

# **Motivating Isolated Web-Based Learners**

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## **Formal Statement of Principle**

If an adult learner in a business environment is completing a Web- or CD-based tutorial without the opportunity to interact with an instructor or other students, and the student must remain sufficiently motivated to complete the entire course without dropping out, then appropriate, adaptive motivational strategies must be applied throughout the course to maintain the learner's motivation level.

## **Abstract**

This paper addresses the need to adequately assess the motivational needs of an intended learner population when designing Web-based and other computer-mediated business tutorials, specifically those that are designed for isolated adult learners. In this paper, "isolated" learners are defined as those who are completing a course without the benefit of social interaction with an instructor or other students. The paper also discusses the need for developing courses that can adapt to a learner's motivational needs at different points in the course completion process.

Research on distance education and computer-mediated instruction has shown that learner motivation tends to increase when the learner interacts with an instructor or other learners. When a course lacks such opportunities for personal interaction, other motivational strategies should be applied where appropriate to maintain or increase the learner's motivation.

It is important to anticipate where the learner may experience motivational struggles while completing the course. Research in the area of adult learners and student motivation suggests that motivation is not a static learner characteristic, but fluctuates at different stages in a course. Designers should evaluate the intended audience to determine where motivation is high, where it

is low, and where it may wane while the learner progresses through a course. Research supports the idea that motivational strategy should be applied at a level commensurate with the learner's motivational state at a given point in a course.

### **Intended Audience and Application for this Principle**

#### ***Who Should Read this Paper?***

This paper will be of interest primarily to designers of e-learning tutorials for individual adult learners. This type of self-contained, self-paced tutorial is typically found in commercial and/or government organizations, and is commonly delivered via the Web or in CD-ROM format. The content in this paper will assist designers in identifying and resolving motivational issues in the target learner population, which will help reduce attrition in such tutorials.

#### ***What type of tutorial or course does this paper primarily address?***

Although the principle may be applicable across a range of course types, this paper focuses on self-contained tutorials or courses in which the learner must display mastery of content at the application level. Common uses of this course type are tutorials to teach software usage or business procedures. These courses typically contain multimedia or interactive components to increase learner engagement with the content. There is no instructor or classmates present.

#### ***What type of learner does this principle apply to, and under what conditions are they completing the course?***

The learners are working adults, who are completing a course or tutorial in addition to their primary work duties. Learners are typically completing a tutorial on their own time; the course may be accessed at their workstation, via a laptop (if the learner is traveling), or on a home computer. The learner will often complete the course only if he or she sees a benefit to his or her own job or to their business.

## **Method(s)**

### ***Prescriptive Design Principle for Web- and Computer-Based Tutorials***

Apply adaptive motivational strategies when designing Web- or computer-based tutorials (WBT/CBT) for isolated learners in business environments.

### ***How Was This Principle Developed?***

Data was gathered from numerous articles and research studies on motivation in adult learners, distance learning, and computer-based instruction. Several of these studies were performed in rigorously controlled experimental environments, using randomly assigned subjects and survey data to gather information. Other studies were more qualitative in nature, using formats such as interviews and informal focus groups to collect data. In the qualitative studies, the researchers were careful to note any limitations in the study due to the sample size or the purposive sampling of participants.

All cited research studies but one employed adult participants. The majority of the studies examined adult learners in university settings. The studies tended to repeat themes regarding the nature of adult learners and motivational factors in distance learning environments. Some studies focused specifically on the needs of mature adult learners with careers and families who were fitting learning endeavors around other commitments. While the studies primarily discussed the needs of learners in university-level courses, findings are transferable to the business environment; this is due to the common needs of adult learners in both academic and business learning settings, and the competing demands on adults that can hamper progress in either type of learning situation.

### ***Research Supporting this Design Principle***

#### **The Importance of Interaction in Motivating Distance Learners**

Researchers and educational technology experts generally agree that interactivity is a key success factor in distance learning. Although the type of interaction may vary a great deal

from course to course—for example, student-to-instructor, student-to-student, or student-to-content—the literature consistently demonstrates that including interaction of some kind is critical to the success of distance learning courses.

