[JOHN MCCUE KELLER: ARCS MODEL OF MOTIVATIONAL DESIGN]

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. (Simsek, 2014)
John McCue Keller, PhD

John McCue Keller (born March 5, 1938) is Professor Emeritus of Educational Psychology and Learning Systems at the Florida State University, United States. (Simsek, 2014) credits Keller as 'one of the most recognized and respected scholars in the field of educational technology and instructional design', and also notes Keller’s many contributions to the field, in particular the development of an instructional design theory, the ARCS Model of Motivational Design.

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Personal Life

On March 5, 1938, John Keller was born to Elmer J. (father) and Marjorie Keller (mother) in Ardmore, a small cultural and tourism city located in Oklahoma, United States.1

After leaving high school, Keller completed one semester of college in 1956 before joining the U.S. Marine Corps in 1957. He served for four (4) years and terminated his service at the rank of Corporal in 1961. During his time of military service, Keller was assigned to an aviation wing where his responsibilities included delivering instruction for flight simulator procedures.

Education and academic career

Keller enrolled in college immediately after leaving the Marine Corps, graduating with a bachelor’s degree in Philosophy with a minor in English from the University of California in 1965. In 1971, after six (6) years of teaching high school in California, Keller began his doctoral studies at Indiana University. He completed his Ph.D. in 1974 with a major in instructional systems technology and minors in organizational behaviour and research and evaluation. Keller’s dissertation focused on locus of control and learned helplessness, constructs which were foundational for his interest in motivation (Keller, Goldman, & Sutterer, 1978)

Keller increasingly developed interest in the field of instructional design at various stages of his academic journey. His interest in motivation however, was most influenced during and after his doctoral studies.

“Reflecting back on these three years at Indiana University, Keller states, “It was my work in locus of control, learned helplessness and also the organizational behavior writings of people like McClelland and Vroom that I realized that I had been interested in motivation all of my life and that the current work out there was just the tip of the iceberg”, reflects Keller (Simsek, 2014)
Post-doctoral Work

After graduating in 1974, Dr John Keller became an Assistant Professor in the department of Instructional Technology at Syracuse University. Keller completed his first years of serious effort in the area of motivation and motivational design (VonDrak, 2007).

(VonDrak, 2007) highlights some of Keller’s major works while at Syracuse University:

- In 1976, he along with Richard Pugh, publish “Sex similarities and differences in locus of control in relation to academic adjustment measures”. Within this timeframe, Keller responds to a question from a colleague who asks for a way to measure motivation. Keller responds that there is not one measure but many (Shellnut, 1996).

- In 1978, he publishes a monograph, “A practitioner’s guide to concepts and measures of motivation”. Also in 1978, “Locus of control in relation to academic attitudes and performance in PSI” was published.

- In 1979, Keller is named Associate Professor, Instructional Design, Development and Evaluation at Syracuse. That same year, he publishes, “Motivation and instructional design: A theoretical perspective.”

- In 1983, a significant monograph is published in the Netherlands, “Development and use of the ARCS model of motivational design”. Also in 1983, Keller is named Chair of the Department of Instructional Design, Development and Evaluation at Syracuse. Finally, Keller contributes a chapter in C. Riegeluth’s 1983 release, Instructional design theories and models: An overview of their current status titled “Motivation design of instruction”.

In 1984, Keller left Syracuse University and moved to Tallahassee, Florida, to join the Instructional Systems Program at Florida State University (Keller, 2007). He accepted a position as Associate Professor, Instructional Science and Technology.

(VonDrak, 2007) continues:

“The following two years, 1986 and 1987, are important years for John Keller and his Motivation Design Theory and Process. The ensuing events represent the official debut and release of this major work to the IT field. The recognition he receives is an indication not only of the acceptance of his work but also the value that is attached to it.

In 1986, he is invited to present a paper at the National Society of Performance and Instruction (NSPI) titled, “Application of the ARCS model of motivation to course design and development”. The following year he received an invitation from NSPI for an encore presentation. The same year, 1987, Keller published two articles, “Strategies for stimulating the motivation to learn”, and “Development and use of the ARCS model of motivation design”. With these events, a milestone has been reached in Keller’s work in motivational design. He has addressed an area, learner motivation, by developing a new theory and process and it has been acknowledged as creditable and important work by peers within his field.”

Research

Keller’s ARCS model offers several strategies for gaining and sustaining learner attention (Francom, G & Reeves T, 2010).
As illustrated in Figure 1, the model consists of four main areas: Attention, Relevance, Confidence, and Satisfaction.

