Motivation in Instructional Design: Comparison of an American and a Soviet Model

Roy M. Bohlin
Kent State University

Abstract. Instructional designers recognize motivation as a key to instructional effectiveness and have a need for information about designing motivating instruction. Keller's model (in press) and Markova's model (1986) for the design of motivating instruction with their prescribed strategies are analyzed. The large number of strategy similarities supports the validation of the cross-cultural comparison. Differences suggest the addition of three specific strategies not included in Keller's model: (a) the use of role-modeling to increase the learner's expectancy of success, (b) the use of a formal self-evaluation to validate learning and improve the learner's satisfaction with the instruction, and (c) the use of important problems in the scientific world to increase the relevancy of the lesson. Further support for the use of these additional strategies to motivate learners can be found in the U.S. literature (Martin & Briggs, 1985).

The element of motivation is the backbone of effective instruction. McDaniels (1985, p. 23) states that "increasing student motivation is an imperative for all educators and may well be the secret to more engaged time and higher achievement in contemporary classrooms." Spitzer and Keller (1978) express the belief that there seems to be little disagreement that motivation is an important component of instruction. Soviet research (Talyzina, 1984, p. 232) suggests that "the student will only confront a problem when he has the proper motivation." Matyukhina (1986, p. 47) declares that the "motivational aspect of learning is inseparable from the problem of achievement; it is one of the reasons for a child's success or failure in school." This importance of effective motivation to instruction invites the study of instructional design models that generate motivation in learners. The attention of instructional designers in the U.S. should include the theories and models of foreign countries. Because I recently had the opportunity to study many aspects of the Soviet educational system, I personally was interested in investigating the Russian theories and models of motivating instruction.

The model developed by John M. Keller is probably the best-known and most complete motivation-based instructional design model in the United States. The works of Markova, Orlov, and Fridman, at the U.S.S.R. Academy of Pedagogical Sciences, represent the most recent and significant publication about motivation-based instructional design in the Soviet Union. The purpose of this article is to analyze these two models to determine if we might integrate some Russian strategies into Keller's model. It is hoped that the results will help instructional designers to build motivation into their instruction.

The Keller Model

Very few American instructional design models are concerned directly with motivation. Unusual in this respect, Keller's model also is interesting because its underpinnings are both theoretically based and empirically supported. The model is based on analyses of actual teaching practices of highly motivating instructors and deductive analysis of current motivational learning theories. The result, called the ARCS model, gives a series of specific instructional strategies for improving learners' motivation.

Keller (Keller & Suzuki, 1986; Keller & Kopp, in press) identifies four stages of motivational "conditions": attention, relevance, confidence, and satisfaction. For motivation to be effective, these four conditions or stages should be addressed. Because these conditions are usually internal to the student, they cannot be manipulated directly by the teacher. The teacher, instead can only control the methods or strategies of instruction, that are intended to produce various consequences or behaviors. The instructor, therefore, best promotes motivation behaviors, or outcomes, by using appropriate instructional strategies.

Keller's model is designed to provide effective "methods" under particular "conditions" to yield desirable motivational "outcomes." The model, therefore, contains specific methods or strategies, that produce motivational outcomes during each of the four motivational conditions.

Attention

The first requirement for motivating instruction is to gain and maintain the attention of the learner. This can be achieved through several strategies aimed at increasing the learner's curiosity or arousal (Keller, 1983; Keller & Kopp, in press). Specific strategies intended to achieve attention are listed below:

- using novel, incongruous, conflicting, and paradoxical events, which creates an abrupt change in the status quo, to produce perceptual arousal (such as presenting two facts that seem contradictory, using a startling flash of light or loud noise, or presenting a bizarre fact),
- using anecdotes to inject a personal element into the material to add interest (for instance explaining personal experiences with the phenomena or an unusual historical anecdote),
- posing questions or having the learner generate a problem to be solved to stimulate inquiry arousal or information seeking behavior,
- using analogies to make the strange familiar and the familiar strange to add interest (such as the analogy that elec-
trical current is like water flowing through a hose),
• varying the style of the elements of instruction to add interest (for example occasionally changing from active to passive learning, from rapid to slow pace, or from humorous to serious presentations).

Relevance
To maintain motivation the learner must perceive that significant personal needs are being met by the instruction. Once attention is aroused, the learner evaluates the relevancy of the instruction before becoming highly motivated. Specific strategies that increase relevancy are listed below:
• using concrete language and examples that are related to the learner’s experience to promote familiarity (such as the fact that variability of boiling points due to pressure changes affects cooking time at high elevations and applies to the rapid cooking of pressure cookers),
• presenting clearly the objectives and goals or having the learner define them (such as giving concrete examples of the desired outcomes or supplying examples of completed assignments),
• using teaching strategies that match the motive profiles of the students (for instance assigning group work for individuals with strong needs for affiliation).

