"How Do I Know That My 4-H Club is Successful?"
Using the ARCS approach

Attention:

Activities:	Observations:

Relevance:

Activities:	Observations:

Confidence:

Activities:	Observations:

Satisfaction:

Activities:	Observations:

Got ARCS?

An Evaluation Tool for Instructional Designers

What is the ARCS Model?

The ARCS Model, developed by John M. Keller, is a systematic approach that provides educators with strategies, that when used together, improve the motivational impact of learning materials or experiences. The four strategies encompassed within ARCS are: **Attention, Relevance, Confidence, and Satisfaction.**

The ARCS Checklist

The checklist below is intended to be used in evaluating the motivational design incorporated into an instructional lesson. While examining the lesson in question, use the checklist prompts to determine whether or not certain strategies of the ARCS model exist within the material. Indicate the presence or absence of each characteristic by checking the box corresponding with "yes" or "no". Big picture questions have been provided for guidance in each ARCS strategy category.

Attention

Big Picture: Is the lesson catching and keeping the learner's attention?

	Yes	No
1. The lesson has one or more opportunities for active participation. Examples: hands-on activities, games, or other forms of interactivity.	☐	☐
2. The lesson is presented in a combination of different formats. Examples: Videos, audio/lecture, readable text, discussion groups	☐	☐
3. The use of humor can be found within the lesson at certain times. Examples: content-related puns or jokes	☐	☐
4. The use of conflict or a devil's advocate approach in the lesson. Examples: stories or scenarios that challenge a student's mental schema	☐	☐
5. The lesson has one or more inquiry-based questions or scenarios. Examples: brainstorming activities, problem-solving activities	☐	☐

Relevance

Big Picture: Why should the learner care? How does the lesson relate to the learner?

	Yes	No
1. The lesson clearly illustrates to the learner how their previous knowledge or skills will utilize their learning of the material.	☐	☐
2. The lesson clearly illustrates to the learner how learning the material will affect their life currently.	☐	☐

3. The lesson clearly illustrates to the learner how learning the material will affect their life in the future. Yes ☐ No ☐

4. The lesson provides an opportunity for the learner to model after a mentor or professional. Examples: guest speakers, videos of professionals Yes ☐ No ☐

5. The lesson provides learners with an opportunity to work independently and choose how they would like to complete learning experience. Yes ☐ No ☐

Confidence

Big Picture: Does the learner feel like they can succeed in learning the material?

1. The lesson appears to be achievable for learners and does not seem to require excessive time or effort. Yes ☐ No ☐

2. The lesson includes clear learning objectives and prerequisites for the learner. Yes ☐ No ☐

3. The lesson layout is incremental; content is broken down into small steps that build on one another. Yes ☐ No ☐

4. There are multiple opportunities of incremental feedback for the learner throughout the lesson. Yes ☐ No ☐

5. The lesson appears to provide the learner with a sense of control over their learning experience and assessment. Yes ☐ No ☐

Satisfaction

Big Picture: Does the learner feel good about their accomplishments in completing the lesson?

1. There is a reward or some form of achievement when completing the lesson. Yes ☐ No ☐

2. The lesson clearly outlines the usefulness of the content. Yes ☐ No ☐

3. The lesson provides a way for the learner to apply their new knowledge in the real world. Yes ☐ No ☐

4. There is feedback provided after completion of the lesson. Yes ☐ No ☐

After completing the checklist, count and add up how many characteristics you identified for <u>each section separately</u> within the lesson by checking "yes". Interpret the motivational design results below for each section of ARCS in the checklist.

3 or more = Excellent   2 = Satisfactory   1 or Less = Poor, Needs Improvement
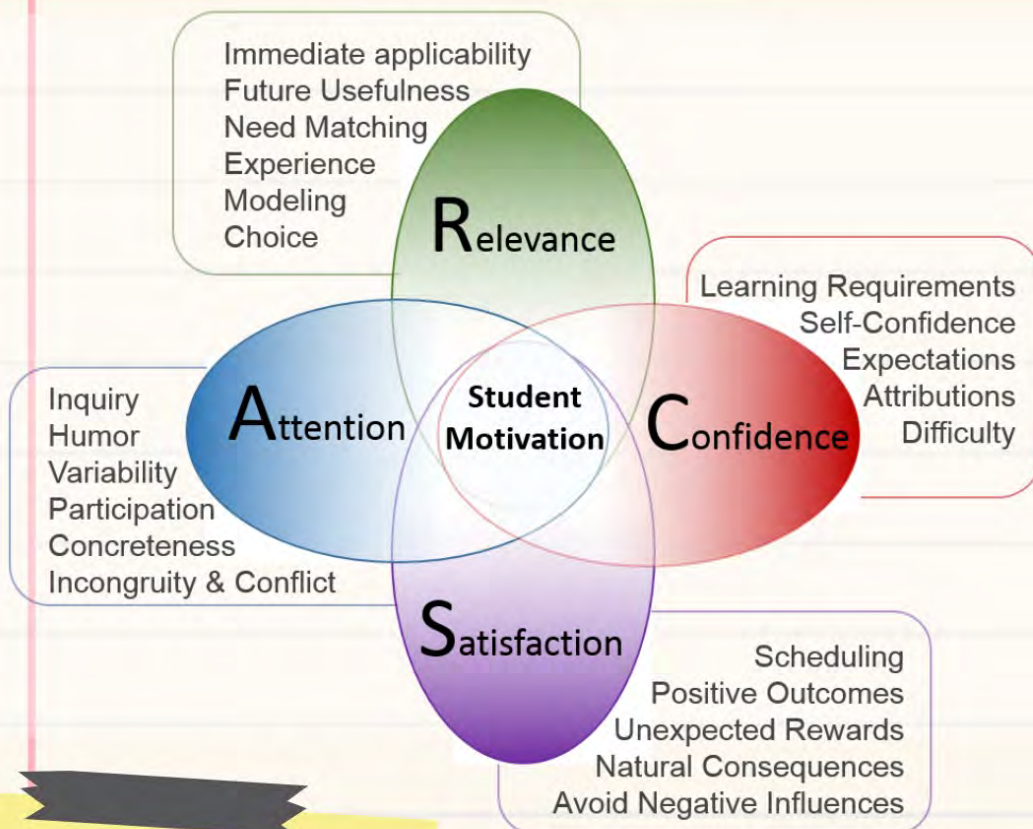
ARCS Model of Motivational Design

