

Proposal for the Volition Subcategories of the ARCS-V Model

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In this paper, the authors propose and discuss the significance of subcategories for Volition in the ARCS-V model. This model is an expansion of the ARCS model developed by John M. Keller. Three subcategories for the element of Attention, Relevance, Confidence and Satisfaction that provide hints for instructors and learners were identified in the ARCS model, but subcategories for Volition of the ARCS-V model have not been identified. Through volition-related research reviews, the authors identified keywords to classify subcategories for Volition for the ARCS-V model. The authors discuss whether the proposed subcategories can make the ARCS-V model more persuasive in the volitional phase of learning. The implications of the proposed subcategories are also discussed.

Keywords: ARCS model, ARCS-V Model, motivation, volition, intention

Introduction

A variety of research that relate to motivational problems in learning have been completed. Numerous theories and models were constructed and introduced as outcomes from the research (Uebuchi, et al, 2004). The ARCS model was advocated by Keller in 1983 and introduced to Japan in 1987 (Suzuki, 2010). It is one of the most popular instructional design (ID) models known for directly dealing with the attractiveness of the instruction and the learner's motivation. Since then, 34 papers that included analytical, descriptive, prescriptive and evaluation related studies were published in 15 years from 1995 to 2010 (Suzuki et al, 2010). In one of the current studies, Nakajima et. al. (2010) expanded the ARCS model by adding another factor: Assistance & Tools (AT). In the ARCS+AT model, university faculty are considered "learners" who utilize e-learning. The university assists from a viewpoint of motivation using a checklist and tools that the model provides. The ARCS+AT model is aimed to provide a framework for solving issues of utilizing e-learning at universities.

Regarding the expansion of the ARCS model, it was initiated by the ARCS model proponent, Keller (2008b), and is ongoing. In the expanded model, ARCS-V, the category of volition (V) was added. The motivation that a learner gains is expected to last until he/she reaches the goal. Keller (2010a) suggested that as there will often be many interfering factors, volition should be assisted or guided properly. The ARCS-V model integrates a volitional perspective into the original ARCS model. Although expanded, it has not been studied much when compared to that of the original model (Suzuki, 2010). For example, Keller (2010a) has a total of four chapters devoted to all of ARCS categories, explaining background theories for each of subcategories for the four factors, such a chapter was not included for Volition, with no subcategories suggested for the Volition. Therefore, the purpose of this paper is to explore details of the ARCS-V model, reviewing related references and finally proposing the subcategories for the volitional category.

The aim of this study is to provide more detailed thus useful framework to users of the ARCS-V model. It is worthwhile since the original model, which had been stable in the form of ARCS for more than twenty years, has been providing detailed practical advice, but this has not been the case for the newly added factor of Volition. The investigation for, and proposal of, the subcategories for Volition of the ARCS-V model can enhance the model's practical value, because it has not yet tried elsewhere.

The ARCS Model and Its Expansion

The design process that is built into the ARCS model makes it a practical, application-focused theory instead of being purely a descriptive or prescriptive theory (Keller, 2010a). Keller integrated a large number of motivation-related concepts and theories into the four categories of ARCS and combined them with the systematic approaches of designing motivation for learning. This allows the ARCS model to be useful for teaching and learning. The ARCS model provides instructors and learners opportunities and tools, not only for diagnosis of the cause of motivational problems in a class, but also strategies for solving them.

As described above, the ARCS model consists of four categories: Attention, Relevance, Confidence and Satisfaction. Each category is constructed with theoretical evidence, and has subcategories aimed to provide instructors practical suggestions for resolving learner issues. The four categories of the ARCS model (Keller, 2010a) and subcategories for each are shown in Table 1. Additionally, process questions for instructors who will use the ARCS model are also described.

Table 1. Four categories of the ARCS model and their subcategories and process questions (Keller, 2010a)

Category	Subcategories	Process question for Instructor
Attention	A-1 : Perceptual Arousal	What can I do to capture their interest?
	A-2 : Inquiry Arousal	How can I stimulate an attitude of inquiry?
	A-3 : Variability	How can I maintain their attention?
Relevance	R-1 : Goal-Orientation	How can I best meet my learner’s needs? (Do I know their needs?)
	R-2 : Motive Matching	How and when can I link my instruction to the learning styles and personal interests of the learners?
	R-3 : Familiarity	How can I tie the instruction to the learners’ experiences?
Confidence	C-1 : Learning Requirement	How can I assist in building a positive expectation for success?
	C-2 : Success Opportunities	How will the learning experience support or enhance the learners’ beliefs in their competence?
	C-3 : Personal Control	How will the learners clearly know their success is based upon their efforts and abilities?
Satisfaction	S-1 : Natural Consequences	How can I encourage and support their intrinsic enjoyment of the learning experience?
	S-2 : Positive Consequences	What will provide rewarding consequences to the learners’ successes?
	S-3 : Equity	What can I do to build learner perceptions of fair treatment?

