

An Exploration of Motivational Strategies Used by Library Media Specialists During Library and Information Skills Instruction

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Research on and development of library and information skills instruction has focused more on content and student outcomes than on the presentation methods that motivate student learning. This paper describes a study that was designed to identify motivational strategies used and resulting on- and off-task behaviors of students. Results indicate that library media specialists (LMSs) use mostly attention-focusing strategies, middle school LMSs utilize more strategies than elementary LMSs, and extrinsic motivators are more common than intrinsic motivators. This study was funded by the AASL/Highsmith Research Award for innovative research. Dr. Small's proposal was selected based on the study's likely potential for impact on the field of school librarianship.

Ideally, effective library and information skills instruction not only helps students acquire the skills they need to be able to solve their information problems, but also stimulates and encourages intellectual curiosity, information-seeking, and exploration behaviors (Small 1998). Burdick (1996) emphasizes the importance of information skills instruction that develops both ability (i.e., knowledge and skills) and desire (i.e., motivation).

To date, most research on and development of instruction in this context has focused almost exclusively on content (the information problem-solving process and related skills) or student outcomes; little or no attention has been paid to presentation methods that motivate student learning. Although there has been some research on the effectiveness of specific motivational teaching methods and strategies in a classroom setting, there has been little research to date that examines the use of motivators in the unique context of library and information skills instruction. Therefore, little is known about the types and amount of motivators that appear to be most effective for stimulating students' task engagement in and enjoyment of the information search process.

Kuhlthau (1993) is one of the few researchers in the field to recognize the importance of motivation in library and information science research. However, her research (e.g., 1993) focuses on (1) the feelings and attitudes of students as they proceed through the research process and (2) more general elements of successful programs, rather than specific instructional interventions to improve student motivation, i.e., the strategies library media specialists (LMSs) use to motivate students about the research process and promote an attitude of lifelong learning.

For example, she describes the “exploration stage” of research as the most difficult for students because they encounter information that is “inconsistent and incompatible and does not match what they already know” (p. 13). Yet, others (e.g., Keller 1987; Brophy 1987) suggest that uncertainty and incongruity are useful for stimulating curiosity and interest. Techniques that reduce the level of anxiety students often experience during the research process may motivate ongoing positive feelings toward that process.

This study focuses on the LMS’s use of motivational teaching strategies during information skills instruction and resulting behaviors exhibited by students. Strategies are categorized using a well-known motivation model, Keller’s ARCS Model (1983).

The ARCS Model of Motivational Design

Although Kuhlthau (1989) and others have recommended a number of motivating instructional strategies for information skills lessons, there has been no systematic, comprehensive approach to studying the motivational aspects of library and information skills instruction. A general approach to motivation in instruction, however, has been developed by Keller (e.g., 1983, 1987). Building on the various concepts and theories that emerged from research on motivation in the workplace, Keller has designed a comprehensive model for designing motivating instruction, the ARCS Model of Motivational Design. The ARCS Model consists of four requisite components to motivating instruction: (1) gaining and sustaining [A]ttention to the instruction by stimulating curiosity and interest, (2) providing the [R]elevance (importance, value) of the learning, (3) building learners’ [C]onfidence in their abilities to succeed at the task, and (4) promoting the potential for learning [S]atisfaction. Keller breaks each of the ARCS components into three subcomponents:

- **Attention**—Perceptual Arousal, Inquiry Arousal, and Variability
- **Relevance**—Goal Orientation, Motive Matching, and Familiarity
- **Confidence**—Learning Requirements, Success Opportunities, and Personal Control; and
- **Satisfaction**—Natural Consequences, Positive Consequences, and Equity

(See appendix I for definitions of each ARCS subcomponent.) Each subcomponent suggests a wide range of motivational strategies to incorporate into instruction.

Newby (1991) found that the ARCS Model provides a useful framework for categorizing various motivational strategies used by first-year elementary classroom teachers. For example, he found a strong positive correlation between the use of relevance strategies and resulting on-task student engagement, but a negative relationship between satisfaction strategies (extrinsic motivators) and on-task behaviors. Unfortunately, his study found that relevance strategies only accounted for about 7 percent of the strategies used by first-year teachers and that the more than half of the satisfaction strategies used (more than 58 percent) were extrinsic, rather than intrinsic, motivators.

Intrinsic versus Extrinsic Motivation

Two general categories of motivational orientations have been identified in the literature (e.g., Rotter 1966; deCharms 1968; Deci 1975). Students with an intrinsic (or internal) orientation find

satisfaction from simply participating in a learning experience that stimulates curiosity and interest, promotes feelings of competence or control, and is inherently pleasurable (e.g. Brophy 1988; Butler 1988; Lepper 1988; Gottfried 1985; Harter 1981). Teachers who encourage an intrinsic orientation create challenging learning situations that allow students to have some control over their learning and that promote competence and mastery.

Students with an extrinsic orientation perform a learning task because it provides satisfaction in the form of some type of external motivator or reward (e.g., a high grade, a prize, verbal praise) that is independent of the actual activity itself and controlled by someone other than the student. Lepper (1988) found extrinsic motivators to be demotivating for anyone who is already intrinsically motivated.

Condry (1978) states that although very young children are naturally curious about their environment and intrinsically motivated to learn, as they get older their motivation relies more on extrinsic factors because of the “decontextualization” of the knowledge they are asked to acquire, i.e., “[i]nformation is presented in an abstract form, dissociated from the contexts in which it might be of obvious, everyday uses to children. Topics are presented when the schedule calls for them, not when particular children are especially interested or ‘ready’ to learn about them” (p. 74). This approach is, of course, in direct contradiction to the concept of “teaching information skills in context.” Furthermore, as children move from third to ninth grade, they become less intrinsically and more extrinsically motivated as emphasis shifts from the processes to the products of learning (Harter 1981). Studies on motivation in classroom settings indicate that students perceive their own motivations inextricably linked to the motivational quality of the instruction they receive (Small, Dodge, and Jiang 1996; Small and Gluck 1994).

