

Culture and Motivation in Online Learning Environments

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Online learning has been hailed as a huge step forward for education. Academia is increasingly offering Internet-based distance courses because they allow “anywhere, anytime” learning and access to a wider pool of students. Firms and organizations like it for training employees because it permits consistency and repeatability in training delivery. K-12 educators endorse it because it teaches children important technology skills that they will need in their advanced education process and in their careers.

Online learning has been implicitly considered the lingua franca of education in terms of its functioning and graphic content (Gunawardena & McIsaac, 2004, p.363). For the most part, instructional design of online learning has largely ignored culture in the creation of online learning environments (Thomas, 2002).

By not taking learners’ culture into consideration, it is possible that online learning environments have been designed in such a way as to negatively impact learners’ motivation and persistence levels. For example, Merryfield (2001) found unexpected challenges in transferring a course on diversity in education to the Internet. She observed that many of the behavioral aspects that differentiated students were broken along cultural lines, and noted that this may have implications for equity of access.

In the European Union, where issues of cultural diversity loom even larger than they do in American classrooms, there have already been some efforts to find an acceptable middle ground in educational software and to make it more portable across political and ethnic borders (Collis & Remmers, 1997). Suggestions offered by the Commission of the European Communities are pragmatic and aim at making educational software equally usable by all, but they do not address issues of learner motivation except by inference.

The fact that online learning and distance education can impose its authors’ goals, perspectives, and standards on a receiving culture (Gunawardena & McIsaac, 2004, p. 388) is very rarely cited in the literature. Understanding whether and how learners’ cultural characteristics may interact with a major delivery method such as online learning makes possible the exploration and creation of alternative means of supporting learners in the construction of knowledge. Not doing so may well condemn groups other than the course implementer’s or author’s to decreased motivation and thus higher attrition, reducing some learners’ chances of benefiting equally from a digital learning environment.

Is Online Learning Different?

Why is it necessary to explore and evaluate the issues of culture and motivation in online learning environments, as distinguished from other specific environments? After all, there already exists persuasive evidence that culture does matter, whether in the classroom, in textbook construction, or in testing. So it is worthwhile to ask the question: Why should online learning need to be investigated separately?

Although research does not generally indicate that learning *outcomes* are different in online learning as compared to other learning delivery methods (Saba, 2000), Winn and Snyder (1996) noted that traditional theories of distance education evolved while behaviorist models were prevalent; thus cognitive psychology and cognitive science have been incompletely integrated in distance education theory and models.

There is evidence to support the contention that online learning environments impose different types of *cognitive loads* on the learner. This was first proposed by Kozma, who argued that there must be recognition of the cognitively relevant characteristics of media. Kozma differentiated between the learner’s *internal* and the *external* environments, specifying that the learner must use his or her internal cognitive resources to extract information from the external environment during the process of constructing new knowledge (Ullmer, 1992).

This position was strengthened by recent research comparing brain activity in virtual and real environments (Micropoulos, 2001). In this exploratory study, participants’ EEG readings were recorded while executing a simple task in a virtual environment and the same task in a real environment, and the two readings were compared. Significant differences were found in the readings, indicating that different cognitive processes were being used when in the virtual environments.

Related to this is Prensky's (2001) contention that "digital natives" actually think differently from those who are not accustomed to using digital accessories and games. He argued that the very use of the digital tools has modified the cognitive processes of those who have grown up with them. Other research on such phenomena as split-attention effects (Mayer & Moreno, 1998) has tended to support similar conclusions.

If it is true that the cognitive load imposed by online learning differs qualitatively from that of other learning environments, then perceptions and reactions that are intertwined with cognition are also likely to vary. A review of how culture and cognition interact will illustrate how this may be true.

