be helpful in all or other parts of life, and two students thought it was helpful or necessary but did not elaborate on that belief. Five students were motivated to learn because of their career goals. Examples of these types of statements follow:

- Student 9: "Because I will be participating in a lot of research over the years."
- Student 10: "I am interested in learning skills so I can apply them to doing research papers for future classes and my own interests."
- Student 11: "I am majoring in nursing (ie. [sic] the medical field) and feel this information will be important."

Eight students (10.1 percent) wrote about their motivation in terms of acquiring information. Three students wanted to find the best or scholarly

Table 1.3. Students' Source of Motivation and Preferences for Instruction Techniques (n=88)

Paired Statements	% Students
The instructor is primarily responsible for motivating me to learn course material.	14.8%
I am primarily responsible for motivating myself to learn course material.	85.2%
The instructor's enthusiasm about a topic makes me want to learn more about that topic.	90.9%
The instructor's enthusiasm about a topic does not affect my desire to learn more about that topic.	9.1%
I prefer to have opportunities to interact with the instructor during class (e.g., ask and respond to questions, get one-on-one help).	89.8%
I prefer to have minimal interactions with the instructor during class.	10.2%
When the instructor asks students questions in class, my interest in the material generally increases.	84.1%
When the instructor asks students questions in class, my interest in the material generally decreases.	15.9%
When I answer a question in class I prefer that the instructor provides immediate feedback to me.	96.6%
When I answer a question in class I do not want immediate feedback from the instructor.	3.4%
I prefer to have choices about how I learn in class (such as developing my own learning goals or being offered multiple ways to complete an assignment).	55.7%
I prefer that the instructor develop one clear way that we are to complete the learning in class.	44.3%
I like to see how the material I am learning can be applied to solve problems.	93.2%
I prefer more theoretical, abstract analyses of course concepts.	6.8%
I prefer that an instructor use a variety of teaching methods (such as lecture, demonstration, discussion, group work, video, games) during a class session.	90.9%
I prefer than an instructor use a single teaching method during a class session.	9.1%
I prefer to have hands-on practice when learning skills that involve technology, such as when learning how to use a new feature of Blackboard.	84.1%
I prefer to watch a demonstration without having hands-on practice when learning skills that involve technology.	15.9%

Table 1.3. Students' Source of Motivation and Preferences for Instruction Techniques (n=88)

I prefer that the instructor stresses collaboration and collegiality in the classroom.	83.7%
I prefer that the instructor stresses independence and competition in the classroom.	16.3%
I enjoy working with my classmates in small groups in the classroom.	62.5%
I enjoy working by myself in the classroom.	37.5%
Working with other students in the classroom helps me learn the material.	80.7%
Working with other students in the classroom does not help me learn the material.	19.3%
I prefer to be challenged when learning new material.	56.8%
I prefer to have my learning scaffolded in small steps by the instructor when learning new material.	43.2%
Feeling successful at a task keeps me motivated to learn more.	97.7%
Feeling successful at a task does not impact my motivation to learn more.	2.3%

or credible sources. Three students were motivated to find information on a specific topic (it is unclear whether for personal or academic purposes), and two students mentioned databases, search tools, or other resources in their response.

- Student 12: “It is helpful in being able to find the best resources.”
- Student 13: “Yes, knowing about the different databases and search tools is helpful.”

Finally, three students mentioned reasons that can be linked to intrinsic motivation. They responded either that they enjoyed learning about the topic or learning in general or that they were interested in the session content. In addition, two students mentioned emotions in their responses. These students wanted to either minimize their anxiety or frustration doing research or improve their confidence level.

- Student 14: “Research has become something like a treasurehunt [sic] of information.”
- Student 15: “I was concerned about finding resources for my research topic. I knew there would be a lot, but that was the point—there was a lot—but now I feel my topic is more focused and the level of anxiety has been neutralized.”

Students who indicated they were unmotivated to learn research skills shared their reasons for feeling this way. Ten responses from unmotivated students fell into six categories. Four students noted they had learned research skills in other classes or elsewhere, and two students mentioned they

were not interested in research or do not like to do research. Two students believed their basic research skills were already adequate. One student wrote that she was not motivated, in general, and another student wrote she had been frustrated by past research experiences.