Guzley and Boor (2001), who conducted a study on the effectiveness of a two-way synchronous audio/visual technology system in a university-level distance education course, assert that interaction between a student and the instructor or other students helps alleviate feelings of isolation and withdrawal on the part of the student. Guzley and Bor found a positive correlation between interaction and student satisfaction with distance education courses; the more interaction, the greater the satisfaction level. Student satisfaction, in turn, positively influences student motivation.

Moshinskie, Balthazard, and Carille (2001) echo this sentiment. They posit that providing “the human touch” in distance learning ventures can help motivate students and keep them from feeling abandoned. Particularly in the area of business e-learning, Moshinskie et al. stress that,

Just as a trainer in the corporate classroom can provide visible extrinsic presence and support, the online environment needs to also encourage and help cyber learners. Chat rooms, E-mail, electronic office hours, and online mentoring can supply the human touch.

(p. 9)

In addition to interaction with other people, Moshinskie et al. (2001) suggest that motivation can be increased by providing opportunities for the learner to interact with the course content itself. This can be accomplished by including interactions such as simulations, scenarios, case studies, and games. These types of interactions often use characters that the learner can interact with, or simulate a social setting that can help the learner contextualize his or her new knowledge. Online learners have difficulty maintaining motivation in a course that is nothing more than a Web-based page-turner.

## **Interaction in the Absence of an Instructor**

While educational technology experts acknowledge that interaction with an instructor or classmates can be a powerful motivating factor for distance learners, many learners in the business and government arenas cannot enjoy this luxury. Learners in these environments frequently find themselves completing stand-alone, packaged courses or tutorials where there is no access to an instructor or to other students.

In instructor-led distance learning courses, the responsibility of motivating students falls primarily to the instructor or facilitator (Guzley & Bor, 2001). Using methods such as those described above by Moshinskie et al. (2001), instructors can keep in contact with students, identifying when motivation is low and taking appropriate action when necessary. When distance learning is delivered to students without an instructor, elevating or maintaining student motivation becomes more problematic. In this situation, one cannot rely on an instructor to boost student motivation; motivation must be maintained by the course itself.

In the absence of an instructor, technology becomes a tool for building and maintaining student motivation throughout the learning process (Guzley & Bor, 2001). The types of media that are used to deliver a course can impact the student's motivation. In the study conducted by Guzley and Bor, it was found that the two-way synchronous audio/visual technology used for course delivery significantly increased the student's ability to interact with others in an instructor-led course. The same idea can be applied to e-learning courses with no instructor. Using a variety of media and interactions can increase the learner's engagement with a course, thus helping to maintain motivation. Technology is currently available that allow instructional designers to build courses that contain audio, animations, and video; these types of technologies can be used to keep learners interested in content (Moshinskie et al., 2001).

The next few sections of this paper will examine research in the area of motivation in adult learners. These sections will provide designers with background information on the types of motivational challenges that exist for adult learners. One cannot use technology to improve

motivation without first understanding the unique motivational struggles of the intended learner population.

### **Motivation in Adult Learners**

Many barriers exist for adult learners who are trying to complete training (Bird & Morgan, 2003); designers should acknowledge that these barriers might negatively affect learner motivation levels. Bird and Morgan conducted a qualitative study, which gathered interview data from 27 adult learners on their experiences as university level distance-education students. The study suggests that many adults completing distance education courses at the university level have to overcome a number of hurdles to be successful in a course. Adults who are completing courses for career advancement or to improve workplace performance may encounter the same situation.

It is also critical for designers to recognize the unique characteristics of adult learners. Quireshi, Morton, and Antosz (2002) provide a list of the typical characteristics of adult learners, drawn from the work of Rogers (1989) and Cranton (1989); the work of Quireshi et al. is summarized below. The list not only describes general characteristics, but also contains a few items that parallel the “hurdles” described by Bird and Morgan (2003). Adult learners generally display the following traits:

1. Maturity – Learners are adults.
2. Value Learning – Learners are engaged in continuing growth.
3. Experience – Learners possess life experience and values.
4. Motivation – Learners have set intentions for learning or education.
5. Realism – Learners have mature expectations about learning itself.
6. Competing Interests – Learners have jobs, families, and a social life.
7. Ingrained Strategies – Learners have set patterns of learning.

The list above contains two key factors to consider. First, designers should acknowledge the issue of competing interests in the lives of adult students. Adult learners typically must balance learning with a variety of other demands. For mature-aged students, responsibility to family and commitments to work often override the need to complete a course (Bird & Morgan, 2003; Qureshi et al., 2002). Competing commitments may reduce motivation to complete a course, resulting in attrition.