The Relationship Between Culture And Cognition

A sociocultural view of cognitive ability first appeared in the early 1900s (Sticht, 1994), although at that point it was almost the opposite of what it is today. A century ago scholars believed that "primitive" people had primitive cognition patterns such that the cognition patterns and the cultures reinforced each other (Cole, Gay, Glick & Sharp, 1971), making members of those cultures unable to think in complex or "advanced" ways. With behaviorism, however, came the belief that cognition is essentially the same across cultures, regardless of cultural norms and practices; anthropologists especially held that position, believing that people varied only on cultural practices.

However, behaviorism fails to explain why different cultures develop such radically different practices if their cognitive patterns are essentially the same. The concept of "World View" prevalent in the 1970s and 1980s attempted to deal with this issue by analyzing the "culturally specific cognition of a people" and representing it "in terms of a set of logically interrelated and structurally consistent propositions and corollary statements that are assumed to model native perception and thinking" (Kearney, 1984, p. 36). Kearney defined a culture's worldview as a model of how that culture looks at reality, consisting of "...basic assumptions and images that provide a more or less coherent, though not necessarily accurate, way of thinking about the world." (p. 41) Kearney further noted that different worldviews developed because of both external (i.e., environmental) and internal (i.e., cognitive) reasons; however, this stance incompletely addresses the question of interaction between culture and cognition.

The sociocultural understanding of cognition has regained currency recently, as social constructivism and contextualism has emerged, according to Sticht (1994); Sticht noted that this approach attempts to explain the cognitive development of humans in general and social groups (cultures) as well as individual development.

Contributing to and fueling this re-emergence was a growing interest in diversity, and thus in how one culture behaved as compared to another (e.g., Dick & Robinson, 1997). Such comparisons often took the form of a litany of differences that were largely anecdotal and without theoretical basis, but they did attempt to categorize and rationalize cultural differences. Unfortunately, they also had the tendency to reduce cultures to stereotypical lists of characteristics.

As knowledge regarding different aspects of cognition was expanded, there began to be cultural analyses that emphasized those aspects. For example, Griggs and Dunn (1996) considered learning styles of Hispanics, mentioning their "other-directedness" which conflicts with the US mainstream individualism and noting that Hispanics' emphasis on cooperation can result in discomfort with the competitiveness of the classroom. A similar study was produced by Chen and Stevenson (1995) who looked at motivation and mathematics achievement in Asian-American, Caucasian-American, and East Asian high school students.

Cognition, Learning Theories, and Social Contexts

During the 60's and 70s, the influence of Piaget caused learning and intelligence to be seen as a progressive process involving feedback and stages of cognitive development. The individual and the characteristics of the individual's mental organization was at the center of Piagetian theory, and social issues were at best secondary, being indicators of progress rather than contributing factors (Light & Perret-Clermont, 1989).

In contrast, Vygotsky treated cognitive development and higher mental functions as primarily a social-cultural product, with cultural knowledge and values providing the basis of reasoning, inferencing, and interpreting meanings. Vygotsky also linked culture with language development, and language with learning, providing an additional link or anchor into cultural meaning making (Trueba, 1993).

An offshoot of Vygotskian thought, activity theory was advanced by Luria, Leont'ev, and Zinchenko. It takes as its main focus the sociocultural nature of intellectual development, according to Gauvain (2001). Activity theory is based on three main assumptions: (1) behavior is goal-directed and practical, (2) cognitive development is a product of social and cultural history, and (3) cognition is a socially mediated process.

Gauvain commented that, because activities and their settings are created by the participants in that setting, they reflect the group's assumptions, resources, and goals. "This notion transcends the boundary between the individual and the social. In so doing, it connects the interpsychological plane, that is, *between* individuals, and the intrapsychological plane, that is, *within* an individual, of human functioning and development." (p. 48) Thus cognitive development is the means by which the individual shapes his/her biological capabilities to conform to the social environment in which the individual is active. But Gauvain cautioned that activity theory is limited because it does not specify which social processes shape intellectual growth or connect specific features of social interaction to specific facets of cognitive growth.

