IMPACTING MOTIVATION, IDENTITY AND AUTONOMY IN LEARNING BY INCREASING THE APPEAL OF TOOLS

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Abstract

Levels of learner investment in classroom practices can be modified and motivated through the influences of a nurturing teaching environment, applying proficient teaching methods, and crafting effective instructional materials and tools. The materials and tools adopted can positively impact degrees of both learner intrinsic and extrinsic motivation and the levels of effective learning, the identity learners form as they adopt, construct and negotiate the target language, and the capability and autonomy with which they act to involve themselves. This enables them to take charge of their learning and language development and utilizes the knowledge and skills they have attained. This paper describes Keller's 1987 ARCS Model, which is a framework of instructional design and improvement. It provides teachers and classroom material designers with a process method that can be applied in a variety of situations to assess and increase the motivational value and appeal of instructions and materials through the four ARCS factors of attention, relevance, confidence and satisfaction.

1 The basis of the ARCS model

Keller's (1987) ARCS Model is grounded in the early version of the Expectancy-Value Theory (Eccles, Adler, Futterman, Goff, Kaczala, Meece & Midgley, 1983), which has a specific focus on motivation in academic settings and on adolescents. This has stemmed from Atkinson's (1957) Motivation Theory and his (1964) Expectancy-Value Model, which theorizes that motivation is based on factors connected to achieving success and avoiding failure (Atkinson & Feather, 1966).

1.2 Expectancy-value theory

The Expectancy-Value Theory suggests that the extent to which a student is motivated to engage in achievement related behavior in an academic task is jointly determined by two factors. Firstly, associated with Attribution Theory are the changeable causal relationship variables, including academic expectancies and values contributing to achievement (Berndt & Miller, 1990). Secondly, related to Self-Determination Theory is the value the student has attached to that task that will lead towards greater persistence, effective cognitive strategies and more affective attention and effort management (Eccles et al., 1983; Rea, 2000; Wade & Adams, 1990; Wigfield & Eccles 1992, 2000; Wigfield, 1994). Brief outlines of Attribution Theory and Self-Determination Theory will be illustrated before returning to the Expectancy-Value Theory and the ARCS Model.

1.3 Attribution theory

Weiner's Attribution Theory (Weiner, 1976, 1977, 1985, 1986, 2000), originating from Heider's

(1958) study proposes that learners will base their actions on beliefs formed as a result of past actions and experiences. They can also be influenced by factors revealed in the present including motivation to learn, enjoyment of learning, exertion of effort, time spent mastering skills and dedication to perseverance (Wigfield, Eccles, Roeser, & Schiefele, 2008).

1.3.1 Dimensions of attribution

Attribution Theory views a task as falling within the causal dimensions of locus, stability, and controllability drawn from Rotter's (1954, 1966) ideas of locus of control and Heider's (1958) three determinants of performance (ability, task difficulty and effort). These dimensions can be inter-connected to what Weiner (2000) considers to be the two main determinants of motivation, which are expectancy of success and value, or the emotional consequences of task success or failure.

In any task learners will be affected by factors located along the 'locus of control' spectrum. At one end of this spectrum are the external (situational) factors of task difficulty (stable and unchangeable) and luck (unstable), which are beyond the learners' control. At the opposite end of the spectrum are the internal (dispositional) attributes of ability (stable yet uncontrollable), and effort (stable and controllable) (Baton, Yousuf & Parvenu, 2012; Chodkiewicz, & Boyle, 2014; Gabillon, 2013; Hassaskhah & Vahabi, 2010; Hsieh & Schallert, 2008; Perry, Stupnisky, Daniels, & Haynes, 2008; Savolainen, 2013; Tai, 2013; Weiner, 2000).

