Enhancing Instructional Design with Relevance Strategies

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In 1993, Peggy A. Ertmer and Timothy J. Newby’s article, “Behaviorism, Cognitivism, Constructivism: Comparing Critical Features from an Instructional Design Perspective”, was published. This outlines the Behavioral, Cognitive, and Constructivist theories of learning and benefits instructional designers by providing structure for instruction. For each learning theory, Ertmer and Newby define how learning occurs, influential learning factors, the role of memory, transfer, types of learning best explained by the theory, basic assumptions or principles of the theory pertinent to instructional design, and instructional structure to facilitate learning (pp. 53-67).

In recent decades, much research on motivational theory has been conducted. In particular, the works of John M. Keller provide a background on critical aspects of motivation and illustrate how instructional designers can enhance instructional content with specific motivational techniques from the ARCS (Attention, Relevance, Confidence, Satisfaction) Model. This model can apply to a variety of learning situations and connects, among other things, learning with learners’ goals through relevance (Keller, 2010, p. 22).

Motivation is important to instructional design because instructional design aims to produce “effective instruction” (Keller, 2010, p. 23). The ARCS Model has demonstrated effectiveness when used in instructional design. Research indicates that motivational tactics, including those tactics pertinent to relevance, can increase course completion and retention rates in online and distance learning (Pittenger & Doering, 2010; Chyung, Winiecki, & Fenner, 1999 as cited in Keller, 2008, pp. 178-179; Visser, 1998 as cited in Keller, 2010, pp. 273-274; Keller, 1999, p. 46), influence personal effort and performance (Keller, 2010, p. 6), increase attention (Song & Keller, 2001 as cited in Keller, 2008, p. 180), and increase comprehension test scores

To mimic these results, instructional designers can incorporate enhancements in instruction by adding relevance to meet the needs of learners. Learning theorists seem to agree that instructional designers cannot control learners’ intrinsic motivations, although a learner’s motivation can be influenced (Keller, 2010, p. 1). Learners approach instruction with myriad values, needs, and pre-existing knowledge and experiences. Still, relevance can aid instruction via both instructional content and instructor techniques (Keller, 1987, p. 3).

Embedding relevance within instruction, as outlined by Keller (2010) and his ARCS Model, is the focus of this paper and research demonstrates its impact on overall motivation, comprehension, and performance (Chang, 2001; Means, Jonassen, & Dwyer, 1997). While the three theories referenced in Ertmer and Newby’s (1993) article are critical in and of themselves to the foundation of an instructional designer’s knowledge, this paper seeks to demonstrate that embedding motivational components related to relevance is also beneficial. This paper explores Keller’s ARCS Model, as it pertains to relevance, and then identifies strategies of goal orientation, motive matching, and familiarity to enhance Behaviorist, Cognitivist, and Constructivist instructional design. The paper concludes with additional notes for instructional designers and suggested research.
Literature Review

Keller’s ARCS Model

Keller’s (1984) ARCS Model (as outlined in Keller, 1987) identifies ways to improve instruction through motivational tactics relative to attention, relevance, confidence, and satisfaction. These four categories identify “specific concepts and variables that characterize human motivation” (Keller, 1987, p. 2). This model suggests multiple strategies instructional designers can use with instructional design models “to enhance the motivational appeal of instruction” (Keller, 1987, p. 2). Keller (2008) notes that “many examples of empirical studies…support the validity of [the ARCS Model]” (p. 178). In fact, literature reviewed in this paper draws from research conducted using ARCS methods.

Relevance

According to Keller (2010), relevance refers to what people consider as “instrumental in meeting needs and satisfying personal desires” (p. 48). Nwagbara’s (1993) research demonstrates that people will participate in learning what they perceive will help accomplish their goals (p. 76) and people are more motivated and willing to put effort forth when they perceive relevance (Nwagbara, pp. 75-76). Thus, relevance is important because people are more motivated to learn what will help them to accomplish goals and relate to their needs (Raynor, 1974, and Toney, 1991 as cited in Nwagbara, pp. 31-32). Research shows that relevance can enhance instruction in a variety of topics including research skills (Creese, 2011) and videotape lessons (Nwagbara). Relevance paired with appropriate technologies also allows K-12 students throughout the United States to experience “real-world situations” and prepare for careers in art and music (Ash, 2011).

