LEARNER SELF-REGULATION IN DISTANCE EDUCATION: A CROSS CULTURAL STUDY

A Thesis in
Adult Education

by
Aisha Salim Ali Al-Harthis

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The thesis of Aisha Salim Ali Al-Harthi was reviewed and approved* by the following:

Michael G. Moore  
Professor of Education  
Thesis Advisor  
Co-Chair of Committee

Gary W. Kuhne  
Associate Professor of Education  
Co-Chair of Committee

David M Post  
Professor of Education

Pui-Wa Lei  
Assistant Professor of Education

Ian E. Baptiste  
Associate Professor of Education  
Professor-in-Charge of Adult Education Program

*Signatures are on file in the Graduate School
ABSTRACT

Learning at a distance requires more self-direction and autonomy since the bulk of the responsibility for learning is transferred to the learner. However, not all learners are able or willing to handle this burden, which results in dropping out from the system or silently struggling to regulate their learning process. Individuals are products of their social system (Bandura 2001). Consequently, their internal mechanisms such as self-regulation are expected to be orchestrated by environmental events and dominant cultural systems of practice (Kitayama, 2002). Systematic variations between cultures are expected as well as variations in the degree of individual consciousness about their value orientation (Kluckhohn & Strodtbeck, 1961). This either facilitates or impedes the learning process. This study investigated cultural variations between two samples of Arab and American distance learners. The overarching purpose of this study was to explore the underlying relationship between learner self-regulation, cultural orientation and learner preference towards course interaction and flexibility. In this research, culture viewed as a dynamic process that is internalized by the individual. Cultural orientation was measured through variables in relation to time (future time orientation), structure (uncertainty avoidance), authority (power distance), and relation (interdependence). Learner self-regulation was measured through six variables representing metacognitive and motivational aspects of self-regulation. These variables were planning, self-checking, effort, self-efficacy, help-seeking, and time and environment management. The validity of cross-cultural comparisons was established using back-translation and multiple group
confirmatory factor analysis. Construct, method and item equivalence were established for all research constructs.

Power distance and future orientation, two cultural variables, were found to be unreliable and were therefore excluded from further analysis in the study. Other variables indicated acceptable reliability and equivalent factor structure for both groups. After listwise deletion, the final analysis was based on an equivalent sample of 95 cases from each group. Results suggest significant differences between Arab and American distance learners in the way they regulate their learning, in their cultural orientation towards time and group interdependence, and in their preferences towards course structure and interaction with instructors. American students scored significantly higher than Arab students on planning, monitoring, effort, time and environment management and self-efficacy, while Arab students scored significantly higher than American students on help. American students scored significantly higher than the Arabs on both group interdependence and future orientation. While it was expected that American students will be more future oriented, it was surprising to find that there also were more group interdependence. Arab students preferred significantly higher structure and more interaction with their instructors than American students.

Using structural equation modeling, the relationship between cultural and self-regulation variables was investigated. In the best fitting model, only future orientation explained variances in self-regulation. Group interdependence was not found to be significant and was excluded from further analysis. In this model, self-regulation was subdivided into two factors (1) metacognition consisting of planning, monitoring, and time and environment management, and (2) motivation consisting of effort and self-
efficacy. Help was not found to be measurement invariant across the two groups. Americans did not conceptualize help as part of their self-regulation whereas Arabs did. The final model without help was found to be invariant across the two groups.

Results were inconclusive when adding variables of course structure and interaction, years and gender to the model. Some fit indices indicated unacceptable fit and some of the components of the model were insignificant. However, these results suggested group by gender interaction on metacognition. This was tested for through MANOVA. Results suggest that Arab males and American females scored higher on metacognition than Arab females and American males.
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Chapter 1

INTRODUCTION

Introduction: Statement of Problem

Cross-cultural variations are slightly addressed in the distance education literature. The majority of the available literature is theoretical and lacks empirical research. With the expansion of distance education through information technology, the body of learners is becoming more diverse and multiple cultural contexts are involved, yet not represented or even fully understood. The process of learning at a distance appears to be very similar for many learners around the world. It is minimally viewed as a function of the distance education system which stresses self-directed learning and learner autonomy by moving the bulk of the responsibility for learning to the learner. However, not all learners are able or willing to handle this burden, which results in dropping out from the system or silently struggling to regulate one’s learning process. In fact, Young (1996) provides an evidence suggesting that learners with low self-regulation or self-direction perform poorly when given control over their learning in relation to choice, sequence and pace of learning events (structural component of transactional distance), whereas their counterparts with high levels of self-direction or self-regulation performed equally well regardless of the type of control given.

This may be more so when cultural views of learning are in direct conflict with the philosophical assumptions made by instructors and instructional designers regarding
learner autonomy and personal control of learning. Learning at a distance cannot be entirely autonomous (Candy, 1990). What students will learn is largely pre-determined by social agents represented in distance teaching institutions. Even in their absence, teachers play the role of social agents by organizing and designing student learning and consequently affecting student cognitive processing. Self-learners only appear to be alone while in fact their “thinking is determined by many diverse social inputs and with additionally socially mediated help not far away it is needed” (Pressley, 1995, p.211). There is a need to understand learner self regulation in web-based distance education environment within a cultural context. There is an obvious need for cultural fit between the organization and design of distance education and learner socio-cultural beliefs to maximize learners’ opportunity for success in this system.

Learning process cannot be conceptualized without the socio-cultural context. Bandura (2001) believes that individuals are producers as well as products of the social system. Their “internal mechanisms are orchestrated by environmental events” (p.4) and organized through their active efforts to coordinate their behaviors with the dominant cultural systems of practice (Kitayama, 2002). To understand what first seems to be an autonomous process of learning, we need to frame research questions within a cultural context. Pointing to the complexity of distance education in its various phases of formation, adaptation and application, Saba (2003) further expands this argument to include global, social, economic and technological factors. He suggests these factors should be viewed as nested hierarchical subsystems that are affecting and affected by each other. Therefore, whole distance education system is dynamic not only because of
the changing factors and their relationship but also because of the internal feedback loop based on the changing nature of transactional distance.

This multi-level hierarchical division is also suggested to understand the sub-levels of culture starting from “the most macro level of a global culture, through national, organizational and team cultures, and down to the representation of culture at the individual level” (Erez & Gati, 2004, p. 583). We cannot simply propose that “human values are conditioned solely by national culture ignoring the potential influence of a variety of other contextual factors” (Chiang, 2005, p.1545). Therefore, Hannafin and Kim (2003) recommend that future research in web-based distance education embrace different world views on teaching and learning processes. By including contextual issues, we can reflect on the complex and dynamic nature of culture on research phenomenon instead of viewing culture as a static entity (Chiang, 2005; Erez & Gati, 2004; Kitayama, 2002). This is being highlighted by recent cross-cultural literature emphasizing the importance of including institutional and individual context in addition to national context (Chiang, 2005; Erez & Gati, 2004).

Purpose of the Study

The overarching purpose of this study was to explore the underlying structural relationship between learner self-regulation, cultural orientation and learner preference towards course interaction and flexibility. This was examined by comparing learners in two distance education systems: the Arab Open University and The Pennsylvania State University World Campus. In this research, culture was not viewed as a static single
entity but as a dynamic process that is internalized by the individual by measuring
cultural orientation through variables in relation to time (future time orientation),
structure (uncertainty avoidance), authority (power distance), and relation
(interdependence). The choice of these cultural variables was based on their hypothesized
potential explanation power to further clarify the differences among distance learners in
their self-regulation processes. Learner self-regulation was measured through six
variables representing metacognitive, and motivational aspects of self-regulation that
were expected to explain the variance in learner self-regulation in distance education.
These variables were planning, self-checking, effort, self-efficacy, help-seeking, and time
and environment management.

The research aimed at a number of purposes. First, it explored the relationship
between learner self-regulation, cultural variables and learners’ preference towards
course interaction and flexibility. Then, it explored differences in self-regulation, cultural
orientation and preferences for course flexibility and interaction between Arab and
American students. Using structural equation modeling, model building strategies were
used to discover the best model (variance and covariance structure) to explain the
relationship between learner self-regulation and cultural orientation between the two
groups. It was expected that learner self-regulation and cultural orientation may lead to
different preferences towards interaction with other learners and the instructor as well as
different preferences for flexibility in the way courses are structured. Therefore, the study
examined whether any differences that may be found between Arabs and Americans in
learner self-regulation and cultural orientation were meaningful in explaining learner
preferences toward course structure and interaction in distance education. Finally, the
researcher examined whether gender and years in the program were meaningful variables in explaining any found differences in the best fitting model of self-regulation for Arabs and Americans.

**Research Questions**

As explained previously, the purpose of this research was to compare between learners in two distance education systems: the Arab Open University and The World Campus at the Pennsylvania State University in relation to their self-regulation, cultural orientation and preference towards course flexibility and interaction. More specifically, it aimed to address the following questions:

1. What are the relationships between (1) learner self-regulation (planning, effort, and self-efficacy, self-monitoring, help seeking, and time and study environment management), (2) cultural orientation (future time perspective, interdependence, uncertainty avoidance and power distance) and (3) learner preferences towards course interaction and flexibility?

2. Are there any differences in self-regulation (planning, effort, and self-efficacy, self-checking, help-seeking and time and study environment management) between Arab and American distance learners?

3. Are there any differences in cultural orientation (future time perspective, interdependence, uncertainty avoidance and power distance) between Arab and American distance learners?
4. Are there any differences in between Arab and American distance learners in their preferences towards course interaction and flexibility?

5. What is the best model (variance and covariance structure) to explain the relationship between learner self-regulation and cultural orientation?

6. Are any found differences between Arabs and Americans in learner self-regulation and cultural orientation meaningful in explaining learner preferences toward course interaction and flexibility in distance education?

7. Are gender, number of years in distance education programs meaningful in explaining any differences found in the best fitting model for Arabs and Americans?

**Significance of the Study**

Generally, studying self-regulation serves a twin goal of providing both theoretical understanding of learning and practical information for designing better educational environments to support learner self-regulation (Pintrich, 2004; Vohs & Baumeister, 2004). “[S]elf-regulation brings about the realization in its profound impact on people’s everyday struggle” (Vohs & Baumeister, 2004, p.3). Little evidence exists in explaining how distance learners regulate their learning at a distance. Studying self-regulation is of particular interest to distance educators, given the absence of the instructor and the increased responsibility on the learner. Only a few guidelines exist on how to incorporate self-regulation processes in web-based leaning environments (Dabbagh & Kitsantas, 2004). Learner self-regulation is the variable that best explains
both student attrition and persistence in web-based courses, according to Zimmerman (2002). Previous research shows that self-regulation is a valid predictor of academic achievement. Zimmerman and Bandura (1994) found a noteworthy replication of the magnitude of the contribution of two self-regulation factors (perceived academic self-efficacy and personal goal setting) in predicting student achievement. In addition, within the global market of distance education understanding cultural expectations could provide a competitive edge for distance education providers (Bentley, Tinney & Chia, 2005).

Based on previous research (Bagozzi et al., 2003), this study hypothesizes that the effect of self-regulation on performance may be mediated through culture. No previous empirical research, based on the researcher’s knowledge, in distance education investigated the relationship between cultural variables and learner self-regulation. Understanding cross-cultural issues in online learning provides another practically valued input for instructional designers in developing “effective online instructions that transfer well between countries” (Lim, 2004, p.164). Overall, most research on self-regulation has been conducted in North America. Results from such research that is based on North American values cannot be generalized to other Western cultures let alone non-Western cultures (Schunk, 2005). Research studies conducted on the Chinese culture revealed a number of cultural constructs and variables that are specific to this culture (Chan, 2002; Smith & Smith, 2000; Tu, 2001). For example, renqing, face and harmony are three Eastern constructs found to be significantly related to tutor’s teaching effectiveness at Hong Kong Open University (Chan, 2002). Still, more empirical research is needed to investigate individual and cultural factors in distance education (Lim, 2004; Anakwe & Kessler, 1999). In addition, research about Arab students in distance education hardly
exists. This is understandable given the short history and delayed start of distance
education in the Arab World (Alsunbul, 2002). Findings from this study will provide
some practical input for instructional design of distance courses by providing insight
about cultural differences in self-regulation and learner preferences towards course
interaction and flexibility for Arab and American students.

Finally, most previous studies on self-regulation and cross-cultural research in
distance education mainly use the typical undergraduate population in traditional
universities (Lynch, 2003; Zimmerman, 2002), which does not reflect the diversity of
distance learners abilities and backgrounds. Therefore, this study proposed to study self-
regulation in distance teaching institutions. This type of institutions have more adult
students, who are working and pursuing college degrees at the same time, which is more
typical of distance learners. Therefore they may show greater variability in self-regulated
learning (Lynch, 2003).

**Definition of Terms**

**Academic Self-Regulation**

Self-regulation refers to “self-generated thoughts, feelings and actions that are
planned and cyclically adapted to the attainment of personal goals” (Zimmerman, 2000,
p. 14). The defining characteristic of self-regulated learners is that they display “personal
initiative, perseverance and adaptive skills in perusing” their learning, so mental abilities
are transformed into task related academic skills (Zimmerman, 2001, p.1). Therefore,
self-regulation learning (SRL) is an interaction between cognition (thoughts), motivation (feelings) and behavior (actions) and context (Pintrich, 2004; Zimmerman, 2005). It is a multi-faceted phenomenon consisting of four phases: fore-thought, planning and activation, monitoring and control, and reaction and reflection (Pintrich, 2004). As Garrison (1997) explains, self-regulation differs from self-directed learning by focusing not only on the external management (task control) of the learning process but also the cognitive (cognitive responsibility) and psychological (motivational) dimensions. In this study six components of self-regulation are examined because of their central importance to learner success and persistence in distance education. These are planning, self-monitoring, self-efficacy, effort, help-seeking, and time and environment management.

Culture

For the purpose of this study, culture is defined broadly as “the distinctive patterns of thought, action and value that characterize the members of a society or social group” (Winthrop, 1991, p.50). Hofstede (1991) points out that culture is a collectively learned phenomenon specific to a group or category. It should be distinguished from human nature, which is inherited and universal, and from an individual’s personality, which can be inherited or learned and is specific to individuals instead of groups. Culture is acquired. It is “constructed and transmitted within social-life contexts for the purposes of promoting individual and group survival, adaptation, and adjustment” (Marsella, et al., 2000, p.50). It is adaptive as it reflects the changing nature of how people relate to their environment. Therefore, culture is continuously changing in response to internal and
external factors (Ferraro, 2002). Four aspects of cultural variations are identified in this study. They measure cultural orientation towards time (future time orientation), structure (uncertainty avoidance), authority (power distance), and relation (interdependence).
Chapter 2

LITERATURE REVIEW

Introduction

This study is informed by research and development in three theoretical fields. Distance education, the main field of focus, provides theoretical underpinning related to contextual understanding of the processes and issues related to the teaching and learning transaction and learner autonomy. Cross-cultural communication and research provides essential perspectives to view variables of socio-cultural differences. Educational and cross-cultural psychology provides extensive research on the construct of self-regulation and its relationship to academic achievement and motivation. Embedded in these well-established traditions, this research offers a unique perspective on the distance learner academic self-regulation across cultures.

The literature is organized into four main sections. The first part discusses learner autonomy and self-directed learning from adult and distance education literature. The second part presents various theoretical perspectives of learner self-regulation as discussed in the educational psychology literature. Then, a cultural literature review is presented as it relates to the study. The final section brings these various perspectives together to discuss issues of autonomy, power, time, dialogue, structure and planning as
they relate to distance learner self-regulation. Although these sections seem to be separate, the discussion in many times is presented in an interrelated approach.

**Adult Learning and Autonomy**

Learner independence, learner autonomy and learner self-direction are concepts that have been central themes in the field of adult education generally and in distance education more specifically. The following discussion tracks the development of these concepts.

**Self-Directed Learning**

The idea of viewing adults as independent individuals in learning situations triggered the curiosity of many adult educators. Tough (1968) studied 35 adult learning projects, and raised many questions about adult motivation to learn independently. He reported that the desire to apply and use knowledge was the single and most common reason for adult learning. Adult learners had an action goal related to their everyday lives.

This purposeful search for knowledge is further elaborated by Knowles’s (1975) discussion of self-directed learning. He believes that being independent is an essential aspect of maturing as an adult, especially for those intending to join non-traditional programs of study. This assumption about adult maturity leads to the recognition of their experiences and purposes for learning. Within this context, the role of the teacher becomes to help those ‘maturing human beings’ (p.19) learn, which he refers to as
“andragogy”. For Knowels (1975), being self-directed does not mean being entirely self-independent. Instead, it is the process of taking a mental position of self-directedness. This is reflected in learners’ attitude when entering a learning situation. Instead of perceiving themselves being ‘taught’, they consider this teaching transaction as a learning resource.

The discussion of learner-directedness is incomplete without recognizing learning within an educational system. Candy (1990) believes a distinction must be made between independent study or self-directed learning and autodidaxy or pure learner autonomy by taking into account the degree of teacher control or direction. He views the first as a technique of instruction, in which no matter how minor the instructor direction may be, there is a fair amount of control over the instructional transaction influencing learner choices. On the hand, autodidaxy implies a total ownership and control of the learner. Candy goes as far as suggesting that learners may not even be aware of being in a learning situation, which completely eliminates the instructor’s image. Autodidactic learners take the initiative for their learning projects. The role of an instructor is only to provide any needed assistance. These learners are single-minded in their commitment to learning, which often leads to achieving high levels of expertise.

Similarly, Garrison (1997; 2003) notes that self-directed learning decisions are not made in isolation from the educational environment. They are based on existing educational conditions, within which an appropriate level of teacher control and learner responsibility are evaluated in relation to the context and purpose of education. To do so, Garrison suggests a model based on viewing self-directed learning from a “collaborative, constructivist” perspective. He emphasizes themes related to (1) self management of
learning strategies as learners deal with external control issues, (2) self-monitoring, which asks learners to assume “cognitive responsibility for constructing meaningful and educationally valid knowledge”, and (3) motivational issues as they relate to persistence and commitment to learning goals (Garrison, 2003, p.165).

From a social cognitive perspective, personal agency is not seen as an entirely autonomous force or the result of external social environment. Instead it is affected by complex interactions between the two (Bandura, 1989). Autonomy is thus viewed within internal perceived locus of control within the social environment. Teachers can support autonomy in situations where there is no perceived external control. This should be viewed within the boundaries of the educational system, which in many times does not allow teachers to act in an autonomy-supportive way. If teachers are more pressured, they are more likely to act in a controlling way with their students. In addition, teachers’ beliefs about their student motivation and autonomy affect their teaching style in relation to autonomy. Teachers who believe that their students are autonomous and motivated tend to be more autonomy supportive than those who believe their students are less motivated (Deci et al., 1991).

From the previous discussion of learner autonomy, self-directedness and control, it is clear that this process cannot be individually constructed without recognizing the wider educational environment, which exists in diverse socio-cultural conditions. Only isolated relationships of the interplay between the different factors affecting this process are discussed. The following discussion presents some of these important contributions in constructing the state of knowledge in relation to this process.
Learner Autonomy

Because of the limited teacher assistance in distance education environments, Wedemeyer (1971, p.548) states there is a need for “self-responsibility and self-regulation for learning” in addition to “freedom” in learning. So, independent learners are free to: (1) self-pace their learning to fit their circumstances, (2) choose an individualized channel of learning without being confined to a single mode of learning, and (3) select learning goals and activities. Within these three modes of freedom, Wedemeyer notes a conceptual shift from pre-scribed goals and activities in the first two to the independent learner-determined goals and activities in the last type of freedom. However, as Moore (1972; 1973) suggests, distance education has been institutionalized in a way that prescribed behaviorist objectives and highly structured content were set for all learners despite differences in their backgrounds and abilities. During the 1970s, Moore concludes, that was a reflection of the dominant behaviorist view on learning (Moore & Kearsley, 2005).

Moore (1972;1973) introduced the idea of learner autonomy as another dimension of independent learning. Learner autonomy can be viewed as either an ability of the learner or a characteristic of a program. Autonomy as a learner ability suggests that learners have different capacities for making decisions regarding their own learning. As a program characteristic, autonomy is the degree to which programs allow learners to “exercise a greater degree of control over his [her] learning” (Moore, 1972, p.80). Moore introduced an 8-level hierarchy for classifying programs based on how much control they give to learners in setting learning goals and a study plan (preparation), process of
learning (execution), and assessing learning for oneself to determine when progress is satisfactory (evaluation). He stated that most programs may give learner the opportunity to control for their learning process, but not in preparation and evaluation (Moore, 1972; Moore & Kearsley, 2005).

Theory of Transactional Distance

Moore (1972; 1973; 1986; 1993) explains that “distance” in distance education should be viewed as a pedagogical distance between the teacher and learner instead of only a geographical distance. He suggests that, in addition to autonomy, this distance is a function of two other variables related to the teaching and learning transaction: dialogue and structure. This is referred to as the theory of transactional distance. Moore suggests four levels of classifying programs based on the variables of structure and dialogue: -D-S (no dialogue, no structure), -D+S (no dialogue, some structure), +D-S (some dialogue, no structure) and +D+S (some dialogue, some structure) (Moore, 1980). Braxton (2000) suggests classifying programs into nine levels instead of four by adding a middle level to dialogue and structure, so programs can be ranked on each component of transactional distance as either low, medium or high.

Student perception of classroom control is another factor that is better explained within the theory of transactional distance. Instructional environments that provide more control to learners allow for the exercise of higher level of self-regulated learning because they provide learning conditions that promote internal motivation and perception of self-efficacy (Eshel & Kohavi, 2003; Young, 1996). Similarly, student perception of
classroom goal orientation (mastery versus performance) affects their use of important achievement motivation behaviors such as the use of appropriate learning strategies, focus on effort, making engaging choices and positive learning orientation. All of these facilitate the development of long-term learning strategy use and self-regulation. Eventually they foster a belief that success is related to one’s effort (Ames & Archer, 1988).

**Dialogue**

Dialogue is defined as the “extent to which a learner may communicate with his teacher” (Moore, 1973, p. 665). Moore suggests that this dialogue should be “purposeful, constructed and valued” (Moore, 1993, p.24). The lack of dialogue in programs is an indicator of the lack of responsiveness to individual learner needs (Moore, 1993). In reality, this could be provided not necessarily though a Socratic-type dialogue, but most importantly through providing an effective communication system that responds to student needs such as answering specific questions about homework problems (Vogeli, 1999).

Moore uses the term “dialogue” to reflect a mutual relationship between the teacher and learner. As he explains (1993, p.24), “each party is a respectful and active listener; each is a contributor, and builds on the contribution of the other party or parties”. The extent of this dialogue, he explains, will be affected by a number of factors including educational philosophies, content matter, individual personalities and most importantly medium of communication.
Web-based technologies allow for more peer interaction that is accessible beyond constrains of time and location (Sung, et. al., 2005). However, Zimmreman (2002) notes from her qualitative study of self-regulation behavior of distance learners that skillful self-regulators value interaction less than naïve self-regulators. However, the former do not mind helping the later.

**Structure**

Structure is defined as “the extent to which the objectives, implementation procedures, and evaluation procedures of teaching program are prepared…to meet specific objectives, implantation plans, and evaluation methods of individual students” (Moore, 1980, p.21). This determines the flexibility or rigidity of educational programs to respond to individual learner needs (Moore, 1993).

**Web-based Instruction and Transactional Distance**

It is important to note that both dialogue and structure will depend on the type of media used because the differences in the inherent media characteristics may permit for more or less dialogue and/or structure resulting in different degrees of transactional distance. For example, interactive video or audio tend to over-structure material and allow for little dialogue resulting in large transactional distance (Moore, 1993). Jung (2001) analyzed 58 research articles in five leading distance education journal to investigate the pedagogical processes in web based instruction (WBI) using the theory of
transactional distance. He found that WBI provides more “structural flexibility” because it provides a way to “adapt contents to match individual students” (p. 530). By doing so, it increases student interaction. Three types of interaction were encouraged in WBI: academic interaction, collaborative interaction and interpersonal interaction. Results from this study seem to be inconclusive. The researcher did not provide enough description of the analysis criteria for classifying articles in relation to pedagogical components of transactional distance. A few studies were frequently cited while others were not even mentioned.

**Learner Self-Regulation**

Garrison (1997) criticizes the literature of self-directed learning in adult education because it heavily focuses on external management (task control) of the learning process, but lacks a more comprehensive model by additionally including the cognitive (cognitive responsibility) and psychological (motivational) dimensions. For better understanding of the last two dimensions, he suggests referring to the psychological literature on self-regulation. The concept of self-regulation grew out of cognitive psychology whereas learner autonomy and self-directed learning were established in adult education and humanistic psychology (Garrison, 1997). In fact, self-regulation was the result of the interest of learning and motivational researchers in self-directed learning (Ridely, Schutz & Glanz, 1992).
Self-Regulation Perspectives

The simplest definition of self-regulation is exercising control over oneself to bring the self in line with preferred standards. In psychology, regulation is not only of the self but also by the self (Vohs & Baumeister, 2004). Self-regulation involves overriding responses that might occur as a result of habit, learning, inclination or innate tendencies. It reflects an effort to alter one’s response, so that responses higher in hierarchy have enough strength to override lower tendencies and impulses. This has been and still is a “vital aspect of human adaptation to life” (Baumeister, Heatherton & Tice, 1994, p. 12).

Although early work on self-regulation was therapeutic in nature as it was used to alter dysfunctional behavior, self-regulation principles are applied today to learning (Schunck, 2005). Zimmerman and Schunk (2001) identify seven theoretical perspectives to view self-regulated learning (SRL): operant, phenomenological, information processing, social cognitive, volitional, Vygotskian, and cognitive and constructivist. They differ in their views on motivation to self-regulate, self-awareness, key self regulation processes, and the role of the social and physical environment and process in acquiring self regulation. Information processing and social cognitive perspectives provide significant input for this study. The first can be used to address issues in instructional design while the second is helpful to address social and cultural issues in the learner environment.
Information processes approach to self regulation.

Within this perspective self regulation basically refers to developing a recursive feedback loop in electronic computing to indicate the discrepancy between learner performance outcomes in comparison with certain standards. Self regulation is a continuous cycle of control and monitoring. It is judged by the learner ability to retrieve information. A number of strategies can be used to transform information into more readily, useable forms such as chunking bits of information into larger unit, creating schemas to sort incoming information, and creating “if-then” strategies and tactics (Zimmerman & Schunk, 2001).

Social Cognitive Theory and Self-Regulation

Not only cognition determines self-regulation of learners. Environmental and behavioral events have an important influence on learning as well. Learner self-regulation is influenced by learner self-efficacy and outcome and goal expectation. Therefore, it covers three areas: metacognition (thoughts), motivation (feelings) and behavior (actions) (Zimmerman, 2001). Bandura (1991) identifies three processes of academic self regulation: self-monitoring, self-judgment and self-reflection. Self monitoring provides information for setting realistic goals and evaluating one’s progress. It serves as a diagnostic and self-motivating function. Self-judgment provides the basis for self-reaction through judging one’s progress against personal and collective standards. Self-reaction creates self-incentives for one’s anticipated affective reaction to one’s own behavior and internal standards. Zimmerman and Schunk (2001) provide another way to
view the interactive SRL processes through a three-phase cyclical model, which consists of forethought, performance and self-reflection. Each phase leads to the next one.

