Interview with John M. Keller on Motivational Design of Instruction

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John M. Keller is one of the most recognized and respected scholars in the field of educational technology and instructional design. He has worked at the junction of psychology, education, and technology. Along with many other contributions, he has developed an instructional design theory that can be used successfully both with traditional and emerging technologies to enhance instructional processes. Much of his work has focused on motivational aspects of instruction, which is a special area of concern for many instructional designers who aim to provide truly satisfying educational experiences for all learners. This indeed makes his contributions very unique and worthwhile. Although he had to build a convincing argument about the appeal of instruction in the beginning years of the Motivational Design Theory, it appears that his efforts have turned out to be fruitful so that now everybody talks about motivation as a vital component of instruction.

Professor Keller's celebrated ARCS Model (which stands for Attention, Relevance, Confidence, and Satisfaction) is well-known by instructional designers all around the world. Scholars in a large number of countries have investigated the applicability and effectiveness of this model, and they generally concluded that motivation should be an integral part any of effective learning system. It also appears that Keller's model has recently been evolved to ARCS-V Model to include "Volition" as the fifth dimension. Considering the global influence of his contributions to the field of educational technology and instructional design, we decided to interview Professor Keller and share his views with colleagues. Similar to our previous interviews, we conducted this interview through online technologies of communication.

When and how did you start your academic career?

After graduating from the University of California at Riverside in 1965 I taught secondary school in Southern California for six years. During that time, I studied psychology at San Diego State University and then began my doctoral studies at Indiana University in the Instructional Systems Technology program in 1971. After graduating in 1974, I was fortunate to obtain a faculty position at Syracuse University. I stayed there until December of 1984 when I moved to Tallahassee, Florida, to join the Instructional Systems Program at Florida State University.

What were the research issues that attracted your initial attention?

At the suggestion of one of my Educational Psychology professors at Indiana University during my graduate studies, I became interested in the concepts of locus of control and learned helplessness. At the time, I did not know how these topics would relate to instructional

systems design but I was intrinsically interested in them and fortunately my professors allowed me to study these topics for my dissertation work.

How did you develop an interest in motivation?

There is a long story behind the development of my interest in motivation. It began when I was an undergraduate majoring in philosophy and literature. I was keenly interested in writers and philosophers such as Faulkner, Dostoevsky, Unamuno (e.g. *Tragic Sense of Life*), and many others that explored human motives, beliefs and values in depth. Later, when I began to study psychology and organizational behavior, I was interested in theories pertaining to motivation and performance.

What were your first discoveries about motivational aspects of learning?

It wasn't until I became an assistant professor at Syracuse University that I realized that my primary area of research interest was motivation and learning. Together with a group of graduate students in an advanced seminar we read major motivational theories and discussed their relevance for learning design. The major outcome of the seminar was the realization that the many different micro-theories of motivation could be clustered into a small number of macro-theories. My earliest papers presented this synthesis.

How did you relate motivation with instructional design?

Until I began my work, the previous research on motivation focused on micro-theories and strategies to achieve various types of motivational conditions such as achievement motivation, internal locus of control, self-motivation, and curiosity. I realized that these concepts and theories could not be integrated meaningfully into the systematic instructional design process. There were simply too many concepts and no guidance for how to incorporate them into the learner analysis and lesson design process. That is, when I began to develop the systematic motivational design process that incorporates the basic elements of design just as they are incorporated in instructional design and other systematic problem solving processes. In my early papers I presented the parallel structure of motivational design and instructional design.

What was the general response of the academia to the concept of motivating instructional design?

Although there was doubt that this could be a productive area, there was also a positive but narrowly focused response. I had published papers in two different psychology journals including the *Journal of Educational Psychology*,; however the first articles I published on motivational design were in *Performance and Instruction* which was a publication of the National Society for Performance and Instruction. They generated quite a lot of interest and even won best paper awards. As time went by, it came as a surprise to me to discover that a large number of people were studying and applying the ARCS model in their design work.

Have you envisioned that motivation would be a sustainable research area for instructional designers?

Yes, I did envision that it would be a sustainable research area. The overwhelming majority of work in our field is on learning, information processing, and instruction; but motivation is a fundamental and necessary component of the learning process. My work helped provide a

pathway for instructional designers to more systematically investigate the motivational components of learning design and performance. At the same time, researchers in the instructional science area were continuing to focus on specific motivational variables and how they affected design of learning. Altogether, the interest in all aspects of motivation grew tremendously during the 1980s and 1990s.