Students' instructional preferences. Students' preferences for particular instruction techniques were more uniformly aligned with each other. (See table 1.3.) In most cases, 88 students responded to the questions in this section of the survey. Regarding the social aspects of learning, most students preferred to work collaboratively in the classroom. Seventy-two students (83.7 percent) favored a collaborative and collegial classroom environment over one that was competitive and emphasized independence. A smaller majority of students (55, or 62.5 percent) enjoyed working in small groups in the classroom, and 71 students (80.7 percent) believed that working with other students helped them learn material.

A strong majority of students indicated they wanted instructors who engaged with them in the classroom. Eighty students (90.9 percent) thought an instructor's enthusiasm provoked their learning about a topic, and most students (79, or 89.8 percent) wanted opportunities to interact with the instructor during class. They generally agreed (74, or 84.1 percent) that their interest in materials increased when an instructor asked questions, and almost all students (85, or 96.6 percent) wanted immediate feedback from an instructor after answering a question.

Almost all students (86, or 97.7 percent) agreed that feeling successful at completing a task motivated them to want to learn more. However, students were more evenly split in their attitudes about choices in learning activities and level of challenge when learning new material. Most students (49, or 55.7 percent) preferred to have flexibility in the way they learned and completed assignments, but many (39, or 44.3 percent) wanted the instructor to develop one clear path for learning. In a similar split, most students (50, or 56.8 percent) liked to be challenged when learning, but 38 students (43.2 percent) desired learning to be scaffolded in small steps. These disparate attitudes underscore the challenge of meeting all student preferences and differentiating instruction for various skill levels through learning activities and assignments.

Discussion

I embarked on this project to assess students' motivations regarding research and to determine whether teaching methods that Keller³³ and Jacobson and Xu³⁴ have promoted as motivational are appealing to undergraduate students. The results from my survey of CU students cannot be generalized because I used non-random convenience sampling. However, the findings provide some evidence about

undergraduates' attitudes about learning research skills and preferred pedagogies and shed light on how librarians might approach ARCS-designed library sessions. In the following sections, I remark on students' motivation, in general, and then I highlight issues librarians might consider when planning their information literacy sessions and suggest strategies for addressing each of the four ARCS components to improve student motivation.

Assessing students' motivation

It was surprising how many students indicated they were *interested* in learning research skills and that almost 86 percent of students were *motivated* to learn research skills. The high numbers could be because many of the students I surveyed were freshmen. Perhaps their motivation was due to their newness to college and recognition that their academic habits needed to change. Head found in her study of freshmen students that many in this group discovered their high school research skills were insufficient for the rigors of college.³⁵ In contrast, one group of students I surveyed was enrolled in a senior thesis preparation class, and those students could have been motivated by their anxiety related to beginning a long-term, extensive research project. Students in "high stakes" situations, such as those who have a significant project to complete or those students who are new to the library, are probably more motivated to learn. The timing of the sessions may have been a factor as well. I worked with faculty to schedule the sessions close to when faculty introduced a research assignment or expected most students to begin their research. Thus, many students may have readily perceived the sessions' relevance to them.

Moreover, it was surprising that more than 85 percent of students felt personally responsible for being motivated to learn in their courses. In a study of college student interest and boredom during instruction, Small, Dodge, and Jiang found that students identified their instructors as primarily being responsible for their interest or lack of interest in learning.³⁶ While the survey question I included in this study is slightly different, it indicates CU students surveyed generally believed the opposite: that they (themselves) were responsible for motivating themselves to learn course material.

These results are encouraging and suggest librarians might not need to be so intentional about using motivational strategies, but it is unrealistic to expect every group of students will be generally motivated to learn about research. Even seasoned librarian instructors experience classes with low participation and a lack of apparent student interest. Thus, librarians should design instruction infused with motivational strategies to proactively address motivational deficits that students may have when they arrive to class.

Keller emphasized that the key to effective implementation of the ARCS model is to know the motivational characteristics of one's audience so one may create concrete motivation objectives.³⁷ It may not be practical to survey

student attitudes in every instruction setting, and students would probably experience survey fatigue as a result. But librarians should consider assessing students about their motivation regularly to create appealing sessions for different groups of students. Librarians might use the following methods to determine audience characteristics:

- Reflect on past experiences with similar groups of students (e.g., year in school, students in a particular class or major), either in instructional settings or one-on-one interactions. When did students seem to be motivated? What factors seemed to impact their motivation?
- Ask your office of institutional research whether they have any data from institution-wide surveys related to students' attitudes about academics, the library, or motivation in general.
- If your library conducts a regular user experience survey, add a question about students' interest in learning research skills.
- Before a session, work with faculty to administer a brief survey about levels of motivation and reasons for being motivated, or question faculty about student characteristics and class dynamics to determine what pedagogies might work best with the group and if they have a sense of students' preferred learning styles.
- Administer a brief survey at the beginning of class that asks if and why students are motivated (may require on-the-fly adjustment of instruction plans!).