Although both intrinsic and extrinsic forms of relevance exist, an instructional designer cannot control the intrinsic relevance of previous experiences, goals, and needs that a learner
possesses when entering an instructional situation. Therefore, this paper focuses on extrinsic forms of relevance, expressly relevance-embedding techniques that enhance motivation and learning in instructional content. Means et al. (1997) identify that enhancing extrinsic relevance specifically increases learners’ motivation and achievement (p. 5, 14).

**Strategies for Embedding Relevance**

Research shows the benefits of embedding relevance into instruction. To accomplish this, Keller (2010) recommends incorporating relevance tactics surrounding goal orientation, motive matching, and familiarity. Instructional designers can combine these tactics or leverage them individually to meet the needs of learners and instructional goals.

**Goal orientation.** Goal orientation requires an instructional designer to determine the learners’ needs and how best to meet them (Keller, 2010, p. 48). Keller outlines that “people will be more motivated to learn if they perceive that the new knowledge or skill will help them achieve a goal” (p. 49). Goal orientation can be broken down to how people focus on outcomes related to mastering tasks or goals relative to ego and performance. Learners oriented to tasks and learning goals typically focus on learning skills to master tasks, seeking improvement comes with effort. Learners oriented to ego and performance are more concerned with appearance and what others perceive, exerting the least amount of effort needed to meet goals (Keller, p. 112).

For goal-orientation, Nwagbara (1993) recommends identifying instructional objectives through examples or allowing learners to outline their own objectives (p. 25). Nwagbara’s study demonstrates that providing learners with “explicit statements about how the instruction will build on their existing skills or knowledge” is one factor that increases learners’ perceived motivation (p. 77).
Nwagbara (1993) identifies differences between goals that are useful in the present and the future, and indicates that instructional designers can leverage both types of goals to enhance learner motivation (p. 25). If a goal is critical to the learner’s present situation, Keller (2010) recommends clearly identifying immediate benefits and providing “comments, anecdotes, or examples that stress the intrinsic satisfactions of the subject of instruction” (p. 127). For goals with a future value, Keller recommends that instructional designers inform learners of what they will be able to do upon completing instruction; clearly tie examples and exercises to what learners will need in the future; and relate successful completion of instruction to future achievements and goals including those involving education, career enhancement, and life (pp. 127-128). In addition, Pittenger and Doering (2010) support the use of relevance to enhance current and future goals. Their study of four online courses in the College of Pharmacy at the University of Minnesota shows that learners prefer course content with relevant examples to meet their current goals of being “medically informed citizen[s]” and future education and career goals in science and health fields (p. 286).

**Motive matching.** Keller (2010) outlines that motive, or interest, matching requires an instructional designer to “provide…learners with appropriate choices, responsibilities, and influences” (p. 48). Instructional designers should enhance learning environments to match learners’ motives relative to learners’ needs for achievement and affiliation. Learners needing achievement generally like to feel responsible for their success and prefer competition and defining their own goals and standards. Alternately, learners seeking affiliation prefer to collaborate and work in sociable, non-competitive environments (Keller, p. 49). People are motivated to achieve when “they receive personal recognition and are valued as both human beings and for the contributions they can make” (Keller, 2010, pp. 128-130).
To leverage motive matching in instructional materials, Keller (2010) categorizes strategies for motive matching into “basic motive stimulation” and “role models” (pp. 130-131). Basic motive stimulation tactics include using “personal language to make the learner feel that he or she is being talked to as a person” (Keller, p. 130), providing examples that illustrate and stimulate feelings of achievement and/or affiliation, and including activities that foster competition (for achievement needs) and/or collaboration (for affiliation needs) (Keller, pp. 130-131). Role models tactics require instructional designers to reference accomplishments and obstacles of “noteworthy people in the area of study” (Keller, p. 131) and utilize quotes and testimonials from people “who attained further goals after successfully completing the course of instruction” (Keller, p. 131).

**Familiarity.** Familiarity requires an instructional designer to tie instruction to learners’ interests and experiences, because learners are likely to have more interest in such content (Keller, 2010, pp. 48-50). Familiarity strategies can be as simple as using personal identifiers, such as personal pronouns and learners’ names, to enhance content relevance, improve motivation, and enhance performance. Dijkstra and Ballast (2012) demonstrate that leveraging learners’ names and their smoking histories to enhance anti-smoking education aids motivation for smoking cessation. Support for Dijkstra and Ballast is cited by Flesch and Lass (1949 as cited in Keller, 2010, p. 50) and Clark and Mayer (2011, pp. 179-203), who note that instructional materials are enhanced by personal pronouns and names because people find this style of writing and conversation more interesting and relatable.