What were the main assumptions and principles of the Motivational Design Theory?

I describe the assumptions and principles of the ARCS motivational design theory in a paper published in 2008 [Keller, J. M. (2008). First principles of motivation to learn and e3-learning, *Distance Education*, 29(2), 175-185]. One characteristic of our field is that with every new delivery system and technological innovation a new series of articles appears that talk about learning and motivation in each of those contexts as if they were materially different from each other. They, of course, are different with respect to the mechanics and affordances provided by each and these can affect the specific types of tactics that one uses, but a key assumption of the ARCS model is that the fundamental principles of learning, instruction, and motivation are the same in each context.

With respect to principles, the four that were derived from the synthesis of motivational concepts and theories and that form the foundation of the ARCS model are that in order to have motivated students their curiosity must be aroused and sustained (attention); the instruction must be perceived to be relevant to one's personal values or instrumental to accomplishing desired goals (relevance); the students must have the personal conviction that they will be able to succeed (confidence); and the consequences of the learning experience must be consistent with the personal incentives of the learner (satisfaction).

Are there other theories of instructional design that helped the acceptance and diffusion of the Motivational Design Theory?

Within the field of instructional systems design, Gagné's *Conditions of Learning* and Merrill's *Component Display Theory* both provided foundational theories that were highly compatible with the ARCS model, but motivational components of these theories were limited to a concern for getting people's attention at the beginning of instruction and providing positive reinforcements to shape and sustain behavior. The ARCS model complemented these theories by providing a more comprehensive and holistic treatment of motivation.

How did the ARCS model emerge?

In response to one of the questions above, I described how the theoretical foundation for a motivational design model was created. However, the ARCS model did not emerge automatically from this synthesis. I undertook a deliberate effort to move from the theory to a systematic design process that could be used by instructional designers and instructors. Again, I enlisted support from some graduate students and we reviewed application-oriented documents to prepare a huge set of motivational tactics written on 3x5" cards. We sorted these into clusters of similar tactics and they matched the four major categories of the theoretical synthesis. We then subdivided each of the stacks into subcategories in order to have a more concrete set of tactical areas than the more general categories. At that point I also thought about the labels for each of the major categories. In moving from a theoretical perspective to a more applied perspective I wanted to have an acronym that would catch

people's attention and be easy to remember. As it turned out, we had to change the names of only two of the categories to create the ARCS acronym.

Has the ARCS model evolved over the years or stayed the same?

The ARCS model was quite stable for many years. There were changes in the subcategories as reflected in differences among some of my publications, but the four primary categories stayed the same. However, several years ago I made a major change in the model by adding a fifth category called "volition." The ARCS model explains the basic characteristics of motivation but even when a person is motivated to achieve a given goal it can be difficult to sustain one's actions in pursuit of that goal. Thanks to the contributions of Markus Deimann, a German doctoral student who came to study with me for one year and who is now a professor in Germany, I added the volition category which explains various reasons why people do not persist in pursuing their goals and provides strategies for helping them stay on task. The new model, ARCS-V, has been described in several of my publications [See Keller, J. M. (2008). An integrative theory of motivation, volition, and performance. *Technology, Instruction, Cognition, and Learning, 6*(2), 79-104].

Who studied or contributed to the ARCS model around the world?

People in a great many countries of the world have conducted studies confirming the validity and generalizability of the ARCS model as well as reports of many different ways in which it has been applied in their contexts. There are far too many people to list here and I apologize to those who are not included in this small sample, but some of the people with whom I have worked personally or am familiar with their contributions are Tom Kopp, Ruth Small, Bernie Dodge, ChanMin Kim, E Shen, Tami Im, and Sang Park in the USA, Katsuaki Suzuki in Japan, Sang Ho Song in South Korea, Hermann Astleitner in Austria, Markus Deimann in Germany, Janine Stockdale in Northern Ireland, and Jan Visser, Nicole Loorbach, and Lya Visser from the Netherlands.

Do results of research regarding motivational design of instruction differ in various countries or cultures?