Marshall (1987) found that when teachers used intrinsic motivators (i.e., tied learning success to the student’s efforts and abilities), there was a higher rate of on-task behavior and higher motivation toward the task; Newby (1991) found negative correlations between the number of extrinsic motivators teachers used and the amount of student task engagement. Some methods that promote a largely intrinsic orientation are autonomy support, helping students set reasonable learning goals for learning, and having students reinforce and monitor themselves for accomplishing steps toward their goals (Hilker 1993).

Cognitive evaluation theory (Deci 1975; Deci and Ryan 1985) identifies two types of rewards: those meant to control and those that provide meaningful information. The more the reward is controlled (e.g., “Finish this worksheet and you will be able to go to recess.”), the more the existing intrinsic motivation will decrease. The more informational the reward (e.g., “Because you have worked hard and mastered research skills . . .”), the more the reward will increase feelings of competence and self-determination and enhance existing intrinsic motivation.

Teachers who encourage an extrinsic orientation tend to (1) be more controlling and authoritative, (2) present feedback in controlling (rather than informational) manner, avoid providing students with choices in how they learn and study (Deci and Ryan 1985). Studies (e.g., Lepper, Greene, and Nisbett 1973; Lepper 1983) have shown that extrinsic rewards unrelated to the learning task, in particular, can have a detrimental effect on intrinsic motivation. Some methods that promote a largely extrinsic orientation are use of unrelated rewards, unattributed praise, and token systems (Hilker 1993).

This research study extended the work of Newby and others, exploring the range and variety of motivational strategies used by LMSs during library and information skills instruction and the resulting student behaviors. Results will be used to begin to build a prescriptive framework for designing motivating instruction in this context.

Research Questions

The main research goal was to explore the types and amount of motivational strategies used by LMSs during library and information skills instructional lessons and the effects of those strategies on student on-task engagement and exploration activities. Two research questions were explored:

1. What types of motivators (as categorized by ARCS, intrinsic versus extrinsic, and controlling versus informational) are used most and least by library media specialists?
2. What is the relationship of ARCS strategies used by LMSs during library and information skills instruction and resulting on-task and off-task student behaviors?

Subjects

Eight LMSs were recruited who regularly teach integrated library and information skills to students from grades three to eight and who had been recommended by their supervisors as having exemplary instructional programs. Criteria used for selection included:

- a minimum of three years experience,
- an established, exemplary instructional program in which library and information skills are taught as process and integrated with the curriculum, and
- program for elementary or middle school level students (third through eighth graders) at schools located in central New York State.

Methods

This exploratory study sought to identify which motivational strategies are regularly used by LMSs in their instruction, mandating repeated observations over an extended period of time. The study involved observations of the teaching episodes of eight LMSs once a week over a three-month period. A team of observers (eight graduate students at a large northeastern university) was trained by the researcher to conduct and record observation. Training entailed hearing a brief verbal overview of the study and research methods, reviewing and discussing an example of a completed observation (see appendix II), and practicing by watching a videotape of an information skills lesson and recording notes using an observation form and recommended observation methods. After the video session ended, the researcher went over notes with observers, pointing out areas of focus and techniques for capturing words, actions, and body language (tone of voice, facial expressions, etc.). At various points in the data collection, data were reviewed to assure that methods were consistent and were capturing detailed descriptions of each lesson.

During the initial meeting with their assigned LMS, each observer administered a pre-observation interview protocol (see appendix III). The protocol requested information from the

LMS about the type of school, number of students, type of community, and information about the library and information skills instructional program. Each observer then observed one randomly selected information skills lesson per LMS in its entirety each week. The observers' notetaking focused on the LMS, recording general instructions, verbal and written interactions, questioning strategies, movement, feedback, presentation methods, body language, and use of media and materials. Observers were instructed to shift their focus at approximately ten-minute intervals during the lesson to the students, recording all on-task behaviors (e.g., interacting directly with the assigned activity, responding to a question) and off-task behaviors (e.g., talking about a nonrelevant topic, staring out a window) at various points in the lesson. For the first three weeks, completed observations were reviewed by the researcher in order to confirm the observer's skill. The researcher provided electronic feedback to the observer when needed. A post-observation interview protocol (see appendix IV) was administered with the LMSs immediately following each observer's final observation.

As is typically the case in research studies, not everything proceeded as planned. For example, one of the LMSs took a new position as a library system director mid-way through the observation period. In this case, it was decided that the observer should administer the post-observation questionnaire to the first LMS and begin again with the new LMS. This decision was made because the new LMS fulfilled all of the requirements for participation and was willing to participate. The data for each of those LMSs were analyzed separately.

In addition, because of the particular instructional schedule of two LMSs, observers could not begin their formal observations until four to six weeks into the study, making it impossible to complete all twelve observations within the time limitations. Therefore, only eighty-six of the proposed ninety-six observations were completed. Immediately after completing the final observation, each observer administered the post-observation interview protocol, requiring LMSs to describe their teaching philosophy, their library and information skills instructional program, their pre-service training in instructional planning and teaching methods, and their preferred teaching strategies.