Recently, based on psychological analysis of academic learning through his work and others including Bandura, Zimmerman and Schunck, Pintrich (2004) suggests a more comprehensive conceptual framework for future research of self-regulation. It provides a blueprint for future development of assessment instruments of self-regulation strategies, some of which can already be measured by the “Motivated Strategies for Learning Questionnaire” (MSQL). Pintrich explains that self-regulated learning can be identified through four phases in four areas of self-regulation. Together, they explain how self-regulated learning operates in the classroom. They are:

- **Phase 1: Forethought, planning and activation**: It “involves planning and goal setting as well as activation of perceptions and knowledge of task and context and the self in relation to the task”.

- **Phase 2: Monitoring**: It involves “various monitoring processes that represent metacognitive awareness of different aspects of the self and task or context”.

- **Phase 3: Control**: It involves “efforts to control and regulate different aspects of the self or task and context”.

- **Phase 4: Reaction and reflection**: It involves “various kinds of reactions and reflections on the self and the task or context” (Pintrich, 2004, p. 398).

Pintrich clarifies that although these four phases present a time-honored sequence, they are not hierarchically or linearly structured. In fact, they may occur simultaneously. At each phase, SRL cuts across four areas/domains: cognition, motivation or affect, behavior and context. The first three are typical psychological functions whereas the last
one (context) reflects social context. Table lists some of the activities, tactics and strategies students are involved in at each phase in each domain. Schunk (2005) explains that some of the activities within these areas require “little if any self-regulation” and some learning situations “may engage learners in some but not all the phases” (p86).
Table 1: Pintrich's (2004) Self-Regulated Learning Phases, Areas and Behaviors

<table>
<thead>
<tr>
<th>Phases of SRL</th>
<th>Areas of SRL</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 1</strong></td>
<td>Cognition</td>
<td>Target goal setting</td>
</tr>
<tr>
<td><em>Forethought, planning and activation</em></td>
<td>Prior content knowledge activation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Metacognitive knowledge activation</td>
</tr>
<tr>
<td>Motivation/Affect</td>
<td>Goal orientation adoption</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Efficacy judgments</td>
<td>Perceptions of task difficulty; Task value activation</td>
</tr>
<tr>
<td></td>
<td>Interest activation</td>
<td>Activation</td>
</tr>
<tr>
<td>Behavior</td>
<td>Time and effort planning</td>
<td>Planning for self-observations of behavior</td>
</tr>
<tr>
<td>Context</td>
<td>Perceptions of task</td>
<td>Perceptions of context</td>
</tr>
<tr>
<td><strong>Phase 2</strong></td>
<td>Cognition</td>
<td>Metacognitive awareness and monitoring of cognition</td>
</tr>
<tr>
<td><em>Monitoring</em></td>
<td>Motivation/Affect</td>
<td>Awareness and monitoring of motivation and affect</td>
</tr>
<tr>
<td></td>
<td>Behavior</td>
<td>Awareness and monitoring of effort, time use, need for help; Self-observation of behavior</td>
</tr>
<tr>
<td></td>
<td>Context</td>
<td>Monitoring changing task and context conditions</td>
</tr>
<tr>
<td><strong>Phase 3</strong></td>
<td>Cognition</td>
<td>Selection and adaptation of cognitive strategies for learning, thinking</td>
</tr>
<tr>
<td><em>Control</em></td>
<td>Motivation/Affect</td>
<td>Selection and adaptation of strategies for managing, motivation, and affect</td>
</tr>
<tr>
<td></td>
<td>Behavior</td>
<td>Increase/decrease effort; Persist, give up; Help-seeking behavior</td>
</tr>
<tr>
<td></td>
<td>Context</td>
<td>Change or renegotiate task; Change or leave context</td>
</tr>
<tr>
<td><strong>Phase 4</strong></td>
<td>Cognition</td>
<td>Cognitive judgments</td>
</tr>
<tr>
<td><em>Reaction and reflection</em></td>
<td>Motivation/Affect</td>
<td>Affective reactions</td>
</tr>
<tr>
<td></td>
<td>Behavior</td>
<td>Choice behavior</td>
</tr>
<tr>
<td></td>
<td>Context</td>
<td>Evaluation of task</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evaluation of context</td>
</tr>
</tbody>
</table>
Self-Regulation Processes

In the following section, a detailed discussion of some major self-regulation processes will be presented. The researcher chose to focus on these as indicators of learner self-regulation process. These are planning, self-monitoring, effort, self-efficacy, help-seeking and time and environment management. As suggested by Zimmerman (2005), processes of self-regulation are interrelated and cyclically sustained. The cyclical nature of these processes depends on feedback from previous performances that is used to adjust to the changing personal, behavioral and environmental factors.

Planning

By setting goals, learners practice an evaluative task that “mobilizes effort toward goal attainment” (Bandura, 1991). Setting goals for oneself has both practical and motivational advantages. As Wood and Bandura (1989) explain, goals provide one with a sense of psychological wellbeing and accomplishment because they not only help to sustain effort, but provide a sense of purpose. In addition, they provide standards to measure one progress against. Goal setting and planning is determined by the task and the environmental features (Zimmerman, 1989). The literature suggests that specific and challenging goals result in better performance than easy and vague goals (Ridley, et. al., 1992).
Self-Monitoring

As will be explained later, reduction in self-monitoring results in failure of self-regulation because individuals act in ways that are not consistent with their own standards. As identified by a number of self-regulation researchers (Bandura, Pintrich and Zimmerman), self-monitoring is a significant metacognitive component of self-regulation. Learners with self-monitoring perform better academically in tests. They use more self-regulated strategies and developed better knowledge representation (Lan, 1996). The discrepancy between one’s behavior and self standards guide one’s reaction to achieve the desired results (Wood & Bandura, 1989).

Effort

Regulation of one’s effort reflects a commitment to pursue one’s goals inspite of difficulties and distractions (Pintrich, 2004). In order to maintain effort, strategic planning is needed. Effort is affected “reciprocally by enactive feedback from these efforts” (Zimmerman, 1989, p.332). Process goals are more effective in guiding one’s effort. At this point it is important to distinguish between attribution of failure and success and their results (pride or shame) to effort or ability. Weiner (1972) suggests that pride is the result of attributing success to low ability and effort while shame is the result of attributing failure to the lack of motivation, which leads to the lack of effort, while having the ability. From previous research Bandura (1991) concludes that highly efficacious learners attribute their failure to lack of effort while low efficacious learners attribute failure to low ability. Notwithstanding, student ability to learn is viewed
differently from Western and Eastern perspectives. While Western perception of ability to learn is somehow fixed and teacher’s role becomes trying to meet individual needs and make students work at their own pace, the Eastern perception of ability is not fixed. All students are encouraged to work hard to achieve the same standards because effort is the only factor making a difference in student learning (Cortazzi & Jin, 1996).

**Self-Efficacy**

Badura (1991) defines self-efficacy as people’s perceived ability “to exercise control over their own level of functioning and over events that affect their lives” (p.257). He suggests it influences self-regulation through four processes: cognition, motivation, affect and selection. Assuming that human action is intentional and purposive, self-efficacy beliefs affect the type of goals people set for themselves. For example, self-regulated learners believe they have the ability to perform the appropriate learning task to master course content (Bois & Staley, 1997). Part of the cognitive process of self-efficacy is assessing environmental constrains that may reduce personal control (Bandura, 1991). Self-efficacy was found to be positively related to positive control orientation (Yamaguchi, 2001). Because of the technology-based environment in distance education, computer self-efficacy was found to predict the likelihood of learner’s future participation in web-based courses as well as their satisfaction with web-based courses (Lim, 2001). In addition, self efficacy for learning and performance alone was found to explain 7 percent in the variance of learner grades in a blended online course (Lynch & Dembo, 2004).
Using motivational strategies, learners “initiate and direct their behavior toward desired learning goals” (Bois & Staley, 1997, p.175). This requires learners to activate their self-evaluation processes so they have a personal standard to judge their progress. Those with high self-efficacy persist in the face of difficulties while others who have self-doubts abort their effort prematurely (Bandura, 1977; 1991). Self-efficacy beliefs are affected by the regulation of the degree of anxiety and depressive mood one may experience when pursuing goals. The lack of one’s belief in his/her ability to control potential threats results in coping deficiency that may lead individuals to magnify “the severity of possible threats” and consequently distress themselves (Bandura, 1991, p.25).

In distance education, how distance learners maintain their effort and control their anxiety remains largely unexplained. Lee and Witta (2001) found that self-efficacy for online technology and online course content has increased during the course of a semester; however, it was not predictive of learner performance.

Finally, self-efficacy influences the type of environments individuals select to be involved in or even create for themselves. This is especially obvious when choosing careers (Bandura, 1989). Certainly choosing to be involved in a distance education program requires individuals to assess their capabilities to participate in this unique educational environment. This assessment includes but not limited to the ability to take responsibility for one’s learning and the ability to use instructional technology. The distance education literature seems to suggest that those who choose this mode of instruction are more likely to be already independent learners (Thompson, 1984; Thompson & knox, 1987).
From a cross-cultural perspective, views of self-efficacy are expected to be mediated by the external sociocultural beliefs leading to differences in the way self-efficacy beliefs operate in Western and non-Western cultures. From a review of 20 cross-cultural research studies, Klassen (2004) concludes that even when students perform equally well, non-Western collectivist groups report lower self-efficacy than Western individualistic groups. He suggests that collective efficacy works the same way for collective groups as self-efficacy for individualistic group. Collective efficacy refers to “group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments” (Bandura, 1997, p.477). Lim (2004) reached a similar conclusion in her study of US and Korean online students. She found a significant difference in learning motivation between the two groups with US students scoring higher in their motivation in relation to the perceived importance, relevancy of learning content, learning process and learner’s ability to learn, while Korean students showed more learner control. Lim explains this finding by emphasizing Asian student orientation towards effort attributions and performance goals while emphasizing US student orientation towards a mastery of learning over time and enjoying the learning process.

**Help Seeking**

Knowles (1975) suggest that self-directed learners are engaged in a process in which they “take the initiative with or without the help of others in diagnosing their learning needs, formulating learning goals, choosing and implementing learning
strategies, and evaluating learning outcomes” (p.18, italic added). Moore (1972) suggests that autonomous learners will turn to teachers for help temporarily surrendering their control over their learning process. However, the type and purpose of help has been established by them in the first place. Students with prior distance education experience are more likely to ask for instructor's help outside the course (King, Harner & Brown, 2000). There are qualitative differences noted by Zimmerman (2004) in help-seeking between distance learners who persist and those who do not persist. Non-completers rely more on face-to-face help while completers try to adapt their help-seeking behavior to the online environment.

**Time and Environment management**

Based on social cognitive theory, it is expected that self-regulation is influenced by personal, social and environmental factors. They provide a source for “enhancing forethought, performance, volitional control and self-reflection”. They provide valuable modeling and instructional sources (Zimmerman, 2005, p. 25). Regulation of one’s context was introduced previously in the model presented by Pintrich (2004). It is particularly important in distance education where students assume more responsibility and control of their learning. Students learning environments are considered a part of the distance education system. Unlike the traditional classroom, distance learners interact with their course materials in non-traditional places such as work, cars, hotels and even battlefields (Moore & Kearsley, 2005). As Pintrich explains, the situation of distance learning provides “multiple opportunities for contextual control and regulation” (p.399).
This is unlike traditional classroom, in which there is more instructor control of most aspects of task and context. Therefore, there is more need for time and environment management for the distance learner. In reality, many distance learners suffer to do so as Bullen (1998) explains. In his study, students found it difficult to integrate an online course into their program because of their struggle with self-discipline and time-management. In addition, Kramarae (2003) suggests that research about management of time and environment in distance education should be viewed from a gender perspective as women must accommodate extra home responsibilities.

**Development of Learner Self-Regulation**

In their model of the social cognitive development of self regulation, Zimmerman and Bonner (cited in Schunk & Zimmerman, 1997) identify four levels of the development of self regulation competence: observational, imitative, self-controlled and self-regulated. The origins of self regulation are social. Therefore, the first two levels are developed through social sources available for learners such as social modeling, verbal description, social guidance and feedback. The second two levels are reached through self sources through internal standards, self reinforcement, self regulatory processes and self efficacy. It is important to note the interaction between both sources of self-regulation. Both are influenced by social environment. This model of self regulatory development recognizes the motivational component of self regulation: learner perceived self-efficacy. Effective self regulation depends on positive self-efficacy (Schunk & Zimmerman, 1997; Zimmerman, 1995).
Failure of Self-Regulation

All cultures require self-regulation. A failure to do so can be punished by society in different forms (Vohs & Baumeister, 2004, p.3). Religion provides a conspicuous example as people are required to perform certain actions and avoid others, both of which require a great deal of self-regulation. Baumeister, Heatherton and Tice (1994) explain how a failure to avoid the “seven deadly sins” in Christianity is a failure in self-regulation because five of these seven are selfish impulses and actions including vanity, avarice, lust, gluttony, laziness and anger. In Islam, strong self-regulation is required to fulfill the demanding worship schedule such as praying five times a day and fasting for a whole month every year. This is in addition to what the prophet Mohammad referred to as the greater “Jehad”, which is the ability to control oneself from committing any sin no matter how small it is and abiding by Islamic principles in every aspect of one’s life. Failure of self-regulation occurs because of a number of factors resulting in under-regulation, a failure to control oneself, or mis-regulation, exerting control in a way that fails to bring about the desired result. These factors include conflicting standards, reduction in monitoring and inadequate strength.

Table 2: Developmental Levels of Self-Regulation

<table>
<thead>
<tr>
<th>Levels</th>
<th>Developmental Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation level</td>
<td>Distinguishing major features of a model’s behavior</td>
</tr>
<tr>
<td>Emulative level</td>
<td>Imitate a model’s behavior</td>
</tr>
<tr>
<td>Self control level</td>
<td>Perform a behavior using a mental representation of the model’s behavior</td>
</tr>
<tr>
<td>Self regulation level</td>
<td>Learners can adapt their behavior with changing conditions</td>
</tr>
</tbody>
</table>
Conflicting Standards. Multiple standards result in conflict, inconsistency or incompatibility leading to confusion about which ones to use as a basis for one’s self-regulation. This might be an expected problem in cross-cultural distance education because of the differences in standards and assumptions of learning between the culture in which the instruction was designed in and the culture to which the instruction is delivered to. Another inconsistency may occur as a result of the distance education orientation and the cultural orientation to learning. Anakwe et. al. (1999) study suggests that distance education is more compatible with individualistic cultures than collectivistic cultures because of it evokes more independence and self-reliance.

Reduction in Monitoring. A failure to evaluate one’s action against standards results in a failure in self regulation because of the absence of the self-monitoring function. The loss of self awareness makes people behave in ways different from their personal standards such as when people get drunk. This also might occur because of trying to avoid dealing with unpleasant experiences and preoccupation with other activities. Most distance learners are employed full time with family responsibilities, so it is not unusual to loose track of ones progress in learning while attending to distractions or attractive alternatives in their work or family context. Zimmerman and Bandura (1994) explain, “it is one thing to possess self-regulatory skills for academic learning; it is another thing to be able to adhere to them when other activities hold greater interest. A high sense of self-regulatory efficacy is needed to override distracting influences” (p.858). Therefore, students need to learn skills and strategies to motivate themselves to persist in their academic studies.
Inadequate Strength. Lack of adequate strength or will power results in failure of self-regulation of a task because the self is unable to conform to the relevant standards. Self-stopping from following an impulse or a habit requires exerting both mental and physical resources. The source of the ability to do so is one’s strength/will power. There are three main reasons for the lack of strength. The first reason is chronic and related to a person’s inherent capacity for self-regulation. Basically some people have more self-discipline than others. The second reason is a temporary one related to either exhaustive use of self-regulation which leads it to break down or momentary physical tiredness. The last reason is external to the person suggesting that the impulse is “uncontrollable” even if the person exerts a great deal of self-regulation (Baumeister, Heatherton & Tice, 1994). In relation to the last reason, within cross-cultural distance education, this aspect can include aspects such as time-zone differences. So, a person’s inability to contribute to alive chat at 3 am is understandable even if that person is normally successful in regulating his schedule for a good study time.

Trait Self-Regulation

Winne and Perry (2005) suggest that self-regulation could be either measured as an event (state-like) or as an aptitude (trait-like). Viewing a behavior as a trait assumes a stable attribute over time; whereas, viewing a behavior as a state suggests a relatively changeable attribute (Hong & O’Neil, 2001). State-based perceptions of self-regulation are more contextually bound than trait-based perceptions. This makes it possible to think
of changing self-regulation and bringing it under learner control (Duncan & McKeachie, 2005).

Hong and O’Neil (2001) conclude a good model fit for a trait self-regulation model from a Korean sample. Trait self-regulation was found to be more stable over time when compared with state self-regulation suggesting a differential stability of individual differences for state and trait self-regulation (Hong, 1998). The trait model is based on a third order trait self regulation with two second order factors: trait meta-cognition composed of planning and self checking and trait motivation composed of effort and self-efficacy. The researchers suggest investigating the effect of trait self-regulation and its components on other learning variables.

**SRL in Distance Education**

The literature review points to an increasing interest in the use of self regulation in distance education. With a narrower focus on self-regulation in computer-based environment, “Educational Psychologist” dedicated its last issue of 2005 to this topic. In the discourse of adult education and distance education, instead of the term “self-regulation”, similar constructs are found and researched more frequently in the main journals of the field such as self-directed learning and learner autonomy.

The majority of studies focus on using SRL as a scaffolding technique by introducing prompts to help students self regulate their learning (Crippena & Earl, in press; van-den-Boom, et. al., 2004; Niemi, Nevgi & Virtanen, 2003; Martens et al.,1996; McManus, 1995). Including scaffolding was found not only to increase learning
outcomes, but student satisfaction and persistence as well (Boyer, 2003). In a study with 853 distance learner at the Open University of the Netherlands, 93% of the sample disagreed with the statement “I prefer printed study materials without [embedded support devices] so that I can structure the material myself”. Students highly appreciated the embedded support devices. However, simply exposing learners to self regulated learning prompts is not enough by itself (McManus, 1996) because multimedia scaffolding cannot be completely adaptive to individual learners’ needs for self-regulation (Azevedo, 2004). In fact, students who received such scaffolding with no teacher feedback in a study of forty-two learners in a web-based class found these prompts to be disturbing, while those who received such prompts with a teacher feedback found them to be least disturbing (van-den-Boom, et. al., 2004). It is important to note that scaffolding based on self-regulation is different from regular scaffolding based on chunking information. It is based on SRL principles to trigger learner metacognitive, motivational and behavioral components of self-regulation through the different phases of self-regulation: forethought, monitoring and reflection.

Some studies looked at learner readiness for self-regulated learning and similar contexts (self-directed learning). For example, the Self-Directed Learning Readiness Scale (SDLRS) was developed by Guglielmino in 1977/78 through a Delphi survey study with 14 learning authorities. Reliability and validity of this scale was provided by many research studies (McCune, Guglielmino & Garcia, 1990). Recently, Pillay, Irving, and McCrindle (2006) conclude that such readiness to participate in online learning environments can be explained in terms of four main factors: technical skills, learner self-efficacy, learning preference and learner attitude. Another inventory to measure self-
directed learning in continuing education is Oddi’s Continuing Learning Inventory (OCLI). This inventory was based on a number of personality characteristics expected to be associated with self-directed learners. It includes aspects related to cognition and motivation including autonomy and self-efficacy (Harvey, Rothman & Frecker, 2006).

The uniqueness of self-regulated learning in web-based environment is slightly addressed. Whipp and Chiarelli (2004) report that although online learners use the traditional SRL strategies, they also use strategies unique to the web-based learning. For example, at the forethought phase, students used the traditional ways of setting goals such as using calendars and organizers to manage course activities. In addition, they also planned for “daily logons, coordination of online and off-line work, and planning for technical problems” (p. 11).

Clearly, the available body of research on self-regulation within distance education or computer mediated environments has its limitations. Most research studies are conducted within traditional campuses using online courses with the normal undergraduate population. A few of them (e.g. Boyer, 2003; White, 1999) examined SRL as a process by investigating aspects beyond cognitive and metacognitive components of SRL. In addition, this body of research rarely addresses the impact of cultural variables on learner self-regulation.

**SRL and Procrastination**

There is conflicting evidence regarding the relationship between components of distance education (fully-fledged distance education courses or blended courses) and
Tuckman (in press) found that weekly support group meetings and regular meetings with course instructor improved student procrastination tendency in comparison with students who were assigned to a totally online course with no such intervention. On the contrary, Romano et al. (2005) found that the students in a blended distance education course tended to procrastinate more than students in a fully-fledged distance course. While the conditions and measures in the two studies are different, and caution against any generalizations, a noteworthy treatment condition in Tuckman’s study was the emphasis on self-regulation in the face to face meetings through “collaboration, motivation, and coaching between learners, and between them and the instructor” (p.4). Such a practice is widely used by open universities through offering learning centers as a place for face to face meetings and collaboration, and resources. Similar to Tuckman (2005), Zimmerman (2002) found that academic self-regulation was the most explanatory variable about student attrition and persistence with goal setting being the driving force for persistence.

**Culture**

This section reviews some perspectives on cross-cultural differences. It expands on Hofstede’s international cultural dimensions because it will be heavily used in this study. In addition, a brief comparison is provided between the two cultures of interest: the Arab World and the United States.
Cross-Cultural Differences

Kluckhohn and Strodtbeck (1961) suggest that systematic variations between cultures are expected as well as variations in the degree of individual consciousness about their value orientation. They classify these variations in relation to five orientations towards innate human nature, human-nature relationship, time, activity and relationships among people. There are a number of theoretical frameworks to view cross cultural differences within these domains. Triandis, an American cross cultural psychologist, uses a combination of individualism-collectivism. To categorize cultures as individualistic or collectivistic, he uses concepts of cultural tightness versus looseness and cultural complexity versus simplicity. Tight cultures such as Eastern cultures behave according to cultural norms and have more consistency on corrective actions; loose cultures are at the opposite of this continuum. Complex cultures have more heterogeneity in people, values and rules and are motivated by personal motives; simple cultures are more isolated and sect-like groups such as the Amish community in the US (Viken, Soeters and Ester, 2004).

Another way to classify cultural differences is provided by the Israeli cross-cultural psychologist, Shalom Schwartz, who conducted a multi-national study of 40 countries in the late 1980s and early 1990s. He developed an empirically validated typology of cultural value orientation (Viken, Soeters and Ester, 2004). In addition, another way to categorize cross cultural differences is provided by Lewis (2003). He divides cultures of the world into three types: linear-active, multi-active and reactive cultures. Linear actives people are task-oriented, organized individuals who prefer direct
discussion. They tend to abide by laws and regulations. Examples of linear-actives include Germany, Norway and the Netherlands. Multi-actives are “emotional an impulsive people [who] attach great importance to family, feelings and relationships” (p.74). They show less respect for rules and regulations. They are flexible and deal well with chaos. Examples of multi-actives include Latin Americas, Arabs and Africans. Reactives “rarely initiate action…preferring to first listen and establish the other’s position, then react to it and formulate their own opinion” (p.73). In these cultures, monologue is the preferred mode of communication. Silence is a meaningful time for reflection and preparation of a response. They use names less and are embarrassed by others stares. They use self-disparagement to avoid offending others. This should not reflect a weak position. Examples of reactives include East Asia nations such as China and Korea.

The most widely cited and comprehensive framework to compare between cultures is Hofstede’s cross-cultural dimensions. Hofstede proposed five international cultural dimensions after conducting an empirical study of IMB local subsidiaries in 50 countries around the world. These are individualism, power distance, uncertainty avoidance, masculinity and long-term orientation. The following sections explain each of these dimensions in addition to time perspective which is not included by Hofstede.

**Small/Large Power Distance**

This dimension reflects the range of responses of various countries to social equality and class differences. It determines access and opportunity to society benefits.
For example, this may be reflected in acceptance of power holders’ privileges and lack of access to superiors (Hofstede, 1991). Ferrora (2002) refers to this dimension as equality and hierarchy. Equality cultures stress status indifference while hierarchy cultures stress status difference. In education, Hofstede (2001) explains that this is most obvious in the power relation between teachers and their students.

**Structural Orientation (High/low Uncertainty Avoidance)**

Uncertainty avoidance dimension explains the degree to which a society can deal with ambiguity and tolerance for deviation from the norm (Hofstede, 1991). For example, in a society with high uncertainty avoidance, instructional design must be organized and clearly articulated for acceptance as formal rules of order will provide greater stability.

**Relation Orientation (Individualism vs. Collectivism)**

Individualism characterizes societies, such as the American society, in which the ties between individuals are loose and everyone is expected to look after himself or herself and his or her immediate family. By contrast, collectivism characterizes societies in which people from birth onwards are integrated into strong, cohesive ingroups to find a lifetime of protection in exchange of unquestionable reality (Hofstede, 1991). Focusing on the primacy of individual versus group goals, Kluckhohn and Strodtbeck (1961) further divide relational orientation into three aspects: individualistic, collateral and lineal. In individualism, the focus is on individual autonomy and individual goals. In
collateral, the primacy is for group goals and welfare. While also group goals have primacy in lineal orientation, group continuity through time is important stressing ordered positional succession within group such the British aristocracy. There is a large body of literature suggesting that women and ethnic minority groups in Western cultures have a collective orientation contrary to the larger individualistic Western orientation (Jackson, Mackenzie and Hobfoll, 2001).

**Masculinity vs. Femininity**

According to Hofstede (1991), these are relative terms as a man can behave in a ‘feminine’ way and a woman can behave in a ‘masculine’ way. In feminine countries, both boys and girls learn to be non-ambitious, modest, and sympathetic. Masculine cultures appreciate assertive behavior and attempts at excelling unlike feminine societies in which excellence is something one keeps to oneself. Other masculine characteristics include materialism, and self-centeredness and other feminine characteristics are interdependence, and service (Hofstede, 1991). Ferrora (2002) criticizes Hofstede’s title of this dimension as masculinity and femininity because it “overstates the importance of gender” (p.70) as the only aspect of this dimension. In addition, using gender implies that in whatever culture women tend to be in one polarity and men in another. This dimension is not tested in this study.
Long-Term Orientation vs. Short-Term Orientation

This item was later added by Michael Bond and others to include the Chinese culture. It is also labeled as “Confucian work dynamism”. It reflects Eastern Asian’s dedication, motivation, responsibility, commitment and loyalty to their employer. It includes values such as “thrift, persistence, having a sense of shame, and ordering relationships” (Jandt, 1998, p.226). A society with long term orientation fosters virtues related to future rewards such as perseverance and thrift. A society with short term orientation fosters virtues related to the past and present such as respect for tradition, perseverance of face and fulfilling social obligations (Hofstede, 2005). This dimension is not fully tested. Only the time aspect of this dimension is tested using, instead of Hofstede’s approach, future time perspective.

Time Perspective

Zimbardo and Boyd (1999) suggest that the way we relate to people and events in our lives is not only due to social and contextual influences, but it is also the result of individual differences. Zimabrdco (2002, p.62) refers to this as time perspective and defines it as “the mind's way of parsing the flow of human experience into zones of past, present and future”. It suggests “the continual flow of personal and social experiences are decomposed or allocated into selected temporal categories or frames that help give order, coherence, and meaning to those events” (Keough, Zimbardo & Boyd, 1999, p. 150) . If this flow is balanced, the transition among temporal orientation will be flexible and
situationally appropriate; otherwise there will be a biased orientation toward one time perspective over another.