In addition to language modifications, instructional designers can personalize content to add familiarity by allowing learners to select assignments and topics of interest. This allows “the learner to select from a variety of means to accomplish a given end” (Keller, 2010, p. 133).
Another familiarity technique includes incorporating examples, scenarios, concepts, and analogies that learners can relate to experiences and/or work (Keller, 2010, p. 50, 126; Nwagbara, 1993, p. 24). Instructional designers can leverage learners’ previous knowledge and experiences as a transition into new content (Keller, 2010, p. 131). According to Keller (1984 as cited in Nwagbara), “people like things that they are familiar with or can relate to through the use of specific images such as stories, pictures, or testimonies” (p. 24). Means et al. (1997) also note that relating elements of instruction for heart function to “concrete, real-life images…appeared to improve learning” (p. 15).

To ensure learners make familiarity connections, Keller (2010) recommends instructional designers explicitly identify how the instruction builds upon or relates to the learners’ existing skills or knowledge (p. 131). If an instructional designer fails to make the connection for learners, familiarity concepts will not likely prove successful.

Adaptability of Relevance

This paper has outlined enhancements to learning and motivation through relevance in a variety of settings and through a variety of formats. Goal orientation, motive matching, and familiarity strategies have been identified as ways to accomplish these enhancements. Due to the flexible nature of relevance, its strategies can apply to Behaviorist, Cognitivist, and Constructivist instruction, as outlined in Ertmer and Newby’s (1993) article, and as explored next.

Relevance and Behaviorism. Ertmer and Newby (1993) identify that instructional designers should concern themselves with identifying effective reinforcers and arranging stimuli and consequences in a learning environment to solicit the desired behavior (p. 55). Although Behaviorism does not seem to be concerned with internal or mental processes of a learner, by
understanding what is relevant and meaningful to the learner, an instructional designer can better solicit desired behavior. For example, if reinforcers, stimuli, and consequences are irrelevant to the learner’s goals, needs, or wants, behavior is not likely to change. Tolman’s (1932) assumption supports this, noting, “behavior is purposeful in that it is always directed toward or away from some particular outcome” (as cited in Keller, 2010, p. 101). Since Behaviorism is concerned more with actions of the learner than how learners process information, goal orientation techniques may be the best relevance technique to apply in Behaviorist situations. Pittenger and Doering’s (2010) study demonstrates enhanced learner performance resulting from orienting to learner goals of medical knowledge and comprehension to aid future coursework and career preparation.

Ertmer and Newby (1993) claim that “instruction is structured around the presentation of the target stimulus and the provision of opportunities for the learner to practice making the proper response” (p. 57). In order for practice opportunities to lead to the “proper response”, (or desired behavior,) practice must be relevant to the desired behavior. This demonstrates the need for familiarity tactics. Dijkstra and Ballast (2012) support this by demonstrating that people who do not perceive information as personally relevant tend not to see a reason to change behavior.

While goal orientation and familiarity tactics can more easily influence Behaviorism, it is more difficult to make a case for utilizing motive matching techniques. Behaviorism is not concerned with a learner’s motives, but rather their behaviors and responses to stimuli, reinforcement, and consequences.

**Relevance and Cognitivism.** Relative to goal orientation and motive matching, McCrudden, Magliano, and Schraw (2010) identify “cues that provide criteria for determining information’s relevance to a particular reading task” (p. 229). These cues were leveraged in the
authors’ study of learners’ reading intentions, goals, processing, and memory (McCruden et al., p. 231). The study found that readers “[spend] more time reading relevant information than irrelevant information and remembered more of this information” (McCruden et al., p. 237). This led the authors to recommend goal orientation tactics of defining how reading is relevant to learning goals or tasks.