An early example of the application of the sociocultural theory of cognition is found in the study published by Cole et al (1971). It is an exhaustively detailed ethnography of the Kpelle in Liberia that sought an explanation of why Kpelle children have so much trouble with Western-style mathematics, and in doing so it demonstrated how culture and thought processes are intertwined. The researchers found significant differences between the Kpelle and Americans in uses of taxonomies, class distinctions/heuristics, memory skills, etc. Their primary conclusion was

...that cultural differences in cognition reside more in the situations to which particular cognitive processes are applied than in the existence of a process in one cultural group and its absence in another. Assuming that our goal is to provide an effective education for everyone..., our task must be to determine the conditions under which various processes are manifested and to develop techniques for seeing that these conditions occur in the appropriate educational setting. (p. 233)

Bandura continued to focus on social constructs, in particular expanding the notion of self-efficacy to include the concept of "collective agency" (Pajares, 2002). This is defined as "a group's shared belief in its capability to attain goals and accomplish desired tasks" (Pajares, 2002, Self-efficacy Beliefs, paragraph 7).

Clearly, current learning theory has progressively emphasized the role of the culture in the development of cognition and learning. But how is this accomplished? What is the nature of the interaction between the culture and the developing intellect that would make this so?

On The Social Context Of Cognition

At the organic level, it is assumed that all "normal" brains function roughly in the same way within a broad range in terms of perceiving and conveying data (Carter, 1998). That data is then processed into information and stored; this "information processing approach" (Anderson, 2000) is assumed to be common to all "normal" human cognition. But an important corollary of these concepts is that the brain perceives and processes information by using pathways and schemata laid down by previous experience; consequently, each successive cognitive experience is progressively more affected by what the individual has perceived and experienced previously. So over time, perceptions of experiences and knowledge provided by the environment (including the cultural context) will literally change the flow of the same mental processes from which they emerged (Valsiner, 1996; Anderson, 2000; Carter, 1998; Sticht, 1994).

Not only perception, but also reasoning is strongly influenced by culture. Reasoning depends on schemata, many of which are supplied by the cultural context (Hutchins, 1980, cited by D'Andrade, 1989). D'Andrade concludes that when differences in problem solving are found between groups of people, it is much more likely that this is the result of a difference in shared cognitive structures, or culture, between the groups than the result of a genetic difference in some kind of general reasoning ability.

These perspectives are further buttressed by the theory of ecological psychology, which argued that the mind and the environment must be treated as a unity rather than separate and independent entities (Costall, 1989; Rosche, 1996). Similarly, the theory of situated learning (Sticht, 1994; Stein, 1998) asserted that learning results from a social process involving a variety of thought, perception, problem-solving, and interaction; thus learning is not separate from the physical, dynamic world, but connected to it through complex social environments. Downes (2004) transferred that concept to online environments, commenting on the importance of social interactions in learning; he especially noted its importance in computer supported collaborative learning and touched briefly on the cultural aspect of social interactions.

If, indeed, social context is intimately involved with the development of cognition, what are the means by which it leaves its mark, and on what aspects of cognition? Culture has traditionally been defined as a stable set of norms, beliefs, and behaviors; however, during the past two decades, culture has been seen as consisting of knowledge and conceptual structures (Valsiner, 1996). If so, how do those structures and knowledge impinge upon and affect the developing mind such that they leave a lasting imprint?

Gauvain (2001, 1995) examined in minute detail the research that points to the social foundation of developmental cognition. She considered the sociocultural context of development to provide the core activities

through which children are exposed to, and learn about, thinking; she believed that the vast majority of the cognitive functions that children develop in the early to middle years of childhood are connected to social experience in ways that are both intricate and interrelated.

She identified three subsystems (Gauvain, 1995) that serve as a sociocultural structure within which cognition develops:

- Cultural activity goals and values
- Tools and materials provided by the culture to meet the goals and values
- High-level cultural structures (e.g., scripts, routines, and rituals) that help the culture implement the goals and values in socially organized and cohesive ways

These subsystems both assist and constrain the cognitive development of the culture's members, and channel human thinking in ways appropriate to and supportive of the culture.