Intrinsic motivation

The fact that so few students I surveyed in this study indicated they were intrinsically motivated to learn research skills suggests librarians need to inject interesting and enjoyable elements into all sessions. In the following ARCS sections, I describe a few ways to boost students' intrinsic motivation by engaging students' curiosity and giving them personal control over learning. In addition, using humor and telling stories about serendipitous research discoveries in the real world can reveal fun and unexpected aspects of conducting research. Games that teach IL skills may work best with younger students, and librarians should consider audience characteristics when deciding whether to use games. Books and articles are available that help librarians gamify their sessions, including *Let the Games Begin! Engaging Students with Field-tested Interactive Information Literacy Instruction*.³⁸

Attention

Keller asserted that getting and sustaining learners' attention is critical to successful instruction.³⁹ Tactics Keller promotes are based on stimulating students' curiosity, through either perceptual arousal (increasing interest) or

inquiry arousal (encouraging an attitude of inquiry).⁴⁰ Instructional strategies he suggested include using humor, questioning learners, sharing personal or human interest examples, challenging learners' thinking, introducing a paradox, and using analogies.⁴¹ Curiosity is another critical component of intrinsic motivation; thus, using curiosity-building strategies effectively will improve engagement and could lead to deeper learning.

A strong majority of undergraduates I surveyed in this study indicated they preferred instructors who use strategies that fall into Keller's attention category. They felt compelled to learn when instructors express enthusiasm about course content, provide opportunities for interactions with them and provide immediate feedback, ask questions, and use a variety of teaching methods. My research results echo findings from Latham and Gross's⁴² research on students' preferred pedagogies.

Students in this study and in Latham and Gross's⁴³ study desired interacting with faculty regularly in class. My survey did not include specific questions about the quality of those desired interactions, such as an instructor's friendliness or other behaviors. Regardless, one simple way librarians can increase motivation is to exhibit behaviors that foster a welcoming learning environment. Mehrabian described "immediacy behaviors" people demonstrate that communicate warmth and a desire for closeness to others.⁴⁴ Examples of such behaviors, that are also attention strategies, are moving around the classroom, using vocal variety, calling on students by name, smiling, and making eye contact.⁴⁵ Kelley and Gorham's experimental study of undergraduate students showed that teacher immediacy improves cognitive learning and creates perceptual arousal, such as attentional focus, recall, and enhanced memory.⁴⁶ In addition, Christophel, in her study of graduate and undergraduate students in various classroom settings, found that immediacy has a positive impact on "all levels of learning."⁴⁷ Jacobson and Xu, in their recommendations for instruction librarians, promoted using immediacy strategies as well to increase motivation.⁴⁸ Librarians who would like additional tips about modifying their classroom behaviors might consult Artman, Sundquist, and Dechow's book *The Craft of Librarian Instruction: Using Acting Techniques to Create Your Teaching Presence*.⁴⁹ In it, the authors offer methods for enlivening sessions, connecting with students, and keeping their attention.

Because CU students indicated they want instruction with pedagogical variety, I have increased the number of strategies I use during a session. My sessions typically begin with using a comic, graphic, or quick quiz that relates to the session's content, a brief introduction of the session's activities, a hands-on activity that relates to the assignment, time for sharing findings in a plenary discussion, and a wrap-up activity, such as a minute paper. Examples of specific inquiry arousal strategies I have used to gain and keep students' attention follow:

- Begin a session asking students a “big picture” question, such as, “Is information power? Why or why not?”
- Share authentic examples of a professional’s information-seeking behavior with students going into that field (such as nursing) and ask them to critique those strategies.
- Use creative media, the “Open Access Explained” video (<https://www.youtube.com/watch?v=L5rVH1KGBCY>), with students that describe a real-world information need and ask them to analyze the economic issues surrounding publication.

I have not formally assessed the effectiveness of using each of these strategies, but informal feedback from students has been positive, and student engagement is typically high in sessions I have designed using these strategies.