Following the completion of all data collection, each narrative was individually reviewed by the researcher and motivational strategies were identified. All motivational strategies for each site were then prepared for coding. The researcher met with the two independent raters to train them in coding the parsed data. Using a set of guidelines (see appendix III), data were coded according to each of the ARCS motivation components and subcomponents. In addition, all satisfaction strategies were categorized as either intrinsic or extrinsic. After coding one lesson, the researcher again met with the raters to review procedures and resolve conflicts, where possible. When coding was completed, content and statistical analyses of coded data and interview responses were conducted.

Results

Both qualitative and quantitative data were gathered and analyzed. Pre- and post-observation interviews provided information about the school setting and the individual teaching philosophy and background of each LMS. Observation summaries documented LMS actions and statements during each teaching episode and observations of student behaviors during those episodes.

Pre-Observation Interviews

The pre-observation interviews provided demographic data about the research sites. Nine LMSs at eight schools were observed for a total of eighty-six completed observations. The schools represented a cross-section of schools by type, grade level, location, and size. Seven schools were public schools while one school was a nonresidential, secular private school. Four of the schools were elementary schools, three were middle schools, and one was a K–12 school. Two schools were located within an urban school district (one mid-size city, one small city), four in suburban districts, and two in rural districts. Student populations ranged from 270 to 890, with an average of 620 students per school.

The years of professional service of the LMSs observed ranged from three to twenty-one, with an average of ten years. Three of the LMSs indicated they had flexible scheduling, while six indicated they used a combination flexible-fixed scheduled program. None had totally fixed scheduled classes. When asked how often they met with teachers to plan instruction, three indicated an average of one to three times per week while six revealed meeting with teachers four or more times a week.

A total of eighty-six narratives were completed. Two narratives were eliminated from analysis because their content (e.g., a storytelling session) or grade level (grade 2) were not appropriate to the focus of this study, leaving eighty-four lesson observations for analysis. The number of students per lesson ranged from seven to thirty-two with an average of nineteen students per lesson. The shortest lesson lasted eight minutes and the longest lesson lasted seventy minutes, with an average length of twenty-nine minutes for all lessons. Table 1 contains summary data for each site.

Table 1. No. Observations, Mean No. of Students, and Mean Lesson Length Per Lesson for Each Observation Site

Site	No. of Obs.	Mean No. Students per Lesson	Mean No. Mins per Lesson
LMS#1	12	19.67	25.90
LMS#2	12	23.75	26.08
LMS#3	6	16.67	37.00
LMS#3A	4	20.25	33.25
LMS#4	12	22.92	18.58
LMS#5	12	17.58	30.83
LMS#6	12	12.40	35.40
LMS#7	5	25.40	32.50
LMS#8	9	14.43	31.67

Grades ranged from third to eighth, including some combination classes (two grades together). The greatest number of observations occurred at the fourth and seventh grade levels (see table 2). There were forty observations at the elementary level and forty-four at the middle school level on a wide range of lesson topics. Examples of lesson topics (titles were assigned by observer) included “Researching Indian Tribes,” “Information Sources for Health Research Projects,” “Using the Online Catalog to Locate Books,” “Searching the Web,” “Overview of The Big Six Study Skills,” “Keyword Searching,” “Listening/ Presentation Skills,” and “Resources for a First Aid Project.”

Table 2. Number of Observations per Grade Level

Grade Level	No. of Observations
2/3	3
3	1
3/4	6
4	18
4/5	4
5	7
5/6	1
6	13
7	19
7/8	1
8	11

By reviewing the eighty-four sets of observation notes, the researcher identified all strategies that could be categorized as motivational. This yielded a total of 2,026 motivation strategies, averaging 225 strategies per site and 24 strategies per lesson. Two independent raters were trained to classify each strategy according to ARCS categories and subcategories (see appendix V). Interrater reliability was calculated at .98. Data comparisons were conducted using descriptive statistics and ANOVA (for repeated measures).

Research Question 1: What types of motivators (as categorized by ARCS, intrinsic versus extrinsic, and controlling versus informational) are used most and least by library media specialists?

Of the 2,026 motivational strategies implemented overall, LMSs used attention strategies more than three times as often as relevance, confidence, and satisfaction strategies (see table 3). A comparison of means by strategy type indicates there were significantly more attention-focusing strategies than all other types ($F=26.53$; $df=3.35$; $p < .0001$). There were no differences in the number of relevance, confidence, and satisfaction strategies used overall.

Table 3. Total, Mean and Percentage of Motivation Strategies by ARCS Category

Strategy Type	No. of Strategies	% of Strategies	Mean
Attention	1,136	56	142.00
Relevance	331	16	41.38
Confidence	299	15	37.38
Satisfaction	260	13	32.50
Total	2,026	100	506.50

A variety of examples for each type of strategy, taken directly from the data, appear in figure 1.

Figure 1. Examples of ARCS Strategies from the Data

Attention

- Pulls out a large poster with a pizza divided into sections for the Big Six.
- Holding up the Dictionary of Inventors, says, “You have to be dead to be in here!”
- “OK, eyes on me. When I say ‘eyes on me’, I want you to turn your head around like an owl to look at me.”
- “Research is fun because you get to be a detective.”
- Let’s plan a pretend game. Let’s say these are my keys (holds up key set) and this one is for my 1962 white Corvette. I am going to give the key to Johnny. My car is in the parking garage and you may use the car until 3:30. The problem is, the garage has 26 floors and 100 spaces per floor.”

Relevance

- “You’re working on the Middle Ages, right? Well, we’re going to continue the Middle Ages in here.”
- “Some of you will apply to be library workers next year and you must know how to do this.”
- “Today we will create a mind map to help you achieve the goals you identified for your language arts class.”
- “We have had some experience with computers last year, but this year we are going to learn a new word for it, OPAC.”
- “It’s like learning to swim. We’re starting to teach you early in small steps.