It may seem intuitively obvious that children are taught by adults in a culture, but what is less obvious is that those adults quickly and completely pass on their own cultural values and goals to the children (Rogoff, 1989). Thus, children are, in effect, apprentices to their culture, and learn concepts, e.g., amount, number, area, volume, weight, etc., that exist in their culture because they are useful in that environment (Light & Perret-Clermont, 1989). Gauvain (2001) referred to this process as *cognitive socialization*, and noted that it emphasizes the cultural and goal-directed nature of these interactions as well as requiring the learner to play an active role in the process. By linking the larger sociocultural context of cognition with the individual context of cognitive growth, the learner's mind is organized and shaped "in ways that are suited to the needs and aspirations of the community in which growth occurs." (p 34).

Higher mental functions identified by Gauvain and indicated by research also to be socially co-constructed processes include:

- **Problem solving skills:** Transfer of cultural knowledge is involved in terms of what features of a problem space to encode, strategies to use, and knowledge base development. Values are also transmitted about the problem domain and the categories of thinking that problems represent.
- **Memory:** both content and process are socially co-constructed processes. In the process of developing memory, individuals absorb values represented as memories as well as specific strategies for remembering.
- **Planning:** Social context is involved in learning how to plan actions in order to reach goals and how to coordinate plans with those of others.

Gauvain did not deny that the individual brings intrinsic capabilities to social interactions and therefore to the developmental process. But she focused on the research that supports the view that much of cognitive development is a shared domain between the individual and society. If her view is correct, there should be persuasive evidence that adults in different cultures actually have differing thought patterns.

Such research has recently been published by Nisbett (2003). Basing his conclusions on a series of experiments conducted by himself and others and supporting them with an analysis of cultural history, he contended that East Asians and Westerners differ in terms of whether they perceive the world holistically or as collections of objects, their conception and use of logic and categorization, their valuation of individualism versus group harmony, their use and understanding of causal attribution, their inclination to apply rules to situations, their development of relationship skills, and much more. His research tends to bear out Gauvain's assertions about cognitive development, and shows us the degree to which the typical adult's cognitive profile can differ from culture to culture.

Culturally Defined Value Systems

Gauvain, Nisbett, and others have indicated the degree to which the sociocultural context affects cognition and how social goals and values underlie many cognitive processes. But that begs the question: to what extent do value systems (and therefore goals) reflect cultural identity? This is an important question in the current inquiry, because a distinct correlation between value clusters and culture is required in order to search for the effect of a given culture in an online learning environment, or to differentiate between two or more cultures.

Recent analyses of culture and attitudes in teaching indicate that values do, indeed, matter. For example, Boufoy-Bastick (2001) noted that strategies for improving computer-related attitudes and beliefs of young Latino students are needed as many do not see computers as being relevant in either their careers or their personal lives. Ziegahn (2001) remarked on the potential variance between adult education teachers' values and those of their students.

The term “values” can vary somewhat in definition from scholar to scholar, but it consistently carries with it the concept of normative orientations, of preferred or even obligatory conduct and of desirable and undesirable conditions (Williams, 1979). It is recognized that societies (as well as institutions) have specific value priorities or hierarchies (Rokeach, 1979; Williams, 1979).

Rokeach (1979), whose quantitative research some three decades ago clearly established the fact that values were differently prioritized by various institutions and societies, contended that values were organized into value systems by organizations and societies, and that a main determinant of values is one’s culture. Using a list of 18 terminal values (i.e., ideal end-states of existence) and 18 instrumental values (i.e., ideal modes of behavior) Rokeach evaluated the value systems of many different groups, concluding that the actual number of terminal and instrumental values that an individual or an organization has is fairly small.

But it was Hofstede’s astonishingly wide data-gathering work that led to a more comprehensive value structure across countries. In a work first published in 1980 and augmented in a second edition (2001), Hofstede detailed the results of a series of surveys of cultural values conducted between 1966 and 1978, then added to in 1985-1995. The surveys included some 116,000 questionnaires in 72 countries, using 20 languages; respondents were members of the IBM workforce. Later, even more data from non-IBM respondents was added.