Relevance

No amount of motivational instruction techniques will motivate students to learn if they do not understand how the content of the lesson meets their needs. Gorham and Millette found that relevance was of primary importance to college students in influencing their motivation in classes.⁵⁰ Librarians should avoid teaching general orientation sessions, where students do not have an immediate need for the information shared. A strong majority of students surveyed in this study reported feeling motivated to learn research skills because they recognized learning about research would help them complete or do well on their coursework. Thus, spending much time convincing students of its importance related to their assignments may not be necessary.

Klentzin found that 33 percent of freshmen students surveyed were extrinsically motivated to conduct research, and 49 percent of students valued research solely based on whether the topic resonated with them.⁵¹ Because of students’ focus on extrinsic motivators, librarians must match session content with a course assignment. Students may have difficulty connecting library information to their academic work when it is not presented in the context of an assignment. This is not to say librarians should only focus on an assignment, but it should be apparent to students the session will help them advance their work. Fewer students in my study saw the applicability of learning research skills to life outside of academics, which means librarians might consider making more explicit connections between academic research and a broader life context. I reflect on ways librarians can help students make these broader connections later in this chapter.

Students judge a session’s relevance based on both its content and pedagogy. Librarians can create motivating instruction and demonstrate its value by using group activities that tap into many students’ psychological needs for social affiliation (or relatedness). Most students surveyed in this study indi-

cated they enjoyed working with classmates in the classroom. An even larger majority thought working with other students helped them learn and preferred a collaborative and collegial classroom environment over one focused on competition and independence. However, librarians might give students choices about working individually or in a group; not every student enjoys working with classmates.

Jacobson and Xu recommended cooperative learning, a type of group activity where students learn from one another and are held accountable for teaching material to the entire class.⁵² Loo, in his study of team-based activities in IL sessions for chemistry students, found that using collaborative learning engaged students (albeit different classes exhibited different levels of engagement) and required them to grapple with content and use metacognitive abilities, such as time and process management.⁵³ Teaching this way had the added benefit of providing opportunities for one-on-one instructor-student interactions and direct observation and evaluation of students' learning.⁵⁴ Drawbacks are that team learning activities require significant time to plan and may require more class time than a typical hour-long IL session.

I have used a cooperative learning activity successfully in two-hour biology classes (some of which I surveyed for this project), where students teach their classmates about scholarly communication in the sciences. The activity has been popular with students and they seem to take pride in being responsible for teaching about a particular topic and sharing their knowledge with other students. Giving students agency or control is one way to meet students' needs for autonomy and increase intrinsic motivation.⁵⁵ Hands-on, active learning provides an opportunity for students to direct their learning, and more than 84 percent of the students I surveyed preferred hands-on practice when learning technology-related skills, in particular.

The majority of students in this study liked to see how the material they are learning can be used to solve problems, so practical examples grounded in real-world case studies would likely appeal to them. Roberts⁵⁶ used the ARCS model to create problem-based learning scenarios and taught research sessions using freely available resources that students could use after college with the intent of encouraging the transfer of their research skills to non-academic contexts. Students in her study reported they would use research skills covered in the session to solve information problems in their everyday lives.⁵⁷ They could perceive the relevance of the sessions beyond their academic coursework.

Hoyer⁵⁸ recognized the importance of social context in IL and noted it is not enough for librarians to teach skills that will only help students succeed in an academic environment since most students will not have careers in academia. She suggested a more discipline-focused approach to IL instruction and that social connections and networking were more relevant to informa-

tion seeking in the workplace.⁵⁹ Librarians need to consider how the realities of information seeking in work environments might impact their instruction and bridge academic literacies with other areas of life. Even though many students already seem to believe learning research skills will help them in the future, librarians can emphasize the value employers place on finding and using information.⁶⁰ Librarians might connect specific critical-thinking skills they teach, such as evaluating sources of information, with workplace values, such as maintaining credibility. Librarians need to share explicit examples with students that demonstrate developing their research skills will not only help them find information at libraries but learn to navigate the “information ecosystem in which all of us work and live.”⁶¹

None of my research questions focused on students’ desire for instruction that links to their personal experiences, but Keller asserted that connecting information with students’ personal experiences or interests and infusing popular culture are ways to hook them into a session.⁶² In Muddiman and Frymier’s study, students indicated they were cued to instructions’ relevance when their faculty used those particular strategies.⁶³ Students should be able to connect information seeking and IL concepts to themselves, personally. Using the familiar in instruction, such as connecting with students’ prior learning, using analogies and metaphors, and common experiences, is a relevance strategy.⁶⁴

Confidence

Confidence and anxiety are elements of the affective piece of learning and have been prominent topics in the library literature since Mellon’s seminal research on students’ feelings about academic libraries⁶⁵ and Kuhlthau’s work on the Information Search Process.⁶⁶ Without confidence, students may not persist at a task. However, using ARCS strategies to address students’ confidence in learning research skills must be done in a thoughtful way. Gustavson and Nall⁶⁷ and Latham and Gross⁶⁸ have noted that students tend to be overconfident in their information literacy skills, so librarians must be careful about how they bolster students’ confidence.