Most related to this study is present-fatalistic and future time orientation. As Zimbardo and Boyd (1999) explain a present-fatalistic time perspective reveal “helpless, and hopeless attitude toward the future and life” (p.). People with this orientation fail to plan and achieve goals because they worry less about the future. On the contrary, people with a future-time perspective are good in “setting and achieving goals” and “planning strategies for meeting long-term obligations” (Keough, Zimbardo & Boyd, 1999, p. 150). A biased orientation towards present-time orientation was found to a significant predictor of dys-regulation such as large amount of alcohol consumption (Keough, Zimbardo & Boyd, 999). Because time perspective is a construct that is not developed through a cross-cultural framework, it does not completely reflect the cross-cultural variations such as the idea of “giving time” to significant others and un-planned events (Trompenaars & Hampden-Turner, 1998, p.78). However, it does capture other aspects such as luck.

The Arab World through Hofstede’s Cultural Dimensions

Hofstede’s analyses of the Arab world is based on data collected from Egypt, Iraq, Kuwait, Lebanon, Libya, Saudi Arabia, and the United Arab Emirates.
As can be seen from the above table, Arabs are more collectivistic than Americans. This study is looking at Arab students in the Arab Gulf region/Arab Gulf States (Kuwait and Bahrain). This part of the Arab World is even more conservative. For example, Buda and Elkhouly (1998) found that a sample of managers from the Gulf States was significantly more collectivistic than an Egyptian sample while the Egyptian sample was significantly more collectivistic than an American sample.

Arabs have higher preferences for uncertainty avoidance than Americans. This was supported by a research of customer-oriented total quality management. The study found that Arabs and Far Easterners perceived mechanistic structure, which included high specialization and restricted access to information, more positively than Australians, Western Europeans, and Americans. The researchers suggest these differences are due to differences in national cultures (Jabnoun, 2005). This conclusion should be taken with caution from this study given the small unequal sample of the different cultural groups.

### Table 3: Scores of the Arab World in Hofstede’s Cultural Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Arab World Score</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Distance</strong></td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td><strong>Uncertainty Avoidance</strong></td>
<td>68</td>
<td>46</td>
</tr>
<tr>
<td><strong>Masculinity</strong></td>
<td>52</td>
<td>62</td>
</tr>
<tr>
<td><strong>Individualism</strong></td>
<td>38</td>
<td>91</td>
</tr>
</tbody>
</table>

Source: Based on Hofstede (2005)

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### Self-Regulation across Cultures

This section discusses distance learner self-regulation across cultures by presenting a convergent overview of study components of autonomy, relational
orientation, power distance, time, dialogue, structure and planning. Jackson, Mackenzie and Hobfoll (2001) recognize the importance of viewing self-regulation within a communal context. They suggest using the term “self-in-social setting regulation” or communal regulation (p.276, italic in original) instead of self-regulation to emphasize the role of social influences. They argue that in the self-regulation literature there is more focus on the self and little recognition to the self-in context, which is the basis for any self-behavior. Standards and reference points individuals strive to achieve through self-regulation are “derived from culturally based notions from culturally based notions of acceptable behaviors that are rooted in socially based role” (p.277-278). As Zimmerman and Bonner (cited in Schunk & Zimmerman, 1997) point out the development of self-regulation originally starts at the social level and then moves to the self-level (see Table 2). For example, within a small cultural group like an organization, personal endeavors operate at the group level through socially mediated regulation, which involves complex social influences outside the person’s direct self-regulation (Bandura, 1991).

Kurman (2001) reports on cultural differences in an achievement settings that required self regulation in choosing the level of task difficulty. Israelis scored significantly higher than Singaporeans. The researcher explained that Singaporeans behaved in a self handicapping manner trying to be cautious and avoid risky tasks. She also found a culture by gender by feedback interaction. Upon receiving a failure feedback, Singaporean women chose easier tasks trying to minimize their error even though easier tasks result in lower points. On the contrary, Israeli men chose even more difficult tasks to maximize their gains since more difficult tasks result in more points.
In a large cross-cultural study in five countries (Costa Rica, Finland, Germany, Poland, and the US) with 2297 respondents, Luszczynska et.al. (2004) found there are significant differences in self regulation (attention regulation) across cultures. The differences are consistent with the cross cultural literature especially in relation to the “uncertainty avoidance” dimension.

**Autonomy across Cultures**

A preference towards autonomy over harmony reflects a more individualistic orientation, especially when the two values come in conflict. Yamaguchi (2001) suggests that the East and the West follow alternative paths of control to maintain psychological well-being. Easterners are motivated to maintain harmony with the environment, so they exercise control by adjusting their relationship with the social and physical environment. By contrast, Westerners are motivated to directly exercise autonomy.

Reflecting on Chinese culture Ho and Crookall (1995), suggest that cultural background of learners may be an obstacle in developing autonomy. Among these obstacles is students respect for teacher’s mien-tzu (face), which centers him/her as the authority figure and knowledge expert. This makes learner independence of the teacher an uncomfortable attempt. To overcome such a cultural clash to develop autonomy, Ho and Crookall used computer-mediated simulations that give learners the opportunity to take more responsibility for their learning. Losing teacher’s mien-tzu (face) such as admitting lack of knowledge in dealing with technology failure was less threatening in a simulation situation than in a traditional classroom setting. This permitted the
development of a new type of relationship between learners and teachers moving the teacher role as a knowledge expert to a guide. Ho and Crookall pointed out the powerful cultural trait of Chinese achievement orientation that enhanced the development of autonomy. White (1995) found that the degree of learner autonomy in distance education foreign language courses had a “predominant influence on metacognitive dimensions of strategy use, ahead of age and level of study” (207).

Relational Variations across Cultures

Jackson, Mackenzie and Hobfoll (2001) suggest that traditional SRL theories are deeply rooted in the concept of self-constrained individualism making it a necessary component to achieve self-reliant, personal agency and therefore success. While in collectivist cultures more consideration is given for others than the self placing success is within the social context. The authors quote Triandis to explain how individuals become agents for social welfare. Thus, self-regulation is viewed as “an interdependent, social process” rather than a self-reliant process (p.282). Finally the authors argued that while self-regulation theorists, based on an individualistic perspective, perceive internal and personal factors as the source of self regulation, a collectivistic perspective emphasizes communal expectations. To explain this further, Nadel (1952/1953) suggests that people self-regulate their action to act in accordance with traditional norms and models as a result of two conditions. First, such traditional models are desired and valued in a way sufficient enough to direct behavior. Second, the practice of such traditional models must have proven to be safe within a society to the extent they become routines and
expectations. Therefore, following them will eventually lead to maximum success within that society. Jackson, Mackenzie and Hobfoll (2001) call for more research to explain how collectivism qualifies practices of self regulation. In doing so, they suggest adopting communal-based models of behavior, which they found to capture the strengths of socially interdependent individuals. This is a call for a balanced approach that does not root individual behavior in one dimension over another (i.e. in individualism versus collectivism), but both are needed to understand the human behavior in context.

Hofstede (2001) measures individualism/collectivism through items about sufficient family time, good working conditions, security of employment and job adventure. Within the context of this study, these are inappropriate measures because of their distance from the educational environment of students. Although, Hofstede explains the implication of the impact of individualism and collectivism on education, he not directly measure them. Therefore, following the suggestion by Jackson, Mackenzie and Hobfoll (2001), this study will measure social interdependence.

Relational orientation as it relates to group development was found to be different based on country context. Within the context of computer mediated communication, Gunawardena et. al. (2001) found differences between American and Mexican students’ perceptions of collectivism, power distance, femininity and context communication. These differences were significant in the development and process of online groups at the Norming and Performing stages. These differences were attributed to country context rather than age and gender differences.
Power Distance and SRL

Jackson, Mackenzie and Hobfoll (2001) question SRL assumption that “individuals have equal control over their external environment” (p.582). Due to different degrees of power, external factors may undermine individual control. Nadel (1952/1953) further explains, self-regulation is absent in situations of high social control. Jackson, Mackenzie and Hobfoll (2001) suggest this situation is even worse for women and minority groups who face economic and social constrains that hinder their personal control. In addition, the authors draw our attention to the differing meaning and sources of power within individualistic and collectivistic cultures. This aspect is better explained by Hofstede.

Time across Cultures

Another variable that is both related to aspects of planning and structure in learning is time. Perceptions and preferential ordering of time differ from one culture to another. Some cultures stress the past more than the present or future; others stress the future more than the past or present with a lot of variations in between (Ferrora, 2002). Trompenaars and Hampden-Turner (1998) divide these perceptions into sequential time, which is “a series of passing events” (p.123), and synchronic time, which includes “past, present and future [as] all interrelated so that the ideas about the future and memories of the past both shape present action” (p.123). Sequential cultures believe that the present is causally related to the future, so one can direct the future through “personal achievement and inner-directed efforts” (Ferrora, 2002, p.134). By contrast, in synchronic cultures, the
future cannot be controlled because there are so many events that could happen. Goals are what are most important at a certain time. In cultures with sequential time such as the United States, Germany and Switzerland, events are scheduled and the social norm is to respect this order. Work is ordered and completed one stage at a time. In these cultures, it is rude to be late because people hate to be thrown out of schedule by unanticipated events. Therefore, it is important to adhere to deadlines. Time is considered a commodity. By contrast, in cultures with synchronic time concept such as places in Africa, Middle East and South America, there is a more relaxed approach to time. Punctuality is not highly stressed and schedules are looser. Instead, it is considered more important to “give time” to significant others and un-planned events. In these cultures, it is rude to “cut off social relationships for the sake of keeping their next appointment” (Trompenaars & Hampden-Turner, 1998, p.78).

A similar classification is Hall’s (1983) distinction between polychromic time (P-time), which refers to “doing many things at once” and monochromic time (M-time) which refers to “doing one thing at a time” (p.46). This orientation to time has some consequences on human interactions cross-culturally. For example, in P-time cultures, completing transactions is more important than following a schedule and keeping appointments. These generalizations about time across cultures should be taken, like all other cultural dimensions, with caution. Although Voss and Blackmon (1998) found strong contrasts between Japan and the West strategic time orientation, Nonisa, Tengb and Ford (2005) found no significant differences in time management dimensions between Sri Lankans and Americans.
In distance education, time is assumed to be flexible, meaning that students can work on their distance courses at any time. Many programs do not require rigid attendance. Nevertheless, like any educational programs, distance programs follow a time schedule with a beginning and an end. Compared with face-to-face (f2f) courses, distance courses follow a more rigid syllabus with clearly articulated assignments and fixed deadlines. Students who cannot meet these requirements often drop out. Given the lack of f2f communication, students need to prove, mostly in writing, that they have covered course material through assignments and other forms of course participation. Eventually, distance courses become more time consuming compared with f2f courses. Maintaining an acceptable level of participation and on-time submission of assignments require high level of self-regulation. Since time in distance education has extended beyond a fixed period in the day, it seems to move away from sequential time to more synchronic time as learners have more freedom to move between tasks and order of tasks. The technology of course management systems makes this process even more flexible. In addition, for many adults who are juggling work and study, the nature of time is more polychromic as they work on many things at the same time. The issue of time becomes even more complicated when working across national boarders, not only because of the physical time differences but also because of the changing nature of time as explained previously.

Dialogue across Cultures

From a cross-cultural perspective based on Hofstede (2001), dialogue will depend on the nature of relationships (individualism vs. collectivism) and hierarchy (power
distance) in a society. Hofstede suggests that collective cultures try to maintain harmony and face through avoiding confrontations and conflicts, whereas individualistic cultures prefer open and direct discussion of conflict. Students in individualistic cultures are encouraged to speak more than in collective cultures. However, not speaking in class in collective cultures does not necessarily reflect lack of knowledge or ability.

As Lewis (2003) explains this pertains to cultural differences in communication styles. Lewis compares between the different structures for reasoning between Westerners and Easterners. He labels the Western logic as ‘monocular’, which means that it is based on one side of a proposition and linearly arrived to. Dialogue and debate facilitate this type of logic. By contrast, he divides Easterners logic into two types:

1. Binocular logic is based on two sides of a proposition. For example, the Chinese try to accommodate another’s point of view while keeping their own. Monologue is a preferred form of communication because silence is a meaningful time for reflection and preparation of a response.

2. Polyocular logic is based on a “reactive, circular form of thinking where a multiplicity of points of view is accommodated” (p.145). For example, the Japanese make an extra effort to save everybody’s face by accommodating all points of views.

Although the binocular and polyocular logic lead to more ambiguity, it provides Eastern people with more comfort because “different interpretations of a situation facilitate avoidance of conflict and leave options open for future cooperation” (p.145). This makes Asians avoid direct answers and expect a solution to emerge whereas Americans offer direct answers to problems.
In addition, dialogue is a function of power distance, especially between the teacher and learner. Based on this, Hofstede (2001) suggests that the learning environment in collective cultures is more teacher-centered than it is in individualistic cultures. This suggests a more formal, one-way communication and that the strict social order gives the teacher the authority to initiate all communication in the classroom. By contrast, in small power distance cultures, where there is more stress on equality between students and teachers, students may make un-invited interventions.

**Structure across Cultures**

“Different cultures have different needs for structure in order to function efficiently” (Mead, 2005, p.185). The function of structure in cross-cultural literature can be explained through Hofstede’s dimensions of power distance and un-certainty avoidance. When uncertainty is high, the teaching process is very structured with “precise objectives, detailed assignments and strict timetables” (Hofstede, 2002, p.162). In low uncertainty avoidance, there is less structure in the educational process and students are rewarded for originality.

Mead (2005) divides structure into formal and informal. A formal structure stresses rules and laws. It regulates tasks and relationships, so that responsibilities are specialized and roles are clear. Applied to education, this suggests a precise description of educational tasks including: who will perform the task, how it will be performed, what tasks typically precede it, what resources are needed to perform it, and where and when the task is performed. In addition, clear communication signals are provided such as who
will communicate with whom and how. In cultures with formal structures, there is usually one superior to report to. This type of structure is common in countries with high power distance. Mead suggests that in these cultures there is a preference for “hierarchical lines of control and communication” (p.172). In other words, communication is more vertical.

An informal structure is reflected in felt but not expressed obligations between the more and less powerful persons. Responsibilities and routines are constantly changing. In this case, it is possible that there is more than one superior to report to. This type of structure is more common in cultures where there is less need to avoid un-certainty and have low power distance. In comparison with the previously mentioned formal structures, informal structures are ambiguous and authority is less precise allowing people to negotiate for influence. Communication is more horizontal between all levels of and units (Mead, 2005).

White (1999) explains that although novice distance learners in her study expressed no initial uncertainty, during the middle of the course most students felt less sure about either themselves as learners or about their understanding of learning material in this solo learning context. In order to overcome these feelings, learners reported using affective control strategies such as self-talk, taking a break, acknowledging their feelings. Another strategy was continuing engagement in the task.
Planning across Cultures

Self-regulated learning requires planning and goal setting. The environment including internal educational environment as well as external national cultural environment influence planning systems heavily. Planning can be explained through Hofstede’s dimension of uncertainty avoidance. In cultures where there is low tolerance for uncertainty planning is more detailed. Uncertainties need to be resolved immediately and there is less preference for change. There is an emphasis for short-tem feedback systems. In cultures with high tolerance for uncertainty, planning is less detailed (Mead, 2005).

It is expected that people from “masculine” or “tough” cultures will be more self-regulated than people from “feminine” or “tender” culture. They are more focused on task accomplishment while people in tender cultures are more interested in job-satisfaction and relationships with superiors and peers (Ferraro, 2002). People in masculine or “tough” societies are more task-oriented and assertive. They are likely to pursue external, measurable goals. They value achievement and competition. One is considered successful if he/she achieved “high status, material accumulations and well-rewarded jobs” (Ferraro, 2002, p.69). For them, failure is a catastrophe while achievement is praised. By contrast, in tender societies, people are more focused on social relationship and cooperation. For them, success is reflected in “less tangible rewards, such as quality time with friends and family, good working relationships or opportunities for spiritual growth” (Ibid, p.69). For example, “students are not praised for their accomplishments because cooperation with others is considered the most important”
This, however, is not a sign for weakness or lack of ability but a preference for modesty (Ferraro, 2002).
Chapter 3

METHODOLOGY

Introduction

From the literature review, we notice the lack of research in distance education using the self-regulation perspective to investigate issues related to independent learning. There are even less research studies that look at the general concept of learner independence from a cross-cultural perspective to understand the influence of external socio-cultural influences on individual variables of self-regulation. No previous studies explored learner self-regulation of Arab students in distance education. This chapter will explain research methodology and process. It includes target population and sample, survey distribution and data collection methods, variables, and data analysis.

Target Population and Sample

The target population for this study is distance learners at the Arab Open University and World Campus of The Pennsylvania State University. The Arab Open University (AOU) was formally launched in June of 2001 in its headquarter office at the State of Kuwait. In October of 2002 five other branches were added in Jordan, Lebanon, Saudi Arabia, Bahrain, and Egypt. By the end of 2003/04, the AOU branches had 16,999 students (AOU, 2006). Currently, the number has risen to 18,000 students (Al-Traif, Personal Communication, March 23, 2006). In 2005, AOU programs were accredited by
the UK Open University Validation Services (OUVS) (AOU, 2006). The university offers bachelor degrees in education, business, languages and computer science. There is one master program in Business Administration. The program is offered through the Arab Open University, but it follows the Malaysian Open University.

Teaching and learning at the AOU consists of both independent study using course learning packages and ‘mandatory’ face-to-face tutor sessions for at least an hour a week. The purpose of these sessions is to help students process the learning material. AOU has learning centers that are equipped with computer and multimedia lab facilities. Three methods are used to assess students at the AOU: tutor-marked assignments (35%), quizzes (15%) and a final exam (50%) (AOU, 2006).

As a reflection of the long distance education history at The Pennsylvania State University, United States of America, World Campus (WC) was established in 1998. WC offers a wide range of graduate and undergraduate degrees in addition to numerous certificates. It has students from more than forty countries and all seven continents (World Campus, 2005).

Hofstede (2001) suggests that functional equivalence should be attempted to match samples at the individual, situational, and organizational level. This is even more important when measuring self-regulation because of the differences in the way people regulate their learning depending on different subject areas. For example, the way somebody regulates his/her study for math (by using cognitive, motivational and knowledge processing strategies) is expected to be different from the way he/she regulate studying for literature. The differences between social and natural sciences in components of knowledge, motivation, and self-regulation were found to distinguish high
from low achievers. However, these differences were less for humanities (Vanderstoep, Pintrich & Fagerlin, 1996).

In order to find a matched sample from the two institutions, the researcher compared programs available at each. Penn State World Campus (PSUWC) is targeting unique specializations at various levels of education: certificates, associates, bachelors and masters. PSUWC programs are an attempt to create a unique niche for Penn State in the distance education market. Examples of these programs include turfgrass sciences, project management, homeland security in public health preparedness, etc. Their bachelor programs seem to compliment their campus-based programs by providing students with more flexibility to take distance education courses, on-campus courses, or a combination of both. In comparison, the Arab Open University is an attempt to expand access to higher education in the Arab World (Abouchedid & Eid, 2004). Therefore, its programs are concentrated at the undergraduate level. There is only one small Master of Business Administration program at the Bahrain branch. The program is being phased away. So, the only graduate program possible to include from AOU is the MBA program. Taking into account the difficulty in matching samples, here are the programs that targeted in this study:
In PSUUWC, the Master of Business Administration (iMBA) was first offered in fall of 2002. The program admits about a little bit more than 60 students a year (Personal Communication, Janet A. May, July 13, 2006).

The Associate Degree in Information Sciences and Technology (IST) was first offered through the WC in the Fall of 2005. The program consists of 60 credits all offered through online courses. The courses are a variety of online group, individual, and independent learning.

Bachelor of Arts in Letters, Arts, and Sciences started during the late 1980s or early 1990s. The program was delivered through print-based Independent Learning (IL). Still, a large portion of the program is offered through independent learning with a web option and some without a web option. These courses are currently being phased out to include more web-based courses with online groups. Students have to complete 123 credits in the program. The estimated average number of students enrolled in Spring 2006 is around 126 students.

<table>
<thead>
<tr>
<th>PSUWC</th>
<th>AOU</th>
</tr>
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<tbody>
<tr>
<td>Master of Business Administration (iMBA)</td>
<td>Master of Business Administration</td>
</tr>
<tr>
<td>Master of Education in Adult Education</td>
<td>BA Program in English Language &amp; Literature</td>
</tr>
<tr>
<td>Bachelor of Arts in Letters, Arts, and Sciences</td>
<td>Bachelor's Degree in IT / Computing</td>
</tr>
<tr>
<td>Associate in Science in Business Administration</td>
<td>B.A. in Business Studies with emphasis on Economics &amp; with emphasis on Systems</td>
</tr>
<tr>
<td>Associate in Information Sciences and Technology</td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science in Nursing (RN to B.S.)</td>
<td></td>
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</tbody>
</table>

Table 4: Programs from PSUWC and AOU

61
Bachelor of Science in Nursing (RN to B.S.) is a degree completion program that offers the opportunity for adult learners to earn a bachelor degree in nursing. So, out of the 120 credit hours in the programs, students are awarded 33 credits for their RN license and any general education credits they may have. However, at least 36 of the last 60 credits students have to take from Penn State. The program has from 25-35 students per semester.

**Survey Distribution and Data Collection**

Data was collected through online surveys, for which students were invited to participate through an email message sent to them through gatekeepers in their institution. The survey consisted of four parts. Refer to Appendix A for the full survey. Part one asked participants for some demographic information. Part two included scales for cross-cultural variables, measuring cross cultural orientation towards power distance (authority) uncertainty avoidance (tolerance for ambiguity), future time perspective (time), and group-interdependence (relation). The third part included self-regulation variables: planning, self-monitoring, effort, self-efficacy, help-seeking and time and environment management. The last part asked students to rate their preference towards course flexibility and interaction with instructors and other learners.

Once the research proposal was approved and research clearance from the Penn State Institutional Review Board (IRB) was obtained, an invitation email (Appendix B) was sent to the sample. The invitation email, see Appendix B, provides a brief description of the study. Students were able to access the study survey through a hyperlink. Before
starting the survey, a brief description of the survey was provided. Students were informed that by participating in the study they will enter a drawing of prizes. They will be told that there are eligible for the drawing only if they complete the full survey. Then, students were asked to give consent to participation after reading their rights in the research as explained in the consent form (Appendix C). If they did not grant consent, the survey was terminated; if they did grant consent then they were able to proceed in taking the survey.

One week after the first invitation email was sent a first reminder email, see Appendix D, was sent to encourage those who did not participate to do so. A week after the first reminder email, a second reminder email will be sent, see Appendix E. The survey was closed by the end of the week in which the second reminder email was sent.

**Pilot Testing**

Some of the instruments in the study have been modified from their original wordings. They were translated from English to Arabic and back-translated from Arabic to English. Therefore, the full survey was first pilot-tested on small number online students. As suggested by Nunnally and Bernstein (1994), the pilot sample came from the same population as the target population (distance students) from both institutions and their condition (taking distance courses) would resemble the final sample. Since this was a small sample, individual faculty members were asked to distribute the survey to their online students. Research clearance for the pilot was obtained from the Penn State Institutional Review Board (IRB). The pilot analysis was based on 61 complete responses.
from the Arab Open University and 17 complete responses from the World Campus. Psychometric properties of the instruments were estimated from the pilot data. Then, modifications were made according to preliminary analysis of the results. The following table presents internal consistencies for each of the study variables. As we see, the reliability coefficients for the first four variables (i.e. cultural variables) were very low especially for the American sample. The American sample was very small. Therefore, these reliability coefficients should be read with caution. Based on these preliminary results, additional items were added to enhance measures’ reliabilities. These items came from the available literature as will be explained in the next section.

Table 5: Initial Internal Consistencies for Study Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>Number of Items</th>
<th>American Pilot Sample (n=17)</th>
<th>Arab Pilot Sample (n=61)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Distance</td>
<td>3</td>
<td>.256</td>
<td>.590</td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td>3</td>
<td>.395</td>
<td>-.006</td>
</tr>
<tr>
<td>Group Interdependent</td>
<td>5</td>
<td>.225</td>
<td>.618</td>
</tr>
<tr>
<td>Future Orientation</td>
<td>4</td>
<td>.263</td>
<td>.411</td>
</tr>
<tr>
<td>Planning</td>
<td>6</td>
<td>.779</td>
<td>.874</td>
</tr>
<tr>
<td>Monitoring</td>
<td>5</td>
<td>.786</td>
<td>.698</td>
</tr>
<tr>
<td>Effort</td>
<td>7</td>
<td>.768</td>
<td>.839</td>
</tr>
<tr>
<td>Time &amp; Environment Management</td>
<td>8</td>
<td>.722</td>
<td>.759</td>
</tr>
<tr>
<td>Help</td>
<td>5</td>
<td>.727</td>
<td>.476</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>5</td>
<td>.800</td>
<td>.896</td>
</tr>
<tr>
<td>Structure</td>
<td>9</td>
<td>.858</td>
<td>.869</td>
</tr>
</tbody>
</table>

All self-regulation variables were found to be adequately reliable except the measure of help for the Arab sample. Further analysis suggested deleting item 5. This would result in an improvement of the Chronach alpha internal consistency for the scale
from .479 to .578. Instead of deleting it, the item was retained to see how it will work our in the final data.

**Research Variables**

All research constructs are measured in a Lickert type scales. Please refer to Appendix A for the full survey. This section presents a detailed discussion of all research variables, how they are scaled and why modifications were made by the researcher to the original scales.

**Cultural Orientation Variables**

Cultural orientation was measured through variables related to time (future time orientation), structure (uncertainty avoidance), authority (power distance), and relation (group-interdependence). These variables contextualize cultural orientation within the educational context. However, they are measured at a very general level.

Scales for uncertainty avoidance and power distance were based on Hofstede’s Values Survey Module 1994 Questionnaire (VSM94). However, since Hofstede’s cross-cultural dimensions are conceptualized as a function of the workplace (Oyserman, Coon & Kemmelmeier, 2002), a slight adaptation of the items was necessary for their use in education. This adaptation was guided by Hofstede’s implications of the dimensions in educational systems (Hofstede, 2001).
**Power Distance.** Hofstede (n.d.) defines power distance as “the extent to which the less powerful individuals in society expect or accept that power is distributed unequally” (p. 4). Based on this, the concept of power distance in an educational environment, including distance education, is defined as the extent to which students expect or accept that power be distributed unequally between them and that their teachers. This will be measured through three items measuring good relationship with a teacher, being consulted by their teacher, and expressing disagreement with the teacher. Omitted from this scale is Hofstede’s item about avoiding multiple bosses because of its inappropriateness to the context.

Based on pilot data, this scale resulted in low reliability coefficients. Therefore, additional investigation in the literature was conducted to find items that will strengthen the scale. Based on this review four additional items were added. These items were rated by two independent cross-cultural researchers who found them to appropriate for the measurement of power distance. The next paragraphs explain the rationale for adding these four items.

Hofstede (2001) suggests that in large power distance societies, all classroom communication is initiated by the teacher and students talk when invited only while in small power distance students are expected to make uninvited interventions and ask questions. Based on this the following item was added: “It is not a problem for me to speak up during a class”. This item was adopted from Singlis (1994) Independent scale. Littlewood (2001) found a preliminary support that Asian are more reluctant than their European counterparts to take part in classroom interaction and he relates that to student
perception of teacher authority. One item were added from Littlewood: “I see the teacher as somebody whose authority should not be questioned”.