✓ Theory originator:
Dr. John Keller

✓ Theory Defined: is based upon the idea that there are four key elements in the learning process which can encourage and sustain learners' motivation: Attention, Relevance, Confidence, and Satisfaction

Relevance
Immediate applicability
Future Usefulness
Need Matching
Experience
Modeling
Choice

Attention
Inquiry
Humor
Variability
Participation
Concreteness
Incongruity & Conflict

Confidence
Learning Requirements
Self-Confidence
Expectations
Attributions
Difficulty

Student Motivation

Satisfaction
Scheduling
Positive Outcomes
Unexpected Rewards
Natural Consequences
Avoid Negative Influences

K-12 Example: Recycling Unit

A: Create a display of landfill photos, barges, etc

R: Keep a daily trash log--identify what each student throws out / recycles in a 24 hour period of time

C: Create a plan for the class to lead a recycling program at the school.

S: At the end of the unit, tally up and report the amount of items that were RECYCLED due to the class effort.

Training Example: Customer Service

A: Begin with a video of humorous non-example

R: Throughout the training utilize scenarios directly from the employees experience (possibly pull these examples from a pre-training survey or SME input)

C: Create a job aid to guide the desired structure / type of response. Easy to use and apply

S: Role play behaviors in the training; provide specific praise to the steps as they are followed

ARCS MODEL OF MOTIVATIONAL DESIGN THEORIES (KELLER)

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Summary: According to John Keller's ARCS Model of Motivational Design Theories, there are four steps for promoting and sustaining motivation in the learning process: Attention, Relevance, Confidence, Satisfaction (ARCS)[1][2].

Originator: John Keller

Key terms: Attention, Relevance, Confidence, Satisfaction (ARCS)

ARCS Model of Motivational Design (Keller)

1. Attention

- Keller attention can be gained in two ways: (1) Perceptual arousal – uses surprise or uncertainly to gain interest. Uses novel, surprising, incongruous, and uncertain events; or (2) Inquiry arousal – stimulates curiosity by posing challenging questions or problems to be solved.

- Methods for grabbing the learners' attention include the use of:
  - Active participation -Adopt strategies such as games, roleplay or other hands-on methods to get learners involved with the material or subject matter.

  - Variability – To better reinforce materials and account for individual differences in learning styles, use a

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Shares

- Humor -Maintain interest by use a small amount of humor (but not too much to be distracting)

- Incongruity and Conflict – A devil's advocate approach in which statements are posed that go against a learner's past experiences.

- Specific examples – Use a visual stimuli, story, or biography.

- Inquiry – Pose questions or problems for the learners to solve, e.g. brainstorming activities.

2. Relevance

- Establish relevance in order to increase a learner's motivation. To do this, use concrete language and examples with which the learners are familiar. Six major strategies described by Keller include:
  - Experience – Tell the learners how the new learning will use their existing skills. We best learn by building upon our preset knowledge or skills.

  - Present Worth – What will the subject matter do for me today?

  - Future Usefulness – What will the subject matter do for me tomorrow?

  - Needs Matching – Take advantage of the dynamics of achievement, risk taking, power, and affiliation.

  - Modeling – First of all, "be what you want them to do!" Other strategies include guest speakers, videos, and having the learners who finish their work first to serve as tutors.

  - Choice – Allow the learners to use different methods to pursue their work or allowing s choice in how they organize it.

3. Confidence

- Help students understand their likelihood for success. If they feel they cannot meet the objectives or that the cost (time or effort) is too high, their motivation will decrease.

- Provide objectives and prerequisites – Help students estimate the probability of success by presenting performance requirements and evaluation criteria. Ensure the learners are aware of performance requirements and evaluative criteria.

- Allow for success that is meaningful.

- Grow the Learners – Allow for small steps of growth during the learning process.