My research was inconclusive about the nature of students’ confidence and anxiety during a library session; to most effectively plan the confidence piece, it would be best for a librarian to measure students’ confidence in advance of the session. More detailed information than that provided in my study is needed to understand students’ confidence and anxiety levels regarding their research assignments to develop effective instructional interventions. In this study, most students were confident in their research abilities to complete their assignment, but almost 30 percent of students reported being anxious about doing the assignment. Were students anxious about aspects of the assignment that were unrelated to the library, such as their writing ability

or the difficulty of the project? Regardless, library anxiety is a known phenomenon of which librarians should be aware, and using humor (an attention strategy) may be an antidote to help lessen students' anxiety during a session.⁶⁹ Polger and Sheidlower's research on instructional strategies librarians use to engage students in the classroom showed that most teaching librarians they surveyed use humor intentionally and felt it was effective.⁷⁰

One way librarians could more accurately assess research confidence is to administer paired quiz questions that ask students to first answer a skill or knowledge question and then a question that asks them to reflect on their confidence regarding that specific research knowledge or skill (called an implicit-confidence test).⁷¹ Ideally, a librarian would partner with the course instructor to administer this type of survey before the session. If the results indicate students are generally overconfident, librarians will need to be more thoughtful about how they reinforce students' confidence during a session. Moreover, an implicit-confidence test is a method librarians can use to help students become self-reflective and recognize when they might be overconfident about their skills in a particular area. Librarians might openly discuss with students how such tests can reveal flawed thinking and how overconfidence can hinder learning. Working with students one-on-one to discover gaps in knowledge and providing corrective feedback might be the most effective strategy and helps preserve students' egos.

Librarians need to incorporate self-reflection activities and expose the affective impacts of conducting research so students can overcome potential barriers to learning. For example, in order to decrease their anxiety, it might be helpful for librarians to share that feelings of frustration and confusion are common during the early stages of research. Librarians can help students tolerate and persist through the ambiguities of the research process. College students' beliefs about intelligence can be influenced, and students who believe intelligence is malleable are more likely to take on challenges in learning.⁷² Thus, librarians should communicate an expectation that students will succeed and connect students' personal efforts, rather than innate intelligence, with success. By addressing these issues, librarians will help learners "value persistence, adaptability, and flexibility and recognize that ambiguity can benefit the research process."⁷³

Addressing the affective side of research may be particularly important when librarians instruct millennial students (now in their twenties and early thirties); research shows millennials tend to fear ambiguity,⁷⁴ which typifies the first stages of research.⁷⁵ Cahoy and Schroeder developed a model, including worksheets based on Mellon's library anxiety model, for incorporating affective learning outcomes into library instruction.⁷⁶ Their model gives librarians strategies to help them "discover, articulate, and address students' self-efficacy, motivation, emotions and attitudes."⁷⁷ I plan to investigate its effectiveness when used in one-shot sessions.

To help students develop feelings of confidence, Keller stated that instructors need to provide the following pieces in their instruction: requirements for learning, opportunities for success, and personal control.⁷⁸ Opportunities for success and personal control correlate specifically with Ryan and Deci's self-determination theory, which suggests that intrinsic motivation is partially based on individuals' needs for competence and autonomy.⁷⁹ Learning requirements help students "develop realistic expectations for success"⁸⁰ and include a clear description of objectives, outcomes, or goals, and criteria that will be used to evaluate students' work. When librarians state clear goals and evaluation criteria, they may help keep students' overconfidence in check. Librarians should specify learning expectations and give students an overview of the plan for the session's activities that includes goals. Having students develop their own learning goals will increase their autonomy and buy-in during a session.