Secondly, the list indicates that for adult learners, motivation to complete a course is typically found in the learner's ability to see usefulness and applicability in the material being learned (Bird & Morgan, 2003; Moshinskie et al., 2001). In order to stay sufficiently motivated, the adult learner must find relevance in course content. Moshinskie et al. affirm the need for relevance, especially in the business world; when employees complete training, it must be clear that the material addresses the needs of the worker in his or her workplace.

Another hurdle for designers to consider, especially in the e-learning arena, is the technical competence of the intended audience and the learners' comfort level with computers (Bird & Morgan, 2003; Guzley & Bor, 2001). Comfort with the delivery technology tends to increase students' feelings of satisfaction with a distance-learning course (Guzley & Bor, 2001). Conversely, discomfort with technology can cause students to feel frustrated and overwhelmed (Bird & Morgan, 2003). In a small qualitative study on problems encountered by distance learning students and instructors, Yilmaz and Tuzun (2001) found that students were often required to learn to use new software tools in order to complete coursework. The process of learning these tools was a significant, and sometimes "painful," challenge to learners. Guzley and Bor posit that if comfort with technology affects student satisfaction and motivation, then designers must focus on making distance-learning applications as user-friendly as possible.

Research demonstrates that motivation in adult learners is often high enough to cause the student to overcome barriers and complete a course of study (Bird & Morgan, 2003; Sankaran & Bui, 2001). Sankaran and Bui emphasize that learners must see value in the material and exhibit a great deal of persistence to overcome that challenges that distance education brings to the learning experience:

During their studies, they often have to work by themselves with little or no opportunities for face to face or peer interaction. They will have to deal with more abstract and ambiguous situations than someone taking a lecture class. They need to be efficient in time management, be responsible and in control of their studies and maintain an image of self-worth and self-efficacy. They should see the value of the education and be able to postpone current enjoyments and cope with interruption life frequently entails. (p. 193)

Bird and Morgan (2003) found that learners that maintained high levels of motivation were able to resolve many of the challenges they faced in obtaining an education. If the knowledge being learned is sufficiently valuable, the learner will persist in his or her studies.

### **The Variable Nature of Motivation**

Motivation is not a static characteristic in the learner, but a variable that fluctuates as the learner is completing a course (Astleitner & Keller, 1995; Bird & Morgan, 2003; Keller, 1999; Menager-Beeley, 2001; Song & Keller, 2001). Much of the work of Keller and his research associates has focused on systematic evaluation of learner motivation in several areas, including attention, relevance, confidence, and satisfaction (ARCS). Using a model such as ARCS can help a designer determine where learner motivation may already be high, and where it is low. For example, a learner may be highly interested in course content, indicating a high level of motivation in the area of attention; but they may doubt their ability to work with a Web-based lesson interface, indicating a problem in the area of confidence. In a situation such as this, the designer should implement motivational strategies that target the student's confidence level. It is not necessary to provide a great deal of motivational support for the learner in the area of attention, because the student's interest and motivation in this area is already high.

Keller and Astleitner (1995) and Song and Keller (2001) also conducted research on "motivationally adaptive" computer-assisted instruction (CAI). In motivationally adaptive CAI, a model is used to forecast motivation of learners in a learning environment (Astleitner & Keller,

1995). The model not only evaluates student motivation in each of the four ARCS categories, but also indicates where in a course motivational techniques need to be applied to maintain the learner's motivation level. Song and Keller (2001) state that:

A primary goal of motivationally adaptive CAI is to provide optimal motivational strategies to learners, which means that the CAI should provide the most appropriate motivational strategies in terms of purpose, type, and amount....the computer should add appropriate motivational strategies when the learners are demotivated and remove unnecessary ones when they are highly motivated. (p. 6)

There are several reasons why a learner's motivation may fluctuate during a course of study. The work of Song and Keller (2001) suggests that many students are initially drawn to distance learning, particularly computer-assisted instruction, by a novelty effect. While learners may be drawn to multimedia instruction out of curiosity, the motivation created by the delivery technology will fade as the learner becomes more accustomed to the system. Bird and Morgan (2003) also describe a novelty effect among adult distance learners; once initial curiosity dwindles, students must find new reasons for persisting in their studies. In the latter stages of a course of study, learners tend to focus on practical, relevant outcomes—such as career advancement—to maintain motivation.