Using the data produced, Hofstede and his associates constructed a database suitable for statistical analysis. Extensive statistical analysis and data reduction techniques revealed a structure of five axial data values (or clusters of values) on which the national cultures surveyed differed from one another. Significantly, countries seemed to group together on each of the structural axes in ways that suggested a degree of cultural consistency (e.g., Hispanic countries tend to group near each other on most of the axes).

Hofstede’s five cultural dimensions are:

- **Power distance:** the degree to which the less powerful members of the society accept and agree that power is distributed unequally; the acceptance of power inequality in the society.
- **Uncertainty avoidance:** a measure of how comfortable or uncomfortable members of a culture are in unstructured situations; how much the society accepts the novel/surprising/unknown versus how much it tries to control it. This concept is not analogous to risk avoidance; rather it is a tolerance for ambiguity or uncertainty.
- **Individualism/collectivism:** the balance in the society between the requirement that individuals take care of themselves versus integrating into groups; the degree to which social referencing is encouraged; whether the individual identifies strongly with a group and is indivisible from it, or whether the individual primarily sees him/herself in self-defined terms, separate from group identity.
- **Masculinity/femininity:** the width of the divide between gender-based roles; the degree to which biological differences are expected to be reflected in social and emotional roles.
- **Long-term/short-term orientation:** the degree to which members of a society are expected to be able to accept delayed gratification of material, social, and emotional needs; persistence and thrift are aspects of this continuum.

Hofstede offered the first comprehensive, data-derived model of cultural values. He defined the model and its components in ways that are usable and coherent, consistent with previous research in the field, and statistically defensible.

Motivation And Persistence

It is clear from the foregoing discussion that values are culturally anchored, and deeply intertwined with cognition and therefore with learning. But what is the connection of values, cognition, motivation, and persistence?

Thought and theory regarding motivation in general has undergone much development in the last century, especially since McClelland (1961) and Atkinson (1964) respectively introduced their works on achievement and expectancy theories. Atkinson examined such factors as anxiety regarding failure, expectancy of success, and need for achievement, but considered these to be individual characteristics only. McClelland, however, saw an effect of culture, at least obliquely, by considering social practices such as methods of childrearing that he felt contributed to the individual’s need for achievement.

A few years later, Raynor (1967) addressed what was essentially a weakness of expectancy theory—that it was concerned only with the expectations of success and failure in the activity being observed. In his model of motivation, Raynor integrated the importance of long-term goals and expectancies, noting that anticipated future consequences of present behavior differentially affects individuals, depending on the strength of their achievement-related motives.

Maehr (1974) did early studies specifically pointed at cultural aspects of motivation, examining logically various constructs that might represent the interaction among culture, personality, and motivation. He observed the effect that social roles may have on certain types of behavior and recommended that more should be done to analyze the influence of social norms on motivational behavior. Maehr noted that culturally derived beliefs about ends (terminal values) and means (instrumental values) typically played little or no role in then-current achievement motivation, but felt that they should.

Keller's (1983; 1987) ARCS model brought together the above themes in motivational thought plus many more, including those of such theorists as Weiner, de Charms, Rotter and Bandura. ARCS, which stands for Attention, Relevance, Confidence, and Satisfaction, provides a systematic approach to incorporating motivational tactics into instruction. The learners' goal orientations are implicit in the Relevance aspect of the model, and their perceived success in having met those goals is included in the Satisfaction phase.

Motivational Systems Theory

Still, motivation as a field did not have a single, unifying theory until Ford's (1992) work. Anchored within a comprehensive theory of human functioning called the Living Systems Framework, Ford's Motivational Systems Theory (MST) provides a complete formulation of the basic characteristics and interactions of motivation and competence development.

Ford defines motivational processes as having three primary characteristics:

- They are qualities of the person rather than properties of the context.
- They are future-oriented rather than being focused on the past or present.
- They are evaluative rather than instrumental in character.