- Feedback – Provide feedback and support internal attributions for success.

- Learner Control – Learners should feel some degree of control over their learning and assessment. They should believe that their success is a direct result of the amount of effort they have put forth.

4. Satisfaction

- Learning must be rewarding or satisfying in some way, whether it is from a sense of achievement, praise from a higher-up, or mere entertainment.

- Make the learner feel as though the skill is useful or beneficial by providing opportunities to use newly acquired knowledge in a real setting.

- Provide feedback and reinforcement. When learners appreciate the results, they will be motivated to learn. Satisfaction is based upon motivation, which can be intrinsic or extrinsic.

- Do not patronize the learner by over-rewarding easy tasks.

For more information, we recommend:

- John Keller's book: Motivational Design for Learning and Performance: The ARCS Model Approach
  . Keller's book explains in detail the ARCS model.   Separate chapters cover each component of the model and offer strategies for promoting each one in learners. Plenty of real-world examples and ready-to-use worksheets. The methods are applied to both traditional and alternative settings, including gifted classes, K12, self-directed learning, and corporate training.

References

1. Keller, J. M. (2009). *Motivational design for learning and performance: The ARCS model approach.* Springer Science & Business Media.

2. Keller, John M. "Development and use of the ARCS model of instructional design." *Journal of instructional development* 10, no. 3 (1987): 2-10.

Development and Use of the ARCS Model of Instructional Design

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Abstract. The ARCS Model of motivation was developed in response to a desire to find more effective ways of understanding the major influences on the motivation to learn, and for systematic ways of identifying and solving problems with learning motivation. The resulting model contains a four category synthesis of variables that encompasses most of the areas of research on human motivation, and a motivational design process that is compatible with typical instructional design models. Following its development, the ARCS Model was field tested in two inservice teacher education programs. Based on the results of these field tests, the ARCS Model appears to provide useful assistance to designers and teachers, and warrants more controlled studies of its critical attributes and areas of effectiveness.

Can Motivation be Systematically Influenced?

Seldom do the arguments about the boundaries of a teacher's responsibilities or whether teaching is an art or science become more animated than when discussing the motivation of students. Instructional designers have similar concerns. Typically, motivation is viewed as highly unpredictable and changeable, subject to many influences over which the teacher or designer has no control. Consequently, both teachers and designers often view their responsibility as providing good quality instruction, and assume it is the student's responsibility to decide whether or not to take advantage of the opportunity to learn.

However, this is a rationalization in that we know that no matter how motivated learners are when they begin a course, it is not too difficult to bore them,

if not kill their interest totally. Conversely, it is possible to stimulate or even inspire the students' desire to achieve. Perhaps the rationalization results from the assumption that motivation is a largely uncontrollable state; therefore, it is easier to think of it as the student's responsibility.

With respect to students' social behavior most teachers do assume that motivation can be controlled by the appropriate application of rules and reinforcements. But when it comes to inspiring interest in a school subject, the popular view is that it requires intuition and native talent. How many times have you heard a teacher or designer say, "I know my subject, but I'm not really an entertainer?"

A concern for these issues led to the exploration of two specific questions. First, is it possible to synthesize the many concepts and theories of human motivation into a simple, meaningful model, or schema, that would be useful to a practitioner? Secondly, is it possible to develop a systematic, as opposed to intuitive, approach to designing motivating instruction? Exploration of these questions led to a review of the literature, the development of an approach called the ARCS Model, and field tests of the model with two different groups of teachers.

What is the ARCS Model?

The ARCS Model (Keller, 1984) is a method for improving the motivational appeal of instructional materials. It has three distinctive features. First, it contains four conceptual categories that subsume many of the specific concepts and variables that characterize human motivation. Second, it includes sets of strategies to use to enhance the motivational appeal of instruction. And third, it incorporates a systematic design process, called motivational design (Keller, 1987), that can be used effectively with traditional instructional design models. Each of these is described in further detail below.

Why the ARCS Model?

When work began (Keller, 1979) on the development of the ARCS Model, there were no macro theories or models that directly addressed the question of how to create instruction that would stimulate the motivation to learn. Most of the applications-oriented theory and research on motivation dealt either with psychological approaches to changing individual motivational characteristics (e.g. McClelland, 1965), or with job satisfaction and work performance (e.g. Steers & Porter, 1987).

In education, motivation was most generally studied in terms of classroom control (e.g. Doyle, 1985), reinforcement of learning (e.g. Skinner, 1961), or the affective outcomes of instruction (e.g. Krathwohl, Bloom, & Masia, 1964). There were some good applications-oriented materials (e.g. Mager, 1968; Wlodkowski, 1978), but they tended to be somewhat restricted in their approach and theoretical foundation. They did not help the designer or teacher know how many or what types of strategies to use with a given audience, and they did not incorporate important principles from several areas of motivational research that have been studied in recent years (e.g. curiosity, sensation seeking, and intrinsic motivation). Subsequently, work has been done to help students learn how to be self-motivated (e.g. McCombs, 1984), and Wlodkowski (1985) has expanded the scope of content and application of his work. But, none of these models takes a design, or problem-solving approach.

Where Did the ARCS Model Originate?