Bird and Morgan (2003) also found that motivation levels typically fluctuate as the learner's personal situation changes during a course of study. In their discussions with mature distance education students in a university setting, Bird and Morgan discovered that while initial motivation and commitment to study was high, it was common for a distance learner's motivation level to rise and fall as he or she completed a university program. This was due in large part to changing perspectives on education, family demands, or financial circumstances. Menager-Beeley (2001) also described this phenomenon among older students, particularly those in the 28-50 age bracket; in a study of Web-based learners and attrition, it was observed that family and work commitments were likely to interfere with the educational goals of this learner population.

For adult learners completing training in the work environment, relevance may be the most important component of motivation. Menager-Beeley (2001) found that that successful completion of a Web-based course was often related to the student's perception of the usefulness and applicability of the content. Menager-Beeley examined three aspects of task value for adult learners: (1) interest, (2) importance, and (3) utility, and evaluated the importance of task value in the learner's choice to stay enrolled in a course or to drop out. Menager-Beeley found a significant correlation between the value that the student placed on the course content and the decision to persist in a course. This study also supported the hypothesis that learners found utility to be important than interest as a motivation factor.

### **Implications of the Research Literature—How Can It Be Applied?**

The literature on distance education, motivation in adult learners, and computer-assisted instruction can be drawn together to help designers apply appropriate motivational strategies in the tutorials or courses that they design.

First, designers should include many interactive components in their courseware because interaction is a key component in boosting distance learners' motivation. While many business and government e-learning tutorials do not provide the learner with access to an instructor or fellow students, the technology exists to build tutorial components that cause the learner to interact extensively with course content. The feeling of "personal interaction" can also be created by using techniques such as simulated e-mails or memos, utilizing a conversational tone in text and audio narration, and by using pedagogical agents (Clark & Mayer, 2003).

Secondly, designers should consider the nature of motivation in adult distance learners and how motivation is affected by the learner's personal context. It is common for learners to be confronted with competing demands while completing a tutorial or course; motivation to continue learning may flag when other activities take priority. It may be possible to minimize the impact of these demands by designing courses that learners can "fit in" around other commitments. For example, chunking a tutorial into short, 10-15 minute lessons may help the learner fit smaller learning episodes into a busy schedule by reducing the amount of time needed for each lesson.

In addition, designers should recognize that motivation for adult learners to complete a course is strongly driven by relevance. Designing courses in which the applicability of the content is obvious to the learner may lower attrition rates.

Finally, designers should determine when and where to apply motivational strategies within a course to match to the motivational needs of the target audience. Careful assessment of the intended learner population should be undertaken prior to course development to learn where motivation is strong and where it is weak. Models can be used to predict areas of the course where learners may encounter motivational struggles, so that appropriate techniques can be applied. Motivation may be decreased if motivational techniques are not applied, or if they are applied too liberally in an effort to “cover all the bases.” The best results occur when designers supply the correct motivational component, in the correct amount, at a time when the learner needs it most.

### **Application of the Principle**

This section presents two examples of adaptively motivational computer-based instruction. The first example is drawn from a research study conducted by Song and Keller (2001). The second example illustrates how adaptive motivational principles can be applied to an e-learning tutorial for adult learners in a work environment.

#### **An Example from the Research Literature**

Song and Keller (2001) conducted a study on the effectiveness of a motivationally adaptive computer-assisted instruction (CAI) course. Three course prototypes were developed. The first prototype had a minimal number of motivational strategies applied; the second was saturated with motivational material; and the third was a motivationally adaptive model. The participants (50 tenth-grade students) were assigned randomly to one of three groups. Each group was assigned to a course prototype and participants were asked to complete the course.