Attention

In the attention category, which aims to catch learners’ interests, concepts of arousal theory, curiosity, boredom, and sensation seeking are represented by the term “attention”. Physiologically-based & cognitively-based curiosity (James, 1890), specific exploration and diversive exploration (Berlyne, 1965), sensation seeking (Zuckerman, 1979) and others are integrated into this category. Additionally, “Perceptual Arousal”, “Inquiry Arousal” and “Variability” were included as subcategory headings that provide strategies for gaining learners’ attention (Keller, 2010a).

Relevance

The Relevance category aims to make learners realize that learning is related to personal experiences and is of value. The value-related concept from the Expectancy-Value theory is included. The Expectancy-Value theory appears when the outcomes that learners will meet are

desirable and achievable. Tolman's theory (1932) explained that behavior is purposeful and is persistent, patterned, and selective. Achievement, affiliation, and power (McClelland, 1976), absolute interest (Schank, 1979) and others are also integrated into this category. "Familiarity", "Goal-orientation", and "Motive Matching" are subcategory headings that provide relevance strategies for learners (Keller, 2010a).

Confidence

In the Confidence category, which aims to reduce learners' uneasiness and encourage them to expect success in the near future, personal control is one of the most important concepts. Locus of control (Rotter, 1966), origin-pawn concept (deChams, 1968), and self-efficacy (Bandura, 1977) are integrated into this category. "Learning Requirement", "Success Opportunities", and "Personal Control" are subcategory headings that provide strategies for encouraging learners to gain confidence in achieving learning goals (Keller, 2010a).

Satisfaction

In the Satisfaction category that aims to make learners feel, "I am glad I did it!", strategies are provided to learners to gain satisfaction from the consequences which provides reinforcement. Also, the concept of fairness is important in this category. Based on theories like classical conditioning, operant conditioning, fair or unfair (Adams, 1965) and others, these concepts are integrated into a single category. "Natural Consequences", "Positive Consequences" and "Equity" were established as subcategory titles that provide strategies for gaining learners' satisfaction and making them feel that they would like to learn more (Keller, 2010a).

As described earlier, the ARCS model is currently being expanded. The concept of volition was established as a new category. Keller (2008b) pointed out this category in "First principles of motivation to learn". The definition of the term "volition" is "A concept of all the actions and attitudes related to the persistence of effort to reach a goal." On the other hand, the definition of "motivation" is "a meaning of what people hope, what they select and perform, and what they devote all their energies to (Suzuki, 2010)." Besides this expansion, the macro-model which supports the ARCS model was also expanded to the MVP model of Motivation, Volition, and Performance (Keller, 2010).

The MVP model was expanded from a macro-model of motivation, learning and performance (Keller, 2008a) which had a simple structure compared to the MVP model. In the macro-model, "effort" is automatically initiated as a learner becomes motivated and then "performance" occurs according to the learner's ability, knowledge and skills. In this process, the focus is not on the influences on the volition that are caused by external inputs or psychological changes after the effort initiation. Accordingly, the MVP model focuses on the period when a learner becomes motivated to the time of learning outcomes. The details for external inputs, the volitional processing in the psychological environment, the information and psychomotor processing, and the motivation and information processing interface are newly described in the model cycle. Then it is clear how volitional factors have been added in the MVP model (See Figure 1). However, subcategories for the V category of the ARCS-V model have not yet been proposed. Therefore, by referring to the context of defining each category and subcategory for the ARCS model, we will propose subcategories for V in the next section.