Confidence

- LMS states if students can’t find anything on their topic, they should see her (LMS) and she will help them use ROM CAT.
- “You’re awesome, Eric. You’re ready to type.”
- LMS reviews key element examples of searches.
- LMS continues to circulate and assist students.

- LMS repeats the student’s answer in a slightly different way, attempting for all students to understand the concept.

Satisfaction

- Tells students that every time they accomplish one of the items, the LMS will give them an A (Apprentice); when they’ve done it more, they’ll be a J (Journeyman).
- When they finish, LMS raises her fist joyously in the air.”Yes! You’re very good for the first time!”
- “I’m so proud of you—you guys are working so hard!”
- “In each of the bags there are two Starbursts . . . If we get through this exercise successfully, you can have them.”
- “Kristen had an excellent question.”

The range of total strategies used by each LMS was 68 to 418 with a mean range per lesson of 5.67 to 34.83. An analysis by site also revealed that attention strategies were the main type used by every LMS, with some differences in the next most frequently used type of strategy (see table 4).

Table 4. Number and Share of Strategies Used, Total, and Mean, by Observation Site

Site (no. obs.)	Strategy				Total	Mean
	Attention	Relevance	Confidence	Satisfaction		
LMS #1 (12)	277 (66%)	71 (17%)	30 (7%)	40 (10%)	418	34.83
LMS #2 (12)	184 (55%)	60 (18%)	55 (17%)	32 (10%)	331	27.58
LMS #3 (6)	56 (46%)	9 (7%)	35 (29%)	22 (18%)	122	20.33
LMS #3A (4)	40 (59%)	9 (13%)	13 (19%)	6 (9%)	68	17.00
LMS #4 (12)	141 (63%)	26 (12%)	25 (11%)	31 (14%)	223	18.58
LMS #5 (12)	123 (51%)	28 (12%)	35 (15%)	53 (22%)	239	19.92
LMS #6 (12)	186 (51%)	70 (19%)	61 (17%)	49 (13%)	366	30.50
LMS #7 (5)	44 (49%)	23 (26%)	10 (11%)	13 (14%)	90	18.00
LMS #8 (10)	85 (50%)	35 (21%)	35 (21%)	14 (8%)	169	16.60

A comparison of means between the elementary (LMS #4, 5, 7, 8) and middle school programs (LMS #1, 2, 3, 3A) was conducted. Each of the K–12 lessons was categorized as elementary (grades 3 to 5) and middle (grades 6 to 8) and included with the corresponding group. Results indicated that middle school LMSs used more attention, relevance, confidence, and total motivation strategies while elementary LMSs used more satisfaction strategies (see table 5). However, the small number of subjects prohibited statistical analysis.

Table 5. Mean Number of Strategies Used by Elementary and Middle School LMSs

	Attention	Relevance	Confidence	Satisfaction	Total
Elementary	11.11	3.40	2.87	3.23	20.61

Middle	16.11	4.61	4.45	2.84	28.01
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Because four of the LMSs (#2, 5, 6, 7) had taken graduate courses in which the ARCS Model was presented with the primary researcher, a comparison of means was conducted to determine bias. Analysis revealed slightly more motivation strategies used by those four (24.00) than the other five LMSs (21.53) who had not been exposed. However, since the goal of this study was to determine what overall types and amount of strategies were used rather than a comparison of individual LMSs, differences were not considered relevant.

A closer look at the attention strategies by each of its subcomponents revealed that over one-half of those used were inquiry arousal strategies; i.e., questioning and problem-posing strategies (see table 6). About one-quarter of the strategies were perceptual arousal (e.g., novelty, humor, enthusiasm), and one-quarter were variability strategies (e.g., variations in media, grouping of students, methods).

Table 6. Total Number, Mean, and Percentage of Strategies in Attention Subcategories

ARCS Subcategory	# Strategies	Mean	%
Perceptual Arousal	287	31.89	25
Inquiry Arousal	581	64.56	51
Variability	268	29.78	24

The 260 satisfaction strategies were categorized into two types of motivators: intrinsic motivators (those tying learning success to effort and ability) and extrinsic motivators (rewards and punishments not connected directly to learning goals) was performed. Results indicate that LMSs use significantly more rewards than punishments (see table 7). Additional analysis on the extrinsic motivators revealed that 90 percent were informational in nature (e.g., “Great! You seem to really remember how to do a bibliography”), as compared to only 10 percent controlling [“I’m going to tell Mrs. B (classroom teacher) you get something from her candy jar”].

Table 7. Total Number and Percentage of Intrinsic and Extrinsic (Controlling and Informational) Motivators

Satisfaction Strategies	Total no.	%
Intrinsic Motivators	4	2
Extrinsic Motivators	256	98
Controlling	26	10
Informational	230	90

Research Question #2: What is the relationship of ARCS strategies used by LMSs during library and information skills instruction and resulting on-task and off-task student behaviors?

A total of 225 student behaviors were recorded at approximately ten-minute intervals throughout each observation. Student behaviors were defined as those of all or most of the group or class being taught rather than of individual students. Each recorded behavior was then categorized as either on-task (in direct response to the instruction) or off-task (unrelated to the instruction). Analysis revealed few (38, 17 percent) of students behaviors were off-task; the vast majority (187, 83 percent) were considered on-task behaviors.

Examples of on-task behaviors exhibited are raising hands in response to questions, asking questions, and taking notes; examples from the data of off-task behaviors are yawning, talking among themselves, and fidgeting. The researcher mapped each behavior to the closest motivation strategy employed preceding the behavior, as shown in table 8. The proportion of on-task behaviors for each ARCS component roughly parallels the total percentages of ARCS strategies used by LMSs as represented in table 3; therefore, the high number of on-task behaviors resulting from attention strategies may be the direct result of the high overall number of attention strategies used by LMSs.