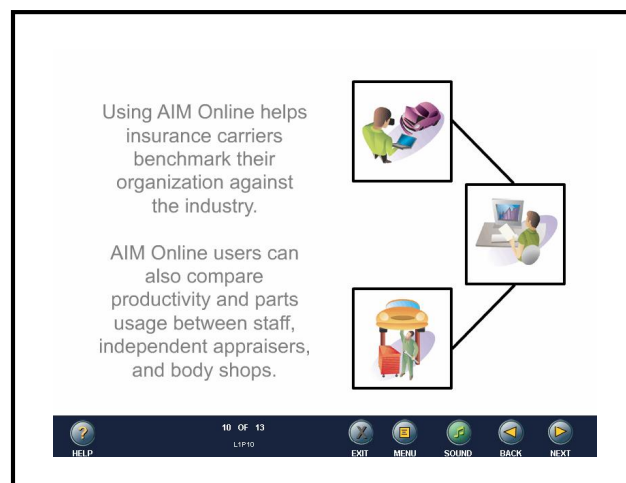
Following course completion, participants' motivation was measured using Keller's Instructional Material Motivation Survey (IMMS). This instrument measures learner reaction to

motivational components of a course in terms of attention, relevance, confidence, satisfaction, and overall motivation. The study found that students who had completed the motivationally adaptive CAI showed higher levels of overall motivation than those who had completed the motivationally saturated or motivationally minimized courses. A correlation was also found between overall motivation and effectiveness of the course; students who had completed the motivationally adaptive course performed significantly better on a 13-item posttest than students in the other two groups.

### Sample Application for an E-Learning Course

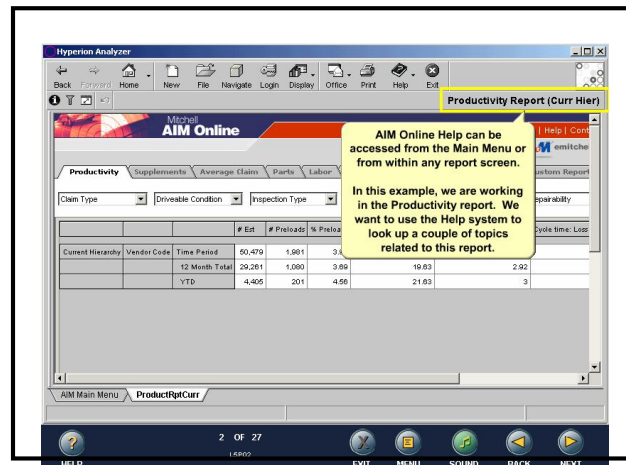
The following lesson screens are drawn from a course developed by the author for users of a Web-based management reporting program. A challenge in developing this course was to keep learners interested in content that could be perceived as dry or boring. The key for maintaining learner motivation is to promote the course content as extremely useful for the target learner population – in this case, managers in the property and casualty divisions of major auto insurance carriers.

In this course, an introductory lesson establishes the relevance of the course content for the target audience. In Figure 1, a sample screen from the course introduction is displayed. By describing the applicability of the content, the learner can see how completing the course may benefit him or her during performance of daily work duties.



**Figure 1: Course Introduction Describing Applicability of Course Content (Screen image courtesy of Mitchell International)**

While providing motivational content in the introductory lesson is helpful, it is also necessary to remind learners of content relevance as they move through the lesson sequence. Figure 2 displays a screen from a lesson in the middle of the course, which teaches the learner how to use the program's Help system. The lesson text includes verbiage to instruct the learner on how the Help program may be beneficial.



**Figure 2: Lesson Screen Containing Verbiage Establishing Content Applicability (Screen image courtesy of Mitchell International)**

The examples in this section illustrate how learners' motivational challenges can be anticipated and accounted for in course design. The lesson screens also show how material must be targeted to address specific motivational areas such as attention, relevance, confidence, or satisfaction.

### **Caveats and Limitations of the Principle**

This principle is applicable primarily to e-learning tutorials. It may not be generalizable to all types of distance learning. It is also assumed that the course does not allow contact with an instructor or other students.

The principle is based on the needs and specific traits of adult learners, particularly working adults. It may not be generalizable to other learner populations.

A final caveat for the principle is the acknowledgement that commercial and government designers are often designing courses for learners with a broad range of personality traits and motivational needs. In some cases, it may be impossible to adequately assess motivational needs and variances across the entire learner population.

### **Summary and Conclusions**

This paper discussed the need for assessing the motivation level of an intended learner population. Research on distance education, adult learner characteristics, and computer-mediated instruction has shown that motivational strategies must be applied where appropriate to maintain or increase the learner's motivation. Motivational strategies should be applied adaptively to adequately increase or maintain the learner's motivational level. It is important to evaluate the target audience to determine what motivational techniques will be most effective for the intended learner population.

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