The ARCS Model is based upon the macro theory of motivation and instructional design developed by Keller (1979, 1983). It is grounded in expectancy-value theory which derives from the work of Tolman (1932) and Lewin (1938). Expectancy-value theory assumes that people are motivated to en-

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gage in an activity if it is perceived to be linked to the satisfaction of personal needs (the value aspect), and if there is a positive expectancy for success (the expectancy aspect).

In the original model (Keller, 1979, 1983), these two categories were expanded to four. The category called *value* was subdivided into two categories called *interest* and *relevance*. The third category, *expectancy*, remained the same, and a fourth category called *outcomes* was added. *Interest* and *relevance* were separated to make a distinction between a set of variables, or constructs, that are concerned primarily with curiosity and arousal versus other motives such as "need for achievement" and "perceived utility." All of these variables have an influence on what people think is important, but *interest* refers more to attentional factors in the environment, and *relevance* refers more to goal directed activity.

The third category, *expectancy*, refers to one's expectation for being successful. It includes several areas of research that are concerned with people's self-confidence and their feelings of control over their lives and environment. There is no doubt that a person's perception of the likelihood of being successful influences the actual degree of success (Jones, 1977).

The fourth category, *outcomes*, refers to

tion, the ARCS Model was created by generating a large list of motivational strategy statements, and sorting them to see whether the four categories of the model provided a conceptually valid typology. All of the strategies used in the development of the model were derived from research findings and from practices that have resulted in motivated learners. Strategy statements were obtained from research studies in the primary areas of research on human motivation, from practical handbooks, and from interviews with practitioners. The strategy statements were then sorted into the four categories, and were further divided into useful subcategories (see Tables 1, 2, 3, 4). Four people worked on the classification process, and the correspondence of judgments for the placement of strategies into categories was acceptable. The reliability estimate based upon the intraclass correlational method (Winer, 1971) was .78.

During the transition from the original model to the ARCS Model, the four categories were renamed as indicated below to strengthen the central feature of each and to generate a useful acronym. The resulting catalog of strategies is used in the process of identifying and solving motivational problems in instructional materials and methods (Keller & Kopp, 1987), and in computer assisted instruc-

& Suzuki, 1987). Following is a brief description of each of the four major conditions.

Attention. The first condition, attention, is an element of motivation and is also a prerequisite for learning. The motivational concern is for getting and sustaining attention. As an element of learning, the concern is for directing attention to the appropriate stimuli. At one level, it is fairly easy to gain attention. A dramatic statement, a sharp noise, a quiet pause —all of these and many other devices are used.

However, getting attention is not enough. A real challenge is to sustain it, to produce a satisfactory level of attention throughout a period of instruction. To do this, it is necessary to respond to the sensation-seeking needs of students (Zuckerman, 1971) and arouse their knowledge-seeking curiosity (Berlyne, 1965), but without overstimulating them. The goal is to find a balance between boredom and indifference versus hyperactivity and anxiety. The strategies listed under categories A5 and A6 (Table 1) are particularly useful in sustaining attention.

Relevance. How many times have we heard students ask, 'Why do I have to study this?' When a convincing answer is not forthcoming, there is a relevance problem. To answer this question, many course designers and instructors try to make the instruction seem relevant to present and future career opportunities for the students (categories R2 and R3, Table 2). Others, in a more classical tradition, believe that learning should be an end in itself, something that students come to enjoy and treasure. Both of these can be important, but there is a third way. It focuses on process rather than ends.

Relevance can come from the way something is taught; it does not have to come from the content itself (categories R4 and R5,Table 2). For example, people high in "need for affiliation" will tend to enjoy classes in which they can work cooperatively in groups. Similarly, people high in "need for achievement" enjoy the opportunity to set moderately challenging goals, and to take personal responsibility for achieving them. To the extent that a course of instruction offers opportunities for an individual to satisfy these and other needs, the person will have a feeling of perceived relevance.

Confidence. Some people never quite achieve success even when the odds are in their favor; others always seem to excell through no matter what the odds.

The ARCS Model includes a systematic design process. It can be conveniently separated into the steps of define, design, develop, and evaluate.

the reinforcing value of instruction. The outcomes of goal-directed behavior have an influence on subsequent levels of perceived value and expectancy for success and, therefore, form the final category of motivational variables in the ARCS model. The *outcomes* category includes the appropriate application of reinforcement as explained in operant conditioning theory, and the environmental outcomes that help maintain intrinsic motivation (e.g. Deci, 1975). More detailed explanations of this syntheses and its rationale are provided by Keller (1983).

Building on this conceptual founda-

tion (Keller & Suzuki, 1987).

Components of the ARCS Model

The ARCS Model defines four major conditions (Attention, Relevance, Confidence, and Satisfaction) that have to be met for people to become and remain motivated. As previously indicated, each of these conditions subsumes several areas of psychological research (Keller, 1979, 1983), and has been divided into specific subcategories with sample motivational strategy prescriptions (Keller, 1983; Keller & Kopp, 1987, Keller

Table 1
Attention Strategies

A1:   *Incongruity, Conflict*
     A1.1   Introduce a fact that seems to contradict the learner's past experience.
     A1.2   Present an example that does not seem to exemplify a given concept.
     A1.3   Introduce two equally plausible facts or principles, only one of which can be true.
     A1.4   Play devil's advocate.