Hofstede (2001) associates higher power distance with classrooms that are more teacher-centered and lower power distance with classrooms that are more student-centered. This controllability of classroom environment is discussed within the educational psychology literature from the perspective of perceived classroom control by students. Therefore, student perception of sharing classroom control with the teacher is an indication of shared, not necessarily equal, authority in the classroom and more freedom for students to be involved in making decisions about their own learning (Eshel & Kohavi, 2003). These authors argue that perception of higher controllability over learning is associated with higher achievement and self-regulation. Eshel (1991) uses Student Decision-Making Scale to measure of perceived classroom control by students. Based on the modified instrument (Eshel & Kohavi, 2003), one student control item was added to the final scale “I know what to do in class without consulting the teacher”.

Students who perceive high power distance between them and their teacher are more likely to use techniques that are indirect and less face-threatening techniques with their teachers. For example, they will only ask their teacher to change their grades in private or through email (Golish & Olson, 2000). In 12 out of 13 learning situations, Yook and Albert (1997) found that Korean students significantly found it inappropriate to negotiate with their teachers compared with American students. These are situations such as when a grade is miscalculated or when students feel that a class is not helping them. Based on this, the following item was added to the power distance scale “I find it difficult to protest a grade my teacher gave me, even when I feel I deserve better”.

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Uncertainty Avoidance. Hofstede (n.d.) defines uncertainty avoidance as the “extent to which people feel threatened by uncertain, unknown, ambiguous, or unstructured situations” (p.5). Accordingly, the concept of uncertainty avoidance in this study is defined as the extent to which learners tolerate ambiguity and un-structured learning situations. It will be measured by three items about need for structure, having precise answer, and abiding by university rules. Based on pilot data analysis, this measure was found to be unreliable. Therefore, three additional items were added.

Two items were related to planning: “It is important for me to see a detailed course syllabus with course description, goals, content and expectations” and “I always ask about future assignments in my courses”. Planning reflects a preference for uncertainty avoidance. In cultures where there is low tolerance for uncertainty planning is more detailed. Uncertainties need to be resolved immediately and there is less preference for change. There is an emphasis for short-term feedback systems. In cultures with high tolerance for uncertainty, planning is less detailed (Mead, 2005).

Group Interdependence Scale. Hofstede’s individualism scale was found to be inappropriate for the purposes of this study because of its contextualization in work-related situations. Therefore, Singelis’s (1994) Self-Construal Scale was used to capture individual’s relational orientation. Singelis’s scale was found to have sound psychometric properties and high theoretical overlap with the literature on individualism/collectivism (Heine et. al., 2002). The two factors of independence and interdependent were found to be uncorrelated (r=-.044). In repeated testing, the reliability of the two scales ranged from 0.69 to 0.74. In this study, only the interdependence scale was used. The interdependence scale includes items related to family relationship and group relationship. Although the
researcher realizes that keeping the items related to family relationships are important to maintain the reliability of the scale, she only used the items related to group relationships because they were considered the closest to the context and purpose of the study to identify relational orientation with other members in a group of classmates. Initially this scale included only five items. The scale included items like “it is important for me to maintain harmony within my group”. However, the final group measure consisted of 6 items. Based on the pilot results, an additional item from Singelis’s (1994) Self-Construal Scale was added to the scale to enhance its reliability.

**Future Orientation.** Future time perspective was measured using Zimbardo’s future-orientation scale. Future time perspective is defined in terms of having the ability to set and achieve goals through long term planning. The scale measures the extent to which individuals set and maintain future goals. It demonstrated the best test-retest reliability (0.80) and Cronbach's alpha coefficient was (0.77) (Keough, Zimbardo & Boyd, 1999). Initially four items were used. The measure with four items resulted in low reliability. Therefore, four additional items were added from Zimbardo’s future-orientation scale. So, future orientation was measured through 8 items.

**Self-Regulation Variables**

Learner self-regulation was measured through six variables representing metacognitive and motivational aspects of self-regulation that were expected to explain the variance in learner self-regulation. These variables were planning, self-monitoring, effort, self-efficacy, help-seeking, and time and environment management. The first three variables
were adapted from Herl et al. (1999) trait self-regulation scale, which divides self-regulation into (1) metacognition referring to the ability plan and monitor one’s progress in problem solving (planning and checking) and (2) one’s motivation to perform (efficacy and effort). Instead of asking learners to think of how generally they feel and think about learning, these scales are contextualized at the program level by adding the phrase “While working on my course requirements in this program”. In comparison, the cultural variables were presented in the more general way people think, feel and act.

Self-efficacy, help-seeking and time and environment management scales were adapted from the MSLQ “The Motivated Strategies for Learning Questionnaire”, which was developed by Pintrich and his colleagues in 1990s at the University of Michigan (Pintrich et al., 1993).

Planning. Planning is defined as a metacognitive activity that predetermines a course of action. It was measured as an internally-scaled variable that consists of the summative value of the responses from the planning items in trait-self regulation scale. It measures the extent one has “a goal (assigned or self-directed) and a plan to achieve the goal” (Herl et. al., 1999, p.12). Hong and O’Neil (2002) report 0.78 Cronbach alpha for the scale internal consistency. In their study the scale consisted of nine items. In Herl et. al (1999) the scale consisted of 8 items. This study retained only 6 items for this scale.

Self-Monitoring. Self-monitoring and sometimes referred to as self-checking is a metacognitive activity. It was measured through the self-checking scale of trait self-regulation. It measures the extent to which one uses a mechanism to monitor goal achievement (Herl et. al., 1999). In the study of Hong and O’Neil (2002), self-monitoring
had the lowest internal consistency (Cronbach alpha=0.60). This study used all the 5 items of the scale as presented by Hong and O’Neil (2002).

**Effort.** Effort is defined as a motivational component. Effort was measured through the effort scale of trait self-regulation, which measures the extent to which one works hard on a task (Herl et. al., 1999, p.12). Regulation of one’s effort reflects a commitment to pursue one’s goals inspite of difficulties and distractions (Pintrich et. al., 1991). The internal consistency of this scale was found to be 0.83 in the study of Hong and O’Neil (2002). In this study, the scale consisted of ten items. In Herl et. al (1999) the scale consisted of 8 items. For this study only 7 items were included.

*Self-Efficacy.* The original trait self-regulation uses the General Self-Efficacy scale (GSE) to measure self-efficacy (Herl et. al., 1999). GSE measures a “broad and stable sense of personal competence to deal effectively with a variety of stressful situations (Luszczynska, Gutie´rrez-Don˜a & Schwarz, 2005, p. 81). Generalized self-efficacy beliefs do not specify tasks or situations; they refer to individuals’ general confidence about their capability in dealing with tasks and situations. Measuring self-efficacy this way may be problematic in the sense that they do not provide context-specific judgments and take self-efficacy to a personality trait level (Pajares, 1996). In addition, these authors (Luszczynska, Gutie´rrez-Don˜a & Schwarz, 2005) suggest adding task-specific self-efficacy measures in future studies. In addition, the GSE scale only covered one aspect of the dimension of the self-efficacy construct which is self-appraisal in dealing with an unexpected situation. Therefore, the researcher chose the MSLQ’s self-efficacy for learning and performance scale over the general self-efficacy scale. The MSLQ scale covers a wider range of the dimensions of self-efficacy including
expectancy for success, self-appraisal of one’s ability and judgment of ones ability to accomplish tasks. In terms of contextualizing self-efficacy, the scale was originally written to measure self-efficacy at the course-level. The researcher modified the items to measure self-efficacy at the program level. Also, the researcher retained only six out of original eight items of the scale in order to maintain a smaller scale that covers most of construct dimensions. The original scale internal consistency measured through Cronbach alpha was 0.93.

*Help Seeking.* The help-seeking scale was adapted from Pintrich et.al (1993) which comprised of four items that ask respondents to indicate the likelihood of knowing when they need help and being “able to identify someone to provide them with some assistance” (p.29). The help-seeking scale in MSQL has low reliability (Cronbach Alpha= 0.52), so one additional item was added, which was “I use online forums to ask for help from other students”. The item also reflects the nature of help-seeking in distance education environment. This item was added based on the research of Whipp and Chiarelli (2004) and Zimmerman (2002) in relation to help seeking in web-based distance education.

*Time and Environment Management.* Time and environment management scale was adopted from the MSLQ. Time management includes “scheduling, planning and managing one’s time”. Study environment refers to the setting where the student does [his/] her work”. The scale included eight items and its internal consistency as measured by Cronbach alpha was 0.76 (Pintrich et.al., 1993, p. 25). Similarly to other scales used from the MSLQ, it was contextualized at the program level instead of the course level by adding the phrase “While working on my course requirements in this program”.

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Distance Education Variables

Preference for future course flexibility was measured according to Chen and Willits (1998), who measured student preference for flexibility or rigidity of teaching methods, learning activities, pace, attendance, objectives, choice of readings, requirements, deadline of assignment and grading. They subdivide these into two factors: course delivery ($\alpha=0.69$) and course design ($\alpha=0.75$). Preference for future interaction was measured according to Bischoff et. al. (1996) by number of times students would prefer to communicate with their instructor and other learners in future courses.

Measurement Reliability & Cross Cultural Validation

Measures developed in one culture cannot just be enforced or extended to be used in another culture with little regard to cultural differences and construct biases. Therefore, according to Vijver and Leung (1997), validity of cross-cultural research comparisons requires establishing the equivalence at the levels of constructs, methods and items. The authors strongly state, “equivalence is usually unknown in empirical studies. Therefore, equivalence cannot be assumed but should be established” (p.10). The next section explains how equivalence was established in this study at the three levels.

Construct Equivalence. Construct bias occurs as a result of the lack of construct equivalence across groups because of many reasons including the under-representation of the broad conceptions of the construct by using insufficient measurement items. Another reason is the absence of some constructs as a result of cultural variations that are of little relevance to non-Western context, and therefore are not available in Western-developed
instruments. To deal with construct bias, two approaches are used: the decentralized approach and factor analysis. The decentralized approach suggests broadening concepts developed by the West by incorporating data from cross-cultural research in the design of the research. To further contextualize differences in self-regulation, cultural variables were also measured in this study. In addition, being from a non-Western culture, the researcher intuitively added a cross-cultural perspective into the constructs being measured. Not all instruments used in this study were validated across cultures in terms of factor structure. The researcher is unaware of using these instruments in the Arab culture.

In view of that, first measurement reliability was conducted for each group separately by calculating the internal consistency reliability coefficients of Cronbach Alpha for all scales. Establishing reliability for the observed scores of the scales is more likely to result in reliable across-group comparisons. Then, confirmatory factor analysis was conducted for each scale (Cozby, 2001; Vijver & Leung, 1997) using LISREL. An overall model fit as well as component fit were evaluated to make sure that each model significantly explains the relationships among factors and indicators. Modifications were made accordingly. Once a confirmatory Factor Analysis (CFA) was conducted for each group separately, the validity of the factor structure for multiple group analyses was tested. This was conducted to test the measurement invariance of each factor to determine if it assessed the same construct across groups. This was done by estimating each of the confirmatory factor models simultaneously across all groups (Kline, 2005). In addition to construct equivalence, the variance and covariance structure of the overall structural
model was analyzed using structural equation modeling for each group to establish structural equivalence of the whole model.

*Method Equivalence.* Method bias is the result of the instrument itself and its administration. This includes issues such as differential response style and extremity ratings of some culture, which has been documented by Hui and Triandis (1989). One suggestion is to use a 10-point Lickert scale. All instruments used in this research use less than 10 points. Originally, the MSQL uses 7-point Lickert scale and the VSM94 uses a 5-point Lickert scale. However, the problem of using such a long scale is that respondents may not be able to distinguish between the different levels of the scale. To maintain consistency in the survey, the researcher uses a four-point Lickert scale for all the self-regulation scales. She maintained the original rating scales of all other scales. Another issue of method bias is differential language problems. The researcher used back-translation as explained in the next section. The survey was conducted in Arabic for Arab participants and English for American participants.

*Item Equivalence.* Although item bias may suggest cultural differences, it could also be the result of measurement inconsistency at the item level. Reasons for that include poor translations and complex wording. In addition, some items may invoke additional traits or abilities for some cultural groups. Therefore, an item bias analysis was to be conducted using item-response theory to identify and remove biased items (Vijver & Leung, 1997). However, these items were easily detected though multiple sample confirmatory factor analysis. All differentially functioning items were deleted from further analysis to establish cross-cultural equivalence of constructs.
Back-Translation

As suggested by Brislin (1986), back-translation is used to assure that constructs in the questionnaire have cross-cultural equivalence. Questionnaire items are first translated by competent bilinguals from the original language to the other language. Then other bilinguals back-translate them from the other language to the original language. Then, the original items are compared with the back-translated items. If the concept survives, then the item is considered an “etic” meaning that the concept has the same meaning in the two cultures. However, if the concept did not survive the back translation process, then it must be an “emic” meaning it is different in the two cultures. This procedure can be repeated if necessary by moving back and forth between the two languages. This is referred to as “decentering” making no one language the center of attention. Sometimes the back-translated version may be used instead of the original version (Brislin, 1986).

Following this process, four competent bilinguals were recruited. All are lecturers at a higher education institution (Sultan Qaboos University-Oman) teaching English-related courses. For all, Arabic is their mother tongue. In addition, they all possess a bachelor degree in teaching English as a second language (TESL) from an English-speaking country. Two of them hold a master degree in “English Language Teaching for Specific Purposes” from the University of Warwick, United Kingdom. The other two hold a master degree in “Theoretical Linguistics-Morphology and Phonology” from the University of Victoria, Canada.
Scales translation was divided between the four individuals. First, one of the bilinguals translated half of the questionnaire scales from English to Arabic. Then, another bilingual translated it back from Arabic to English. This was done independently, so each translator was only able to see one language at a time without being exposed to the items in both languages. The researcher then compared the original English version with the back-translated English version. Then, a final verification was conducted by allowing both translators to see items in both languages with notes from the researcher on the disagreement between them. Translators were asked to respond back to these comments and verify their position from them to reach a final agreement on the Arabic version of the translation.

Some of the researcher’s observations that were included in the comments to the translators were lack of accuracy of terms used, inconsistency of the translation with research purpose, and refining language articulation. For example, milder and impersonal terms were used in the translation of English terms into Arabic. This resulted in that the back-translation of Arabic back to English was milder and impersonal compared with the original one. For example, the word “argument” in the “Group Interdependence Scale” was translated back as “discussion”. Other examples included translating specific terms into more general terms such as translating “homework” into “work” and “classes” into “studies”. In the same scale, when translating the phrase “it is important to me”, the “me” did not appear in the back translation. This may reflect the communal aspect of the way language, Arabic in this case, is used in collective cultures; therefore, the “we” or the passive voice was used omitting the individualization of action.
The item “I try to identify students in my classes whom I can ask for help if necessary” in the “Help Seeking Scale” was translated back as “I try to identify my classmates who are able to help me if I need help”. The initiative to ask for help differs in the two sentences. The back translation assumes that other students will initiate help if needed while the original assumes that the person will “ask” for help. A similar example was back-translating “I usually study in a place where I can concentrate on my course work” in the “Time and Environment Management Scale” into “I usually study in a place which enables me to concentrate on my studies”. The concentration in the back-translated version was attributed to the place instead of one’s ability to be in that place. More external than internal attribution is more likely to be a characteristic of collective culture.

Other changes in the translation suggested by the researcher were targeted to make the wording consistent with the research purpose. To give an example, “characterize” in the “Future Time Perspective Scale” was back-translated as “apply”. This is a personality scale so it deals with how characteristic a behavior is instead if it is applied or not. Another context example was back-translating “online course space” in the “Time and Environment Management Scale” into “the internet”. This clearly indicated the lack of familiarity of the translators with distance education context and terms.

Sometimes translators changed the tense of the verbs by using the past instead of the present. For example, “while working” was back-translated into “While I was working”. Since the purpose of this research is to capture student habits in both their previous and current courses, using the past tense will only reflect past events not student habits.
Based on this process, the final Arabic version of the survey (Appendix 6) can be considered an equivalent version to the English survey. Most of the concepts are etic concepts that are similar in the learning environment of both cultures. The researcher is mindful that the result from the translation reflects the high level of the translators’ academic background. Therefore, the pilot study will further emphasize the accuracy of the translation.

**Analysis**

**Hypothesis Testing**

Upon establishing measurement validity and reliability, statistical testing of research hypotheses was conducted. First, Pearson zero-order correlations were calculated and examined between all study variables. Then, three separate multivariate analyses of variance (MANOVA) were conducted to examine if the two groups differ in (1) their self-regulation and (2) their cultural orientation and (3) distance education variables of interaction and structure.

**Models Specification and Estimation**

Using structural equation modeling, model building strategies were used to discover the best model (variance and covariance structure) to explain the relationship between learner self-regulation and cultural orientation between the two groups. This model was specified based on a model of culture fit presented by Kanungo and Jaerger.
(1990). This model examined the relationship between culture and its dimensions on certain aspects of human life in different countries by focusing not only on the larger socio-cultural environment, but also the internal organization or work culture. Mendonca and Kanungo (1994) discuss the issue of culture fit between human resource management practices and the characteristic of internal work values in organizations, which reflect the cultural values and beliefs of developing countries. They forecast that the lack of fit occurs as a result of the uncritical adoption by developing countries of the Western management practices.

Some aspects of the model of culture fit were evaluated by Aycan et al. (2000) and Aycan et al. (1999). Aycan et al. (1999) compared human resource practices of Canadian and Indian managers. The research supported the model of culture fit by establishing a mediation impact of socio-cultural environment on managerial practices through managerial beliefs and assumptions. This study was further expanded to compare between 10 countries (Aycan et al., 2000). The researchers made links between human resource practices, socio-cultural environment and internal work culture dimensions. For example, they found that managers who view their culture as fatalistic, a socio-cultural dimension, assume that by nature their employees are not malleable. This negatively impacts their assumption of employee participation, which was conceptualized an internal work cultural dimension. Managers who viewed their cultures as based on paternalism and high power distance, two socio-cultural dimensions, assume employees are not proactive and do not seek responsibility. This leads to less job enrichment activities.
The model of culture fit presents a good framework for investigating differences in the phases of self-regulation between Western and non-Western learners in distance education environment. Within this model, distance teaching institutions are viewed as units operating within the larger socio-cultural environment, and are influenced by society’s norms, values and preferences. This sensitivity to the external culture is essential to their success (Kunungo & Jaeger, 1990). In addition, another overlapping layer of culture is the professional academic culture associated with the field of distance education. This association could be created by professional associations, unions, university departments, publishers, etc. It encompasses an association with “professional peers and reference groups, schools of academic thought and practice, professional approach” (Holliday, 1994, p.29). This aspect was accounted for using concepts from Moore’s theory of transactional distance: preference for course flexibility and course interaction.

The model of culture fit integrates the work of Hofstede’s international cultural dimensions (Kanungo & Jaerger, 1990; Ross, 1999; Sagie & Aycan, 2003). The idea of emphasizing both the wider socio-cultural environment as well as the smaller cultures hosted within is further explained by Holliday (1994). Focusing on the classroom as his unit of analysis, he suggests that classrooms are “part of a complex of interrelated and overlapping cultures in different ways” (p.28). National cultures and professional academic cultures are only two parts in this cultural complex. Accordingly, the effect of culture within this framework can be accounted for by cross-cultural dimensions: Hofstede’s dimensions of power distance and uncertainty avoidance, group interdependence and future time orientation.
As you can see from Figure 1, this model conceptualizes the general cultural environment as exogenous/independent variables that directly predict learner self-regulated learning and indirectly predict learner preferences for course flexibility and interaction:

An alternative model, see Figure 2 is that both cross-cultural variables and self-regulation variables directly predict learner preference for course interaction and course flexibility:

Figure 1: Model 1
Both models are identified because the measurement part for each factor is just identified with 21 observations and 21 parameters for the SRL factor and 10 observations and 10 parameters for the cross-cultural factor. The structural part is identified because it is recursive (Kline, 2005).

The overall model was fitted for each group separately to establish model significance to first establish if the hypothesized model was actually significant in explaining the relationships between cultural orientation, self-regulation and learner

Figure 2: Model 2
preference for course interaction and flexibility. The overall model fit as well as component fit were evaluated. Differences between how the model fits each group were examined to investigate if any differences that may be found between Arabs and Americans in self-regulation and cultural orientation were meaningful in explaining learner preferences towards course structure and interaction. The model was modified as necessary.

Finally, the researcher examined whether gender, number of previous distance courses were meaningful variables in explaining any found differences in the best fitting model of self-regulation between the two groups. There is a large body of literature suggesting gender differences in self-regulation processes (Bidjerano, 2005). Based on King, Harner and Brown (2000), it was expected that students with previous (perhaps also more) experience in distance education would score higher of study skills than novice learners. Theses variables were treated as exogenous or independent variables to predict the ‘best’ fitting model. They were reflected as binary categorical (dummy) variables. Female was coded as a “1” and male was coded as “0”. The models were tested simultaneously for both groups to assure structural invariance of the model across groups.

**Limitations**

Given the differences between the educational and technological history between the two populations, it was expected that their level in using self-regulation in distance education would be different. In the same country (USA), Williams and Hellman (2004) provided evidence that for students at the same comfort level in using a computer, second
generation college students reported significantly higher use of self-regulation college students. In the Arab world, illiteracy rates are still very high (40% of the region’s population of 15 years and older). Two thirds of the illiterate population is female (Sabri, 2004). In addition, computer illiteracy follows a similar pattern (Abouchedid & Eid, 2004).

Data Collection Errors

While uploading the survey to an online site, a couple of errors occurred. These errors and the way of dealing with them will affect data analysis. For Future Orientation dimension which consisted of seven items. For the American survey, items five “I complete projects on time by making steady progress” and six “making I believe that a person’s day should be planned ahead each morning” were accidentally grouped together in an awkward wording “I complete projects on time by making I believe that a person’s day should be planned ahead each morning”. For the Arab survey, these items were separate and appropriately stated. To be consistent with the English survey, items five and six were collapsed for the Arab sample.

In addition, while transferring the data from one survey program to another, the researcher misplaced the scale of the self regulation variables by writing “often” in place of “sometimes”. This made the scale order as follows “Never(1)-often(2)-sometimes(3)-always(4)”. Since it is not possible to know if students used the wording of the scale or the order of the scale, the researcher collapsed the two middle categories so, “Never” was coded 1. “Sometime and always” were coded 2. “Always” was coded 3. The Likert
categories assume that the underlying data were continuous. It is still acceptable in SEM to treat the variables as continuous since there are more than two categories (Byrne, 1998). The following table shows the differences in reliabilities for each of the self-regulation dimension as a result of this modification in the initial samples:

Table 6: Differences in Reliabilities of Self-Regulation Dimensions as a Result of the Researcher’s Error in Confusing Scale Headings

<table>
<thead>
<tr>
<th>Reliability</th>
<th>4 levels</th>
<th>3 levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>.890</td>
<td>.842</td>
</tr>
<tr>
<td>Monitoring</td>
<td>.844</td>
<td>.795</td>
</tr>
<tr>
<td>Effort</td>
<td>.836</td>
<td>.798</td>
</tr>
<tr>
<td>Time &amp; Environment Management</td>
<td>.742</td>
<td>.750</td>
</tr>
<tr>
<td>Help</td>
<td>.707</td>
<td>.710</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>.855</td>
<td>.859</td>
</tr>
</tbody>
</table>
Chapter 4

RESULTS

Introduction

This chapter presents detailed analyses of data. It describes the collected samples and explains the analysis process detailing how the models were developed. First, data was screened for errors, missing cases and sample differences. Then, an equivalent sample is chosen for multiple group comparisons. Descriptions of sample demographics are provided. Since this is a comparative study between Arab and American distance learners, cross-group comparisons were conducted to establish measurement reliability between the two groups. Accordingly, scales’ reliabilities were calculated for each sample. Then, multiple group analyses were conducted to establish measurement invariance of all study measures to test if they measure the same construct across the two groups. Once this was established, research questions were answered. First correlations between study variables were explored to understand the relationship between them. Then, group differences between Arab and American students were tested through multivariate analysis of variance tests for each block of variables: cultural variables, self-regulation variables and distance education variables. Finally, a model consisting of the three blocks of variables was explored through model building strategies using structural equation modeling. The process of doing so is documented.
Data Screening

American Sample. In the American sample, 144 students started the survey; and only 112 submitted partially-complete surveys. About a third of these students (29.9%) were located in Pennsylvania. Others were located at different parts of the United States and other countries. The majority of the responses, 93.8% (135 cases), came from the United States, while 6.3% (9 cases) came from different international locations including Germany, France, Italy and Japan. In the 112 cases, percentage of missing data varied from 0 to 3.6%. Of these, only 95 cases had complete data on all study variables.

Arab Sample. In the Arab Sample, there were 890 attempts to respond to the survey from students at different branches of the Arab Open University. Overall 90% (801 cases) came from three main AOU campuses in Kuwait, Saudi Arabic and Bahrain. The remaining 10% came from other countries with AOU campuses as well as nineteen different international locations without AOU campuses. Only five of these cases were valid and represented individuals who were actually registered at different AOU campuses, but were located in other countries such as Great Britain, United States and United Arab Emirates, all of which do not have any AOU campuses. Of this large sample pool, only 379 students submitted partially-complete surveys. Further elimination of cases was conducted on the 379 cases by deleting any case with missing data of more than two measures of the study. The percentage of missing data in the remaining cases (335 cases) varied from 0 to 2.7%.

There was a big difference between the Arab and American samples; therefore a sub-sample, equal to the available complete American sample (=95), was elected from
the Arab sample. Instead of choosing a completely random sample from the data, I chose a purposeful sample in an effort to make samples more equivalent and homogeneous within the Arab groups. All of complete data from Bahrain, 37 cases making 38.9% of the final sample, were selected because of Bahrain’s stronger emphasis on using course management systems than in other AOU campuses. I also selected all graduate students: 11 cases. Two came from Bahrain and eight (8.4%) from Saudi Arabia but taking the master program at the Bahrain campus. Finally, I randomly selected the remaining from the Kuwaiti group which came to 50 cases making 52.6% of the final sample. In addition, there are more cultural similarities between Bahrainis and Kuwaitis than the rest of the groups (Saudis, Egyptians, Jordanians, etc.).

**Demographic Missing data**

In this study two demographic variables were used to test their meaningfulness in explaining any differences found in the best fitting model between Arabs and American. These variables are gender and the number of years in current programs. Therefore, data screening was conducted for these two variables. In addition to these two variables, the study initially proposed also looking into level of education (graduate and undergraduate). However, because of the small number of graduate students in the Arab sample (=11 cases), this variable was dropped.

*Gender.* For the American sample (in the partially complete data of 112 cases), there was no missing data on this variable. For the Arab sample (in the partially complete
data of 335 cases), only one case had missing data for gender. This case was coded as female because the open comment indicated so.

*Years.* Number of years was used to indicate the length of students’ experience in the distance education system. In the American sample, one case was considered a univariate outlier for the number of years spent in the program with an extreme z-score of 6.013. This was a person who reported being in the program for ten years. This case was deleted. In addition, there were six cases with four years or more in the program. Although these cases maybe a bit extreme, they were retained in the final sample because they still represent a reasonable time to finish a degree within the Penn State system. In the Arab sample, number of years seems to be within the normal range. There was only one case with six years in the program, which was a bit extreme (z-value of 3.008), this case was retain. Years seems to be normally distributed as reflected in its histogram with acceptable skewness value of -0.09 and kurtosis value of -.608.