<table>
<thead>
<tr>
<th>Attention</th>
<th>Relevance</th>
<th>Confidence</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceptual Arousal</strong></td>
<td><strong>Goal Orientation</strong></td>
<td><strong>Learning Requirements</strong></td>
<td><strong>Intrinsic Reinforcement</strong></td>
</tr>
<tr>
<td>Provide novelty and surprise</td>
<td>Present objectives and useful purpose of instruction and specific methods for successful achievement</td>
<td>Inform students about learning and performance requirements and assessment criteria</td>
<td>Encourage and support intrinsic enjoyment of the learning experience</td>
</tr>
<tr>
<td><strong>Inquiry Arousal</strong></td>
<td><strong>Motive Matching</strong></td>
<td><strong>Successful Opportunities</strong></td>
<td><strong>Extrinsic Rewards</strong></td>
</tr>
<tr>
<td>Stimulate curiosity by posing questions or problems to solve</td>
<td>Match objectives to student needs and motives</td>
<td>Provide challenging and meaningful opportunities for successful learning</td>
<td>Provide positive reinforcement and motivational feedback</td>
</tr>
<tr>
<td><strong>Variability</strong></td>
<td><strong>Familiarity</strong></td>
<td><strong>Personal Responsibility</strong></td>
<td><strong>Equity</strong></td>
</tr>
<tr>
<td>Incorporate a range of methods and media to meet students' varying needs</td>
<td>Present content in ways that are understandable and that related to the learners' experiences and values</td>
<td>Link learning success to students' personal effort and ability</td>
<td>Maintain consistent standards and consequences for success</td>
</tr>
</tbody>
</table>

Figure 1. Keller’s motivational concepts

(Keller, 2013) explains that Attention and Relevance are the two major parts to the model which represent the components of motivation. “These categories are the result of a synthesis of the research on human motivation.”

According to (Keller, 2013), Confidence and Satisfaction, the second part of the model, represent a systematic design process that assists you in creating motivational enhancements that are appropriate for a given set of learners.

ARCS facilitates the identification of various elements of student motivation, and the design process helps you profile the motivational characteristics of students in a given learning environment and then design motivational tactics that are appropriate for them. (Keller, 2013)

(Poulsen, Lam, Cisneros & Trust, 2008) present for each category of ARCS model, the following practical strategies to gain and sustain student motivation:

**Attention** – Grabbing attention is the most important part of the model because it initiates the motivation for the learners. Once learners are interested in a topic, they are willing to invest their time, pay attention, and find out more.

- **Perceptual Arousal**
  - Concreteness – Use specific, relatable examples.
  - Incongruity and Conflict – Stimulate interest by providing the opposite point of view.
  - Humor – Use humor to lighten up the subject.

- **Inquiry Arousal**
  - Participation – Provide role-play or hands on experience.
  - Inquiry – Ask questions that get students to do critical thinking or brainstorming.
  - Variability – Incorporate a variety of teaching methods (video, reading, lecture).
**Relevance** – Learners will throw concepts to the wayside if their attention cannot be grabbed and sustained and if relevance is not conveyed.

**Goal Orientation**
- **Present Worth** – Describe how the knowledge will help the learners today.
- **Future Usefulness** – Describe how the knowledge will help in the future (getting into college, finding a job, getting a promotion).
- **Motive Matching**
- **Needs Matching** – Assess your group and decide whether the learners are learning because of achievement, risk taking, power, or affiliation.
- **Choice** – Give the learners a choice in what method works best for them when learning something new.

**Familiarity**
- **Modeling** – The concept of “be what you want them to do.” Also, bring in role models (people who have used the knowledge that you are presenting to improve their lives).
- **Experience** – Draws on learner’s existing knowledge/skills and shows them how they can use their previous knowledge to learn more.

**Confidence** – If learners are unaware or feel that the learning requirements are out of reach, motivation normally decreases.

**Success Opportunities** – Being successful in one learning situation can help to build confidence in subsequent endeavors. Learners should be given the opportunity to achieve success through multiple, varied, and challenging experiences that build upon one another.

**Personal Control** – Confidence is increased if a learner attributes their success to personal ability or effort, rather than external factors such as lack of challenge or luck.

**Satisfaction** – Learners must obtain some type of satisfaction or reward from a learning experience. This satisfaction can be from a sense of achievement, praise from a higher-up, or mere entertainment. Feedback and reinforcement are important elements and when learners appreciate the results, they will be motivated to learn. Satisfaction is based upon motivation, which can be intrinsic or extrinsic. Keller suggests three main strategies to promote satisfaction:

**Intrinsic Reinforcement** – encourage and support intrinsic enjoyment of the learning experience. Example: The teacher invites former students to provide testimonials on how learning these skills helped them with subsequent homework and class projects.

**Extrinsic Rewards** – provide positive reinforcement and motivational feedback. Example: The teacher awards certificates to students as they master the complete set of skills.

**Equity** – maintain consistent standards and consequences for success. Example: After the term project has been completed, the teacher provides evaluative feedback using the criteria described in class.

To keep learners satisfied, instruction should be designed to allow them to use their newly-learned skills as soon as possible in as authentic a setting as possible.”

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Awards

(VonDrak, 2007) lists Keller’s numerous awards including: the Outstanding Young Researcher Award from Association for Educational Communications and Technology in 1975; Encore Presenter at National Society for Performance and Instruction in 1987 and 1989 respectively; Best article of the year in Performance & Instruction from the National Society for Performance and Instruction in 1989; Instructor of the Year Award from the Florida State University’s Department of Educational Research in 1990; and the Distinguished Alumnus Award from Indiana University in 1992.

Publications and/or books

Keller’s work has more than 750 citations on Google scholar.

(Keller, 2008b) lists over two hundred (200) publications made over the course of Keller’s four (4) decade academic career. The publications include numerous books, monographs, book chapters, refereed articles, encyclopedia articles, technical manuals, paper presentations and technical reports.

Keller’s publications include the following:

Books


Monographs


Book Chapters


Refereed Articles


Technical Books and Manuals


Technical Reports


References