A2:   *Concreteness*
     A2.1   Show visual representations of any important object or set of ideas or relationships.
     A2.2   Give examples of every instructionally important concept or principle.
     A2.3   Use content-related anecdotes, case studies, biographies, etc.

A3:   *Variability*
     A3.1   In stand up delivery, vary the tone of your voice, and use body movement, pauses, and props.
     A3.2   Vary the format of instruction (information presentation, practice, testing, etc.) according to the attention span of the audience.

     A3.3   Vary the medium of instruction (platform delivery, film, video, print, etc.)
     A3.4   Break up print materials by use of white space, visuals, tables, different typefaces, etc.
     A3.5   Change the style of presentation (humorous-serious, fast-slow, loud-soft, active-passive, etc.).
     A3.6   Shift between student-instructor interaction and student-student interaction.

A4:   *Humor*
     A4.1   Where appropriate, use plays on words during redundant information presentation.
     A4.2   Use humorous introductions.
     A4.3   Use humorous analogies to explain and summarize.

A5:   *Inquiry*
     A5.1   Use creativity techniques to have learners create unusual analogies and associations to the content.
     A5.2   Build in problem solving activities at regular intervals.
     A5.3   Give learners the opportunity to select topics, projects and assignments that appeal to their curiosity and need to explore.

A6:   *Participation*
     A6.1   Use games, role plays, or simulations that require learner participation.

Table 2
Relevance Strategies

R1:   *Experience*
     R1.1   State explicitly how the instruction builds on the learner's existing skills.
     R1.2   Use analogies familiar to the learner from past experience.
     R1.3   Find out what the learners' interests are and relate them to the instruction.

R2:   *Present Worth*
     R2.1   State explicitly the present intrinsic value of learning the content, as distinct from its value as a link to future goals.

R3:   *Future Usefulness*
     R3.1   State explicitly how the instruction relates to future activities of the learner.
     R3.2   Ask learners to relate the instruction to their own future goals (future wheel).

R4:   *Need Matching*
     R4.1   To enhance achievement striving behavior, provide opportunities to achieve standards of excellence under conditions of moderate risk.
     R4.2   To make instruction responsive to the power motive, provide opportunities for responsibility, authority, and interpersonal influence.
     R4.3   To satisfy the need for affiliation, establish trust and provide opportunities for no-risk, cooperative interaction.

R5:   *Modeling*
     R5.1   Bring in alumni of the course as enthusiastic guest lecturers.
     R5.2   In a self-paced course, use those who finish first as deputy tutors.
     R5.3   Model enthusiasm for the subject taught.

R6:   *Choice*
     R6.1   Provide meaningful alternative methods for accomplishing a goal.
     R6.2   Provide personal choices for organizing one's work.

Table 3
Confidence Strategies

C1: *Learning Requirements*
    C1.1 Incorporate clearly stated, appealing learning goals into instructional materials.
    C1.2 Provide self-evaluation tools which are based on clearly stated goals.
    C1.3 Explain the criteria for evaluation of performance.

C2: *Difficulty*
    C2.1 Organize materials on an increasing level of difficulty; that is, structure the learning material to provide a "conquerable" challenge.

C3: *Expectations*
    C3.1 Include statements about the likelihood of success with given amounts of effort and ability.
    C3.2 Teach students how to develop a plan of work that will result in goal accomplishment.
    C3.3 Help students set realistic goals.

C4: *Attributions*
    C4.1 Attribute student success to effort rather than luck or ease of task when appropriate (i.e. when you know it's true!).
    C4.2 Encourage student efforts to verbalize appropriate attributions for both successes and failures.

C5: *Self-Confidence*
    C5.1 Allow students opportunity to become increasingly independent in learning and practicing a skill.
    C5.2 Have students learn new skills under low risk conditions, but practice performance of well-learned tasks under realistic conditions.
    C5.3 Help students understand that the pursuit of excellence does not mean that anything short of perfection is failure; learn to feel good about genuine accomplishment.

Table 4
Satisfaction Strategies

S1: *Natural Consequences*
    S1.1 Allow a student to use a newly acquired skill in a realistic setting as soon as possible.
    S1.2 Verbally reinforce a student's intrinsic pride in accomplishing a difficult task.
    S1.3 Allow a student who masters a task to help others who have not yet done so.

S2: *Unexpected Rewards*
    S2.1 Reward intrinsically interesting task performance with unexpected, non-contingent rewards.
    S2.2 Reward boring tasks with extrinsic, anticipated rewards.

S3: *Positive Outcomes*
    S3.1 Give verbal praise for successful progress or accomplishment.
    S3.2 Give personal attention to students.
    S3.3 Provide informative, helpful feedback when it is immediately useful.
    S3.4 Provide motivating feedback (praise) immediately following task performance.