Confidence
The third requirement for motivated learning—confidence—is related to the individual’s attitude toward success or failure (Keller & Kopp, in press). This attitude influences the learner’s actual performance. Suggested strategies to enhance confidence follow:
• presenting performance requirements and evaluative criteria to help students estimate their probability of success (such as telling the student the number of items on a test and the required percentage needed for passing),
• providing attributional feedback and opportunities for control to aid in the student’s connection of success to personal effort (for example allowing for learner control in a computer program or using feedback like “See, you can do this! When you keep trying, you succeed.”),
• supplying difficulty levels that allow meaningfully successful experiences in learning and performance situations (for instance starting with simple problems and giving progressively harder problems).

Satisfaction
Individual satisfaction is important for sustaining motivation. The learner must perceive the rewards gained as appropriate and consistent with their expectations (Keller & Kopp, in press). Suggested procedures aimed at promoting the learner’s satisfaction are listed below:
• providing opportunities to practice newly acquired knowledge and skills in real or simulated situations to develop intrinsic motivation (such as using a computer program or game that applies a recently learned concept),
• using appropriate feedback that sustains a desired behavior (for example a nod with a smile or a wink for a correct answer to a question),
• being consistent with standards and consequences for task accomplishments to give the learner a sense of equity.

Keller (1983) does not recommend the use of all these strategies in any given lesson. He suggests, instead, procedures which specifically address those areas of the four conditions identified by an audience needs assessment.

Motivational Phase
The motivational phase gives the students an insight into the importance of the study of a given portion of the curriculum. The first procedure of this phase is the creation of a problem-based learning situation, for instance, giving a task that requires the study of the topic, discussing the significance of the upcoming topic, or recounting the solution of a historical problem using the concept. The teacher, then, should formulate the basic learning task, such as summing up the discussion of the problem-based scenario to clearly define the goal of the learning. The instructor must allow for the self-control and self-evaluation of student potential in the proposed activities, for example, by supplying the time frame for completion of the assignment and outlining the students’ knowledge and the gaps they must fill to master the topic.

Operational-cognitive Phase
The operational-cognitive phase requires the most time. During this phase, the learners assimilate the content of the topic. The learning activity should take

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Soviet Theories
Based on a deductive analysis of Soviet research, a Soviet instructional motivation model (Markova, Orlov, & Pridman, 1986) specifies a sequence of three stages of instruction for effective development and promotion of motivation: 1) the motivational phase, 2) the operational-cognitive phase, and 3) the introspective-evaluative phase. The authors stress the need for the promotion of long lasting motivation, not the creation of short-lived interests. The authors suggest that this can only be done on a large scale by following through these three phases. The studies they cite, however, are not available in English translation for our analysis.

on a theoretical, investigative character (such as studying grammar as a scientific and theoretical research into the native language) so that the learners may become intrinsically interested in studying the topic. The effectiveness of this phase is dependent upon the perceived relevance of the topic as produced in the previous phase.

Introspective-evaluative Phase
This final phase in the study of the topic involves self evaluation with the students reflecting upon their own learning activities to evaluate their results with the goals. This phase should be organized, such as having the students compile questions to test the assimilation of the topic or having them con-
Construct a model demonstrating the connections of the basic concepts of the topic, to give the students a feeling of emotional satisfaction.

**Strategies**

The Soviet theorists supply specific procedures which have been found to promote motivation during the three stages. These strategies are identified in four categories: material, activities, group work, and evaluation. Motivational material has informational content that is relevant to the students' future needs, is intelligible but reasonably complex, places the learner in a novel perspective, and is aimed at the solution of serious problems in the actual scientific world. Motivational activities are those processes that develop analogies to aid understanding, are perceived as relevant to the students' future needs, take on an investigative nature, supply a feeling of emotional satisfaction from accomplishment, are practical and concrete, and satisfy the need to think. Collective (group) work can be used to improve individual motivation by promoting the effects of peer pressure, role modeling, specialization of skills to improve personal chances for successful accomplishment, and the potentially rewarding nature of group work. Evaluation (feedback) is motivational when it is given in a qualitative way, accentuates the positive, and explains students' shortcomings.

While motivational activities are needed for all three stages of motivational learning the other three categories are each best suited for specific stages. Motivational materials should be concentrated in the first stage; group work in the second stage; and feedback in the third stage. The authors emphasize the importance of enlisting all these strategies and point out that none of these alone can play the decisive role in producing motivation.

The major objective of the strategies outlined in the Markov, Orlov and Fridman Model is the shaping of a "motivational sphere" that "will support the pupil in the performance of efficacious and fruitful learning throughout all his years" and will nurture a drive life-long toward learning for the sake of knowledge (Markova, et al., 1986).

**Comparisons**

The two models reviewed have a great number of similarities. Table 1 shows that three areas of motivation are identified in both models: interest, relevance, and satisfaction. Further analysis of the models reveals a number of similarities in motivational strategies. These parallels support the hypothesis that the treatment of motivation in instruction is similar across the two cultures.