McCruden et al. (2010) research is one of many studies demonstrating ties between relevance and cognitive processing. In addition to goal orientation and motive matching, familiarity tactics can enhance cognitive processing. One example is Dijkstra and Ballast’s (2012) study on personalization used in smoking cessation education. The authors incorporated learners’ names and smoking histories to alter anti-smoking materials and claim, “personalization is thought to increase perceived personal relevance and subsequent central processing of the content information, thereby bringing the persuasive information closer to the self” (p. 62). Dijkstra and Ballast’s work supports Ertmer and Newby’s (1993) suggestion that instructional designers should add meaning to instruction and help “learners organize and relate new information to existing knowledge in memory” (p. 60), notable familiarity tactics, to enhance memory in cognitive processing (p. 60). As indicated previously, Keller (1984 as cited in Nwagbara, 1993) notes that “people like things that they are familiar with or can relate to…such as stories, pictures, or testimonies about specific people or things familiar to the learner” (p. 24).

**Relevance and Constructivism.** Ertmer and Newby (1993) identify that Constructivist learning is found in relevant contexts (p. 63). This makes a direct case for adding relevance techniques into Constructivist learning. If learning occurs from creating meaningful experiences,
instructional designers can use goal orientation, motive matching, and familiarity techniques to enhance instruction.

By leveraging goal orientation techniques, learners can see the relevance of instruction to their needs. From there, they can leverage the instructional knowledge to meet their current and future needs, just as students met needs in Pittenger and Doering’s (2010) study.

Motive matching techniques allow achievement-driven and affiliation-driven learners to meet their motives in learning. Emphasizing learner control is one of the motive matching techniques. In Cognitivism, such a technique allows a learner to “manipulate information” in order to construct meaning (Ertmer & Newby, 1993, p. 65). McCrudden et al.'s (2010) study demonstrates this, showing how readers navigate information to learn what is relevant.

Familiarity is important as learning should “occur in realistic settings” and “tasks [should be] relevant to the students’ lived experience” (Ertmer & Newby, 1993, p. 63). Means et al.’s (1997) study demonstrates learners’ ability to construct meaning from relevant and familiar concepts applied to instruction on heart function.

**Application and Discussion**

While there are a variety of relevance tactics for an instructional designer to employ to enhance motivation and learning outcomes, instructional designers should consider what is realistic and feasible. Keller (2010) recommends considering instructional time restraints, instructional objectives, development time and cost restraints, and learning and instructional styles when selecting tactics to include in instruction (p. 250). Keller outlines that excessive relevance tactics can begin to de-motivate and irritate learners.
Recommendations for Further Study

To enhance this paper, additional research should focus on the individual ARCS components of attention, confidence, and satisfaction. Some research has claimed that relevance can be studied individually (Means et al., 1997) while others, such as Keller (2010), seem to indicate that the ARCS Model should be used to study motivation from more holistic approaches. Additional clarification is needed in goal orientation, motive matching, and familiarity tactics. Some tactics seem to promote other components of the ARCS Model, (attention, confidence, and/or satisfaction,) in addition to relevance. Other tactics appear to promote a combination of ARCS components. For example, Nwagbara (1993) discusses giving learners the ability to outline their own objectives and activities to enhance relevance, yet allowing someone more control can also lead to learner confidence and satisfaction. Current conclusions on the effectiveness of relevance alone are more difficult to prove. Regarding personalization to aid familiarity, Clark and Mayer (2011) caution its use by citing while “personalization can be effective in some situations, additional research is needed to determine when it becomes counterproductive by being distracting or condescending” (p. 201).

This paper does not elaborate on the importance of an audience analysis as a means to determine the quantity of relevance tactics to incorporate into instruction to promote motivation and learning outcomes. Keller (2010) and Chang (2001, pp. 125-126) stress the importance of analyzing learners so appropriate relevance tactics are employed by the instructional designer. Keller outlines that learners will come to resist excessive amounts of motivation in learning materials (p. 40).

This paper does not address evaluation, as a means to review and revise the learning and motivational objectives for relevance. Instructional design is a constant work-in-process, as
designers must constantly evaluate and re-evaluate learning to ensure that it continues to meet learner and instructional needs. Future works should incorporate evaluation.

Conclusion

Instructional designers must understand, “Before students can be motivated to learn, they will have to believe that the instruction is related to important personal goals or motives and feel connected to the setting” (Keller, 2010, p. 45). This paper demonstrates the importance of the relevance-enhancing methods, particularly goal orientation, motive matching, and familiarity, in instructional design. Instructional designers should note the ability for such tactics to overcome motivation and learning obstacles, as implement them judiciously to promote motivation, comprehension, and performance in instructional content.
References