S4: *Negative Influences*
    S4.1 Avoid the use of threats as a means of obtaining task performance.
    S4.2 Avoid surveillance (as opposed to positive attention)
    S4.3 Avoid external performance evaluations whenever it is possible to help the student evaluate his or her own work.

S5: *Scheduling*
    S5.1 Provide frequent reinforcements when a student is learning a new task.
    S5.2 Provide intermittent reinforcement as a student becomes more competent at a task.
    S5.3 Vary the schedule of reinforcements in terms of both interval and quantity.

Differences in confidence, the third major component of the model, can influence a student's persistence and accomplishment.

There are several factors that contribute to one's level of confidence, or expectancy for success. For example, confident people tend to attribute the causes of success to things such as ability and effort instead of luck or the difficulty of the task (Weiner, 1974; Dweck, 1986). They also tend to be oriented toward involvement in the task activity and enjoy learning even if it means making mistakes. Also, confident people tend to believe that they can effectively accomplish their goals by means of their actions (Bandura, 1977; Bandura & Schunk, 1981). In contrast, unconfident people often have more of an ego involvement; they want to impress others and they worry about failing (Dweck, 1986).

Fear of failure is often stronger in students than teachers realize. A challenge for teachers in generating or maintaining motivation is to foster the development of confidence despite the competitiveness and external control that often exist in schools.

The preceding research results are reflected in the confidence building strategies (Table 3) that can be used by an instructional designer or teacher. The purpose of most of these strategies is to help the learner form the impression that some level of success is possible if effort is exerted. It is, of course, important to avoid creating this impression if it is false. If success is not possible with a rea-

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sonable amount of effort, then the instruction should be redesigned or the student should be given appropriate counsel.

Satisfaction. This category incorporates research and practices that help make people feel good about their accomplishments. According to reinforcement theory, people should be more motivated if the task and the reward are defined, and an appropriate reinforcement schedule is used (categories S3 and S5, Table 4). Generally this is true, but people sometimes become resentful and even angry when they are told what they have to do, and what they will be given as a reward. Why would this be so? An important part of the answer seems to be 'control.'

When a student is required to do something to get a reward that a teacher controls, resentment may occur because the teacher has taken over part of the student's sphere of control over his or her own life. This is especially likely to happen when the behavior you control is one which the student enjoys for intrinsically satisfying reasons. The establishment of external control over an intrinsically satisfying behavior can decrease the person's enjoyment of the activity (Lepper & Greene, 1979).

There are appropriate ways to use extrinsic rewards in learning situations, and to stimulate instrinsic reward. A challenge is to provide appropriate contingencies without overcontrolling, and to encourage the development of intrinsic satisfaction (categories S1, S2, and S4, Table 4).

In summary, these four categories form the basis of the ARCS Model. Within each are subcategories that include prescriptive motivational strategies (see Keller & Kopp, 1987; Keller & Suzuki, 1987). However, given the purpose of this model for helping to identify specific ways to make instruction more appealing, there is still the question of procedure: How is the ARCS Model used in instructional development or lesson planning? The following two sections provide a brief description of this process, and the results of using the model with two groups of teachers.

Using the ARCS Model

The ARCS Model includes a systematic design process that can be used with typical instructional design and development models. It can be conveniently separated into the steps of define, design, develop, and evaluate (see Table

5).

Define. Prior to the field tests reported in the next section, the define phase had two purposes; audience analysis and preparation of objectives. During the field tests a third purpose called "problem classification" was added as the first step in the process. It became clear that an unstated but important constraint of the ARCS Model is that, in its present form, it is designed to help make a course of instruction more motivating for a rea-

sonably typical class of students, one in which some people will be very cooperative and interested, others will be indifferent and bored, and some may even be slightly antagonistic.

There can be motivational challenges that differ from situation to situation. For example, lack of perceived relevance might be the primary problem in a World History class, and low expectancy for success (i.e. low confidence) in a required algebra class for non-college bound students. However, the assumption is that the group as a whole will be responsive if an effective set of motivational strategies is employed.

The ARCS Model, as presently constituted, is not designed as a behavioral change model; that is, it is not intended for use in solving individual personality problems or in teaching students how to be self-motivated. It could easily be adapted and used as a frame of reference for organizing strategies for teaching meta-cognitive strategies for self-motivation, but that was not its function in the field tests. For work in the area of self-motivation, see McCombs (1984), and Schmitt & Newby (1986).

Consequently, the first step in ap-

plying the ARCS Model is to classify the motivational problem to be solved. If the problem is one of improving the motivation appeal of instruction for a given audience, then it is appropriate to use the model.

The second step is to do an audience analysis to identify motivational gaps. In some situations, a group of students will be highly motivated for a particular course due to their intrinsic interest in the topic, or because of external factors that

Seldom do the arguments about the boundaries of teacher's responsibilities or whether teaching is an art or science become more animated than when discussing the motivation of students.

make the course important to them. In other cases, the students' motivation will have to be stimulated after they arrive at the class. In the first case, the designer or instructor will have to maintain the motivation, but in the second case, strategies to establish motivation will be required. An even more specific level of analysis can be performed to discover if there are particular problems in one or more of the four motivational categories (Keller & Suzuki, 1987).