Keller promoted using hands-on activities that challenge at an appropriate level so students develop feelings of achievement or competence.⁸¹ Jacobson and Xu also encouraged librarians to help learners develop confidence by giving them active, hands-on activities tailored to their skill level and by exhibiting positive teacher behaviors, such as encouraging participation, using praise, and responding to students' errors tactfully.⁸² Polger and Sheidlower found in their survey of librarians that they rated hands-on experiences for students as the most effective engagement technique.⁸³ Hands-on activities may appeal to millennial students because of their "proclivity for exploration and discovery,"⁸⁴ and students in my study preferred hands-on practice when learning technology-related skills. Interestingly, just under 57 percent of students I surveyed liked to be challenged when learning new material, so librarians might need to be vigilant about monitoring students' skills and planning appropriately leveled and scaffolded instruction. Small suggested librarians give a periodic review or summary of content and adjust the difficulty of instruction to students' abilities.⁸⁵

Librarians can provide the following opportunities for personal control:

- Give students time to search for sources on their topics independently and accomplish assignment-related goals in class.
- Create opportunities for autonomy with boundaries and clear expectations so they understand how to achieve their objectives or learning goals (to lessen ambiguity).
- Give learners positive, immediate, and meaningful feedback, which acknowledges their efforts. Feedback can help a student whose response is not quite accurate to come to a correct conclusion and bolster their feelings of efficacy.⁸⁶

To help students build upon their existing search habits, librarians should model their own search strategies and narrate their behavior to make

explicit their decision-making processes, such as those used to select a search tool, brainstorm keywords, construct a search phrase, and refine searches. Acknowledging barriers to searching and showing students how to overcome those barriers helps them internalize the idea that initial search attempts do not always produce the desired results, and mental flexibility and persistence are required for success.⁸⁷ Teaching students how to deal with challenges is a strategy that falls within Keller's description of personal control.⁸⁸ If librarians model their techniques effectively, students will see that success is directly connected to their efforts and ability to use more nuanced search strategies.

Satisfaction

Satisfaction, an affective component of motivation, relates to students' positive feelings about a learning experience and their desire to keep learning.⁸⁹ Keller identified the following concepts as central to learners' satisfaction: intrinsic reinforcement, extrinsic rewards, and equity.⁹⁰ Students will most likely feel satisfied if they recognize the skills or knowledge they are acquiring can be applied to achieve their academic goals (extrinsic rewards). Perhaps the most obvious way to fulfill "natural consequences," where students can implement learning in a meaningful way,⁹¹ is to help them *progress* on their assignment. To indicate progress, librarians might use the following strategies in a session:

- Provide worksheets on which students can document keyword term selection for database searching, strategies for overcoming research roadblocks, ways of using sources in a paper, or a timeline of research goals for a long-term project.
- Ask students to email themselves search results or create a database account with saved searches or results.⁹²
- Provide students with a written checklist of learning goals they can mark so they have a sense of what they have accomplished by the end of a class.
- Provide a handout that reinforces a session's content.

Even small indications of accomplishment might be effective. Giving students the opportunity to demonstrate their learning to other students by sharing the results of their group activities or individual work with the entire class provides an extrinsic reward.⁹³ This might be done more formally in a presentation format or through short voluntary reports to the group.

To encourage deeper reflection, at the end of a session, librarians might have students describe how instruction has helped them with an assignment, will help them in the future, or how their behavior might change as a result of learning. Roberts used the following self-reflective questions in her study to determine how students perceived a session's relevance, but asking these

questions may encourage students to develop positive feelings about a session: How might you use the search strategies we talked about in your everyday life? What part of this workshop will you use outside academic work?⁹⁴

Instructors can support learners' intrinsic enjoyment of an instruction session by giving feedback that connects students' efforts with their achievements and supports their pride in accomplishment.⁹⁵ Students crave feedback on their work, and librarians have the power to give feedback in a way that motivates. Dweck's work on types of feedback adults give to children has shown that students who are praised regarding their efforts or strategies used to approach a task expressed more of a mastery-orientation and persisted at tasks.⁹⁶ Those students with a mastery orientation tend to be optimistic about their prospects for success, work harder, and problem-solve to overcome obstacles.⁹⁷ Thus, librarians should praise students, not only for their correct responses but also for their efforts in class. Librarians should give students feedback when they do hands-on work and encourage them when they become frustrated or discouraged. Keller advised that feedback should be phrased to be informational and focused on the learner's actions versus controlling and focused on a result.⁹⁸ An example of an informational message is, "I am impressed by how you persisted in developing your search strategy." In contrast, a controlling message might be, "You applied my keyword selection technique and look at your great results!" Librarians should avoid praise that centers on traits, such as intelligence. Satisfaction relates to equity as well; instructors should strive to treat each student fairly and provide feedback that respects all learners.