Table 8. Number and Percentage of On-Task and Off-Task Student Behaviors by ARCS Component

	On-Task Behaviors		Off-Task Behaviors	
	No.	%	No.	%
Attention	120	64	21	55
Relevance	30	16	12	32
Confidence	19	10	1	3
Satisfaction	18	10	4	11

Because more than one-half of all student behaviors were linked to attention strategies, an analysis by attention subcomponents (perceptual arousal, inquiry arousal, variability) was performed in an attempt to more precisely determine the nature of the strategy that precipitated the behavior (see table 9). Perceptual arousal is defined as a sudden or unexpected change in the environment, such as incongruity, novelty, mystery, or surprise. Perceptual arousal also may be achieved through the use of humor, examples, mnemonics, or through the instructor's enthusiasm, often demonstrated through voice and gesture. Inquiry arousal is defined as "creating a problem situation which can be resolved only by knowledge-seeking behavior"; it is achieved through such strategies as questioning, presenting a problem-solving situation, or providing a thinking challenge such as a paradox. Variability is defined as divergent ways of presenting information and stimulating learning. Variability can include variation in instructional pace, method or medium, change in grouping, or activities that require participation and interactivity.

Table 9. Attention Strategies On-Task and Off-Task Behaviors by ARCS Sub-Components

	On-Task Behaviors		Off-Task Behaviors	
	No.	%	No.	%
Attention	120	85	21	15
Perceptual Arousal	31	26	5	24

Inquiry Arousal	64	53	12	57
Variability	25	21	4	19

Again, results parallel the overall percentage of strategies for the attention subcomponents reflected in table 6. Of the attention strategies, inquiry-arousal strategies seemed to produce the highest percentage (more than 50 percent) of both on-task and off-task behaviors, with perceptual arousal and variability fairly evenly dividing the remaining behaviors.

It may be more useful to examine the causes of the off-task behaviors than the on-task ones when determining the circumstances under which potentially positive strategies might produce relatively negative effects. An examination of the strategies preceding the off-task behaviors in this study revealed that these negative effects often occurred when (1) there was some type of unstructured break in the lesson, such as moving from the library to the computer cluster, stopping the lesson to hand out worksheets, or focusing attention on one student's task while the others watched; (2) overusing a particular motivation strategy, such as asking multiple questions in a row or giving too many similar examples; or (3) using an appropriate strategy in an inappropriate manner, such as asking questions that will likely trigger unrelated conversations or using adult examples that young students don't comprehend.

Post-Observation Interview

A post-observation interview asked LMSs to identify the greatest influences on their instructional style. Five named an exceptional professor whose class they had taken, while four cited classroom teachers with whom they had worked. Other responses included a preservice course on instructional strategies, an inservice workshop on classroom management, and personal classroom teaching experiences. When asked to describe any preservice training in instructional design or teaching methods they had taken, six LMSs described specific courses in their Master of Library Science programs and five cited education courses. Undergraduate student teaching was named by three LMSs, while three mentioned presentations or workshops that had made an impact. One LMS mentioned her graduate internship experience.

LMSs were asked to describe their personal teaching philosophy, and their statements were subsequently categorized by the ARCS component that each statement reflected (see figure 2). Most statements were relevance-related statements. There were no satisfaction statements.

Figure 2. LMS Statements on Personal Teaching Philosophy.

Attention

- “Curriculum, interest connections, and lots of hands on experience.” (LMS #4)
- “Keep it simple. Let the kids do what they're interested in.” (LMS #8)

Relevance

- “[T]hink beyond a specific assignment to bring in skills and strategies that will be useful elsewhere; complement teachers' curriculum without repeating it.” (LMS #1)

- “Every student has a different learning style and you have to discover that to find out how they learn best.” (LMS #2)
- “There are a variety of learning styles and teaching styles. Both students and teachers share the responsibility of being open to more than one style.” (LMS #3A)
- “Try to individualize as much as possible for each student so they can achieve to their own potential. “ (LMS #5)
- “If you can’t make it relevant to the kids you’re teaching, they won’t learn.” (LMS #6)
- “We teach students, not curriculum. We have to match the curriculum to the needs of students.” (LMS #7)

Confidence

- “Our students are capable of far more than most adults in their life expect of them. The uncarved block in all of them simply needs to be coaxed into a shape that best suits their goals in life.” (LMS #3)

LMSs were asked to describe their library and information skills programs. Middle school programs tended to be well defined and heavily focused on research skills. LMS #1 expressed frustration that, because of the high number of students in her school, it was difficult to guarantee that every student spend sufficient time in the media center. LMS #2 looks at general long-range goals, identifying certain skills and resources student should learn before high school and using flexible scheduling to teach them when they are needed. LMS #3 stated “I am highly reference oriented. I focus on the research skills manual developed with our English and Technology Departments . . . I am sure that we spend too much time on location and use and not enough time on higher level skills. I would love to find that happy medium between books and technology, fun and fact, as well as productivity and motivation.” LMS #3A described her information skills instructional program as integrated with classroom curriculum objectives and tied to the State Education Department Library Skills Curriculum.

Elementary programs (including #6, the K–12 program) seemed to be more organic in nature. LMS #4 and #5 said that their programs were ongoing and evolving. LMS #4 stated her program combines traditional skills instruction with integration of modern technology and techniques, while LMS #5’s program builds on prior skills, attempting to integrate her instruction with the curriculum that students were learning at the time. LMS #6 described her program as “a work in progress,” while LMS #7 teaches information skills on an as-needed basis, in context, and process-oriented. LMS #8 stated that she always tries to build technology into her instruction while teaching students to find, filter, organize, and present information.