The third step in the define phase is to prepare motivational objectives (Table 5). The audience analysis should reveal the specific areas which are most likely to require special attention in the development of motivational strategies. Of course, it is always possible that a balanced focus will be most appropriate in a given setting; that is, a designer or teacher might not discover an acute problem area, but simply might have to give balanced treatment to all four areas.

Motivational objectives, like instructional objectives, should identify the behavior, conditions, and criteria that apply. For example, a motivational objective might be, "by the end of the first module of work, all of the students in the

DEFINE	DEVELOP
Classify problem	Prepare motivational elements
Analyze audience motivation	Intergrate with instruction
Prepare motivational objectives	
DESIGN	EVALUATE
Generate potential strategies	Conduct developmental try-out
Select strategies	Assess motivational outcomes

class will express confidence that they can finish the unit successfully if they try hard." By creating specific motivational objectives, the designer or instructor is better able to choose appropriate strategies.

Design. The first step in design is to create a list of potential motivational strategies for each of the objectives. At this point, it is generally best to use a brainstorming approach to create a broad range of strategy ideas. The goal is to move away from the analytical thinking that characterizes the define phase, and to begin thinking in an uncritical, more creative mode. By creating a variety of possible strategies the likelihood of finding optimal strategies is increased.

The next step is to critically review the potential strategies, and select the ones to be used. Five guidelines that help accomplish this are that the motivational strategies should:
(a) not take up too much instructional time, (b) not detract from the instructional objectives, (c) fall within the time and money constraints of the development and implementation aspects of the instruction, (d) be acceptable to the audience, and (e) be compatible with the delivery system, including the instructor's personal style and preferences.

All of these criteria exemplify the central concern for motivation as a means to an end, not an end in itself. For example, if students come to class already motivated, do not inject a large number of motivational strategies. This could slow the instruction, and cause the students to focus on the entertaining motivational strategies to the detriment of the instructional objectives. This is illustrated by a foreign language teacher who spent so much time with the students planning a culturally enriching banquet that she covered only half of the required content. At first the students enjoyed it, but they became annoyed when they realized that

they would not be properly prepared for the next level of study. Motivational strategies should stimulate the motivation to learn (Brophy, 1983), and not detract from the learning process.

The strategies included in the model are proven in that they are based on research and successful practices, but their effectiveness, and the exact way in which they are implemented depends in part on the personality of the instructor, and the type of atmosphere that he or she desires (e.g. formal versus informal). Consequently, the final selection of strategies for a given instructional event is based, in large part, upon the judgments of the designer and teacher rather than upon objective criteria. In this sense, even though the ARCS Model

phase it is time to create any special materials that are required, and integrate them into the instruction. This usually requires revision of the instructional materials to ensure continuity and internal consistency.

Evaluate. It is important to base the evaluation of the materials on motivational as well as learning outcomes. Too often, decisions about the effectiveness of motivational strategies are based on gain scores or other achievement measures. This is not a good practice, because achievement is affected by many factors, not just motivation (see Keller, 1979, for a more complete discussion of this point). To judge motivational consequences, it is best to use direct measures of persistence, intensity of effort, emotion, and attitude.

Developmental Test of the ARCS Model: Two Case Studies

The ARCS Model was field tested in two teacher training workshops. The first was with 18 teachers of middle school children between the ages of 12 and 14. All of the teachers were from the same school district in central New York, and most were from the same school. The primary purpose of the overall inservice program was to improve instruction in problem solving, and the ARCS

> **Relevance can come from the way something is taught; it does not have to come from the content itself.**

contains prescriptive strategies, the overall model is more heuristic than prescriptive or algorithmic. It helps insure a solution to motivational problems, but it does not guarantee one as does a correctly applied algorithm. It requires experience and judgment, and perhaps even some trial and error from the designer.

Develop. During the development

Model was included as one part of each workshop session. It was included as a problem solving approach to improving motivation, and to assist the teachers in designing the motivational aspects of the instructional materials they were designing.

The workshop took place over a period of four months with four-hour afternoon meetings twice a month. It was con-

ducted by a trainer who was familiar with the motivational material encompassed by the ARCS Model, and included one session in which the author presented the specific strategies and procedures of the model.

During the four months of the project, the teachers went through the complete process of defining a motivational problem, formulating objectives, selecting strategies, preparing an implementation plan, enacting the plan, and reporting results. Most of the teachers worked on developing or revising modules of instruction to make them more interesting, but some worked on the motivational problems of specific students.

There were two criteria for success in this developmental test, both of which were attitudinal. First was that the participants would, after being taught the basic characteristics of the model, regard it as being comprehensible and useful. This criterion was important because the ARCS Model draws upon a broad base of psychological concepts and research that has not been studied by most teachers. For the ARCS Model to be acceptable to practitioners, it has to be presented in familiar, practical language. The second criterion was that after using the ARCS Model, they would believe that it helped them do a better job of improving the motivational appeal of instruction than they would have done otherwise.

In response to a questionnaire with 5

said that they gained some insights from learning and using the model, but they used more or less the same motivational strategies that they would have used anyway. Both of these teachers, according to comments from the principal and other teachers, had excellent reputations as motivators. Given the overall positive responses, this test of the ARCS Model was judged to be supportive of its acceptability and utility.