Limitations of This Study

I used a student questionnaire in this study due to its ease of administration, completion, and scoring. However, self-report instruments, such as questionnaires, can result in the collection of unreliable data.⁹⁹ I asked students to rate their confidence and anxiety levels before and after library instruction at the end of the instruction session. These data may not be fully reliable because students may have had inaccurate recall of their feelings at the start of the session. In addition, the survey only measured motivation at a particular moment in time. Motivation is influenced by many factors, including mood, hunger, and fatigue, which may have impacted students' responses.

It is important to note that students' self-reported attitudes about pedagogy do not equate with observable classroom behaviors that indicate motivation, which was the focus of Small et al.'s research.¹⁰⁰ Expressed attitudes do not necessarily translate to actual behaviors, and this can result in data that is not externally valid.¹⁰¹ A more valid method of assessing motivation would

be to directly observe student behaviors in a class while they are completing research tasks. Measurement of students' effort and persistence can give an indication of motivation while learning a task.¹⁰² However, because direct observation of my own IL instruction would require the assistance of another librarian in completing this thesis project, I chose to use a questionnaire. I used non-random convenience sampling to select participants to complete the survey because I desired feedback on my own instruction. Because I selected survey and interview participants non-randomly, the results may not be generalizable to a larger population.

Conclusion

An important step in implementing Keller's ARCS motivational model is examining an audience's motivations and understanding what content and pedagogy might be relevant to the group. That step is problematic for librarians because we typically meet our students on the day instruction takes place. Regardless, librarians should attempt to better understand their students to design engaging instruction. In the study this chapter describes, I sought to perform an audience analysis on a more general level by using a survey to ask undergraduate students why they were motivated or unmotivated to learn research skills and what instructional strategies they preferred. This type of survey is just one method librarians might use, which is relatively easy to implement to assess student characteristics. In contrast, Latham and Gross chose to acquire similar information using student focus groups, which may yield more holistic information from participants.

Not surprisingly, I discovered most students were motivated to learn research skills because they wanted to succeed academically, either on their immediate research assignments or more generally. Very few students indicated they were intrinsically motivated to learn research skills. Students' selections on the instructional methods portion of the survey revealed they preferred strategies that Keller promotes as being motivational, which reinforces their potential effectiveness with that particular group.

While my survey results are not generalizable, they suggest that the various attention strategies Keller describes, such as asking questions, using a variety of instructional methods, and providing opportunities for students to interact with their instructor, would be effective. Using the immediacy behaviors described in this chapter to help build a positive rapport with students does not require extensive planning and is arguably one of the best ways instructors can help students stay engaged and have a positive attitude about learning. To demonstrate relevance, instructors should base their teaching upon students' research assignments. However, because fewer students seem

to perceive the broader relevance of learning research skills, it is important to show them (not just tell them) how those skills will benefit them both on the job and in other areas of life. Asking students to solve real-world research-based problems can help them draw that conclusion. Giving students constructive, immediate feedback, and praising them for their efforts meets their needs for efficacy and would most likely help students feel satisfied with instruction. Because most students do not seem to view doing research as inherently “fun,” it is paramount to add elements that boost students’ intrinsic motivation, such as piquing curiosity and giving them personal control over their learning—but with clear guidelines and expectations about learning outcomes. Infusing instruction with intrinsic strategies may help students focus on the task of learning, rather than extrinsic outcomes, such as completing coursework.

Additional research is needed to understand students’ anxiety in library instruction settings. The question about anxiety that I asked in this study did not reveal whether students’ anxiety was related to library research or their assignment. Because previous research has shown students tend to be over-confident about their research abilities, it would be prudent for library instructors to assess students’ skills and share with students those results so they have an accurate understanding of their abilities and needs for improvement.

The process of gathering information about one’s audience is not only useful for designing motivational instruction; it also fosters a student-centered teaching approach. Thinking about student characteristics shifts the focus from an instructor’s preferences to pedagogy that appeals to students. In addition, students pay attention when instructors ask their opinions and are more likely to feel valued and respected as individual learners, which is an effective way to build rapport with them. By keeping students’ needs at the forefront and learning about their preferences, an instructor might be encouraged to try new instructional methods that they may not have considered before. Not all of Keller’s strategies may resonate with all instructors but they provide a foundation from which one may strategically plan engaging instruction that appeals to diverse groups of learners.