**Samples Descriptions**

The following table provides descriptive statistics for three demographic variables: gender, level of education (graduate or undergraduate), and number of years students completed in their current educational programs at the two institutions.
In the American sample, the number of female participants was slightly higher than males while in the Arab sample the number of male participants was slightly higher than female participants. While more than a half of the American sample came from graduate students (53.7%), only 6% of the Arab sample came from graduate students. In the Arab sample, most respondents were in the bachelor of information technology and computing (43.1%) and the bachelor of business studies (40.0%). Only 6% came from a master program for business administration. In the American sample, more than half of the sample (53.7%) came from graduate students in business and education. The remaining came from Bachelor of Arts in Letters, Arts, and Sciences (22.1%), Associate in Science in Business Administration (16.8%), Associate in Information Sciences and Technology (7.4%) and Bachelor of Science in Nursing (RN to B.S.) (1.1%). Therefore, the two samples were not fully comparable in academic specialization and educational level. The researcher did try to get comparable samples. For example, the researcher was able to collect data from AOU master of business administration students, but only 11 students participated.

Table 7: Demographic Characteristics of the Sample

<table>
<thead>
<tr>
<th></th>
<th>United States (n=95)</th>
<th>Arab World n=(95)</th>
<th>Total (N=190)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>39 (41.1 %)</td>
<td>49 (51.6%)</td>
<td>88 (46.3%)</td>
</tr>
<tr>
<td>Female</td>
<td>56 (58.9%)</td>
<td>46 (48.4%)</td>
<td>102 (53.7%)</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>44 (46.3%)</td>
<td>84 (88.4%)</td>
<td>128 (56.4%)</td>
</tr>
<tr>
<td>Graduate</td>
<td>51 (53.7%)</td>
<td>11 (11.6%)</td>
<td>62 (32.6%)</td>
</tr>
<tr>
<td><strong>Years in the Program</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1.433</td>
<td>2.003</td>
<td>1.1718</td>
</tr>
<tr>
<td>SD</td>
<td>1.130</td>
<td>1.059</td>
<td>1.129</td>
</tr>
</tbody>
</table>
Measurement Reliability

With the exception of the help scale, all Chronbach alphas for the self-regulation variables, except for help, were above 0.7, which is according to Kline (1998) is a minimum figure for internal consistency for good psychometric test. Table 8 shows two sets of Crobach alphas for all self-regulation measures when the variables are scaled at four categories [never(1)-often(2)-sometimes(3)-always(4)] and at three categories “never=1; sometime and often=2; always=3. The latter scaling was used to avoid the problem of inaccurate wording used during data collection, as explained in chapter 3. All subsequent analysis uses data with three levels of measurement:

Table 8: Cronbach α for all Self-Regulation Measures when measured with four categories and when collapsed into three categories

<table>
<thead>
<tr>
<th>Measure</th>
<th>Arab 4 levels</th>
<th>Arab 3 levels</th>
<th>American 4 levels</th>
<th>American 3 levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>322 .868</td>
<td>.834</td>
<td>103 .901</td>
<td>.863</td>
</tr>
<tr>
<td>Monitoring</td>
<td>333 .778</td>
<td>.739</td>
<td>109 .840</td>
<td>.791</td>
</tr>
<tr>
<td>Effort</td>
<td>328 .822</td>
<td>.820</td>
<td>108 .854</td>
<td>.812</td>
</tr>
<tr>
<td>Time &amp; Environment Management</td>
<td>327 .720</td>
<td>.712</td>
<td>110 .745</td>
<td>.755</td>
</tr>
<tr>
<td>Help</td>
<td>325 .650</td>
<td>.591</td>
<td>111 .725</td>
<td>.723</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>330 .911</td>
<td>.893</td>
<td>109 .865</td>
<td>.868</td>
</tr>
</tbody>
</table>

Internal consistency for each dimension was estimated for each variable in the study. Table 9 shows the results for each sample and for the combined sample; these results are for the partially complete data. From Table 9, it is clear that Power Distance and Uncertainty Avoidance resulted in poor Chronbach alpha coefficients for both groups
indicating that the measures for those two variables are unreliable. Therefore, these two dimensions were deleted from further analysis. Across the two samples, the Help dimension is an interesting case because of the low internal consistency alpha (.591) for the Arab sample and the acceptable internal consistency for the American sample (.723). Further item analysis did not indicate a better internal consistency coefficient if any of the items is deleted. This may indicate that the dimension functions differently across the two groups.

Table 9: Cronbach’s α for all Study Measures

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Items in scale</th>
<th>n responses used to calculate α</th>
<th>α (Cronbach’s Alpha Coefficients for Internal Consistency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Distance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Interdependence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future Orientation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effort</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9 shows internal consistency measures for the final samples for the Arab and American groups. In these samples, the measurement for help had a better reliability coefficient for the Arab group (=.615). For the seven-item effort measure, reliability was
reduced in the small Arab sample (n=95). SPSS output indicated that deleting item 3 “I put forth my best effort on my course assignment” would increase reliability to .775. For the American sample deleting item 3 did not result in great reduction in reliability. Therefore, a decision was made to delete item 3. The reported reliability coefficient in the following table is based on the remaining 6 items instead of 7 items.

Table 10: Cronbach’s α for all Study Variables for the Equivalent Final Samples Used in the Analysis

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Items in scale</th>
<th>Arab (n=95)</th>
<th>American (n=95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Distance</td>
<td>7</td>
<td>-.02</td>
<td>.149 (n=93)</td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td>5</td>
<td>.355</td>
<td>.451 (n=93)</td>
</tr>
<tr>
<td>Group Interdependence</td>
<td>6</td>
<td>.721</td>
<td>.707</td>
</tr>
<tr>
<td>Future Orientation</td>
<td>6</td>
<td>.711</td>
<td>.617</td>
</tr>
<tr>
<td>Planning</td>
<td>6</td>
<td>.845</td>
<td>.862</td>
</tr>
<tr>
<td>Monitoring</td>
<td>5</td>
<td>.737</td>
<td>.764</td>
</tr>
<tr>
<td>Effort</td>
<td>6</td>
<td>.764</td>
<td>.766</td>
</tr>
<tr>
<td>Time &amp; Environment Management</td>
<td>8</td>
<td>.706</td>
<td>.780</td>
</tr>
<tr>
<td>Help</td>
<td>5</td>
<td>.615</td>
<td>.718</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>6</td>
<td>.891</td>
<td>.872</td>
</tr>
<tr>
<td>Structure</td>
<td>9</td>
<td>.884</td>
<td>.824</td>
</tr>
</tbody>
</table>

Measurement Cross-Cultural Validation

Multiple samples confirmatory factor analysis was conducted on the remaining two cultural factors (group interdependence and future orientation), the six self-regulation factors (planning, monitoring, time and environment management, effort, help and self-efficacy), and structure. These nine multiple group confirmatory factor analysis were conducted to test if factors measure the same constructs across the two groups. For this analysis, factors were scaled by fixing one of the factor loadings (i.e. items) to 1.00;
using unit loading identification (ULI) constraint. The fixed indicator (i.e. item) is assumed to measure the factor equally well in both samples. To establish measurement invariance of the construct, only factor loadings are constrained to be equal across the two samples. Then a chi-square difference test was conducted between the model with factor loadings freely estimated and the model with the factor loadings constrained to be equal across the two groups. If chi-square difference test was insignificant, we can conclude that the more constrained model does not fit the data any worse than the unconstrained one. Therefore, indicators measure the factor in comparable ways in each group. This establishes measurement invariance, so we can safely assume that the factors measure the construct in comparable ways across the two groups (Kline, 2004). Results of the multiple group confirmatory factor analyses with chi-square difference tests are reported in Table 11.

For the future-orientation measure, the initial model with the six indicators resulted in in-significant factor loadings for the American sample for items four and seven. Therefore, the final model was established without those two items. With the deletion of these two items reliability was reduced to .592 for American sample and improved to .773 for the Arab sample. This model fits both the Arab and American samples.

For the planning measure, the multiple-group model with un-constrained factor loadings did not fit and modification indices suggested adding an error covariance between items three “I carefully plan my course of action in my study” and item four “I clearly plan my course of action in my study”. This warranted a closer look at the two items. The two items were highly correlated in both samples (r >.70). Therefore, their
error covariance was set free. By doing so, we assume that those two items share “something in common that is not explicitly represented in the model” (Kline, 2005, p.168). These two items may appear to be redundant to respondents. Only one word is different in the two statements: “carefully” and “clearly”. Therefore, it is not surprising that these two items will be more similar to each other than to the rest of the items in the scale. When the error covariance was added, the model fits and it was found to be measurement invariant across the two groups.

For the time and environment management measure, factor loading of item three “I find it hard to stick to a study schedule” was found to be insignificant in Arab sample (t-value for Arab sample =1.26). The item explained only 3.3% of the variance in the factor. In the American sample, item three was significant (t-value=3.83) and it explained about 28% of the variance in the factor. Because of the insignificant loading of item three, a decision was made to drop it from this measure. With this deletion, item seven became insignificant for the Arab group and item eight became insignificant for the American group. Even with all three items deleted from the time and environment scale, Chronbach alpha was still within acceptable range: .751 for Americans and .763 for Arabs. Therefore, the final model did not include all these reverse coded items (3, 7 and 8). This model fit the data well and it was found to be measurement invariant across the two groups. Fit indices are reported in Table 11.

Although the initial model for Help was found to fit the data well with non-significant Chi-Square of 13.21 (p = 0.2) and RMSEA = 0.058, factor loading of item two “I ask the instructor to clarify concepts I don’t understand well” was found to be insignificant for both groups (t-value for Arabs=.95 and for Americans=1.87). This was
the only item related to asking for help from the instructor in the measure while all other items were related to asking for help from other students (items 3, 4 and 5) or from anyone with no specification (item 1). Item two explained only about 1% of the variance in Help for the Arab group and less than 7% for the American group. In fact deleting this item resulted in an improved Chronbach alpha for both groups to .742 for the American sample and to .665 for the Arab sample. Therefore, a decision was made to drop item two. Model fit was re-evaluated. Fit indices indicated good model fit as reported in the table below. The model was also measurement invariant across the two groups. This was concluded after conducting a Chi-square difference test.

For the self-efficacy measure, the constrained model with all factor loadings constrained to be equal did not fit well. Modification indices indicated that freeing the loading for item three will improve model fit. This is an indication that item three “I'm confident I can understand the basic concepts taught in my courses” functions differently in the two groups. Instead of freely estimating item three, it was deleted from the model.

Then, the model with item three and the model without item three were compared to see if the model without item three is better. Since the two models are nested, as suggested by Tabachnick and Fidell (2001) we use the Akaike Information Criterion (AIC) and the Consistent Akaike Information Criterion (CAIC) to compare between them because AIC does not depend on sample data. The model with smaller values will be more parsimonious. Both AIC (=70.12) and CAIC (=138.08) for the model without item three were indeed smaller than the AIC (=93.02) and CAIC (=173.72) for the model with item three. This indicates that the model without item three fits the data better than the model with item three. However, once item three was deleted from the model, the model
became insignificant. Modification indices indicated that item four was functioning differently in the two groups and estimating it freely will improve the model fit. Instead of freely estimating item four, the model was established without it. The final model without both items three and four fits data very well as fit indices indicate in the table below. Without the items three and four, Chronbach alpha was slightly reduced to .851 for American and .808 for Arabs.

**Structure.** Although the measure for structure was found to be reliable with Cronbach’s Alpha Coefficients for Internal Consistency of more than .80, a confirmatory factor analysis did not hold. A follow-up exploratory factor analysis with principal component analysis and Varimax rotation revealed three factors for the American sample with eigen values more than one. The factors explained 70% of the variance in structure, 43% of this variance was explained by the first factor alone. For the Arab sample, only two factors had eigen values more than one and they explained 67.2% of the variance in structure. These results slightly differ from the results reported by Chen and Willits (1998), who originally wrote the scale. The authors found two factors (course delivery and course design) instead of three for structure. Given the multidimensionality of structure, only the factor indicating course design “course design factor” will be used in further analysis. The items (course objectives, choice of readings, requirements, and deadlines of assignments) making the factor were similar in both groups. Items not included in further analysis were course pace, grading, attendance, teaching methods and learning activities. These items may reflect differences between implantation of distance education programs at Penn State World Campus and the Arab Open University. For example, when a factor consisting of course pace, teaching methods and learning
activities was fitted, two of these items were found to be insignificant for the Americans and significant for the Arabs. To avoid lack of measurement invariance all items not included in the course design factor were not part of further analysis.

For the multiple group analysis, the course design factor included only four instead of the six items found in Chen and Willits (1998) to indicate rigidity/flexibility of course structure. These were course objectives, choice of readings, requirements, and deadlines of assignments. Unlike Chen and Willits (1998), attendance and grading were not part of this factor. The multiple-group measurement model fits extremely well as indicated in the table below. This model was scaled by fixing the loading of requirements on the factor to 1.00.
Table 11: *Tests of invariance of confirmatory factor Analysis models*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Items /indicators</th>
<th>Model</th>
<th>$\chi^2$ (normal-theory)</th>
<th>$\chi^2$ (Satorra-Bentler)</th>
<th>DF</th>
<th>RMSEA</th>
<th>NNFI</th>
<th>CFI</th>
<th>Test of hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group Interdependence</strong></td>
<td>6</td>
<td>Unconstrained Model</td>
<td>37.53 (P = 0.0045)</td>
<td>30.73 (P = 0.031)</td>
<td>18</td>
<td>.087</td>
<td>.93</td>
<td>.96</td>
<td>Satorra-Bentler $\chi^2$ difference (5,N=190)= 6.987, p=0.2216</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Constrained Model</td>
<td>44.45 (P = 0.0046)</td>
<td>37.95 (P = 0.026)</td>
<td>23</td>
<td>.083</td>
<td>.93</td>
<td>.95</td>
<td>Conclusion: Measurement invariance is retained; all factor loadings are invariant. Note: Model fits a bit worse for Arabs than Americans. Error variance of GI is not significant for American and is significant for Arab.</td>
</tr>
<tr>
<td><strong>Future Orientation</strong></td>
<td>4</td>
<td>Unconstrained Model</td>
<td>1.29 (P = 0.86)</td>
<td>0.76 (P = 0.94)</td>
<td>4</td>
<td>.000</td>
<td>1.05</td>
<td>1.00</td>
<td>Satorra-Bentler $\chi^2$ difference (3,N=190)= 5.347, p=0.1481</td>
</tr>
<tr>
<td>(Without items 4 and 6)</td>
<td></td>
<td>Constrained Model</td>
<td>8.25 (P = 0.31)</td>
<td>5.40 (P = 0.61)</td>
<td>7</td>
<td>.000</td>
<td>1.02</td>
<td>1.00</td>
<td>Conclusion: Measurement invariance is retained; all factor loadings are invariant. Note: Model fits a bit worse for Americans than Arabs.</td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td>6</td>
<td>Unconstrained Model</td>
<td>29.89 (P = 0.019)</td>
<td>23.25 (P = 0.11)</td>
<td>16</td>
<td>.069</td>
<td>.98</td>
<td>.99</td>
<td>Satorra-Bentler $\chi^2$ difference (5,N=190)= 2.24, p=0.815</td>
</tr>
<tr>
<td>(with free error covariance between item 3 and 4)</td>
<td></td>
<td>Constrained Model</td>
<td>31.82 (P = 0.061)</td>
<td>26.86 (P = 0.18)</td>
<td>21</td>
<td>.054</td>
<td>.99</td>
<td>.99</td>
<td>Conclusion: Measurement invariance is retained; all factor loadings are invariant. Note: Model fits a lot worse for Americans than Arabs.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Unconstrained Model</td>
<td>25.40 (P = 0.0046)</td>
<td>19.69 (P = 0.032)</td>
<td>10</td>
<td>.10</td>
<td>.93</td>
<td>.97</td>
<td></td>
</tr>
<tr>
<td>Effort (without item3)</td>
<td>6</td>
<td>Unconstrained Model</td>
<td>33.80 (P = 0.013)</td>
<td>28.72 (P = 0.052)</td>
<td>18</td>
<td>.080</td>
<td>.96</td>
<td>.97</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>---</td>
<td>---------------------</td>
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<td>-----</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Constrained Model</td>
<td>37.73 (P = 0.027)</td>
<td>33.77 (P = 0.069)</td>
<td>23</td>
<td>.071</td>
<td>.96</td>
<td>.97</td>
<td></td>
</tr>
<tr>
<td>Time &amp; Environment Management (Items 3, 7, and 8 are deleted)</td>
<td>5</td>
<td>Unconstrained Model</td>
<td>20.01 (P = 0.029)</td>
<td>19.82 (P = 0.031)</td>
<td>10</td>
<td>.10</td>
<td>.93</td>
<td>.97</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Constrained Model</td>
<td>20.92 (P = 0.10)</td>
<td>20.80 (P = 0.11)</td>
<td>14</td>
<td>.072</td>
<td>.97</td>
<td>.98</td>
<td></td>
</tr>
<tr>
<td>Help (without Item2)</td>
<td>4</td>
<td>Unconstrained Model</td>
<td>6.51 (P = 0.16)</td>
<td>--</td>
<td>4</td>
<td>.082</td>
<td>.96</td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Constrained Model</td>
<td>14.10 (P = 0.049)</td>
<td>--</td>
<td>7</td>
<td>.10</td>
<td>.93</td>
<td>.96</td>
<td></td>
</tr>
</tbody>
</table>
| Self-efficacy (without item 3) | 4 | Unconstrained Model | 2.60 (P = 0.63)   | 1.46 (P = 0.83)   | 4  | .000 | 1.02| 1.00| Satora-Bentler $\chi^2$ difference $\chi^2$ difference (3,N=190)= 3.8325, p=0.2802

- Satora-Bentler $\chi^2$ difference $\chi^2$ difference (5,N=190)= 4.354, p=0.4997
- Conclusion: Measurement invariance is retained; all factor loadings are invariant
- Note: Model fits a bit worse for Arabs than Americans.

- Satora-Bentler $\chi^2$ difference $\chi^2$ difference (4,N=190)= 0.913, p=0.9227
- Conclusion: Measurement invariance is retained; all factor loadings are invariant
- Note: Model fits a bit worse for Arabs than Americans.

- Normal theory $\chi^2$ difference (3,N=190)= 7.35, p=0.0615
- Conclusion: Measurement invariance is retained; all factor loadings are invariant
- Note: Model fits a bit worse for Arabs than Americans.
<table>
<thead>
<tr>
<th>Structure</th>
<th>4</th>
<th>Unconstrained Model</th>
<th>6.78 (P = 0.15)</th>
<th>3.26 (P = 0.51)</th>
<th>.00</th>
<th>1.01</th>
<th>1.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Constrained Model</td>
<td>7.12 (P = 0.42)</td>
<td>4.68 (P = 0.70)</td>
<td>.00</td>
<td>1.01</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Constrained Model 6.41 (P = 0.49) 4.44 (P = 0.73)

Normal theory $\chi^2$ difference (3, N=190) = 3.832, p=0.2802

Conclusion: Measurement invariance is retained; all factor loadings are invariant.

Note: Model fits worse for Americans than Arabs.
Models for group interdependence, monitoring, effort, time and environment management, and help fit better for Americans than Arabs as fit indices indicated (see the table above). Models for future orientation, planning, and self-efficacy fit better for the Arabs than Americans. The following tables present factor loadings for all the models.

Table 12: Group Interdependence (GI): Maximum Likelihood Parameter Estimates for Confirmatory Factor Analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Loadings</th>
<th>SE</th>
<th>Standardized Loadings-Arab</th>
<th>Standardized Loadings-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>GI → Item 1</td>
<td>1.00</td>
<td>-</td>
<td>0.56</td>
<td>0.44</td>
</tr>
<tr>
<td>GI → Item 2</td>
<td>1.23</td>
<td>0.17</td>
<td>0.78</td>
<td>0.55</td>
</tr>
<tr>
<td>GI → Item 3</td>
<td>1.18</td>
<td>0.17</td>
<td>0.76</td>
<td>0.52</td>
</tr>
<tr>
<td>GI → Item 4</td>
<td>1.05</td>
<td>0.20</td>
<td>0.60</td>
<td>0.46</td>
</tr>
<tr>
<td>GI → Item 5</td>
<td>0.65</td>
<td>0.19</td>
<td>0.32</td>
<td>0.29</td>
</tr>
<tr>
<td>GI → Item 6</td>
<td>0.79</td>
<td>0.17</td>
<td>0.39</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Table 13: Future Orientation (FO): Maximum Likelihood Parameter Estimates for Confirmatory Factor Analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Loadings</th>
<th>SE</th>
<th>Standardized Loadings-Arab</th>
<th>Standardized Loadings-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>FO→ Item 1</td>
<td>1.00</td>
<td>-</td>
<td>0.63</td>
<td>0.58</td>
</tr>
<tr>
<td>FO→ Item 2</td>
<td>1.19</td>
<td>0.21</td>
<td>0.64</td>
<td>0.63</td>
</tr>
<tr>
<td>FO→ Item 3</td>
<td>1.23</td>
<td>0.21</td>
<td>0.61</td>
<td>0.68</td>
</tr>
<tr>
<td>FO→ *Item 5&amp;6</td>
<td>1.26</td>
<td>0.19</td>
<td>0.43</td>
<td>0.63</td>
</tr>
</tbody>
</table>

* As explained in chapter 3, this item was computed by summing items 5 and 6, then dividing by 2. This was done to resolve a mistake during data collection.
Table 14: **Planning (PLAN): Maximum Likelihood Parameter Estimates for Confirmatory Factor Analysis**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Loadings</th>
<th>SE</th>
<th>Standardized Loadings-Arab</th>
<th>Standardized Loadings-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN→ Item 1</td>
<td>1.00</td>
<td>-</td>
<td>0.70</td>
<td>0.65</td>
</tr>
<tr>
<td>PLAN→ Item 2</td>
<td>1.04</td>
<td>0.12</td>
<td>0.63</td>
<td>0.69</td>
</tr>
<tr>
<td>PLAN→ Item 3</td>
<td>0.90</td>
<td>0.12</td>
<td>0.66</td>
<td>0.61</td>
</tr>
<tr>
<td>PLAN→ Item 4</td>
<td>0.90</td>
<td>0.12</td>
<td>0.65</td>
<td>0.61</td>
</tr>
<tr>
<td>PLAN→ Item 5</td>
<td>1.25</td>
<td>0.14</td>
<td>0.69</td>
<td>0.79</td>
</tr>
<tr>
<td>PLAN→ Item 6</td>
<td>1.21</td>
<td>0.14</td>
<td>0.76</td>
<td>0.82</td>
</tr>
</tbody>
</table>

Table 15: **Monitoring (MONT): Maximum Likelihood Parameter Estimates for Confirmatory Factor Analysis**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Loadings</th>
<th>SE</th>
<th>Standardized Loadings-Arab</th>
<th>Standardized Loadings-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONT→ Item 1</td>
<td>1.00</td>
<td>-</td>
<td>0.76</td>
<td>0.75</td>
</tr>
<tr>
<td>MONT→ Item 2</td>
<td>0.67</td>
<td>0.13</td>
<td>0.42</td>
<td>0.54</td>
</tr>
<tr>
<td>MONT→ Item 3</td>
<td>0.80</td>
<td>0.13</td>
<td>0.57</td>
<td>0.53</td>
</tr>
<tr>
<td>MONT→ Item 4</td>
<td>0.95</td>
<td>0.12</td>
<td>0.73</td>
<td>0.68</td>
</tr>
<tr>
<td>MONT→ Item 5</td>
<td>0.71</td>
<td>0.12</td>
<td>0.55</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Table 16: **Time and Environment Management: Maximum Likelihood Parameter Estimates for Confirmatory Factor Analysis**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Loadings</th>
<th>SE</th>
<th>Standardized Loadings-Arab</th>
<th>Standardized Loadings-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMEV→ Item 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMEV→ Item 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMEV→ Item 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMEV→ Item 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMEV→ Item 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 17: *Help: Maximum Likelihood Parameter Estimates for Confirmatory Factor Analysis*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Loadings</th>
<th>SE</th>
<th>Standardized Loadings-Arab</th>
<th>Standardized Loadings-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELP→ Item 1 (RV)</td>
<td>1.00</td>
<td>-</td>
<td>0.41</td>
<td>0.39</td>
</tr>
<tr>
<td>HELP→ Item 3</td>
<td>2.12</td>
<td>0.45</td>
<td>0.67</td>
<td>0.76</td>
</tr>
<tr>
<td>HELP→ Item 4</td>
<td>2.70</td>
<td>0.57</td>
<td>0.76</td>
<td>0.90</td>
</tr>
<tr>
<td>HELP→ Item 5</td>
<td>1.63</td>
<td>0.37</td>
<td>0.48</td>
<td>0.61</td>
</tr>
</tbody>
</table>

Table 18: *Self-Efficacy (SEFC): Maximum Likelihood Parameter Estimates for Confirmatory Factor Analysis*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Loadings</th>
<th>SE</th>
<th>Standardized Loadings-Arab</th>
<th>Standardized Loadings-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEFC→ Item 1</td>
<td>1.00</td>
<td>-</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>SEFC→ Item 2</td>
<td>1.05</td>
<td>0.10</td>
<td>0.79</td>
<td>0.71</td>
</tr>
<tr>
<td>SEFC→ Item 5</td>
<td>1.19</td>
<td>0.11</td>
<td>0.88</td>
<td>0.84</td>
</tr>
<tr>
<td>SEFC→ Item 6</td>
<td>1.02</td>
<td>0.12</td>
<td>0.74</td>
<td>0.76</td>
</tr>
</tbody>
</table>

Table 19: *Structure (STRC): Maximum Likelihood Parameter Estimates for Confirmatory Factor Analysis*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Loadings</th>
<th>SE</th>
<th>Standardized Loadings-Arab</th>
<th>Standardized Loadings-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRC→ Item 5</td>
<td>0.77</td>
<td>0.07</td>
<td>0.62</td>
<td>0.72</td>
</tr>
<tr>
<td>STRC→ Item 6</td>
<td>0.93</td>
<td>0.05</td>
<td>0.85</td>
<td>0.76</td>
</tr>
<tr>
<td>STRC→ Item 7</td>
<td>1.00</td>
<td>-</td>
<td>0.90</td>
<td>0.93</td>
</tr>
<tr>
<td>STRC→ Item 8</td>
<td>0.83</td>
<td>0.07</td>
<td>0.67</td>
<td>0.68</td>
</tr>
</tbody>
</table>
Data Analyses

The two unreliable measures of power distance and uncertainty avoidance were dropped from further analysis. In addition, only items found to hold in confirmatory factor analysis were retained in the subsequent analysis. A similar approach of eliminating items, especially negatively worded items, was used by Luszczynska et al. (2004) when conducting a cross cultural research on attention control of goal pursuit as one component of dispositional self-regulation. This was done to reach a more unidimensional scale across cultures.

Data Screening

In the coming analysis the sum of items in each dimension is used instead of the latent factors. For example group interdependence consists of the sum of six items; future orientation is the sum of four items and so on. Before conducting further analysis, some assumptions were examined.

Sample size and Missing Data. For the coming analysis there were no missing data. The two sample had equal sample sizes (n=95; N=190).