An interesting consequence of using the ARCS Model in this setting occurred: Some of the teachers, in their conclusions, suggested that the key factor in the process was that they had simply paid more attention to the student, or class. At first, this seemed to be a disappointing result for the ARCS Model. Why have a reasonably complex, formalized model if 'paying more attention' is all that is required?

Upon reflection, it became clear that the teachers were not giving themselves enough credit for what they had actually accomplished. After analyzing their action plans and logbooks, it was obvious that they had used specific strategies to bring about the change. For them, 'attention' was simply a convenient word to summarize a great many specific acts.

A second test was conducted with another group consisting of 16 teachers from primary, middle, and secondary schools within a single school district in

was used for classroom visitations and individual consultation.

At the end of the first session, the teachers had defined their motivational problems. During the next four weeks, they were to work on collecting data to verify the problem, and to develop a preliminary strategy list. They were enthusiastic at the end of the first session, but by the beginning of second session one month later, several had encountered difficulties and become discouraged.

After analyzing their problem statements and progress reports, it appeared that the differences were due primarily to the type of problem chosen by the participant. The workshop leaders had encouraged the participants to work on instructional improvement problems that were fairly small in scope; that is, to chose a unit or lesson which they would analyze and improve with respect to its motivational characteristics. Instead, several of the teachers had chosen to work on the personal motivational problems of individual students. Some of these students had personal problems and ·family situations that would be a challenge even for an experienced psychotherapist.

In general, the teachers who chose instructional improvement projects had · made better progress and felt more positive. However, some of these teachers enlarged the scope of the project after the first session, or failed to reduce the scope as recommended by the workshop leaders. Consequently, the first part of the second session was spent reviewing the chosen problems and scope of work. After the concerned teachers redefined their problems into something more manageable, their progress improved quickly.

The difficulties experienced with the second group were reflected in the ratings obtained from the questionnaires on the two criteria as described above in the first study. After the second session, 10 of the 12 teachers (83%) agreed that the model seemed comprehensible and useful. At the end of the workshop, 9 of the 12 teachers (75%) felt that use of the model had helped them improve the motivational appeal of their instruction.

Why, we wondered, did the ARCS Model work better with the first group, which included several teachers who chose behavior modification problems? In that group, the workshop leader had worked with the school district, and with the same group of teachers, on several other projects during the preceding three

The ARCS Model defines four major conditions (Attention, Relevence, Confidence, and Satisfaction) that have to be met for people to become and remain motivated.

point response scales ranging from strongly disagree to strongly agree, all of the participants responded positively (agree or strongly agree) to the first criterion, and sixteen (89%) responded positively to the second. The other two were neutral. In a "Comments" section, they

northeastern New York. This was a six-day workshop on motivational design conducted by the author and two assistants for two days each in three successive months. One day each month was spent in a working session with the teachers, and the other day each month

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years. The earlier projects were concerned with helping the teachers learn to use systematic development and research procedures for creating and validating instructional improvement projects in the areas of curiosity and cognitive problem-solving skills.

In the second group, most of the teachers had not had an inservice training program in many years, and some had never had one. Consequently, these teachers were starting from "scratch" in terms of orienting themselves toward a productive experience in the workshop, and toward the specific processes of systematic development. They had to learn the generic problem solving and design processes as represented in the specific context of the ARCS Model, and the content of the model itself. Furthermore, these teachers had to work independently during the four weeks between sessions. They could not get immediate personal advice from the workshop leaders because of the distance to their work location, and they did not mail materials to the workshop leaders for review as they had been invited to do. In summary, this group chose too many problems that, although interesting and important to them, fell outside the scope of the ARCS strategies or the time constraints of the workshop, and they had no prior experience in working independently on instructional improvement projects.

Conclusion

The results of these two field tests provide support for the comprehensibility and utility of the ARCS Model as a means of assisting in the motivational design of instruction, and they illustrate some of the requirements for its successful use. ARCS is a problem solving model, and it does require some time to acquire an understanding of the basic strategies and concepts included in it. If a potential user has never learned to work with a systematic instructional design model, then the concepts of problem identification, solution design, and implementation must be learned in conjunction with the content and processes of the ARCS Model.

Furthermore, care must be exercised in the first step of the application to ensure that participants select problems that are appropriate for the model. These would be problems concerned with the improvement of instruction, and not with changes in the personalities of the students.

A limitation of this study is that even though positive support was found in two different settings and there is research support for the various elements of the model, there were many uncontrolled aspects to the field tests. For example, the author of the model was involved in both studies. A more objective test of the model would result from having trainers other than the author. More objective measures of the effectiveness of the model could also be used. For example, a checklist of motivational characteristics applied to preworkshop samples of materials developed and taught by the participants could be compared to postworkshop samples. And, it is essential that several replications of the study be conducted to test for consistent results. This type of action research can never be highly controlled, and the dynamics that can develop in any given group can have a strong influence on the outcomes. Given the initially positive responses to the model, more controlled studies of its critical attributes and areas of effectiveness appear to be warranted.

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