So motivation can be facilitated or constrained, but not imposed on a learner under Ford's theory, as it is entirely internal to the individual.

Within MST, motivation is defined as "the organized patterning of an individual's personal goals, emotions, and personal agency beliefs." (p. 78) Thus the concept can be restated:

Motivation = Goals x Emotions x Personal Agency Beliefs

Ford assigned goals a leadership role in motivation, specifying that both cognitive and emotional evaluations underlie the formation of new goals. He contended that a large portion of one's feelings of satisfaction and frustration can be traced to the organizing aspect of one's goals, and that the most motivating activities in life will be those that involve the simultaneous pursuit and attainment of multiple personal goals. Goals include both content (representing the consequences to be achieved or avoided) and process (directing the other components and capabilities of the person to try to produce those consequences).

Thus Ford's theory fits neatly into the space provided by Rokeach and Hofstede on one hand, and Gauvain and Nisbett on the other. As discussed earlier, Rokeach and Hofstede made clear that goals and the values that support them are heavily influenced by one's national culture, and Gauvain and Nisbett showed in exhaustive detail the extent to which culture is seen to affect the individual's cognitive processes. This interlinking of values, goals, cognition, and culture is at the heart of the theoretical connections being proposed by this paper. A schematic view of these linkages is shown in Figure 1.

In fact, Gauvain (2001) nibbled around the edges of this when she remarked that children's learning and involvement with their community show "patterns reflecting both short- and long-term goals and values of the communities. These variations would be expected to lead to differences in what children learn to think about and how they learn to think." (p. 40)

The other two components of MST also show unmistakable connections with the individual's culture. Personal Agency Beliefs are evaluative thoughts (and therefore anchored in cognition) that compare desired and anticipated consequences; but they have no meaning or functional significance if the goal they support is without value to the individual. They are seen as being more fundamental than the actual skills and circumstances they represent, because they can encourage people to open opportunities and acquire capabilities that they do not yet possess; thus they serve as a potentiating force. Ford notes that they play "a particularly crucial role in situations that are of the greatest developmental significance—those involving challenging but attainable goals." (p. 124). Note that Bandura's notion of "collective agency" (described above) is an expanded version of this concept that illustrates the cultural connections even more clearly.

Likewise, emotions (in older children and adults) are generally "activated by cognitive evaluations pertaining to current or potential concerns in real or imagined circumstances" (p. 143) according to MST. Regardless of whether the emotions are conscious or not, they may involve habitual patterns. Both in terms of

their cognitive component and in terms of their connection with ingrained patterns, emotions clearly have connections with culture.

Emotions have long been considered to have a clear interaction with online learning as well. Malone and Lepper (1987; also Lepper and Malone, 1987) wrote extensively on the importance of using “motivational embellishments” to create a sense of fun, challenge, curiosity, and fantasy in online learning in order to engage learners and enhance their intrinsic motivation.

Finally, it should be noted that MST defines competence as “the attainment of relevant goals in specified environments, using appropriate means and resulting in positive developmental outcomes” (p. 67). Accordingly, the concept of competence is also intimately connected with cultural issues as regards both goals and context.

Thus every aspect of Ford’s theory, when juxtaposed with other relevant models and theories, is permeated by the effects of the individual’s cultural background and the effects that background unavoidably imposes. When these interactions are mediated by an online environment, the motivational outcome may be different than that in other environments. And because we have seen both theoretical and research-based evidence that online environments differ from other learning environments in terms of their cognitive load and effects on the learner, it is reasonable to suggest that the role of culture on motivational outcomes in online environments is worth studying.

Conclusion

Cognition, cultural goals, and values, motivation... the pieces are all there for online learning and instructional design experts to find. The problem is that they are scattered across disparate disciplines: anthropology, psychology, sociology, and education. Given the current state of relevant knowledge and theory, it would be illogical that there might not be an effect—or a range of effects—on learner motivation and persistence, rooted in the interplay between the online learning environment and learner culture. It only remains to find what those effects might be so that we can allow and plan for them, and in so doing, provide added means by which all learners can advance equally on the path offered by online learning.