Normality and Linearity. Based on skewness and kurtosis values, all variables in both the American and Arab sample did not appear to depart significantly from univariate normality with the exception of group interdependence for the American sample which was significantly kurtotic (value of 3.273). Multivariate normality was assessed for the combination of variables used to answer different research questions.
**Outliers.** Malahanobis distance was used to check multivariate outliers for the combination of the two cultural variables, the six self-regulation variables and three distance education variables. These variables are basically the sum of the measure as retained from the measurement invariance. For both the Arab and America samples, no multivariate outliers were detected; there were no cases with Malahanobis distance of more than the critical $\chi^2$ of 31.264 for the 11 variables at $\alpha=.001$.

**Research Question One**

*RQ1. What are the relationships between (1) learner self-regulation (planning, effort, and self-efficacy, self-monitoring, help seeking, and time and study environment management), (2) cultural orientation (future orientation, interdependence) and (3) learner preferences towards course interaction and flexibility?*

For the American sample, group interdependence was only significantly and positively correlated with Help ($r=.245$) while future orientation was only significantly and positively correlated with all self-regulation variables except Help ($r=.058$, ns). For the Arab sample, group interdependence was significantly and positively correlated with all variables of self regulation except effort and time and environment management. Future orientation was significantly and positively correlated with all self-regulation variables. These correlations were much stronger for the Arab sample than the ones for the American sample. From this we can conclude that learner self-regulation, with the exception of help for the American sample, is significantly and positively related to American students’ perception of the cultural variable of future orientation.
For the Arab group, one significant distance education variable, preference to interact with other students, was significantly related to group interdependence. This indicates that Arab students who prefer more interaction with other students were more group-interdependent. This correlation was not significant for the American group. Nothing was significantly related to future orientation in either group.

Among the relationships between self-regulation variables and distance education variables, for both samples seeking help was significantly and positively related to preference for interaction with other students. In other words, students who seek more help generally would like more interaction with other students; maybe as potential sources of help. For the American sample, help was also significantly and positively correlated with preference for interaction with the instructor as well; that was not the case for the Arab sample. This may reflect the high power distance in the Arab culture between instructor and students, which consequently may affect the way they perceive instructors as sources of help. In fact, planning and monitoring one’s study was found to be significantly and positively related to preference for structure and interaction with instructor. An interesting negative correlation was found between self-efficacy and structure. Students with preference towards more structure are more likely to have less self-efficacy. This is consistent with Moore’s theory of transactional distance when we perceive self-efficacy as one indicator of learner autonomy. The more autonomous learners have greater capacity to structure their own learning and therefore would prefer less structure in their programs (Moore & Kearsley, 2005).
Table 20: Correlations, standard deviations and means for study variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Culture</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Group Interdependence</td>
<td>-</td>
<td>.217*</td>
<td>.211*</td>
<td>.232*</td>
<td>.066</td>
<td>.122</td>
<td>.393**</td>
<td>.280**</td>
<td>.025</td>
<td>.145</td>
<td>.349**</td>
<td>18.77</td>
<td>4.001</td>
</tr>
<tr>
<td>2. Future orientation</td>
<td>.001</td>
<td>-</td>
<td>.560**</td>
<td>.527**</td>
<td>.507**</td>
<td>.462**</td>
<td>.296**</td>
<td>.302**</td>
<td>-.047</td>
<td>.196</td>
<td>-.074</td>
<td>15.574</td>
<td>2.956</td>
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<td><strong>Self Regulation</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Planning</td>
<td>.103</td>
<td>.428**</td>
<td>-</td>
<td>.710**</td>
<td>.486**</td>
<td>.565**</td>
<td>.268**</td>
<td>.317**</td>
<td>.236*</td>
<td>.219*</td>
<td>-.011</td>
<td>13.28</td>
<td>2.272</td>
</tr>
<tr>
<td>4. Monitoring</td>
<td>-.060</td>
<td>.374**</td>
<td>.628**</td>
<td>-</td>
<td>.571**</td>
<td>.483**</td>
<td>.147</td>
<td>.319**</td>
<td>.235*</td>
<td>.255*</td>
<td>-.066</td>
<td>11.22</td>
<td>1.886</td>
</tr>
<tr>
<td>5. Effort</td>
<td>-.102</td>
<td>.322**</td>
<td>.446**</td>
<td>.519**</td>
<td>-</td>
<td>.498**</td>
<td>.038</td>
<td>.449**</td>
<td>.127</td>
<td>.069</td>
<td>-.191</td>
<td>14.95</td>
<td>2.095</td>
</tr>
<tr>
<td>6. Time &amp; Environment Management</td>
<td>-.049</td>
<td>.346**</td>
<td>.442**</td>
<td>.390**</td>
<td>.491**</td>
<td>-</td>
<td>.304**</td>
<td>.403**</td>
<td>.150</td>
<td>.179</td>
<td>-.009</td>
<td>11.33</td>
<td>1.965</td>
</tr>
<tr>
<td>7. Help</td>
<td>.245*</td>
<td>.058</td>
<td>.216*</td>
<td>.102</td>
<td>.034</td>
<td>.127</td>
<td>-</td>
<td>.221*</td>
<td>-.013</td>
<td>.192</td>
<td>.310**</td>
<td>8.22</td>
<td>1.745</td>
</tr>
<tr>
<td>8. Self-efficacy</td>
<td>-.062</td>
<td>.267**</td>
<td>.434**</td>
<td>.360**</td>
<td>.432**</td>
<td>.370**</td>
<td>.076</td>
<td>-</td>
<td>.159</td>
<td>.008</td>
<td>-.093</td>
<td>11.47</td>
<td>2.072</td>
</tr>
<tr>
<td><strong>Distance Education</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Structure</td>
<td>.000</td>
<td>-.114</td>
<td>-.124</td>
<td>-.092</td>
<td>-.072</td>
<td>-.154</td>
<td>-.088</td>
<td>-.204*</td>
<td>-</td>
<td>.178</td>
<td>.138</td>
<td>18.453</td>
<td>6.11</td>
</tr>
<tr>
<td>10. Interaction with instructor</td>
<td>.041</td>
<td>-.005</td>
<td>.164</td>
<td>.114</td>
<td>.013</td>
<td>.007</td>
<td>.254*</td>
<td>-.041</td>
<td>.049</td>
<td>-</td>
<td>.361**</td>
<td>69.06</td>
<td>25.813</td>
</tr>
<tr>
<td>11. Interaction with students</td>
<td>.155</td>
<td>.096</td>
<td>.158</td>
<td>.175</td>
<td>.108</td>
<td>.201</td>
<td>.498**</td>
<td>.124</td>
<td>-.038</td>
<td>.425**</td>
<td>-</td>
<td>59.72</td>
<td>30.446</td>
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<tr>
<td><strong>Americans</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>3.216</td>
<td>2.107</td>
<td>2.479</td>
<td>1.764</td>
<td>1.92</td>
<td>1.915</td>
<td>1.885</td>
<td>2.135</td>
<td>5.383</td>
<td>27.17</td>
<td>33.685</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The correlation at the top right-hand side are for Arabs and the correlations at the bottom left-hand side are for the Americans.
Research Question Two

RQ2. Are there any differences in self-regulation (planning, effort, and self-efficacy, self-checking, help-seeking and time and study environment management) between Arab and American distance learners?

No multivariate outliers were found with self-regulation measures (6 variables) using a criterion of $\alpha=.001$, critical $\chi^2(6)= 22.458$. Results from Levene’s Test for Homogeneity of Variances and Box’s M (F=0.584, p=0.932) test of equality of covariance indicated that all criterion variables were found to have homogeneity of variances and covariance. The assumption of multivariate normality was satisfactory with a non-significant chi-square value of 3.632 (p=0.163).

The null hypothesis for this question is “In the population, there is no difference between Arabs and Americans when they are compared simultaneously on the six self-regulation variables”. MANOVA was used to test the null hypothesis. The analysis revealed a significant multivariate effect for group with Wilk’s lambda=.612 and $p<.000$. In other words, in the population, Arabs and Americans are not equal on all the criterion self-regulation variables. This high (0.612) Wilk’s lambda indicates weak relationship ($\eta^2=0.388$) between students’ self-regulation variables and the group they belong to.

To check the impact of the main effect of group (Arab or American) on the individual six self-regulation variables, univariate analysis of variance (ANOVA) was examined for each variable. Results of this analysis are reported in the following table:
Since each of these ANOVAs is an independent test, an experiment-wise type I error was adjusted for using Bonferroni adjustment, so for $\alpha$-level of 0.05, the adjusted alpha for each test is 0.008. As you can see from the univariate ANOVAs, significant differences were found between the two groups for all self-regulation variables. Group mean of the American sample was significantly higher than the Arab sample in planning, monitoring, effort, time and environment management, and self-efficacy, while the mean for Arabs was higher on the measure for help. This result is within the study’s expectation. Since Americans are considered more independent than Arabs, they were expected to generally have higher self-regulation. Help-seeking is the only self-regulation variable that was found to be higher for Arabs than Americas; further discussion about this will be presented.

### Research Questions Three

**RQ3.** Are there any differences in cultural orientation (future time perspective and interdependence) between Arab and American distance learners?
No multivariate outliers were found with two cultural variables and a criterion of \( \alpha = .001 \), critical \( \chi^2(2) = 13.816 \). The assumption of multivariate normality was satisfactory with a non-significant chi-square value of 5.773 (\( p = 0.056 \)).

MANOVA analysis revealed a significant multivariate effect for group, Wilk’s lambda=.931 and \( p < .000 \). In other words, in the population Arabs and Americans are not equal on all the criterion cultural variables. This high (=.931) Wilk’s lambda indicates very weak relationship (\( \eta^2 = .069 \)) between the cultural variables and group.

All univariate ANOVAs were significant. In this analysis, please note that the adjusted alpha for each test is 0.025 for the univariate ANOVAs after adjusting for the experiment-wise type I error, for the \( \alpha \)-level of 0.05. The group mean of the American sample was significantly higher than the Arab sample for both group interdependence and future orientation. It was expected that Americans will be more future-oriented than Arabs, but it was surprising that they were also more group interdependent.

Table 22: Multivariate Analysis of Variance of Cultural Variables

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependant Variable</th>
<th>Univariate F</th>
<th>Df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Group Interdependence</td>
<td>5.657</td>
<td>1/188</td>
<td>.018</td>
</tr>
<tr>
<td></td>
<td>Future Orientation</td>
<td>10.198</td>
<td>1/188</td>
<td>.002</td>
</tr>
</tbody>
</table>

Upon examining the assumptions of MANVOA, it was found that homogeneity of variance and covariance matrices of the criterion variables (group interdependence and future orientation) was not retained at the 0.05 level. This was assessed through both Levene’s test of homogeneity of variances and Box’s M (\( F = 5.255, p = 0.001 \)) test of equality of covariance matrices. Box’s test revealed a significant (\( p = 0.001 \)) \( F \) value of 5.255 rejecting the null hypothesis that covariance matrices in the two groups were equal.
For both sample group interdependence (Levene’ statistic= 8.600(1, 188; p= 0.004) and future orientation (Levene’ statistic= 8.826 (1, 188; p= 0.003) Levene’s statistics was significant leading to the rejection of the null hypothesis of equality of groups’ variances. In addition, group interdependence variable was kurtotic with kurtosis value of 3.273 (SE=.49). The variance and covariance matrices are reported below:

Table 23: Variance and Covariance matrices for the American and Arab groups

<table>
<thead>
<tr>
<th></th>
<th>Americans</th>
<th></th>
<th>Arabs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group</td>
<td>Future</td>
<td>Group</td>
<td>Future</td>
</tr>
<tr>
<td></td>
<td>Interdependence</td>
<td>Orientation</td>
<td>Interdependence</td>
<td>Orientation</td>
</tr>
<tr>
<td>Group</td>
<td>10.340</td>
<td>0.005</td>
<td>16.010</td>
<td>2.570</td>
</tr>
<tr>
<td>Interdependence</td>
<td></td>
<td>4.441</td>
<td></td>
<td>8.739</td>
</tr>
</tbody>
</table>

The ratios between the variances of the two groups for future orientation (8.739/4.441=1.97) and for group interdependence (16.010/10.340=1.55) were less than two. According to Tabachnich and Fidell (2001), if the ratio between the two samples is more than 3, then we can consider samples not discrepant. Therefore, we can conclude that samples variances for group interdependence and future orientation reveal reasonable homogeneity. However, the ratio of samples covariances is huge (2.570/0.005=514).

To further examine the validity of group differences on group interdependence and future orientation, robust tests (Welch and Brown-Forsythe) of equality of group means were acquired. Both variables were found to be significant for both groups confirming that group differences between Arabs and Americans. For group interdependence the test resulted in a significant F value of 5.657 (1, 179.681), p=0.018.
For future orientation the test resulted in a significant F value of 10.198 (1, 169.925), p=0.002.

**Research Question Four**

*RQ4. Are there any differences in between Arab and American distance learners in their preferences towards course interaction (interaction with instructors and interaction with other learners) and flexibility (structure)?*

No multivariate outliers were found with the three variables using a criterion of $\alpha=.001$, critical $\chi^2(3)=16.266$. Results from Levene’s Test for Homogeneity of Variances and Box’s M (F=0.713, p=0.639) test of equality of covariance indicated that all criterion variables were found to have homogeneity of variances and covariance. The assumption of multivariate normality was violated with a non-significant chi-square value of 9.515 (p=0.009). As Tabachnick and Fidell (2001) explain, MANOVA is robust to violation of multivariate normality if there are more than 20 degrees of freedom if this violation is not caused by outliers; in this case there are more than 20 degrees of freedom for error, so there are a lot more cases (190 cases) than variables (3 variables). Therefore, there are no reasons to expect distortion of results because of failure of multivariate normality. In addition, further analysis of univariate normality indicated reasonable normality. Skewness values of variables were within normal distribution; all absolute values were less than 3.00. However, variables were slightly negatively kurtotic which reflected a slight departure from normality. Still, they are not considered extreme; all
were less than 8 (Kline, 2005). Absolute kurtosis value for interaction with instructor was -5.603; it was -6.836 for interaction with instructor; it was -3.031 for structure.

MANOVA analysis resulted in a significant multivariate effect for group, Wilk’s lambda=.689 and p<.000 meaning that in the population, Arabs and Americans were not equal on all the criterion distance education variables. This relatively high (=.754) Wilk’s lambda indicates a week relationship (η² = .246) between distance education variables (preference for course structure, preference for interaction with instructor and preference for interaction with other students) and group.

Consistent with differences between the collective Arab culture and the individualistic American culture, Arab students (mean=69.06) preferred significantly more interaction with their instructors than American students (mean=47.75). Only, preference for interaction with other students was not found to be significant in the univariate analysis. Although it was not significant, Arabs had a slightly higher mean on the variable than Americans. Differences between Arab and American students in their preferences towards structure were also consistent with cross-cultural literature on uncertainty avoidance. Arabs have higher uncertainty avoidance than Americans and are therefore more likely to prefer more structure (Hofstede, 2001). The group mean of the Arab sample (mean=13.43) on their preference for structure sample was significantly higher than the American sample (mean=18.45).
Research Question Five

RQ5. What is the best model (variance and covariance structure) to explain the relationship between learner self-regulation and cultural orientation?

Before exploring a model, which can possibly explain the relationship between self-regulation and cultural orientation, first the best model for self-regulation was explored. Before starting the structural equation modeling (SEM), SEM assumptions were examined. For both groups multivariate normality was evaluated for all self-regulation variables, cultural variables (group interdependence and future orientation), distance education variables (structure, interaction with instructor, and interaction with other students) and years in the program. Results of the multivariate normality (skewness and kurtosis) test indicated that the data was multivariate normal with a non-significant chi-square value of 1.88 (p=0.390) for the American group and a non-significant chi-square value of 0.954 (p=0.621) for the Arab group.

The initial model for self-regulation (see the following figure) was a confirmatory factor analysis, in which self-regulation was measured through planning, monitoring, time and environment management, help and self-efficacy. This model was fitted for both
groups simultaneously to establish measurement invariance across the two groups.

Figure 3 presents the model tested.

![Figure 3: Model 1 for Self-Regulation](image)

The overall model did not fit the data well (chi-square= 38.18, p = 0.0037; RMSEA=0.11). In this model, factor loading for help was found to be insignificant for Americans and significant for Arabs. This measure is of special interest to the study, especially from the cultural perspective adopted by the researcher. Many questions arise: is this lack of significance is due to a measurement error or is the item for help functioning differently between the two groups? Is it that American students do not see asking for help as a part of their self-regulation whereas Arab students do? Is it because of the independent United States culture that American students are less likely to ask for help whereas the collective Arab culture makes it easier for students to ask for help?
Disregarding all other measures of self-regulation, a simple one way ANOVA for help with group as the independent variable indicates that there are significant differences between Arab and American students in help-seeking with an F-value of 31.265, which is greater than the critical F-value (.95; df=1, 188)= 3.914. From group means, we see that Arabs (mean=8.22) scored significantly higher on this measure than Americans (mean=6.75). This indicates that Arab respondents reported higher likelihood of knowing when they need help and being “able to identify someone to provide them with some assistance” (Pintrich et.al, 1993, p.29) as well as using online forums to ask for help from other students (Whipp & Chiarelli, 2004; Zimmerman, 2002).

Even with the measure for Help deleted, the first order self-regulation model did not fit well (Chi-square=25.18, p=0.0086; RMSEA=0.12). Therefore, a two-factor self-regulation model was fitted. Hong and O’Neil (2001) suggest a second order model for self-regulation with metacognition consisting of planning and monitoring and motivation consisting of self-efficacy and effort. Help and time and environment management were not in the work of Hon and O’Neil; they were added by the researcher. In the Motivated Strategies for Learning Questionnaire (MSLQ), they were categorized under learning strategies scales (Duncan & McKeachie, 2005; Pintrich et al, 1994). Therefore, in this study, they were fitted under metacognition. When fitting this model, metacognition was scaled by setting the loading of planning to 1.00 and motivation was scaled by setting the loading of effort to 1.00 (see the following figure). Help was found to be insignificant for Americans. In order to have a model that will work for both groups, a decision was made to delete it from the model.
The model without help was found to fit the data adequately with a chi-Square value of 18.22 (p=0.02). Although the Root Mean Square Error of Approximation (RMSEA=.12) indicated poor fit for the model, other fit indices indicated acceptable fit (NNFI= 0.93; CFI = 0.97). This model was found to be measurement invariant across the two groups. Measurement invariance was tested through a chi-square difference test between the model with equal factor loadings and the model without equal factor loadings (see the following table for fit indices for both model). The value for normal theory $\chi^2$ difference was 2.25, and the difference in degrees of freedom was 3. This was insignificant with $p=0.5222$. So, the constrained model did not fit the data worse than the more unconstrained model meaning that all factor loadings were invariant.
Once the measurement invariance was established for self-regulation factors (metacognition and motivation), cultural factors were added to the model as suggested by the model of culture fit in order to determine their effect on self-regulation. The following figure shows the model tested. Please note that cultural variables were fitted as observed exogenous variables, which in path analysis are assumed to be measured without error (Kline, 2005).

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$ (normal-theory)</th>
<th>df</th>
<th>RMSEA</th>
<th>NNFI</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconstrained Model</td>
<td>18.22 (P = 0.020)</td>
<td>8</td>
<td>.12</td>
<td>.93</td>
<td>.97</td>
</tr>
<tr>
<td>Constrained Model</td>
<td>20.47 (P = 0.039)</td>
<td>11</td>
<td>.096</td>
<td>.95</td>
<td>.97</td>
</tr>
</tbody>
</table>
This model was fitted simultaneously for both groups without any constrains. It indicated a good fit with Chi-Square=28.79 (p=0.051), RMSEA=0.080, NNFI=0.95 and CFI=0.98. Group interdependence was found to be insignificant in predicting both metacognition and motivation for both Arabs (λ=0.055, ns for metacognition and -0.00098, ns for motivation) and Americans (λ=0.011, ns, for metacognition and -0.056, ns for motivation). Accordingly, group interdependence was deleted from the model.

The next model was fitted with future orientation only predicting metacognition and motivation. In this model, only the paths from future orientation to metacognition and motivation were freely estimated. As proven in the previous step the model with metacognition and motivation was invariant across the two groups, so factor loadings were constrained to be equal in this test. This model fit well for both groups. Fit indices were: χ²(16)= 20.55, p=0.20, NNFI=0.96, CFI=0.99, and RMSEA=0.055 with 90%
confidence interval 0.00 and 0.12. Future orientation significantly predicted both metacognition and motivation for both Arabs ($\lambda=0.44$, SE=0.06 for metacognition and $\lambda=0.34$, SE= 0.06 for motivation) and Americans ($\lambda=0.46$, SE=0.09 for metacognition and $\lambda=0.31$, SE=0.09 for motivation). When the unstandardized direct effects of future orientation were constrained to be equal across the two groups, the model still fit well. Chi-square difference test indicated this model with equality constrains did not fit the data appreciably worse than the unconstrained model with a Chi-square difference of 0.33 ($p=0.8479$) for 2 degrees of freedom difference. For the constrained model, fit indices all indicated a close model fit: $\chi^2(18)=20.88$, $p=0.25$, NNFI=0.99, CFI=0.99, and RMSEA=0.041 with 90% confidence interval 0.00 and 0.10. Future orientation significantly predicted both metacognition and motivation. Future orientation had greater predictive power for Arabs than Americans because the proportions of explained variance for metacognition and motivation were respectively 44% and 35% for Arabs and 27% and 21% for the Americans. Figure 6 and Figure 7 show the within group completely standardized solutions for the models in both groups.
Figure 6: Model for Arabs

Figure 7: Model for Americans
Research Questions Six

RQ6. Are any found differences between Arabs and Americans in learner self-regulation (metacognition and motivation) and cultural orientation (future orientation) meaningful in explaining learner preferences toward course interaction and flexibility in distance education?

Because of the small sample size for SEM analysis, fitting the previous model in addition to the distance education variables would result in a complex model. To simplify the model, metacognition and motivation were fitted as observed variables consisting of the sum of planning, monitoring, and time and environment management for metacognition and of effort and self-efficacy for motivation. The model is saturated with zero degrees of freedom, and it fits the data perfectly. For the Arab sample, the model explains 37% of the variance in metacognition and 23% of the variance in motivation. For the American group, the model explains 22% of the variance in metacognition and 12% of the variance in motivation.

According to the model of culture fit, external sociocultural factors influence internal work/organization beliefs, which in turn influence practices in the organization (Aycan et.al, 1999; Aycan et.al, 2000). So, the influence of external sociocultural factors on organization practices is expected to be mediated through internal organizational beliefs. Individuals in distance education systems are affected by both external sociocultural environment as well as internal beliefs of distance education institutions. Therefore, the influence of future orientation (cultural variable) on distance education
variables (structure and interaction) was expected to be mediated through self-regulation (metacognition and motivation) as depicted in the following theoretical model (Figure 8):

![Theoretical Mediation Model of the Effect of Future Orientation on Distance Education Variables (Structure and Interaction) through Self-Regulation](image)

Figure 8: Theoretical Mediation Model of the Effect of Future Orientation on Distance Education Variables (Structure and Interaction) through Self-Regulation

Missing from this model are other cultural variables such as uncertainty avoidance and power distance. If those two variables were added, it is expected that uncertainty avoidance will indirectly predict preference for structure and power distance will indirectly predict interaction with instructors and students.

This model was first tested separately for each group to check how well the model fits. The initial model did not fit well for Americans (Chi-Square=46.86, p=0.000) and RMSEA=0.247) and Arabs (Chi-Square=42.68, p=0.000) and RMSEA=0.234). For better model fit, modification indices suggested adding two error covariances between metacognition and motivation and interaction with instructor and other learners. This allows the two variables to covary making an assumption that they share other common causes not explained by the model (Kline, 2005). Both metacognition and motivation are indicators or sub-processes of self-regulation and they would share many underlying causes such as ability, level of maturity, etc. Interaction with instructor and interaction
with other learners are expected to share other common causes such as personal preferences for face-to-face interaction (learning style), learning ability, time availability, etc.

For the Arab group, according to the chi-square value of 10.52 ($p = 0.062$), this model was found to fit well. However, other fit indices indicated unacceptable or mediocre fit. Root Mean Square Error of Approximation (RMSEA) indicated unacceptable fit of 0.11 with 90 Percent Confidence Interval for RMSEA between 0.0 and 0.20. NNFI indicated a mediocre fit of 0.83. In this model, all paths from metacognition and motivation to distance education variables were insignificant except for the path from metacognition to interaction with instructor with a t-value of 2.85, $\beta=1.74$ ($SE=0.61$) suggesting that the effect of future orientation on preference for interaction with instructor was mediated through metacognition. The Squared Multiple Correlations for reduced form equation (with future orientation predicting interaction with instructor) was 0.02 indicating that the mediation equation explains only 2% of the variance in preference for interaction with the instructor.

For the American group, the model was found to fit well with a chi-square value of 1.01 ($P = 0.96$). Unlike the model for Arabs, all fit indices indicated good model fit. Root Mean Square Error of Approximation (RMSEA) indicated a close fit of 0.00 with 90 Percent Confidence Interval between 0.00 and 0.00. NNFI indicated a perfect fit of 1.14. Also, the Comparative Fit Index (CFI) and Goodness of Fit Index (GFI) indicated a perfect fit (=1.00). However, in this model, all paths from metacognition and motivation to distance education variables were insignificant meaning that the metacognition and
motivation did not mediate the effect of future orientation on the distance education variables.

In the model with direct effect (see Figure 7) of future orientation on structure and preference for interaction with instructor, results suggest that the model fits well for the Americans with chi-square=8.06, $p=0.43$, RMSEA=0.0090, NNFI=1.00, CFI=1.00 and GFI=0.97. However, it has mediocre to unacceptable fit for the Arab group according to fit indices: chi-Square =22.16, $p=0.0046$, RMSEA = 0.14, NNFI = 0.76, CFI = 0.87 and GFI= 0.93. In addition, all paths from future orientation to structure and interaction with instructor and learners were insignificant for both groups.

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**Figure 9**: Theoretical Model for the Direct Effect of Future Orientation on Distance Education Variables

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Research Questions Seven

RQ7. Are gender and number of years in distance education programs meaningful in explaining any differences found in the best fitting model for Arabs and Americans?

Gender and years in the program were added to the model as exogenous variables along with future orientation. This model (see the following figure) was tested separately for each group.

![Model with Gender and Years](image)

The model was found to have a good fit for both Arabs ($\chi^2=16.09$, $p = 0.14$) and Americans ($\chi^2=17.03$, $p = 0.11$). All fit indices indicated mostly acceptable fit for both groups with the exception of NNFI, which indicated mediocre fit for both groups. Fit indices for Arabs were: RMSEA = 0.078 with 90 Percent Confidence Interval for RMSEA = (0.0 ; 0.15), NNFI = 0.84, CFI = 0.94 and Standardized RMR = 0.062. Fit indices for Americans were: RMSEA = 0.071 with 90 Percent Confidence Interval between 0.0- 0.14, NNFI = 0.86, CFI = 0.95, and Standardized RMR = 0.060.

Although the overall model fits well, some of the paths in the model were not found to be significant. The path from years to metacognition was found to be significant
in the model for Arabs ($\gamma = -0.81$, $SE =0.38$); this path was not significant in the model for Americans ($\gamma = 0.15$, $SE = 0.36$). The path from years to motivation was not found to be significant for both groups. The negative sign for the effect of years on metacognition for the Arab sample indicates that the less time students have been in their current programs the higher their metacognition is.