The major differences in the practices of the educators appears to be a possible cause of differences in strategies and the philosophy of their use. It is significant that the Markova, Orlov and Fridman Model is very limiting in its adjustability for personal applications, because of its requirement for specific strategies in a prescribed sequence (the instructor must follow a carefully specified program of steps for successful motivation). Conversely, the more general nature of Keller's goals (to supply a model for designing motivational instruction that can be easily used by a large number of designers and instructors) allow for a great deal more flexibility and is more generally useful with various teaching techniques. This difference may be a reflection of the fact that American teachers are encouraged to develop their own effective "styles" of teaching, while the process in the Soviet Union is more centrally standardized. The Markova, Orlov, and Fridman Model is also distinct in its use of three distinctive and sequential stages, while Keller uses a model of four phases, which are interactive and may need to be addressed many times in any order.

Analysis of the differences between the perspectives can be summarized in Table 2.

**Conclusions**

A number of apparent differences may be due to omission of characteristics that are implied in the theoretical descriptions of the models but that are not stated in the strategies. The actual differences in the strategies connected with these conditions also may be due to the contrasting perspectives of the acceptable needs and motives of students during the educational process. The most significant underlying difference is Markova, Orlov, and Fridman believe that students have a fundamental need to learn and that a specific instructional program in its complete form will motivate the learner to investigate and achieve. The Keller model, however, is a supplement (not a required regimen) intended to improve sound instructional programs by helping to ensure the learner's motivation throughout the lesson.

The Markova, Orlov, and Fridman Model should be examined from the perspective that their educational system has learners who have been socialized to
Table 2

Differences Between Two Motivation-Based Models

KELLER
1. predominately short range goal of motivation
2. more generic and flexible
3. uses personal anecdotes
4. uses rewards
5. uses carefully timed feedback
6. no use of peer pressure
7. no use of role modeling
8. uses student control over successes
9. uses attributional feedback
10. uses a deeper knowledge of the familiar to promote interest

MARKOVA, ORLOV, AND FRIDMAN
1. long range goal of life long desire for learning
2. specific sequence of steps for instruction, less flexible
3. no suggested personalization
4. no use of rewards
5. no timing of feedback
6. uses peer pressure
7. uses role modeling
8. uses learner self-evaluation
9. no use of attributional feedback
10. uses serious problems in the real scientific world to promote relevance

Different motives and needs (for example working for and with the group is most important and education is the way to succeed). Therefore, the techniques for motivating those students cannot necessarily be expected to be effective with contemporary American learners. However, that does not eliminate the possibility of implementing some of their strategies to expand Keller's motivational model to improve its usefulness and/or its effectiveness.

The relative strength of the Keller model is its adaptability to a wide variety of teaching methods and processes. This flexibility is necessary in Western educational programs. The extreme variance in classroom processes is encouraged to accommodate a wide range of learning styles and to develop individuality.

A point that should not go unnoticed is the Soviet belief that group work is motivational due to its intrinsically rewarding nature. Obviously, while this is the case in a high moral Soviet educational system, some might see this belief as more of a political indoctrination of the Socialist ideology. However, we should remember that to some Western motivational theorists (e.g., Donald McClelland) the "need for affiliation" exists for a large number of individuals. These theorists argue, not unlike the Soviet theorists, that for these learners there is an inherent satisfaction in working within groups.

Recommendations

Three aspects of the Markova, Orlov, and Fridman are sufficiently consistent with American educational theories to warrant inclusion in the Keller model. These are the use of role-modeling, relevancy of instruction to the students' perceived future needs, and involvement of the learner in "a self-evaluation of achievement." I think that these three strategies should be included in Keller's model to give instructional designers more strategies in the development of motivating instruction.

The use of role-modeling to change the attitudes and behaviors of individuals is widely supported by theorists (Martin & Briggs, 1986, chap. 4). The concept of addressing relevancy, through the use of serious problems in the real world, also has significant support in the literature (Martin & Briggs, 1986, chap. 8). Self-evaluation (as the learners compare the results of their work with the goals they set) has been widely identified as helpful in the development of self-initiated learning (Martin & Briggs, 1986).

It is appropriate to include these three strategies in the Keller model. The result would yield a model much like Keller's, but expanded with the addition of three new strategies. Under confidence I would add a strategy that used activities allowing for role-modeling of successful individuals (e.g. guest speakers famous in the field of study or video tapes of role models). As a strategy for relevance, I would add provision for students' perceptions (e.g. using real problems in the world with interdisciplinary sources). I would add a strategy using self-evaluation of learners' achievement under the condition of satisfaction (e.g. a post-test evaluation form which can help students compare their progress with their original goals).

There is a need to study the effectiveness of role-modeling, the use of real problems in the world, and learner self-evaluation as strategies for inclusion in an expanded "Model for the Design of Motivational Instruction." Those three concepts should be analyzed further for their appropriateness in Western instructional design models by studying their motivational effects on American students and their effectiveness on learners of varying ability and learning style.

We also should be looking to the motivational techniques of other cultures for additional strategies (e.g., Japan and Germany). Analysis of strategies for motivation in other cultures may help improve the design of instruction in our culture.

References


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