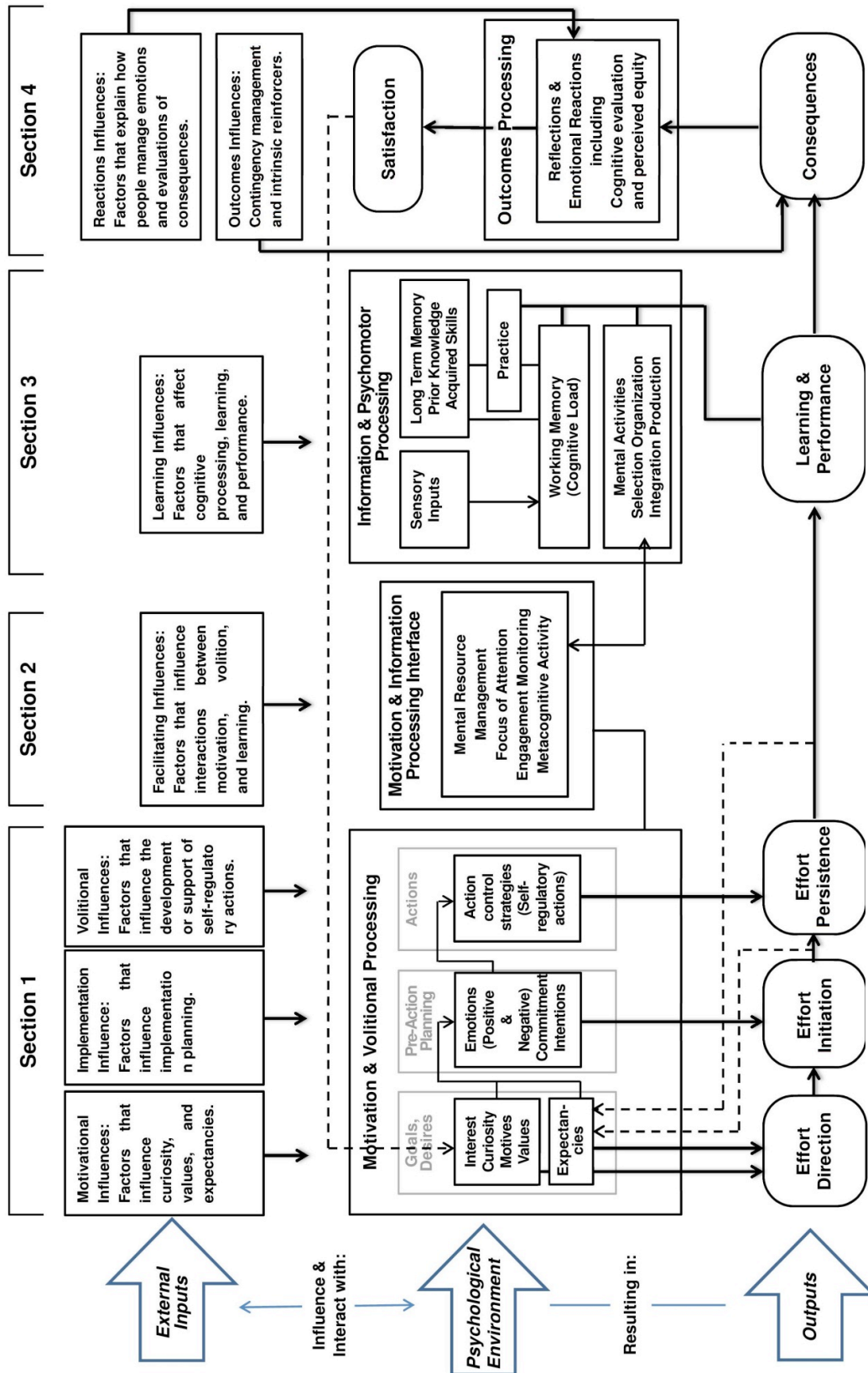


Figure 1. The MVP model of Motivation, Volition, and Performance (Keller, 2010b)

Proposals for Subcategories within the Volitional Category

The Volition category in the expanded ARCS-V model attempts to supplement the concept of volition that is not explained in detail in the original ARCS model. It is important to provide practical explanations or suggestions in order to benefit instructors. First, we will propose the subcategories for Volition in the same manner as in each of the ARCS categories.

Figure 2 shows the cycle of learning activities and a learner's state of mind in a simple way by extracting the row of learner's "psychological environment" and "outputs" from Figure 1 and by simplifying the structure. The figure is provided for clarifying the area that relates to volition in the learning cycle. By referring to these two figures, it is easier to determine what focus is needed and when to assist learners to sustain their volition. As described in the previous paragraph, "volition" is "the actions and attitudes related to the persistence of effort to reach a goal". Therefore, we propose that the volition-related area is inclusive from "Effort Initiation" to "Learning & Performance" in the Figure 1. It will be unique to include "Mental Resource Management" of the MVP model as an important part of the processes that relate to a learner's volition.