Whether instigated by a teacher or self-perceived (Hsieh & Schallert, 2008), the positive or negative outcomes of a task will create similar feelings and reactions in learners. Relating to pride and self-esteem, these will exhibit as either causal stability (expectancy/hope), or, controllable or uncontrollable causal control (shame or guilt/regret) (Perry, et al. 2008; Savolainen, 2013; Weiner, 2000). These will be credited to personal or environmental attributions of which the task difficulty, luck, ability and effort are dominant (Weiner, 1976, 1977, 1985, 1986, 2000). Other affective attributions may also include, feelings of self-efficacy (Bandura, 1997), personal intelligence, knowledge, effort and strategy, or instructional quality, test difficulty, grading criteria, course content, class size, and social support (Perry, et al., 2008). This will then have a motivational effect on self-efficacy and self-belief to carry out future tasks (Bandura, Barbaranelli, Caprara, and Pastorelli, 1996) by affecting future expectations of success (Stoeber & Becker, 2008) and readiness to engage in similar tasks (Savolainen, 2013). As a constructivist approach to managing teaching and learning in language classrooms (Tai, 2013) Attribution Theory can result in teachers adopting alternative techniques of instruction and student development.

1.4 Self-determination theory

Self Determination Theory (SDT) (Deci & Ryan, 1985; Deci, Vallerand, Pelletier & Ryan, 1991) provides a clear, systematic, linear continuum of motivation constructs. These range from intrinsic and more self-determined motivation at one end, through four levels of extrinsic motivation, to non-self-determined amotivational factors at the opposite end. As a humanistic theory SDT assumes that individuals have a natural tendency to engage with their environment, seek challenges, and pursue goals (McClelland, 2013) and would therefore be placed at the intrinsic end of the continuum. This is not always the case however, and individuals may find themselves in situations where they are asked to take part in and complete activities for which

they recognize no perceived benefit. In these instances, the individuals will find themselves with levels of non-self-determined motivation where extrinsic motivational factors and amotivation come into play. When specifically applied to second language learning, SDT has been able to educate teachers of learner's L2 motivations (Noels, 2001; Noels, Pelletier, Clément, & Vallerand, 2003) as the motivational factors that affect their participation in a particular activity can be placed at a specific point along this linear construct. As such, SDT would be able to inform teachers of a learner's range of motivations to take part and complete classroom goals. This information could then be used to identify learners who need greater extrinsic motivation and who might require greater levels of persistence, effective cognitive strategies, affective attention and effort management.

A graphic of the self-determination theory displaying three forms of motivation, and the six regulatory styles with their perceived locus of causality and relevant regulatory processes on the self-determined to non-self-determined behavior continuum can be found in Ryan and Deci (2000b, p. 72). Further explanation on each of these motivational categories and the characteristics that learners, their identity, intentions, and actions should identify with in order to fit into each category can be found in Deci and Ryan (2000), Dörnyei (1998), Gagne and Deci (2005), McClelland (2013), Ryan and Deci (2000), Ryan and Deci (2002), Tanaka (2013), and Vallerand (1997).

2 The ARCS model

Grounded in the Expectancy-Value Theory and his 1979 ideas on instructional design, Keller (1987) developed the original ARCS model. Use of the process that this model provides can enable teachers and material designers to systematically identify problems in learning motivation, then improve the design and appeal of instructional tools, including the environment, materials, resources, verbal instructions and procedures. This is done with the purpose of increasing learner's curiosity, developing more positive self-efficacy, and overcoming any feelings of anxiety or helplessness in the classroom and stimulating and sustaining goal orientated behavior by stimulating learning through appropriate levels of challenge and influencing how learners will feel having completed the tasks (Keller, 2010).
This is achieved by defining, and focusing on four conditions that Keller (1987) said instructional tools including the environment, materials, resources, instructions and procedures had to meet in order to influence learners to become, and remain motivated. These are:

1. **Attention** Arousing and sustaining learner's curiosity and interest in the topic through appropriate stimuli.
2. **Relevance** Making the topic and teaching methods relevant to learner's lives and increasing their perception of this relevance.
3. **Confidence** Developing learner's understanding that if effort is exerted there can be an expectancy of success giving them feelings of being in control.
4. **Satisfaction** Encouraging and producing feelings of satisfaction in learners about accomplishments leading to the outcome.