The only significant path for gender was the one from gender to metacognition in the model for Arabs ($\gamma = -2.32$, $SE =0.81$); this path was not significant in the model for Americans ($\gamma = 1.07$, $SE = 0.97$). The path from gender to motivation was not found to be significant for both groups. The negative sign for the effect of gender on metacognition for the Arab sample indicates that males ($mean=37.143$, $SD=5.26$) have higher metacognition than females ($mean=34.435$, $SD=4.861$).

These results suggest a possible group by gender interaction effect on the two self-regulation variables (metacognition and motivation). This interaction was further investigated through a multivariate analysis of variance (MANOVA). The interaction was found to be significant with Wilk’s lambda = 0.94 and $p = .003$. However, in the univariate analysis of variance, only metacognition was found to be significant with an F-value $(1, 186) = 9.62113$, $p = 0.002$. Motivation was not significant with an F-value $(1, 186) = 0.41297$, $p = 0.521$. Arab males ($mean = 37.143$) and American females ($mean = 41.054$) reported higher metacognition (a composite of planning, monitoring, and time and environment management) than Arab females ($mean = 34.435$) and American males ($mean = 9.205$).
Summary of Results

This chapter presented the detailed analyses of study data. It presented description of samples, reliability analysis, cross-cultural validation of study variables, multivariate analyses of variance on group differences between Arab and American student on cultural orientation, self-regulation, and preference towards course structure and interaction. Then, it describes the process and results of building a model to explain the relationships between the three sets of variables. Here is a summary of the results:

- Group interdependence was only significantly correlated with help for the American group. It was significantly and positively correlated with planning, monitoring, help, self-efficacy and interaction with other students for the Arab group.

- Future orientation was positively and significantly correlated with all self-regulation variables for the Arab group and with all self-regulation variables except help for the American group.

- Preference towards structure was negatively and significantly correlated with self-efficacy only for the American group. It was positively and significantly correlated with planning and monitoring for the Arab group.

- Preference towards interaction with instructor was positively and significantly correlated with help and interaction with other students for the American group. It was only correlated with planning, monitoring and interaction with other students for the Arab group.
Preference towards interaction with other students was positively and significantly correlated with help and structure for the American group. It was positively and significantly correlated with group interdependence, help and interaction with instructor for the Arab group.

There were significant differences between Arabs and Americans on all the criterion self-regulation variables. Americans scored significantly higher than the Arabs on planning, monitoring, effort, time and environment management and self-efficacy. Arabs scored significantly higher than Americans on the measure for help.

There were significant differences between Arabs and Americans on the two criterion cultural variables (group interdependence and future orientation). Americans scored significantly higher than the Arabs on both variables.

There were significant differences between Arabs and Americans on the composite of preference towards distance education structure and interaction. Only preference for course structure and preference for interaction with the instructor had a unique contribution in predicting group differences. Preference for interaction with other students was not found to be significant in the univariate analysis. Arab students preferred significantly higher structure and more interaction with their instructors than American students.

In the best fitting model for self-regulation, the construct was conceptualized through two factors: (1) metacognition consisting of planning, monitoring, and time and environment management, and (2) motivation consisting of effort and self-efficacy. Metacognition was scaled by setting the loading of planning to
1.00 and motivation was scaled by setting the loading of effort to 1.00. This model was found to be invariant across the two groups. Help was not found to be measurement invariant across the two groups. Americans did not conceptualize help as part of their self-regulation whereas Arabs did.

➢ In the model consisting of both cultural variables and self-regulation variables, only future orientation was found to explain variances in metacognition and motivation. Group interdependence was found to be insignificant and was deleted from the model. The final model was found to be invariant across the two groups. Future orientation had greater predictive power for the Arabs than the Americans.

➢ In the model for Arabs with distance education variables, only the effect of future orientation on preference for interaction with instructor was significantly mediated through metacognition and it explains minimal variance (2%). No such mediation was found in the American sample as all paths from metacognition and motivation were found to be insignificant.

➢ In the final model for Arabs with years and gender added, the number of years negatively predicted metacognition indicating that the less time students have been in their current programs the higher their metacognition is. Male student had higher metacognition than female students. Motivation was not predicated by either years in the program or gender.

➢ Gender and years in the program were found to be insignificant in the final model for Americans. Only future orientation predicted metacognition and motivation.
There was a group by gender interaction on metacognition. Arab males and American females scored higher on metacognition than Arab females and American males.
Chapter 5
DISCUSSION AND CONCLUSIONS

Introduction

This was an exploratory study aiming to investigate differences between Arab and American distance learners by focusing on the role of culture on learner self-regulation and its effect on learner preferences towards structure of courses and interaction with instructors and other learners. The overarching purpose in this study was to explore the underlying structural relationship (i.e. a model) between learner self-regulation, cultural orientation and learner preference towards course interaction and flexibility (please refer to Figure 1 and Figure 2). This model was developed based on the model of culture fit by Kanungo and Jaerger (1990) and model of self-regulation by Herl et. al. (1999) and Hong and O’Neil (2002). As hypothesized by the study, in this model the general cultural environment manifested in cultural variables such as power distance, uncertainty avoidance, group interdependence, and future orientation will directly predict distance learner self-regulation, and indirectly (mediated by learner self-regulation) predict learner preferences for course flexibility and interaction (Model 1 Figure 1). A competing hypothesis based on an alternative model (Model 2 Figure 2) is both cross-cultural variables and self-regulation variables will directly predict learner preference for course interaction and course flexibility.
This study was only able to establish the link in model 1 from future orientation, a cultural variable, to learner self-regulation. Learner self-regulation was conceptualized in terms of metacognitive and motivational factors. Other parts of the model were either not established by this study such as group interdependence or they were not even tested because of the initial lack of measurement reliability. The study was limited by issues related to sample size and characteristics as well as measurement challenges, especially in a cross-cultural context. Therefore, future research is needed to explore other areas in the model and alternative ways for measuring them.

Multivariate analysis of variance (MANOVAs) indicated that there were significant differences between Arab and American distance learners in the way they perceive group interdependence, which was conceptualized as an indicator of collectivism, and in future orientation, which was conceptualized as an indicator of future time perspective. Surprisingly, Americans were more group interdependent than Arabs. There were also significant differences between Arabs and Americans in the self-regulation processes of planning, monitoring, time and environment management, help-seeking, effort and self-efficacy. Consistent with cultural differences, Arab students preferred significantly more structure in their courses and more interaction with their instructors.

This chapter further discusses these findings in light of the available literature as well as comments provided by research participants to enrich the discussion. These qualitative comments were not included in the analysis in the previous chapter because this study was quantitative in nature. Also, these comments were optional for participants to provide and did not accumulate a lot of text to warrant qualitative analysis.
Group Interdependence

In this study Americans were found to be more group interdependent than Arabs. This was surprising since group interdependence was conceptualized as an indicator of collectivism. Arabs were expected to be more group interdependent than Americans. Contrary to the results of this study and consistent with previous research, in a study by Gunawardena et al. (2001) American students were found to be less collectivistic than Mexican students in group development and functioning processes (norming and performing phases). These differences were accounted for by country rather than differences in age or gender.

In this study, group interdependence was measured through a modified version of Singelis’s (1994) Self-Construal Scale with items focusing on relational orientation with other members in a group. The modified version included items related to group relationships of Singelis’s interdependent scale with the intention to identify relational orientation with other members in a group of classmates. These items emphasized maintaining harmony within the group, sacrificing one’s self-interest for the benefit of the group, respecting group decisions, staying in the group when needed despite one’s unhappiness with it, avoiding argument with the group even when one strongly disagrees with it, and feeling that relationships with others are more important than one’s own accomplishments.

You can see that most of these items reflect norms of group work. Group work by nature requires collective thinking. Individuals from more collectivistic societies show more cooperative behavior in group work while individuals from more individualistic
societies show more competitive behavior (Cox, Lobel & McLeod, 1991). Despite their preference towards individualism, it is possible that American students displayed more collective behavior to essentially serve their self-interest of striving for success. In the Penn State system, working in a group on course assignments and projects is part of the distance education experience. Although students may not prefer it, they will still be dedicated to it. As indicated in their open comments, students preferred to work alone instead of a group, which is consistent with American individualism:

“Given a good syllabus, I would prefer to work at my own pace and not have to rely on other students. That is the most difficult part of Distance Education for me, working with other students”.

“The big problem is coordinating within a group when you are in many different time zones and everyone works at different paces and has different times of the day available to work on their studies due to work and or family”.

For the Arab students, group-interdependence was positively and significantly correlated with students’ preference to interact with other students meaning that the more group-interdependent students preferred more interaction with other students. It was expected that the more collectivistic individuals would like more interaction with other learners than the more individualistic ones. Since Americans were found to be more group-interdependent, it would then be expected that they would prefer more interaction with other learners. However, there was no such correlation for the American group, which validates the previous explanation that American students were more group interdependent to achieve their self-interest of striving for success through group work, not because they like to interact with other students.
Researchers have distinguished between feelings of belonging and connecting and feelings of duty to in-groups (Oyserman, Coon & Kemmelmeier, 2002). In this case, in an effort to adapt to group work, American students may be trying to “integrate” (Singelis, 1996) group interest over their own by developing an interdependent self while at the same time maintaining their preference towards independence. In addition, in this study, almost 60% of the American sample was women, who are more likely to be more collective than men (Jackson, Mackenzie and Hobfoll, 2001).

**Future Orientation**

The purpose of the study was to investigate cultural differences between distance learners in the US and the Arab World. Future orientation was found to be the only significant predictor of differences in learners’ self-regulation in distance education. This study established a positive direct effect of future-orientation on both metacognition and motivation of students in distance education courses. Future orientation significantly predicted both metacognition and motivation for both groups. In other words, future-oriented individuals, in both groups, plan for their study, monitor their progress, manage their time and environment, have higher self-efficacy and try to maintain their effort. However, the model established in this study between future orientation and self-regulation had greater predictive power for the Arab group than the American group. From the MANOVA results, future orientation was found to be significantly higher for Americans than Arabs.
Results on future orientation between Arab students (in Kuwait and Bahrain in this study) and the American students (US) were consistent with the results from the GLOBE research, which covered 62 cultures through the collaboration of 170 researchers (House, et. al., 1999). In this research, Kuwait was categorized among the countries with the least future orientation with a mean of 3.26. The Unites States was in the second highest category of courtiers with the highest future orientation ($mean=4.15$) (Ashkanasy et al., 2007). In the GLOBE study, future orientation was defined as “the degree to which individuals in organizations engage in future-oriented behaviours such as planning, investing in the future, and delaying gratification” (p.192). It was measured with one item only: “More people live (should live) for the present than for the future” (p.193). In this study,

Educational psychologists agree that perceptions of the future profoundly affect student motivation and self-regulation (Kauffman & Husman, 2004). From a social cognitive perspective, “future orientation is embedded in the notion of perceived instrumentality” (Greene & DeBacker, 2004, p.113). This is best explained by Miller and Brickman (2004):

“Personally valued future goals influence proximal self-regulation through their impact on the development of proximal subgoals leading to future goal attainment”. (Miller & Brickman, 2004, p. 9).

Miller and Brickman (2004) suggest in order to achieve future goals, one needs to develop a system of subgoals/proximal motivation and self-regulation that will be perceived as instrumental to the achievement of future goals. As they summarize from the work of Bandura and Corono on social cognitive theory, simply desiring something
without action will not result in obtaining it; an outcome can only be obtained through action incorporated into one’s larger self-regulatory system. The perceived instrumentality of academic tasks to the attainment of personally valued future goals explains students’ incentive value for doing school work. When students perceive academic tasks as instrumental to the achievement of their future goals, they value academic tasks more and are engaged more vigorously in them. Perceived instrumentality of tasks to future goals was also found to be positively related to self-regulation strategies, effort and persistence (Miller & Brickman, 2004).

The metacognitive and motivational processes of planning, monitoring, time and environment management, effort, and self-efficacy can be used to devise proximal self-regulation strategies and tactics. Through these processes, students create proximal subgoals to eventually achieve their personally valued goals. For example, students should realize the instrumentality of completing and submitting an assignment in an online course on time to the achievement of their subgoal of passing the course successfully. This in itself is instrumental to achieving their personally-valued future goal of gaining a college degree. In order to complete and submit an assignment on time students will have to use proximal self-regulation and motivation processes.

Failure of proximal self-regulation suggests that students lack the skills of developing appropriate proximal subgoals. This is due to three factors: (1) lack of exposure to the skills within their sociocultural context or (2) ineffective or inappropriate problem solving and planning, and (3) self-doubts about one’s ability to change the outcome (Miller & Brickman, 2004). In this study it was apparent that both Arab and American students realize the importance of self-regulation processes; however,
Americans reported significantly higher use of these processes while working on course requirements in their distance education programs than Arabs.

Comments from American students indicated that they understood the requirements of the distance education system and the skills they needed to be successful distance learners:

“It is definitely a program that requires self motivation. As long as one is motivated to do the work and participate various times during the week, one will be successful”.

“Like the convenience of instant learning - no commuting, no time wasted in a class where discussion may or may not be meaningful. Distance learning has been a more efficient means of pursuing my degree”.

“I personally love the distance learning. It lets you schedule your school time based on individual preferences”.

“Not easy considering that many have full-time careers and family commitments. Very important to manage time carefully and stay on track”.

“I enjoy it. It fits the time of lifestyle I have. Which is on the go all the time”.

“I prefer to get my weeks work done early in the week to have weekends as free as possible”.

“To date, I feel that the distance program has worked well for me”.

“I especially like the freedom and flexibility of on-line courses. I prefer not having to go to a classroom and being constrained to a set time”.

“Distance learning is definitely not for the faint of heart; one simply cannot question their drive to attain higher educational goals”.

“I try to develop a 'space' for myself to learn in, even if that requires re-arranging furniture in hotel rooms and even disconnecting electronic equipment that is a distraction, such as TVs”.
Independent learning is a new concept for Arab students. At the beginning of their programs, AOU provides students with a course titled “CR101– Independent Study Skills”. In this course students are introduced to a wide range of study techniques and strategies considered important to their success in the open university such as the use of different study media, writing reports, using study resource materials and references and preparing for examinations. In addition, students also take another course “TU170– Learning On-Line: Computing with Confidence” to learn about software applications and how to participate in on-line discussions, search the web and author simple web pages (Hashim, 2007). Despite these efforts, some students indicated in their open comments that they still feel they lack independent learning skills. One indicated she left the system because she could not adjust. Others indicated they learned through this experience to work independently.

Arab and American students seem to be at two different points in the continuum of independence. While Arab students are still at the low end of the continuum trying to learn how to adapt to the distance education system, American students seem to be much further in the continuum of independence thinking about tactics to aid them in their independence efforts. These differences clearly reflect the amount and length of exposure to being independent learners and using self-regulatory skills within their sociocultural context as suggested by Miller and Brickman (2004). Bluedorn (2002) explains the relationship between the organization age and future orientation. The older the organization the more its members look into the past and future. The future is socially constructed by the past. Basically, knowledge and possibilities of the future are derived from sociocultural context (Miller & Brickman, 2004).
Cross-Cultural Differences in Self-Regulation between Arabs and Americans

Results on self-regulation were mostly consistent with study expectations. Generally, American students reported higher levels of self-regulation than Arab students with significantly higher levels of planning, monitoring, time and environment management, effort and self-efficacy. However, it was surprising to see that they scored lower than Arabs on the measurement for help.

As a construct, self-regulation was found to be equivalent in the two cultures, when conceptualized without the measure for help. It consisted of two factors: metacognition and motivation. Metacognition was measured through planning, monitoring, and time and environment management. Motivation was measured through effort and self-efficacy. This structure was found to hold across the two groups. The only difference in the self-regulation construct was in help-seeking, which was found to be part of Arab students’ self-regulation and not American students’ self-regulation. From a cross-cultural perspective, we can say that the final structure of self-regulation was found to be of an “etic” nature; in other words the concept has the same meaning in the two cultures (Brislin, 1986). The only “emic”, culture-specific, component of the hypothesized self-regulation construct was help-seeking. The coming section expands on the discussion of group differences in help, metacognition and motivation.

Help

In this study, help-seeking was found not to be part of American students’ construct of self-regulation. Arab students were found to seek significantly more help
than American students. The literature suggests that managing the support of others through help-seeking behaviors is an important attribute of successful self-regulators (Pintrich, et al., 1994). However, seeking academic help is associated with negative connotations (Taplin, et al., 2001). It is perceived as a threat to learner’s desire for autonomy (Ryan, Pintrich & Midgley, 2001). Within distance learning environments, seeking-help should not contradict the concept of autonomy. As Moore (1972) suggests autonomous learners will temporarily surrender their control over their learning process if they establish a need for help. From a cultural perspective, since the American culture is more individualistic than the Arab culture, it was expected that American students are more independent and self-reliant than Arab students. Therefore, they will desire more autonomy than Arab students. Thus, they may seek less help than Arab students.

Another reason for help-avoidance is learners’ perception that seeking-help is a threat to their perceived competence. This is felt more so by “students with low self-esteem or perceptions of cognitive competence”. Therefore, low achievers are less likely to seek help for the fear of being perceived by others as having less ability (Ryan, et. al., 2001, p. 96). As Kitsantas and Chow (2007) confirm, distance education provides electronic, asynchronous means for seeking help, which makes it less threatening compared with traditional education with face-to-face interaction. These researchers found that college students in distance and distributed learning classes felt less threatened to seek-help from formal sources such as the instructor and support services. They also sought help more frequently than students in traditional courses.

Another independent factor influencing help-seeking behavior is student’s social competence. Ryan, et. al. (2001) suggest, “considering help seeking, not just as an
academic self-regulatory strategy, but also as a social interaction with others”. Coming from a collective culture, relationship building is more significant for Arab students than American students. This is not to say that Arab students are more socially competent than American students. However, because of their multi-active communication style they attach more importance to relationships (Lewis, 2003), which requires frequent interaction. Indeed, in this study, Arab students expressed a preference for significantly more interaction with their instructors than American students. Although not significant, they also expressed more preference for interaction with other students compared with American students. For Arab students, seeking help was significantly and positively related to preference for interaction with other students, while for American students, help was significantly and positively correlated with preference for interaction with the instructor. This is similar to the previously reported findings of Kitsantas and Chow (2007). These results suggest differences in the sources students seek for help. The high power distance in the Arab culture between instructor and students makes it difficult for students to seek instructor help. Instructors are not perceived as equals in large power distance cultures (Hofstede, 2001). In fact some Arab students commented on the gap between them and their instructors and the difficulty to communicate with them.

**Metacognition and Self-Regulation**

One of the purposes of this study was to investigate the impact of culture on distance learning processes. More specifically, the study focused on how students regulate their learning processes. It was concluded that this regulation includes both
metacognitive and motivational components, confirming the self-regulation model suggested by O’Neil (1999) and Hong and O’Neil (2001). In their model, the metacognitive component of self-regulation consisted of the processes of planning and monitoring. This study added time and environment management because of its importance to adult distance learners, especially women (Kramarae, 2003). These processes along with similar other processes are referred to by metacognitive researchers as metacognitive strategies, metacognitive skills or executive strategies of procedural knowledge. They reflect continuous regulation and active monitoring, which are required for metacognition. As a second-degree operation/thought that controls a first-degree operation/thought (Hacker, 1998), metacognitive thinking requires planning before hand and evaluation afterwards. In distinguishing between cognitive and metacognitive thinking, Flavell (1979) states “cognitive strategies are invoked to make progress, metacognitive strategies to monitor it” (p. 909, Italic in original). Pintrich (1999) perceive self-regulation as a metacognitive process reflecting strategies students use to regulate their cognition.

Using similar processes to the ones included in this study, Lee and Balyer (2006) suggest using the metacognitive processes of planning, monitoring, evaluating, and revising to design web-based learning with what they refer to as “metacognitive maps” to enhance the use of these processes. Metacognitive maps are visual interface-based tool to provide metacognitive support to learners and minimize disorientation in the online environment. Similarly, through incorporating similar strategies to monitor and evaluate learning in a web-based course, Chang (2005) found that online students became more
responsible for their learning and more intrinsically oriented. They were also more confident in their understanding of course materials.

**Motivation and Self-regulation**

Motivational control emphasizes the idea of raising the intention to learn as opposed to doing something else. Such a decision is associated with careful thinking about expectancies and value outcome (Steiner, 1997). It also depends on one’s given one’s time, context, effort and perceived ability. Two motivational components were explored in this study: regulation of self-efficacy and effort. In both groups, effort was significantly and positively correlated with all self-regulation variables except help. For the American group, self-efficacy was also significantly and positively correlated with all self-regulation variables except help. For the Arab group, it was significantly and positively correlated with all self-regulation variables including help; the more self-efficacious students were the more help they sought. This is consistent with previous research. Help-seeking is less threatening for students with higher self-esteem (Ryan, et. al., 2001). In addition, as explained before for Arab student help-seeking was positively correlated with preference for more interaction with other learners. This may be indicative of collective self-efficacy reflecting a group's shared belief in its conjoint capabilities (Bandura, 1997).

In addition, in this study Arab students reported significantly lower effort and self-efficacy, which is consistent with research findings from non-Western students (Klassen, 2004). From his work with Asian students, Chong (2007) suggest that Asian
students’ fear of failure is not associated with low self-efficacy or low perception of the self; instead along with perception of competency it leads students to use other self-processes to regulate academic effort. These processes would reflect sociocultural differences between groups and need to be further examined through qualitative research within the context of distance education.

Students who use motivational strategies more frequently are more likely to maintain greater effort and persistence for school work (Wolters, 1999). To foster learner motivation, Kauffman (2004) suggests using technology to embed efficacy-building in Web-based environments because of their positive influence on achievement. This will also reduce pressure on on-line teachers. In addition to providing external motivational in online courses, a culture change of students’ perception towards learning is needed. So, instead of overemphasizing the career and vocational prospects for learning, which is becoming more prominent in the educational systems of the Arab Gulf region as a result of the rapid economic changes, lifelong learning and learning to be constructs need to be emphasized. Miller and Brickman (2004) propose that any interventions to make students more mastery-oriented and therefore better self-regulators need to emphasize altruistic instrumental values for learning such as helping others instead of economic benefit and power.

**Gender Differences**

This study found a group by gender interaction on metacognition, but not on motivation. Arab males and American females scored higher on metacognition, which
was a composite of planning, monitoring, and time and environment management, than Arab females and American males. As summarized by Bidjerano (2005) the literature, mostly conducted in the United States, suggests that female students use/report more self-regulation strategies than male students. Bidjerano (2005) found that female students overreported the use of six self-regulation strategies: rehearsal, organization, metacognition, time management skills, elaboration, and effort. Zimmermann and Martinez-Pons (1990) found that girls displayed more planning and goal-setting than boys. Pokay and Blumenfeld (1990) also found that girls over-reported the use of strategies such as metacognitive, general cognitive, geometry specific, and effort management strategies. In addition, gender indirectly predicted students’ grades in geometry through its impact on expectancies levels, use of geometry-specific and effort-management strategies. Girls’ achievement was associated with using geometry-specific and effort-management strategies while boys’ achievement was associated with high expectancies. Accordingly, Pokay and Blumenfeld suggest that “motivation may be more facilitative for boys’ achievement, whereas strategy use may be more facilitative for girls’ achievement” (p.48).

As summarized by Gabriel and Gardner (1999) gender differences primarily exist in social interactions and reflect societal differences between men and women in social status and roles. They reflect stereotypical beliefs associated with each gender. For example Bidjerano (2005) explains how “girls are expected to behave in a certain way in academic setting. [They] are expected to be conscientious, organized, and to skillfully manage their learning environment” (p. 7). When gender stereotypes were controlled for, gender differences disappeared in writing self-efficacy, writing self-concept, value of
writing, self-efficacy for self-regulation, task goal orientation, and writing achievement. These gender stereotypes reflected characteristics stereotypically associated with males and females in American society (Pajaras & Valiante, 2002). As a result of these gender stereotypes rather than gender result in differences between males and females. For example, Harter et. al. (1997) found that girls who adopted a feminine gender orientation suppressed their voice with parents, teachers, male classmates, female classmates, and close friends. They displayed expected social behaviors consistent with societal stereotypes, which could make them more vulnerable in certain public situations. These perceptions of acceptable sex roles affect achievement and motivation of female students’ more than male students (Greene & DeBacker, 2004).

In the United States, Females along with minorities are considered to be more collectivistic than males; a collective approach is viewed as lacking self-reliance and self-regulatory abilities (Harter et al., 1997; Bidjerano, 2005; Jackson, Mackenzie & Hobfoll, 2005). In addition, they are found to be less self-efficacious and more anxious than men in academic settings (Pintrich & De Groot, 1990). However, they are found by many research studies including this one to use metacognitive strategies more often than men (Pokay & Blumenfeld, 1990) which makes better self-regulators. However, in terms of the motivational component of self-regulation, this study found no gender differences. Previous research suggests that motivation may be more facilitative for boys’ achievement (Pokay & Blumenfeld, 1990).

The Arab culture is more male-dominated (Hofstede, 2001). In this study Arab men reported more strategy use than Arab women. So, it is possible to argue that Arab women have less exposure and opportunity to use the strategies of planning, monitoring
and time and environment management. As Mostafa (2005) explains Arab societies are still “reluctant to abandon their traditional viewpoint of women primarily committed to the house and children” (p.21). Although prevalent, these viewpoints are slowly changing with modernity especially in the Arab Gulf area (Ibid, 2005).

**Relationship with Instructors and Other Learners**

In this study, Arab students expressed a preference for significantly more interaction with their instructors than American students. It was interesting to see this since Arab students, who study within an open university system, already have more interaction with their instructors than American students, who study within mostly an online system with limited interaction with instructors. On average AOU provides weekly face-to-face tutorial sessions for one hour for courses with three credit hours. In addition, AOU tutors are required to maintain announced weekly office hours (AOU, 2006)

Students’ qualitative comments provide some insight about the type of interaction students in each group yearned for. Arab students expressed a need for more supportive interaction with instructors. Students wanted instructors’ help in learning both about content and technology. However, they expressed a gap between them and their instructors and difficulty to communicate with them. Some students felt a few instructors were drawing the line in their relationship with them. Students referred to them as “arrogant” and “don’t care about students’ struggle with courses”. One of the most frequent themes in students’ comments was the lack of qualified teachers at the Open University. Lack of qualification was described in terms of lack of content knowledge
about courses and lack of competency in using the distance education system. Students suggested that some instructors taught using traditional teaching methods, and they were not flexible enough to accommodate the new system let alone help students with it. These characteristics of the relationship between students and instructors are consistent with Hofstede’s (2001) description of high-power distance cultures, in which there is high teacher-student inequality and teachers are perceived as educational gurus.

Some American students said that they missed the personal face-to-face communication with their instructors. A number of them suggested alternative ways to of communication such as taped lectures instead of written lessons and weekly online live chats between instructors and students. The most frequent request for interaction with instructor was students’ need for instructors’ feedback on course assignments:

“The interaction that I like with my instructor’s the most, are their comments on submitted assignments. These help me to focus on the main points that are being presented.”

“I like to receive work back where the instructor has used mark-up, or something, to comment on what he or she did or did not like. It is important to me to know the instructor carefully read all my work. If there are no, minimal, or generic comments, my trust and respect for the instructor goes out the window. The communication I get back from each assignment is critically important - I'm alone in my office doing all this work without ever going into a classroom and meeting the instructor and other students. I want communication, instruction and attention.”