There are steps in the volition-related area. At the earliest step, learners are motivated. Then they prepare for producing their effort, and output their performance until they meet a goal as long as volition is not interfered with. However, interferences tend to emerge and influence a learner's volition in actual situations, so instructors must work to prepare strategies to protect them from it. Kim & Keller (2008) experimented to determine if it is effective for instructors to send e-mail messages to learners with helpful comments that included volitional elements when learners would encounter motivational problems. It did not work well, however, when learners did not expect it. This result suggested that instructors should try to help learners learn how to be self-directed when learning and not help strengthen volition directly. Then learners, themselves, will sustain their own volition.

According to this, the key to self-directed learning is for instructors to assist learners in reference to the sections of "Pre-action Planning", "Actions", and "Mental Resource Management" in the MVP model. Related publications for these sections are action control theory (Kuhl, 1984), implementation intention (Gollwitzer, 1996; Papies, et. Al., 2009), self-regulated learning (Zimmerman, 1990; Pintrich, 2004; Boekaerts & Corno, 2005) and others. In reference to these articles, 1) Strategies for pre-action planning after forming implementation intention, 2) Strategies for action-control, and 3) Strategies for meta-cognition are representative strategies that will help a learner's volition in the ARCS-V model.

When an instructor needs to determine if there is any problem regarding volition at each step, strategic keywords supported by theoretical evidence as described above will be helpful. The keywords and explanations for each are as follows:

Implementation Intention

An intention, once motivated and formed, will become “Implementation Intention”, that is, an effort to reach a goal. This leads a person to goal-oriented actions (Gollwitzer, 1996). At the same time, “volition” for maintaining the effort will accompany. It is important for instructors to assist learners to form an intention-volition link, first. To practice this, instructors should focus on the transition to intention implementation intention by having learners create plans that reflect such intentions.

Appropriate Self-control

Instructors need to prepare strategies that assist learners to have self-control for learning activities properly while implementing the plan they established with implementation intention. Kuhl (1984) advocated in his “Action Control Theory” that 1) selective attention, 2) encoding control, 3) emotion control, 4) motivation control, 5) environment control, and 6) parsimonious information processing will be important when learners are controlling their own actions. Instructors should induce learners to reflect on their emotion or capacity, and help learners control themselves by arranging their learning environments.

Self-monitoring

Maintaining volition will demand that learners not just control themselves but review their own current progress for learning objectively. This objectivity in learning will allow learners to realize what to learn next to reach a goal in a proper manner. Then volition to learn will be maintained. Self-monitoring is one of the most important actions according to Self-Regulated Learning (SRL) (Zimmerman, 1990). Instructors should encourage learners to reflect upon themselves objectively in between. A portfolio system that has recently become popular in Japan might be useful in this situation.

We used these keywords as headings for the subcategories of Volition in the same manner as the ARCS model shown in Table 2. We then provided explanations for each subcategory with the representative theory in Table 3, so that the rationale for each heading will be clearly understood.

Table 2. *Subcategories Proposed for the Volition of the ARCS-V model*

Category	Subcategory	Process Question for Instructor
Volition	V-1: Implementation Intention	How can I guide learners to make practical plans for reaching their goals?
	V-2: Appropriate Self-control	How can I encourage learners to behave by keeping their learning controlled?
	V-3: Self-monitoring	How can I provide learners opportunities to realize their learning progress?

Table 3. *Rationale for the proposal of the subcategories for the Volition*

Subcategories	Comments	Reference
V-1 : Implementation Intention	In this subcategory, we will support learners for the practical phase of the four action phases. That is, the instructor will assist learners for working on making a plan for reaching a goal, making a commitment, and starting the effort.	Rubicon Model of Action Phases (Achtziger & Gollwitzer, 2008 ; Gollwitzer, 1996) <Four action phases> (1) predecisional phase (motivational) (2) preactional phase (volitional) (3) actional phase (volitional) (4) postactional phase (motivational)
V-2 : Appropriate Self-control	In this subcategory, we will support learners for planning and implementing the action-control strategies. That is, the instructor will assist learners for excluding any factor which interrupts them against their self-control.	Action Control Theory (Kuhl, 1984) <Action Control Theory> (1) Selective attention (2) Encoding control (3) Emotion control (4) Motivation control (5) Environment control (6) Parsimonious information processing
V-3 : Self-monitoring	In this subcategory, we will support learners for self-monitoring at the action phase for the sake of making them keep learning towards the goal. That is, the instructor will assist learners to have them realize where they are and how much is left to reach the goal and adjust their plans accordingly.	Self-Regulated Learning (Zimmerman & Campillo, 2002) <Phases and Subprocesses of Self-Regulation > (1) Forethought Phase (Task Analysis & Self-Motivation Beliefs) (2) Performance Phase (Self-Control & Self-Observation) (3) Self-Reflection Phase (Self-Judgment & Self-Reaction)

Discussion

The validity of the proposed subcategories of for Volition in the ARCS-V model needs verification. We will also discuss if there is more to consider as the proposal is presented.