Appendix 1A.

Reflection on the Library Session

1. Name of course in which library instruction took place:
2. Approximately how many librarian-taught research sessions have you attended at CU this semester (not including today's session)?
 - a. None, 1–2, 3–4, 5 or more, other (please explain).
3. Approximately how many librarian-taught research sessions at CU have you attended during the last year (not including today's session)?
 - a. None, 1–2, 3–4, 5 or more, other (please explain).
4. Rate your interest level in learning research skills today.
 - a. Very interested, interested, neither interested nor disinterested, not interested, really not interested
5. What did you like about the session?
6. Please describe how you feel the session could be improved.
7. The library session goals matched the assignment requirements.
 - a. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree
8. The library session goals were attainable during the class period.
 - a. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree
9. When you arrived to class today, what was your confidence level in being able to complete the research for your assignment on your own?
 - a. Very confident, confident, neither confident nor unsure, unsure, very unsure
10. After this session, what is your confidence level in being able to apply the information you learned to complete your assignment?
 - a. Very confident, confident, neither confident nor unsure, unsure, very unsure
11. When you arrived to class today, what was your level of anxiety regarding completing your research assignment?
 - a. Very anxious, anxious, neither anxious nor relaxed, relaxed, very relaxed
12. After the session today, what is your level of anxiety regarding completing your research assignment?
 - a. Very anxious, anxious, neither anxious nor relaxed, relaxed, very relaxed
13. Do you believe the information you learned today will help you complete your research assignment?
 - a. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree

14. Do you feel motivated to learn research skills? Why or why not?
15. Do you believe learning research skills will help you complete assignments in other classes?
 - a. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree
16. Do you believe learning research skills will help you solve problems in your life outside of school?
 - a. Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree

Student Preferences for Instructional Strategies

Please reflect on what helps foster your desire to learn during ANY classroom instruction (not just library instruction). Think of the instructor behaviors and classroom environment you prefer and select the statement with which you **most agree**.

1.
 - a. The instructor is primarily responsible for motivating me to learn course material.
 - b. I am primarily responsible for motivating myself to learn course material.
2.
 - a. The instructor's enthusiasm about a topic makes me want to learn more about that topic.
 - b. The instructor's enthusiasm about a topic **does not** affect my desire to learn more about that topic.
3.
 - a. I prefer to have opportunities to interact with the instructor during class (e.g., ask and respond to questions, get one-on-one help).
 - b. I prefer to have minimal interactions with the instructor during class.
4.
 - a. When the instructor asks students questions in class, my interest in the material generally increases.
 - b. When the instructor asks students questions in class, my interest in the material generally decreases.
5.
 - a. When I answer a question in class, I prefer that the instructor provides immediate feedback to me.
 - b. When I answer a question in class, I do not want immediate feedback from the instructor.

6.
 - a. I prefer to have choices about how I learn in class (such as developing my own learning goals or being offered multiple ways to complete an assignment).
 - b. I prefer that the instructor develop one clear way that we are to complete the learning in class.
7.
 - a. I like to see how the material I am learning can be applied to solve problems.
 - b. I prefer more theoretical, abstract analyses of course concepts.
8.
 - a. I prefer that an instructor use a variety of teaching methods (such as lecture, demonstration, discussion, group work, video, games) during a class session.
 - b. I prefer than an instructor use a single teaching method during a class session.
9.
 - a. I prefer to have hands-on practice when learning skills that involve technology, such as when learning how to use a new feature of Blackboard.
 - b. I prefer to watch a demonstration **without** having hands-on practice when learning skills that involve technology.
10.
 - a. I prefer that the instructor stresses collaboration and collegiality in the classroom.
 - b. I prefer that the instructor stresses independence and competition in the classroom.
11.
 - a. I enjoy working with my classmates in small groups in the classroom.
 - b. I enjoy working by myself in the classroom.
12.
 - a. Working with other students in the classroom helps me learn the material.
 - b. Working with other students in the classroom **does not** help me learn the material.
13.
 - a. I prefer to be challenged when learning new material.
 - b. I prefer to have my learning scaffolded in small steps by the instructor when learning new material.

14.
 - a. Feeling successful at a task keeps me motivated to learn more.
 - b. Feeling successful at a task does not impact my motivation to learn more.

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