In his 2008a paper, Keller described the added condition of Volition. This recognized that although motivation to complete a learning goal may be initially increased, persistence and other interventions might also be required to maintain motivation and effort over time and throughout the task, and to overcome the various kinds of distractions, obstacles and competing

goals that can interfere. Keller (2008a) describes that this problem of maintaining goal orientated behavior and overcoming discouragement and attrition can be particularly necessary in self-directed learning environments including online and distance learning. Learners who can employ these volitional, or self-regulatory strategies internally to help them stay on track with the task will not require external interventions. This could similarly be said for learners in a classroom setting pressured by short-term tasks, goals, imminent deadlines for submission, and teachers monitoring progress and assisting and encouraging task completion.

3 ARCS sub-categories

To aid in improving instructional design each of the four original ARCS factors feature sub-categories that all contain three strategies. Keller (2010) initially presents each of these strategies as a topic heading, then with a question posed to teachers to answer according to their individual teaching and learning situations. This encourages teachers to produce motivational strategies by combining their experience of their own environments, their creativity and judgement. He then presents a broad generalized example answer to that question with the intention of stimulating teachers into increasing and applying their knowledge and understanding of their learners and their motivational profiles. Then using this information teachers should create or discover appropriate answers, interventions or solutions from within their own environments that can be addressed and altered throughout the design, presentation and use of instructional materials (Keller, 2000, 2008b). With this situation-specific answer applied to instructional design and integrated into his 10-step systematic process of motivational design, teachers are then able to provide efficient, effective, appealing strategies, principles, processes, tactics and environments for stimulating and sustaining goal-orientated behavior of learners in line with instructional objectives (Keller, 2010). The following paragraphs will illustrate the ARCS sub-categories and each of the three strategies and generalized answers from Keller (2010).

The first group of sub-categories are attention getting strategies. They are designed to encourage tactics that can catch the initial attention of learners by presenting classroom approaches differently to those commonly used. Through the three strategies of perception arousal, inquiry arousal and variability, and through the questions presented teachers are urged to come up with tactics that can stimulate interest. This can be through a change in an aspect of, or the whole of the external environment or in how the topic/theme is presented, by stimulating an attitude of inquiry by creating knowledge seeking behavior that will assist in solving a problem, and by capturing attention or curiosity by altering the teaching methods or style from those previously used. Once this initial attention has been captured the subsequent relevance producing strategies are then required to maintain this interest (Keller, 2010).

The three relevance producing strategies are goal orientation, motive matching and familiarity. The question posed for each strategy first stimulate teachers to connect instruction directly to the student's lives and futures by meeting their needs through the use of authentic examples, skills and assignments. Second, by initiating teaching strategies that encourage group work or competitive activities the learners can be provided with the ability to make choices, gain responsibilities and create influences that can make the instruction appealing and independent of the classroom learning. Third, by tying the instruction to learner's prior experiences and current interests, teachers are able to make recognizable connections to the classroom content which can induce feelings of meaningfulness and maintain levels of motivation (Keller 2010).

In order to stimulate continued motivation, the third category requires confidence building tactics within the three strategies of learning requirements, success opportunities and personal control. Through tactics, which can include providing examples of assessments and defining the criteria on which they'll be judged teachers are first able to let learners know exactly what is expected of them, and if learners perceive the tasks to be specific, measurable, attainable, realistic and time-bound, confidence can be further positively affected. The opportunities for success can then be enhanced through a learner's belief in self-competence. This can be appropriately managed with the use of suitable scaffolding and pacing through the learning process, corrective feedback that enables each learner to progress towards the expected targets while making improvements, and challenges and exercises that positively influence learning as they develop and sharpen task related skills. Activities that allow learners to take personal control and make the choices that will affect their success outcomes, also influencing their feelings of competence and building positive expectations for success can reduce anxiety and positively affect motivation.