Discussion

The purpose of this study was to identify the motivational strategies used by LMSs in information skills instruction and the relationship between those strategies and the on- and off-task behaviors of students. Data analyses have revealed several interesting results that merit additional discussion.

First, the LMSs averaged approximately twenty-three strategies per each thirty-minute lesson, indicating that the use of motivational strategies was considered an important part of their overall instructional style. A comparison of the number of strategies used by grade level showed that middle school LMSs tend to use more motivational strategies than their elementary counterparts. This may be due to a greater perceived need to motivate middle school age students, as motivation reaches its lowest point by ninth grade (Harter 1981).

In terms of type of strategy, all LMSs observed in this study used an overwhelmingly greater number of attention-focusing strategies than relevance-promoting, confidence-building, and satisfaction-producing strategies. Only 13 percent of all strategies were satisfaction-producing strategies. This result differed from the results of Newby's (1991) study, which calculated more than twice as many satisfaction strategies used by first year elementary classroom teachers than all other types of strategies. This may have been caused by the fact that LMSs interact with students on a more infrequent basis than their classroom teacher colleagues and, therefore, may need more strategies to gain and maintain student interest. It is also possible that information skills lessons are perceived by students as less interesting and relevant and therefore in need of more stimulating and curiosity-provoking methods. Finally, this may have been influenced by the difference in subjects-experienced versus first-year instructors. The relatively low number of relevance, confidence, and satisfaction strategies used by LMSs is troubling. For example, Kuhlthau (e.g., 1993) has found that students experience significant anxiety and low confidence during the information-gathering phase of the process. If LMSs provide greater numbers of confidence-building strategies during this phase, they may help to lessen the negative feelings and improve the overall attitudes of students toward the overall research process. Furthermore, using strategies that reinforce the relevance of information skills to information-seeking tasks and promoting the relationship between successful information seeking and student effort is critical.

Knowledge about the potential "misuse" of motivational strategies resulted from the analysis of student off-task behaviors. Negative results may occur when there is an unstructured change of pace, the overuse of a strategy, or the use of a strategy in an inappropriate way.

The fact that middle school LMSs overall used more motivational strategies than elementary LMSs was an interesting finding. There may be a greater need to motivate students of this age level because they have a greater number of competing distractions (e.g., sports, the opposite sex) and their intrinsic motivation is at its nadir (Harter 1981).

The LMSs used significantly more extrinsic than intrinsic motivators. Newby (1991) suggests the more frequent use of attention strategies is the result of frequent alterations and repetitions (e.g., calling attention to important information) whereas the instructor may see less need to repeat relevance and confidence strategies. However, he also ascribed this reason to satisfaction strategies, which were used least by LMSs. There is a need to increase number of intrinsic motivators that tie learning success to student effort and ability.

The significantly greater use of extrinsic than intrinsic motivators is consistent with Newby's findings. In this study, this finding is less conclusive, however, due to the relatively small number of satisfaction strategies overall. Furthermore, Newby did not examine the nature of the extrinsic motivators. A closer look at the types of extrinsic motivators employed revealed a greater use of informational (largely verbal praise) than controlling strategies, which is less likely

to decrease existing high intrinsic motivation and may sometimes even increase existing low intrinsic motivation.

Recommendations for Future Research

The results of this study have yielded rich, descriptive data that provide an initial “glimpse” into a new area of research in our field—the motivational aspects of library and information skills instruction. The findings provide a foundation for designing future research studies that test specific motivational interventions in order to compare changes in student attitudes as well as learning outcomes. Future research on the motivational aspects of library and information skills instruction may include large-scale replication of this study, follow-up exploration of certain findings (e.g., why LMSs use so few relevance, confidence, and satisfaction strategies), replication of this study with grades 9-12, and experiments that investigate results when LMSs are trained to incorporate and deliver a greater number of relevance, confidence, and satisfaction (intrinsic motivators) strategies into their library and information skills instruction.

Future studies that use other criteria for analysis, such as the four features of activities that promote intrinsic motivation—challenge, curiosity, control, and contextualization (Lepper 1988; Malone 1981)—may further increase our knowledge of how to design library and information skills lessons that excite students about learning information skills and the research process. It might also be useful to conduct a content analysis of library and information skills lesson plans to determine if there are links between types of learning tasks or goals and type of motivational strategies. Finally, it might be interesting to conduct brief student interviews after each lesson to explore student attitudes about specific motivational strategies that have been used.

The effective use of motivational strategies in library and information skills instruction help to develop students’ curiosity, intrinsic motivation, and a lifelong love of learning. Research studies, such as the one described, provide a theoretical foundation for the development of guidelines for library media specialists to use in designing motivation into their library and information skills lessons. This author is in the process of developing such guidelines, based, in part, on the results of this study.

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Appendix I

Keller's ARCS Model of Motivational Design

Attention

Perceptual Arousal—the instructor provides novelty, surprisingness, incongruity or uncertainty.

Inquiry Arousal—the instructor stimulates recall by posing questions or problems to solve.

Variability—the instructor incorporates a range of methods and media that motivates students with varying needs.

Relevance

Goal Orientation—clearly presenting the objectives and usefulness of the instruction and specific methods for successful achievement.

Motive Matching—matching objectives to student needs and motives.

Familiarity—presenting content in ways that are understood by and tied to learners' experience and values.

Confidence

Learning Requirements—informing learners of learning and performance requirements and criteria.

Success Opportunities—providing challenging and meaningful opportunities for successful learning.