Unfortunately, so far research in this area is very sparse. (Collis & Remmers, 1997; Collis, 1999; Thomas, 2002). As learning becomes increasingly globalized and as academic and other organizations move forward with plans to encourage learners from other cultures to join them, it would be a shame if our own ethnocentrism prevented us from understanding that other cultures may react differently than we do to the virtual learning environments we have implemented. Only by testing and engaging in continued research can we evaluate whether the learning structures we have designed will provide equal access and opportunities for success to all learners.

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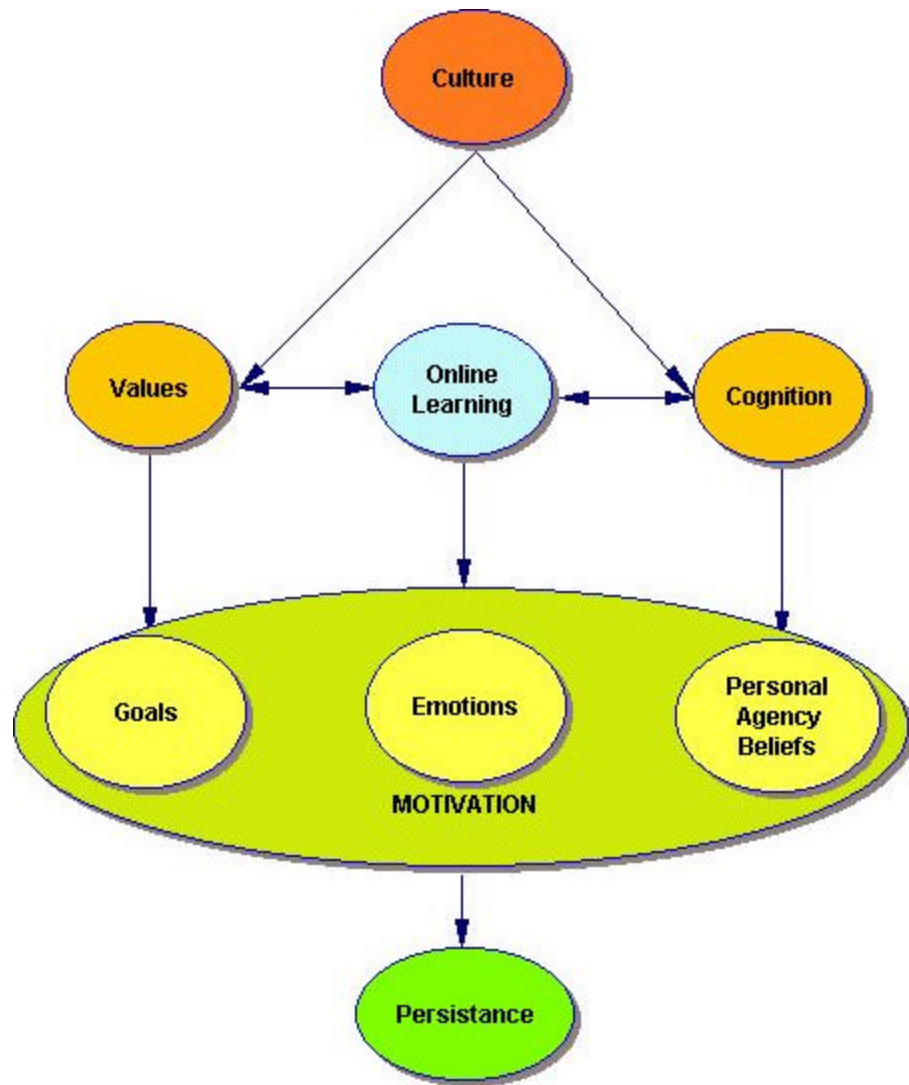


Figure 1