The fourth and final sub-category contains the strategies of natural consequences, positive consequences and equity. The objective of employing tactics within these strategies is for learners to gain satisfaction through the learning process which can lead to positive mindsets and continuing high levels of motivation. Keller (2010) suggested that the natural consequences of learning can be achieved by enabling newly acquired skills and knowledge learned to be applied to further tasks. Positive consequences illustrated by reinforcing positive feelings of accomplishment through rewards and positive acknowledgements can show learning has been meaningful and purposeful. Finally, by anchoring these processes in transparency and consistency with the original course outcomes and purpose, and through the uniformity of task standards, consequences and recognitions throughout, learners are able to gain positive levels of satisfaction leading to increased motivation.

Keller (2010) dedicated greater detail to each of the four sub-categories providing an in-depth analysis of the psychological basis for their inclusion and further examples of cases and strategies for strengthening learning motivation. These strategies and tactics that arise from these sub-categories to assist in diagnosing learner's motivational profiles and creating motivational tactics are designed to be integrated into Keller's (1987) procedure of instructional and motivational design.

4 ARCS process of motivational design

The procedure that Keller (2010) described hypothesizes that the process of instructional design begins prior to a new program. An overview of this complete process will be illustrated here indicating where the ARCS sub-categories, strategies and tactics should be inserted. However, it is also possible for teachers to enter into this cyclic process at later stages as they inherit classes, programs and learners.

The systematic process of motivational design can assist teachers by providing a step-by-step procedure to follow to identify problems and weak areas of motivation. Following this process and utilizing the strategies from the ARCS sub-categories these problems and weak areas of motivation can be strengthened through the design of appropriate instructional tools and tactics that are able to match student characteristics and needs. This is a generic process that Keller

(2010) claims teachers with specific knowledge of their classroom situations and learners can apply to a wide range of learning environments.

As a problem-solving process to be used to identify specific motivational challenges that exist in a given situation, this ten-step design process can be succinctly defined and separated into the four categories of define (analyze), design, develop, and pilot (implement and evaluate). With the exception of the define phase the processes involved are distinctly similar to the plan, act, observe, reflect stages of the action research cycle and Kolb's Experiential Learning Model, which encourage continual assessment and evaluation of instruction and appropriateness of materials. The distinction between these however, is that the ARCS Model specifically integrates the ARCS sub-categories and three strategies to focus on positively influencing learning motivation through the design and features of instructional materials and tactics.

The define (analyze) phase involves five steps beginning with an analysis or definition of the environment. This is carried out by (1) the teacher establishing the characteristics, situation and description of the course, rationale behind it, the setting and the instructors, (2) determining the characteristics of the learners, their skills and attitudes, (3) analyzing the learner's motivation towards the course, (4) evaluating the appropriateness and motivational methods of the existing materials and conditions, and finally (5) listing the desired objectives, accomplishments and assessments that will establish the future motivational dynamics and achievements of the learners.

The define phase is where a teacher can utilize the information collected in the analyze phase and from it begin to develop and identify tactics based on the three strategies of each ARCS factor that might be appropriate. This phase contains three steps beginning with (6) listing the methods that might help with accomplishing the motivational objective. Following this (7) the most suitable or acceptable of these methods based on the learners, the teacher and the environmental setting are chosen. The third step is (8) to include the instructional and motivational components into an integrated design.

The third phase of develop is (9) when the selection and development of the materials, methods and tactics that will achieve the objectives takes place.

In the fourth and final phase (10) the methods and materials that were selected are operationalized and are then evaluated and revised in order to assess their appropriateness to the learners and the environment. For this assessment Keller (2010) suggested the use of either the Course Interest Survey which is appropriate for classroom-based or online learning, or the Instructional Materials Motivational Survey for print-based self-directed online learning. As Keller suggests, once a program is concluded the 10-step cycle is repeated.

For each of these four phases and the ten steps Keller (2010) provided further detailed explanation and examples of how teachers can apply this process and proceed through the identification and strengthening of problematic and weak areas of motivation in instructional materials within their own situations.