I know of at least 50 different countries in which the ARCS model has been studied and applied. I have been to many of those countries in North and South America, Europe, the Middle East, Northeast Asia, and Southeast Asia. I have found that the four categories transfer reliably across all of these different settings. The primary differences that occur are in regard to the subcategories and tactics that tend to be used. Keep in mind that the ARCS model is a problem-solving model in which the analysis process is used to identify specific motivational challenges that exist in a given situation. If it were more of a prescriptive model then it would not transfer as well because the prescriptions that are valid in one culture would not be valid in some other culture. Given that the ARCS model is a problem-solving process, strategies are developed and applied based on the results of the analysis. For example, in Western cultures there tends to be more of a focus on individual recognition and individual competition. In the Eastern cultures there is more often a concern with the influence of social values on individual and group behavior. This is a sweeping generalization but it generally illustrates how the model can have both a widespread application together with individual variations in different cultural settings.

Is there a collection or library of ARCS studies around the world, an established network of ARCS researchers, or a list of dissertations completed about the ARCS model?

Some of this information is on my website (http://arcsmodel.com) but I do not know of any comprehensive reviews of ARCS-related studies. Also, there is no established network of ARCS researchers or list of dissertations. However, I have a list of the 57 or more dissertations for which I was the advisor. Most of those focused on the ARCS model or specific motivational variables. I plan to post this list on my website early in 2014.

Which aspects of the ARCS model are well-studied and which aspects still need further investigations?

There have been many studies and reports related to the original formulation of the ARCS model. These have confirmed its theoretical and practical validity together with its generalizability. However, there still are many ways in which it could be studied in relation to various delivery systems, cultural settings, and learner populations. Also, the recent expansion of the model to include volition provides many opportunities for studies.

What roles can instructional designers as both researchers and developers play to have more motivating instructional systems?

It seems to me that there are two overarching requirements for researchers and developers to have more impact on developing motivating instructional systems. The first pertains to attitude; people have to want to focus on the motivational aspects of their instructional systems. Generally speaking, instructional designers and many teachers focus primarily on the instructional quality of the work they do. They might assume that if the instructional quality is good, either motivation will take care of itself or it's the learner's responsibility to be motivated to learn the material. In my publications I have described how these assumptions are often false and, at best, only partially true. Designers and instructors must be motivated toward being motivating in order to achieve this goal. The other requirement is to develop appropriate skills in motivational design to augment their skills in instructional design and teaching. My publications include step-by-step processes to support the development of these skills.

What lies ahead in terms of motivational design of instruction?

I am continually surprised by the extent to which the ARCS model has taken on a life of its own. I receive e-mails from all over the world, most recently Mongolia, asking for permission to use my measurement surveys and for guidance in regard to specific issues. I would hope that the future will include even more systematic inclusion of motivational design principles in the processes of instructional design, lesson planning, and teaching. On the one hand, many designers and teachers certainly do know how to provide motivating instruction. Some of them are highly skilled and others are proceeding on the basis of past experience and intuition. This is an effective way of building one's skills, but it can be time consuming with a lot of trial and error and it doesn't work for everyone. Thus, taking advantage of the systematic processes that I have published as have a few other researchers can help provide more predictably positive outcomes.

What do you recommend to researchers who are interested in the Motivational Design Theory of Instruction?

My recommendation is very simple. Read established literature on the psychology of motivation, motivation and learning, and motivational design. I describe many motivational concepts and offer motivational design processes and tools in my book [Keller, J.M. (2010), Motivational Design for Learning and Performance: The ARCS Model Approach. New York: Springer] which is available in Japanese and Korean as well as English. Then, do not be afraid to apply the process and implement new strategies in your classroom. It can be frightening to employ a strategy that you have never used before, but having a successful experience with an innovative approach is highly reinforcing and will help give you the courage to keep trying new ideas and expanding your repertoire.

John M. Keller's contributions to the field of educational technology and instructional design are not limited to the development of the ARCS Model only. Instead, he opened a wide area of study that is called Motivational Design of Instruction. As often indicated, instruction may be effective and efficient but not appealing. Many studies have shown that motivational aspects of instruction may be as important as cognitive aspects so that instructional systems should be designed in such a way that all learners, regardless of their individual differences and social conditions, are engaged in the educational process and satisfied at the end.

Professor Keller has emphasized that motivation is a sophisticated construct so that motivating instructional design should take many variables into account. There are both individual and social elements of motivation. Current educational technologies provide many opportunities both for instructional designers and individual learners to create highly motivating learning environments. The ARCS Model and the relevant studies behind it demonstrate how this can be accomplished. Professor Keller, as the creator of the most known theory in this area, is retired now but he still continues to share his expertise and experiences with colleagues around the world.

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