When we attempt to identify conditions that will be useful for learners for the volition related area (from “Effort Initiation” to “Learning & Performance” at “Outputs” in Figure2), we can generally anticipate that volition will be maintained and learners will reach their goals as a result of this effort. This is true if 1) learners are allowed time, until reaching their goals, to look

back at the plans for learning made right after learners became motivated, 2) learners can avoid interference with the effort, and can adjust their plans for the situation by understanding their own progress in learning, and 3) the instructor can assist learners at these points above. The subcategories we propose will be adequate, as long as “V-1: Implementation Intention” aims to support learners make an actual plan for reaching their goals, make commitments and initiate efforts; “V-2: Appropriate Self-control” aims to help learners avoid an overwhelming load by conducting self-control; and “V-3: Self-monitoring” aims to help learners make clear how much is left to reach their goals and modify their plans.

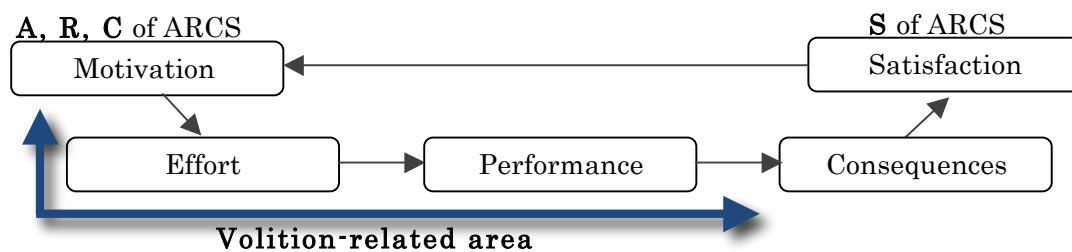


Figure 2. *Volition-related area in the cycle of the ARCS-V model*

However, we realized the need to determine how the original ARCS model may be influenced from the appearance of the volitional element. We also needed to study if the original model may need revision in parts. Keller (2010) explained that the main elements of the concept of learner’s volition were “implementation intention”, “action control”, and “self-regulation”. Based on this perspective, we reviewed if each subcategory of the ARCS model has a relationship to the concept of volition (See Table 4).

Table 4. *Results of checking the volition in the ARCS model*

Δ	A-1 : Perceptual Arousal	○	R-1 : Goal-Orientation
Δ	A-2 : Inquiry Arousal	○	R-2 : Motive Matching
○	A-3 : Variability	○	R-3 : Familiarity
○	C-1 : Learning Requirement	×	S-1 : Natural Consequences
○	C-2 : Success Opportunities	×	S-2 : Positive Consequences
○	C-3 : Personal Control	×	S-3 : Equity

From the review, we found that the expansion of the ARCS model by Keller did not simply add another factor, but is focused again on the cognitive concept that was in the original ARCS model. The ARCS-V model was arranged to make it clearer. Investigating the expanded model resulted in a review of the original ARCS model to determine if modification is needed or not.

CONCLUSION

The purpose of this paper is to propose subcategories for Volition of the ARCS-V model.

Because of this study, we selected three subcategory headings: “Implementation Intention”, “Appropriate Self-control”, and “Self-monitoring”. “Implementation Intention”, theoretically supported by Rubicon Model of Action Phases (Achtziger & Gollwitzer, 2008; Gollwitzer, 1996), will give instructors suggestions to the process question, “How can I guide learners to make a practical plan for reaching their goals?” “Appropriate Self-control” theoretically supported by Action Control Theory (Kuhl, 1984) will produce hints to the question, “How can I encourage learners to behave to keep their learning controlled?” “Self-monitoring” theoretically supported by Self-Regulated Learning (Zimmerman & Campillo, 2002) will suggest how to address the question, “How can I provide learners opportunities to realize their learning progress?”

We discussed the validity of the proposal and the implication of what was pointed out, which is the influence from focusing the volitional aspect upon the definition of the original ARCS model. Further research will be needed to prove the effectiveness and the validity of these subcategories and of the ARCS-V model itself. We will continue this study and propose practical volitional strategies to support the diagnosis and solutions for motivational and volitional problems. Through further experimentation and analyses, we must determine if the ARCS-V model will be more effective than the original ARCS model.

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