5 Alternative application of ARCS

As has been described, the ten-step ARCS instructional design process is to be applied to the

construction of a complete syllabus but Keller (2010) also described how the ARCS factors can be utilized to individual lessons, or even elements within lessons. First the perceived positive and negative levels of attention, relevance, confidence and satisfaction that learners may have for each of the design factors from within one lesson should be mapped out. This can include learner characteristics, learning task, and the medium used to assist learning. Following this, it is possible for a teacher to systematically consider and evaluate where motivational tactics for that lesson are sufficient, and where they need to be developed and employed further.

Using these whole and bit methods, the ARCS model and Keller's (1987) instructional design process has been applied in a wide number of learning environments including traditional classrooms (Klein & Freitag 1992; Means, Jonassen, & Dwyer 1997; Small & Gluck 1994; Visser & Keller 1990); computer-assisted instruction (Astleitner, 2000; Astleitner & Keller 1995; Chang & Lehman 2002; ChanLin 1994; Keller, 2008b; Shellnut, Knowlton, & Savage 1999; Song & Keller 1999; Song & Keller, 2001); blended learning environments (Figl & Bauer, 2008; Gabrielle, 2003); and, online, distant, and Web-based classrooms (Chyung 2001; Huett, 2006; Huett, Kalinowski, Moller, & Huett, 2008; Song, 2000; Visser, Plomp, & Kuiper, 1999). Use of the ACRS Model has also been extended to assess the motivational value of technological tools in the classroom. In 2009, Cheng and Chau developed Keller's ARCS model to assess their student's motivation to use video to demonstrate evidence of learning and development, and to reflect on their English language learning experiences. Students in their Hong Kong-based study were asked to record on video a monologic opinion-based piece on their individual, and community perspectives of their English language course, which their peers were later able to view. Cheng and Chau (2009) developed a 12-item questionnaire with 5-point Likert scale responses. With this tool they were able to plot responses to the attention, relevance, confidence and satisfaction factors to assess the student's motivation to use video in their study by interpreting ARCS in the following way:

Attention: The response of peers to interest and curiosity stimulated by digital videos.
Relevance: Whether video-based reflection suits the learning needs of individuals and helps them improve their knowledge and skills.
Confidence: Relates to the ability to undertake video reflection and the positive explanation of learning achievement resulting from the task.
Satisfaction: The extent to which peers enjoy giving feedback due to the positive consequences the feedback generates.

In a much simpler way, Thomas (2018) adapted the ARCS Model to assess learner's motivation to use technological devices in a bring-your-own-device policy in an Academic English program at a Japanese university. At the start of the first semester in a program designed to develop independent self-reflection practices of academic style presentations, learner's perceptions of their own use of mobile devices and home-produced videos were assessed using just one question for each of the ARCS factors on a 7-point Likert scale. The questions determined learner's perceptions of video as a tool to increase awareness of activities, the suitability of the tool for these activities, and the confidence and satisfaction that the learner's gained in the activities by using this tool. Over the course of the two semesters interventions and tactics developed using the ARCS sub-categories and strategies were introduced through the learning environment, teaching methods and scaffolding tools. At the end of the year the ARCS factors were again measured using the same instrument and recognized that through these interventions and the motivations to use this tool based on the attention, relevance,

confidence and satisfaction it afforded learners in the activities had increased.

6 Conclusion

Keller's (1987) ARCS model of instructional design provides a structured framework to guide teachers and classroom materials designers in assessing and subsequently increasing their learner's levels of motivation. Through careful analysis of all affective factors and with modification of and interventions within student, lesson, material and instructional management, teachers are able to positively affect learners. Changes can come in various forms including heightened attention to learning, the increased relevance of activities to learners, the confidence that the activities will build in learners, and the satisfaction that learners can gain from learning. The ARCS Model has been applied effectively in multiple educational settings and has also been adapted to assess the motivational value of technological devices applied to learning.

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