Personal Responsibility—linking learning success to personal effort and ability.

Satisfaction

Natural Consequences—encouraging and supporting intrinsic enjoyment of the learning experience.

Reinforcement—providing positive reinforcement and motivational feedback.

Equity—maintaining consistent standards and consequences for success.

Appendix II

Directions to Observer & Sample Partially Completed Observation

Before the observation:

- Contact your assigned library media specialist and arrange an in-person initial meeting
- Administer the pre-observation questionnaire
- Get a schedule of information skills lessons for the following week (or longer if possible)
- Randomly select one lesson for that week for observation. (Gr. 4-8)
- Arrive a few minutes early in order to be in place before students enter the room.

During each observation:

- Find an unobtrusive position within the room that allows clear visual and aural access to the instructor and students
- Observe & record learning environment (children's work displayed, etc.)
- Observe an information skills lesson from beginning to end
- Note beginning time of lesson and number of students
- Record everything you possibly can in as much detail as possible with exact quotes (indicated by quotation marks) wherever possible
- For the library media specialist, write down any or all of the following:
 - General instructions (telling/showing students what to do)
 - Interactions (verbal/written) (e.g. questioning, evaluative feedback)
 - Method of presenting information, including
 - delivery technique (e.g. lectures, games, Q&A)
 - media/materials used (e.g. overhead projector, handout)
- Mark all lms behaviors and, where possible, student reactive behaviors sequentially and in the correct columns on the observation form
- At approximately 10-minute intervals, briefly shift attention to students and record student behaviors (e.g. working on assigned activity, asking questions, listening attentively)
- Record all behaviors in the order they are observed
- Note ending time of lesson

After each observation:

- Type each observation in its entirety and submit to Dr. Small within 24 hours of the observation.

After all observations have been completed:

- Interview the LMS for additional data (use post-observation questionnaire)

Example of a partial observation:

Observation # 2 Date: 9/18/97

Location: LMC Grade: 6th # students 25
Beginning Time: 1:40pm Ending Time: 2:10pm

Library Media Specialist Behaviors

“Please sit in your groups at the tables. We’re going to spend some reviewing the research process you learned earlier this year.”

Turns off lights and waits until all is quiet in room. Begins lesson with a description of an “information problem” on an overhead projector. “Please read the information problem on the screen to yourselves. We’re going to discuss it.”

“Now, everyone write down in your notebooks what you think the task is.”

Walks around room to be sure students are writing. Nods head and makes quiet comments to students, such as:

“Great, Tara. You know exactly what the task is.”

“Read a little more carefully so you will find the answer, Joe.”

After a couple of minutes, “Now, who would like to share what they think is the information problem here?” Looks around room and points to student.

LMS says “Good answer. Now Mr. Littlefield has given you an assignment to do group astronomy projects. What do you know about the requirements of this task?” Calls on various students and writes responses on the blackboard.

Says to class, “Good. I think you have a good idea of what the requirements of the task are. Now I want you to think about what information seeking strategies you might use to begin this assignment? Since we worked on this recently, I know you all know what information seeking strategies are. But just in case some of you may have forgotten, here is a reminder.”

Puts overhead up with definition. “After you have written information seeking strategies in your notebooks, I’ll call on some of you for answers.”

“Jared and Tommy might do better if they pay attention.”

Student Behaviors

Students, chatting among themselves, sit at various tables around room.

Students attentive.

Copying down list into notebooks. Nodding heads, some talking. Some students raise hand to answer question.

Some boys in back are giggling and talking.

Boys look embarrassed and stop talking.

Appendix III

Pre-Observation Questionnaire

LMS #: _____

Type of school:

public elementary public middle private K-12
 public K-8 other (please specify) _____

Total student population of school: _____

Type of community: (check one)

urban
 suburban
 rural
 other (please specify) _____

How would you generally describe the types of students in your school? (e.g. low-middle class, large number of Vietnamese immigrants, mostly farming families, etc.)

Approximate average # of students visiting library each week: _____

years of experience of lms: _____

years classroom teaching experience of lms: _____

Year received MLS: _____

How would you describe the way you schedule students visits to the library? (check one)

scheduled classes
 flexible scheduling
 combination scheduled/flexible scheduling
 other (please specify) _____

On average, how many times per week do you meet with teachers to plan instruction?

0 1-3 4 or more

Appendix IV

Post-Observation Questionnaire

LMS #: _____

Who/what was the greatest influence on your instructional style (please be specific)?

_____ pre-service course _____

_____ in-service workshop _____

_____ role model _____

_____ other _____

Please describe any pre-service training you had in instructional design and/or teaching methods:

What is your personal teaching philosophy?

What are some teaching strategies you tend to use frequently?

How would you describe your information skills instructional program?

Appendix V

Directions to Coders

Thank you for agreeing to be coders for my research study. You will be analyzing observations of approximately 90 library/information skills lessons. Each lesson has been segmented and only those statements which are motivational in nature will be analyzed. As a result, many of the observation details have been removed so as you read through the lesson, it may not flow smoothly. The sections that you will analyze are those in boldface type, although other information has been included to provide some context.

First, look at each statement and decide whether it belongs in the Attention, Relevance, Confidence, or Satisfaction category. Then decide in which of the three subcategories the statement best fits. Under that subcategory, choose the specific motivational strategy the statement best reflects. All categories, subcategories, and strategies are described in detail on the following pages.

Go through a lesson, marking those statements that seem obvious for a particular category and subcategory. Write the strategy number for each statement on the line next to the statement and under the appropriate letter. In addition, for all statements classified as Satisfaction strategies, decide if the strategy is an intrinsic or extrinsic motivator and put a check mark (✓) on the appropriate line.

Examples:

	A	R	C	S	INT	EXT
LMS cites examples from her own experience.		—	F-1	—	—	—

LMS praises student for outstanding performance on oral research report.		—	—	—	R-4	—	—
--	--	---	---	---	-----	---	---

Then go back and work on those statements more difficult to categorize. If you cannot decide between two or more categories, subcategories, and/or strategies, select the one that is the best match and write the numbers of other possibilities in the margin. (This may be useful when you both work together to achieve consensus.)

If you can classify a statement into a particular category and subcategory but the specific strategy is not listed, check the category and write your strategy in the right margin. If you are absolutely unable to categorize a statement, put a question mark (?) in the left margin beside the statement.

After you have completed one or two lessons, you should meet to discuss each statement with the intention of coming to consensus about its classification. Where there is disagreement and you reach consensus, circle the dominant strategy; do not change the rejected response. When you compare responses, if one of you has categorized the statement and the other has not, the other can decide if she can accept the categorization. If not, if both coders are unable to categorize a statement, or if you think a strategy should be further segmented, place an X in front of the statement. The researcher will make a determination as to what action to take.

MOTIVATIONAL CATEGORIES AND STRATEGIES

ATTENTION-GETTING STRATEGIES (A) : Strategies that capture the interest of learners; stimulating the curiosity to learn.

Perceptual Arousal: a sudden or unexpected change in the environment.

PA-1. demonstration

PA-2. humor

PA-3. novelty

PA-4. incongruity

PA-5. puzzle

PA-6. mystery

PA-7. contradiction, conflict or unusual point of view.

PA-8. surprise

PA-9. enthusiasm

PA-10. mnemonics

PA.11. requires students to use imagination

PA-12. example or nonexample

PA-13. emphasizes important information.

PA-14. emphasis through body language (e.g. voice, gesture).

Inquiry Arousal: creating a problem situation which can be resolved only by knowledge-seeking behavior.

IA-1. problem-solving situation

IA-2. poses question

IA-3. paradox

IA-4. nurtures thinking challenge

IA-5. calculated delay in revealing information

IA-6. draws attention to specific ideas or objects

Variability: divergent ways of presenting information and stimulating learning.

V-1. visual (e.g. diagram, drawing, timeline, map, display)

V-2. audio-visual medium (e.g. overhead transparency, handout, slide-tape)

V-3. computer technology (e.g. Internet, CD-ROM)

V-4. physical movement around room

V-5. varied grouping

V-6. varied teaching methods (e.g. lecture, discussion, brainstorming, panel)

V-7. varied pace of delivery

V-8. encourages individual participation, interactivity, or hands-on experiences

RELEVANCE PRODUCING STRATEGIES (R) : Strategies that connect instruction to students' needs and motives.

Goal Orientation: links learned skills and knowledge to goals.

GO-1. opportunity to achieve personal goals

GO-2. link to future goal

GO-3. presents objectives/structure of lesson (e.g. outline, agenda)

GO-4. describes importance or usefulness of what is to be learned

- GO-5. instruction tied to curriculum/class assignments/activities
- GO-6. role models
- GO-7. testimonials

Motive Matching: matching instructional methods to students' learning styles, needs, and personal interests.

- MM-1. cooperative group work
- MM-2. leadership opportunities
- MM-3. competition or contest
- MM-4. independent study
- MM-5. opportunity for choice
- MM-6. opportunity to learn more about topics of interest/satisfy curiosity
- MM-7. use of learner's name and other appropriate personal information

Familiarity: connects learning to students' existing knowledge and experience.

- F-1. familiar or personal examples, anecdotes, or situations
- F-2. analogies or metaphors
- F-3. use of concrete examples of abstract concepts
- F-4. related to or builds on previous learning
- F-5. reminds students of past learning

CONFIDENCE-BUILDING STRATEGIES (C) : Strategies that help learners believe/feel they will succeed; effect a positive attitude.

Learning Requirements: letting students know what is expected of them.

- LR-1. provides criteria for successful achievement
- LR-2. specifies learning requirement(s)

Success Opportunities: techniques that encourage students and provide successful learning experiences.

- SO-1. provides opportunity for successful performance or learning
- SO-2. adjusts difficulty level to student ability/achievement level
- SO-3. rephrases student responses
- SO-4. practice opportunities
- SO-5. chunking of content
- SO-6. individual guidance/help
- SO-8. periodic review/summary

Personal Control: providing opportunities for students to have some control over their own learning.

- PC-1. shared control of learning
- PC-2. attributional feedback that helps students connect success to personal effort

SATISFACTION-GENERATING STRATEGIES (S) : Strategies that reinforce accomplishment.

Natural Consequences: opportunities to apply newly learned skills and knowledge.

- NC-1. opportunity to apply newly acquired knowledge or skills

Reinforcement: use of reinforcement and/or reward.

- R-1. informative/corrective feedback
- R-2. motivational feedback/encouragement
- R-3. unexpected tangible reward
- R-4. verbal praise
- R-5. anticipated tangible reward
- R-6. student work displayed
- R-7. threats or surveillance

Equity: connecting achievement to personal effort and ability.

- E-1. exercise or activity consistent with instructional presentation
- E-2. opportunity to reach personal learning goals

INTRINSIC MOTIVATORS are those that are internal to the learner. Pleasure is inherent in a specific behavior or activity. They are intrinsically-motivated behaviors which learners engage in in order to feel competent and self-determining.

EXTRINSIC MOTIVATORS are those that are external to a specific behavior or activity, arising from an expectation of reward or punishment. They provide satisfaction that is independent of the actual activity itself and is controlled by someone other than the learner.

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