Students in both groups realize that instructor’s availability in distance education is more limited than in traditional education. Therefore, seeking help from the instructor was not found, through confirmatory factor analysis, to be part of either group’s concept of help seeking. However, for American students seeking-help was significantly and positively correlated with preference for interaction with the instructor. For Arab
students, seeking help was significantly and positively related to preference for interaction with other students. As previously explained this suggests differences in the sources students seek for help. While American students preferred seeking help from formal sources (i.e. instructors), Arab students looked for less formal sources (i.e. other learners).

Although it was not significant, Arab students expressed more preference for interaction with other students compared with American students. As explained previously, although American students were significantly more group interdependent than Arab students, the researcher believes this was a reflection of more commitment to group work. From the open comments of students, it was clear that Arab students wanted and valued more interaction with other learners. Coming from an individualistic culture, American students saw group work as somehow constraining their efforts to be independent learners, especially when the group is not working well together.

Structure

As explained in previous research, structure is a multidimensional construct (Chen & Willits, 1998). In this study, only four aspects of structure related to course design were found to be measurement invariance. These were (1) course objectives, (2) choice of readings, (3) requirements, and (4) deadlines of assignments. Other aspects of structure related to course delivery such as course pace, grading, attendance, teaching methods and learning activities were not included in the final analysis. It is possible to claim that these aspects reflected differences in the contexts of participants in the two
institutions. While the Arab Open University (AOU) followed the open university model, Penn State World Campus (WC) followed a dual mode model serving both on-campus and distance students.

Despite the lack of similarities in the structure of distance education of the two institutions, this study found significant differences between Arab and American learners’ preference in the four aspects of structure examined: course objectives, choice of readings, requirements, and deadlines of assignments. Arab students preferred significantly more rigid structure on these aspects than American students. This is consistent with the cross-cultural literature on uncertainty avoidance. According to Hofstede (2002), in cultures with high uncertainty, the teaching process is more structured with “precise objectives, detailed assignments and strict timetables” (p.162). In addition to this cultural factor, the open university model followed by AOU lends itself to more structure because course content and structure are pre-packaged with little flexibility for tutors to change. WC instructors have more flexibility in their courses.

An interesting negative correlation was found between self-efficacy and structure for the American group. Students with preference towards more structure were more likely to have less self-efficacy. This is consistent with Moore’s theory of transactional distance, if we perceive self-efficacy as one indicator of learner autonomy. The more autonomous learners possess greater capacity to structure their own learning and prefer less structure in their programs (Moore & Kearsley, 2005). For the Arab group, preference towards structure was positively and significantly correlated with planning and monitoring for the Arab group. Students who prefer to plan and constantly monitor their leaning wanted more structure to aid them in this process.
Research Limitations

The study established successful in establishing cultural equivalence of the measures used. Linguistic equivalence was established through back-translation and construct equivalence was established through multiple group confirmatory factor analysis. However, the study was confined by a number of limitations including sample size and characteristics and measurement issues. The small sample size of the US respondents limited this research to less than 100 cases (95 cases) for each group, which is considered small for running structural equation modeling, especially given the complexity of the model being evaluated (Kline, 2004). In addition, the final samples used in the study were not completely equivalent. There were differences between students’ educational levels. While more than half of the American sample was from graduate students, only 6% was from graduate students in the Arab sample. Also, academic specializations were different. While most of the Arab sample came from students in information technology and business, most of the American sample came from business and education. In addition, it is possible that there were additional differences between the two samples in terms of age and ethnicity which this study did not include. Moreover, the Arab sample came from two different locations/countries for the Arab Open University. The two sub-samples were treated as one homogenous group, which may not be the case. Future comparative studies need to use more comparable samples.

This research was not able to establish measurement reliability for Hofstede’s concepts of power distance and uncertainty avoidance. Hofstede measures these variables
at the country level. This study tried to measure them at the individual level hoping that they will reflect country-level differences. However, the researcher was not able to establish the reliability of these measures and deleted them from further analysis.

**Future Research**

It is recommended that future research re-evaluate the model of cultural effect on learner’s self-regulation presented in this study with a large sample size. This study was only able to establish one link in the model; the link from future orientation to metacognition and motivation. Other cultural measures were either found to be insignificant (group interdependence) or unreliable (power distance and uncertainty avoidance) and were not used in the final model. Furthermore, this model needs to be validated in more cultures. Future research can explore other ways to measure cultural variables such as power distance and uncertainty avoidance, and then examine their effect on learner self-regulation. Further development of the model is another consideration. For example, the model can be re-conceptualized to include a connection between future orientation, proximal self-regulation processes, and personally valued goals. Based on Miller and Brickman (2004) this connection assumes that self-regulation processes mediate the effect of future orientation on personally valued goals.

Cross-cultural differences found in this study between Arab and American students related to gender and help-seeking need to be further validated and reexamined. There is limited research regarding how the changing atmosphere in the Arab Gulf region is changing views of women’s roles (Mostafa, 2005) and how is this reflected in the
educational environment, especially using distance technology, which presumably would reduce the gender divide because it maintains the valued sex segregation in Muslim societies.

In addition to quantitative methods suggesting the existence of differences between international groups, qualitative research methodology will provide better understanding of the nature and sources of these differences. Furthermore, future research can examine other self-regulation dimensions and self-motivational processes used to regulate one’s academic effort and self-efficacy in distance courses. I echo Kauffman’s (2004) call for researchers to continue exploring strategies that could enhance students SRL in Web-based environments.

This study used self-reported data assuming that self-regulation is an attitude that is generalizable across situations. Self-reported data reflect only learners’ memories and interpretation of their actions, not necessarily their actual behaviors (Winne & Perry, 2000). In this case, self-regulation is perceived as an event that is specific to a learning situation (Winne & Perry, 2000). To collect data, Winne and Perry suggest using measures such as think aloud, error detection and trace methodologies. In the think-aloud method, students report their thoughts and processes while performing a task; then data collected is used to map self-regulation processes. The error detection method uses metacognitive monitoring and evaluation by deliberately introducing errors into the task and observing how students detect them and what they do when they detect them. The trace method suggests observing what students produce as a result of being engaged in a task. In traditional education, for example, highlighting a text or writing on the margin is considered indicators of cognition. Using this method in online courses seems most
appropriate since the technology provides for ways to register and trace student online activity such as frequency and length of logging into an online course, number of messages read, number of online postings, etc.

**Conclusion**

Through the use of structural equation modeling this research addressed the issue of cross-cultural equivalence of research concepts. By doing so the study addressed one of the major issues in cross-cultural research: the error of commission, which refers to “insensitivity to the ethnocultural groups being studied by conceptualizing and conducting … research without regard to the experience of the groups being studied”. This is normally the result of using “instruments and assessment methods that are not equivalent for the groups under study” (Marsella, et al., 2000, p. 51). With the pre-conceptualized set of self-regulation processes and models located through research within a Western context, there is still a lot more to the specificity of the construct of self-regulation within each culture. This would have to be established through more qualitative research. This study provides evidence for some parts of a culturally-equivalent model of learner self-regulation; all behaviors found not to be equivalent across two cultures were eliminated to avoid cultural bias of the measures.

This study does not by any means reflect “the spectrum of existing human variations” (Marsella, et al., 2000) within learner self-regulation in either culture. Lack of culture fit often occurs as a result of the uncritical adoption of ideas and technology (Mendonca & Kanungo, 1994); from this study it is clear that the adopted model of
distance education by the Arab Open University from the United Kingdom Open University is still associated with student struggle to be more self-regulating and independent in their study. AOU is putting forward some strategies to help their students in this process; however, there is a need to re-examine and understand not only individual factors in students’ endeavors to self-regulate, but also culturally associated behaviors that could facilitate or impede this process. More research is therefore needed to identify other parts or variations of the construct of self-regulation in distance education within and across cultures.

Self-regulation in distance education should be viewed from both a metacognitive as well as a motivational perspective confirming Garrison (1997) suggestion of focusing not only on the external management of the learning process but also on cognitive responsibility and motivational dimensions. Learners in this study were found to use metacognitive strategies to plan for their learning, monitor their progress, and manage their time and environment. They also try to maintain their motivation effort and self-efficacy. A cultural influence on learner self-regulation was manifested in future time orientation. Both learner metacognitive and motivational factors of self-regulation were explained by future orientation. One implication of this finding is recognizing the role of future-orientation on learner self-regulation in distance education. Distance education systems can benefit from orienting students to distance education by fostering their understanding of the impact of future orientation on the learning process. One way to do so is through proximal future orientation and proximal self-regulation. Within the same context, White (1999) suggests providing students with profiles of different distance
learners as well as assisting them in developing individual awareness about the self, strategy, goals and tasks related to their learning process.
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Appendix A

Full Survey-English Version

Thank you for taking the time to participate in this survey of distance learner self-regulation and cultural orientation. The purpose of this comparative research study is to explore the relationship between learner self-regulation, cultural orientation and learners’ preference towards course interaction and flexibility in distance education environments. Self-regulation basically refers to your personal thoughts, feelings and actions when pursuing your goals. You are asked to complete a web-based survey, which will only take about 10 minutes to complete. Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. You must be 18 years of age or older to take part in this research study. By participating in the study, you will be enrolled in a drawing for one of ten $25 Best Buy gift certificates. Once you have submitted a completed survey your participation is complete. You will be asked for your access PSU ID, which will only be used to confirm that you are a student at Penn State World Campus and to avoid any double entries in the survey. It will be immediately deleted from responses after data collection. There would be no way to identify who the responses belong to. Any subsequent records of the study will not have any personal identifiers. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared because they would have been deleted at a very early stage of research before any analysis is conducted. Your confidentiality will be kept to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the Internet by any third parties. The study is not part of the courses you are taking via World Campus and your participation in the study will in no way affect your grade. Please contact Aisha Al-Harthi at (814) 237-7538 or asa144@psu.edu with questions or concerns about this study.

Completion and submission of the survey implies your consent to participate in this research. Please print off this form to keep for your records. Please indicate if you agree or disagree to participate in this study:

1. Agree
2. Disagree
Choosing Disagree will end up the survey. If you accidentally clicked on Disagree, please go back to the original link and restart the survey. If you want to end the survey click End Survey. Thank you for your interest in the study:

1. End Survey
Please enter your PSU access ID (xyz123) in the box.

[Box]

What is your gender?
1. Male
2. Female

With which of the following groups do you most identify with?
1. African-American/Black
2. Asian-American or Pacific Islander
3. Hispanic/Latino
4. Native American
5. White
6. Other ________________________________

What is your program of study?
1. Master of Business Administration (iMBA)
2. Master of Education in Adult Education
3. Bachelor of Science in Nursing (RN to B.S.)
4. Bachelor of Arts in Letters, Arts, and Sciences
5. Associate in Science in Business Administration
6. Associate in Information Sciences and Technology
7. Other ________________________________

How many years have you been in this program?

[Box]

Approximately, how many online courses have you taken in this program so far?

[Box]

What is your current GPA (Grade Point Average)?

[Box]
Please think of an ideal class-disregarding your present classes. How important would it be for you to:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is important to me to have a good working relationship with my teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I see the teacher as somebody whose authority should not be questioned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I find it difficult to protest a grade my teacher gave me, even when I feel I deserve better</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. It is not a problem for me to speak up during a class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. In my experience, students are not afraid to express disagreement with the teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I know what to do in class without consulting the teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I will only ask my teacher to change my grade in private or through email</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please think of an ideal class-disregarding your present classes. How important would it be for you to:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is important for me to see a detailed course syllabus with course description, goals, content and expectations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. It is important for me to get precise answers from my teacher to most questions I have about my learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I believe university rules should not be broken - not even when I think it is in the university’s best interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I feel uncomfortable when my teacher uses new methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I always ask about future assignments in my courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
These questions measure a variety of feelings and behaviors in various situations. Please choose the phrase that best matches your degree of agreement or disagreement with each statement:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is important for me to maintain harmony within my group</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>2. I will sacrifice my self-interest for the benefit of the group I am in</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>3. It is important to me to respect decisions made by the group</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>4. I will stay in a group if they need me, even when I’m not happy with the group</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>5. Even when I strongly disagree with group members, I avoid an argument</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>6. I often have the feeling that my relationships with others are more important than my own accomplishments</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
</tbody>
</table>

How characteristic or true is this of you?

<table>
<thead>
<tr>
<th></th>
<th>Very Uncharacteristic</th>
<th>Uncharacteristic</th>
<th>Neutral</th>
<th>Somewhat characteristic</th>
<th>Very characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When I want to achieve something, I set goals and consider specific means for reaching those goals</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>2. Meeting tomorrow’s deadlines and doing other necessary work comes before tonight’s play</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>3. I am able to resist temptations when I know that there is work to be done</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>4. It upsets me to be late for appointments</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>5. I complete projects on time by making I believe that a person’s day should be planned ahead each morning</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>6. I make lists of things to do</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
<td>❑</td>
</tr>
</tbody>
</table>
While working on my course requirements in this program:

<table>
<thead>
<tr>
<th></th>
<th>Almost Never</th>
<th>Often</th>
<th>Sometimes</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I determine how to solve a course assignment before I begin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I try to understand the goal of a course assignment before I attempt to answer</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. I carefully plan my course of action in my study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I clearly plan my course of action in my study</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>5. I ask myself questions about what a course assignment requires me to do before I do it</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6. I figure out my goals and what I need to do to accomplish them in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

While working on my course requirements in this program:

<table>
<thead>
<tr>
<th></th>
<th>Almost Never</th>
<th>Often</th>
<th>Sometimes</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I check my work while I’m doing it</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I keep track of my progress</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. I ask myself questions to stay on track as I work on a task</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I almost always know how much of a task I have left to complete</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I correct my errors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

While working on my course requirements for this educational program:

<table>
<thead>
<tr>
<th></th>
<th>Almost Never</th>
<th>Often</th>
<th>Sometimes</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I work as hard as possible on all course assignments</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. I concentrate fully when doing a course assignment</td>
<td></td>
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<tr>
<td>3. I put forth my best effort on my course assignment</td>
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<tr>
<td>4. I don’t give up even if the course assignment is hard</td>
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</tr>
<tr>
<td>5. I work hard to do well even if I don’t like a course assignment</td>
<td></td>
<td></td>
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<tr>
<td>6. If I persist on a course assignment, I’ll eventually succeed</td>
<td></td>
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</tr>
<tr>
<td>7. The lack of ability for the course assignments can be compensated for by working hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
While working on my course requirements for this educational program:

<table>
<thead>
<tr>
<th></th>
<th>Almost Never</th>
<th>Often</th>
<th>Sometimes</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I usually study in a place where I can concentrate on my course work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I make good use of my study time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I find it hard to stick to a study schedule</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4. I have a regular place set aside for studying</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5. I make sure that I keep up with the weekly readings and assignments</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6. I log into the online space for my courses regularly</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7. I often find that I don’t spend very much time on my courses because of other activities</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8. I rarely find time to review my notes or readings before an exam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

While working on my course requirements for this educational program:

<table>
<thead>
<tr>
<th></th>
<th>Almost Never</th>
<th>Often</th>
<th>Sometimes</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Even if I have trouble learning the material in my classes, I try to do the work on my own, without help from anyone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I ask the instructor to clarify concepts I don’t understand well</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. When I can’t understand the material in my classes, I ask another student in this class for help.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I try to identify students in my classes whom I can ask for help if necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I use online forums to ask for help from other students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

While working on my course requirements for this educational program:

<table>
<thead>
<tr>
<th></th>
<th>Almost Never</th>
<th>Often</th>
<th>Sometimes</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I believe I will receive excellent grades this semester</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I’m certain I can understand the most difficult material in my courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I’m confident I can understand the basic concepts taught in my courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I’m confident I can do an excellent job on my assignments and exams</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I’m confident I can master the skills being taught in my program</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6. Considering the difficulty of this program, the teachers, and my skills, I think I will do well in this</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please rate the degree of flexibility you prefer in your future courses in the following areas:

<table>
<thead>
<tr>
<th>Area</th>
<th>Extremely Rigid</th>
<th>Extremely Flexible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching methods</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>2. Learning activities</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>3. Course Pace</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>4. Attendance</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>5. Objectives</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>6. Choice of readings</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>7. Requirements</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>8. Deadline of assignment</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>9. Grading</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>

On a scale from 0-100, what is the number of times you prefer to communicate with your instructor (0= no communication whatsoever; 100=the ultimate amount of communication).

On a scale from 0-100, what is the number of times you prefer to communicate with your classmates(0= no communication whatsoever; 100=the ultimate amount of communication).

Please feel free to express additional comments or opinions related to your study habits at a distance.

Please contact asa144@psu.edu if you have any questions regarding this survey.
Hello:

My name is Aisha Al-Harthi at The Pennsylvania State University. I am conducting research on differences between distance learners in their self-regulation in two cultures under my advisor Dr. Michael G. Moore.

The purpose of this comparative research study is to explore the relationships between learner self-regulation, cultural orientation and learner preference towards course interaction and flexibility in distance education. Self-regulation basically refers to the extent to which people control their personal thoughts, feelings and actions when pursuing academic goals. Your participating in this study will help distance educators, instructional designers and you to create better learning environments by increasing awareness of the diversity of learners, their backgrounds and preferences for course design. So, better support can be provided to help learners regulate their studies at a distance.

In order to participate (and maybe win some prizes!) simply click on the link contained in this email. The link will take you to a web-based survey that should take about 20 minutes to complete. By participating in the study, you will be enrolled in a drawing for one of 10 prizes ($25 Best Buy Gift Certificates. Once you have submitted a completed survey your participation is complete.

http://SurveyLinkWouldAppearRightHere.com

You must be 18 years of age or older to take part in this research study.

Sincerely,

Aisha S. Al-Harthi (Ph.D Candidate)  Dr. Michael G. Moore (advisor)
950 W. Aaron Dr., Apt. C-2  314 Keller Building,
State College, PA 16803  University Park, PA 16802
(814) 237-7538; asa144@psu.edu  (814) 863-3501; mgmoore@psu.edu
Appendix C

Implied Informed Consent Form

The Pennsylvania State University

Title of Project: Distance Learner Self-Regulation in Distance Education: A Cross Cultural Study

Principal Investigator: Aisha S. Al-Harthi, Graduate Student
950 W. Aaron Dr., Apt. C-2
State College, PA 16803
(814) 237-7538; asa144@psu.edu

Advisor: Dr. Michael G. Moore (advisor)
314 Keller Building,
University Park, PA 16802
(814) 863-3501; mgmoore@psu.edu

1. Purpose of the Study: The purpose of this comparative research study is to explore the relationships between learner self-regulation, cultural orientation and learners’ preference towards course interaction and flexibility in distance education environments. Self-regulation basically refers to the extent to which people control their personal thoughts, feelings and actions when pursuing academic goals.

2. Procedures to be followed: By participating in the study, you will be enrolled in a drawing for one of 10 prizes ($25 Best Buy Gift Certificates. You are eligible for the drawing only if you complete the full survey.

3. Duration: It will take about 20 minutes to complete the survey.

4. Statement of Confidentiality: Your student ID number is only used to confirm your identity as Penn State student and to avoid any double entries in the survey. It will be used to conduct the drawing of the survey and notify winners. It will be immediately deleted from responses after data collection and drawing is complete. Any subsequent records of the study will not have any personal identifiers. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared because they would have been deleted at a very early stage of research before any analysis is conducted. In other words, there would be no way to identify who the responses belong to.
5. **Right to Ask Questions:** Please contact Aisha Al-Harthi at (814) 237-7538 with questions or concerns about this study.

6. **Payment for participation:** You can choose to enroll in a drawing for one of 10 prizes ($20 Best Buy Gift Certificates).

7. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

You must be 18 years of age or older to take part in this research study.
Appendix D

First Reminder Email

Hello:

Two weeks ago you received an invitation to participate in a survey. The survey is still open and I invite you to participate one last time, if you already did not.

The purpose of this comparative research study is to explore the relationships between learner self-regulation, cultural orientation and learner preference towards course interaction and flexibility in distance education. Self-regulation basically refers to the extent to which people control their personal thoughts, feelings and actions when pursuing academic goals.

In order to participate (and maybe win some prizes!) simply click on the link contained in this email. The link will take you to a web-based survey that should take about 20 minutes to complete. By participating in the study, you will be enrolled in a drawing for one of 10 prizes ($ 25 Best Buy Gift Certificates. Once you have submitted a completed survey your participation is complete.

http://SurveyLinkWouldAppearRightHere.com

You must be 18 years of age or older to take part in this research study.

Sincerely,

Aisha S. Al-Harthi (Ph.D Candidate)                  Dr. Michael G. Moore (advisor)
950 W. Aaron Dr., Apt. C-2                    314 Keller Building,
State College, PA 16803                          University Park, PA 16802
(814) 237-7538; asa144@psu.edu                      mgmoore@psu.edu
Hello:

Two weeks ago you received an invitation to participate in a survey. The survey is still open and I invite you to participate one last time, if you already did not.

The purpose of this comparative research study is to explore the relationships between learner self-regulation, cultural orientation and learner preference towards course interaction and flexibility in distance education. Self-regulation basically refers to the extent to which people control their personal thoughts, feelings and actions when pursuing academic goals.

In order to participate (and maybe win some prizes!) simply click on the link contained in this email. The link will take you to a web-based survey that should take about 20 minutes to complete. By participating in the study, you will be enrolled in a drawing for one of 10 prizes ($25 Best Buy Gift Certificates. Once you have submitted a completed survey your participation is complete.

http://SurveyLinkWouldAppearRightHere.com

You must be 18 years of age or older to take part in this research study.

Sincerely,

Aisha S. Al-Harthi (Ph.D Candidate)  Dr. Michael G. Moore (advisor)
950 W. Aaron Dr., Apt. C-2  314 Keller Building,
State College, PA 16803  University Park, PA 16802
(814) 237-7538; asa144@psu.edu  mgmoore@psu.edu
Appendix F

Full Survey- Arabic Version

شكرًا على رغبتك بالمشاركة في هذا الاستبيان حول: الاتجاهات التعليمية والاختلافات الثقافية في بيئة التعليم. بعد تهدف هذه الدراسة المقارنة للكشف عن الاختلافات بين: الاتجاهات التعليمية والاختلافات الثقافية بين المتعلمين، وتوضيح المشكلات والتفاعل الجماعي. المدونة في بيئة التعليم عن بعد. الاتجاهات التعليمية تأتي ببساطة مدى استطاعة الفرد على التحكم في أفكاره ومشاعره وتصوراته في أتى منะج استخدام التعليم الإلكتروني يتطلب اكتمال حوالي 10 دقائق. قرار مشاركتك في هذا البحث اختياري. إذا كنت ترغب في المشاركة، فإليك الاجابة على أي أسئلة لا تتردد الإجابة عليها. إذ أن تكون سناً أو أكبر للمشاركة في هذا البحث. يطلب منك إدخال رقمك الجامعي. رقمك الجامعي يتم كشف فقط لإثبات هويتك و手続き طلب المطالعون والبحث عن الاستبان أكثر من مرة. بعد أن تنتهي مرحلة جمع البيانات سيتم مباشرة رفع رقمك الجامعي من كل بيانات الدولة. إن رفعك الجامعي في أي ملف من ملفات الدراسة لذلك لم يساهم في رفع بيانات شخصية على أي معلومات شخصية في أي بحث أو محاضرة تنتج عن الدراسة. لا يوجد أي معنى يتم إعطاء أن سيتم المحافظة على خصوصيتك بالدرجة التي ستمح بها التقنية المستخدمة حيث لا توجد ضمانات دعم تجسن طرف ثالث على البيانات المرسلة عن طريق الإنترنت. الرجاء الاتصال بنا إذا لم تجب أي تساؤلات متعلقة بالدراسة.

الحاري (asa144@psu.edu)

إكمال الاستبان و تسليمه بدل على مواقعك على المشاركة في هذا البحث. الرجاء طباعة هذا الاستمارة والاحتفاظ بها كمرجع لك.

الإشارة إلى مدى موافتك على المشاركة في البحث:

1. أوافق
2. لا أوافق
شكرا على اهتمامك بالدراسة. عدم موافقتك على شروط المشاركة ستنهي الاستبيان. إذا ضغطت بالخطأ على زر عدم الموافقة الرجاء الرجوع إلى وصلة الاستبيان والمحاولة مرة أخرى.

1. نهاية الاستبيان
الرجاء إدخال رقمك الجامعي في الفراغ

ما هو جنسك؟
1. ذكر
2. أنثى
3. آخر

في أي فرع من الجامعة العربية المفتوحة تدرس؟
1. فرع الكويت
2. فرع البحرين
3. حدده، فرع آخر

ما هو برنامجك الدراسي الحالي؟
1. بكالوريوس اللغة الإنجليزية
2. بكالوريوس تقنيات المعلومات والجهاز
3. بكالوريوس إدارة الأعمال: الاقتصاد - النظام الإداري
4. ماجستير إدارة الأعمال
5. حدده، برنامج آخر

ما عدد السنوات التي قضيتها في برنامج دراستك الحالي؟

تقريباً كم عدد المقررات الدراسية الإلكترونية التي درستها حتى الآن؟

ما هو معدلك الدراسي التراكمي الحالي؟
تحتيل صف دراسي مثالي متزاهلا صروف دراستك الحالية ما مدى موافقتك أو عدم موافقتك على الجمل التالية

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<thead>
<tr>
<th>الأمر</th>
<th>لا أوافق تمامًا</th>
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<th>محيد</th>
<th>أوافق</th>
<th>أوافق تمامًا</th>
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</thead>
<tbody>
<tr>
<td>1. يمكني أن تكون علاقتي جيدة مع مدرسي</td>
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<td>2. ارى أنه لا ينبغي التشكيك في سلطة المدرس</td>
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<td>3. ليس من السهل علي الاعتراس على الدرجات التي gắngيني إليها المدرس حتى لو شعرت باني استحق أفضل منها</td>
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<td>4. من السهل علي المشاركة في الصف</td>
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<td>5. من خلال خبرتي الشخصية لا أعتقد أن زملائي الطالبة يكافرون التعبير عن اعتراضهم بالمدرس</td>
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<td>6. أعط ما يجب علي فعله في النقطة الصف من دون الحاجة لسؤال المدرس</td>
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<td>7. أستطيع سؤال معلمي بشأن تغيير درجتي فقط إذا قالت عليه أن يكون أو من خلال البريد الإلكتروني</td>
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تحتيل صف دراسي مثالي متزاهلا صروف دراستك الحالية ما مدى موافقتك أو عدم موافقتك على الجمل التالية

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<tr>
<td>1. يمكني الإطلاق على خطه مفصلة للمقرر توضيح أهداف ومحتوى وتوقعاته</td>
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<td>2. يمكني أن بطني المدرس إجابات دقيقة لمعظم الأسئلة التي أسألها إليها عن المقرر</td>
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<td>3. اعتقد أنه لا يجب محاكاة قوانين الجامعة في جميع الأحوال حتى في حالة عدم افتراضي بأنها في مصلحة الجامعة</td>
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<td>4. أشعر بعدم الراحة عندما يستخدم المدرس طرق تدريس جديدة لم تستخدمها من قبل</td>
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<td>5. أسأل المدرس دائما عن الواجبات التي سيكلفنا بها فيما بعد</td>
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ما مدى أهمية الأشياء بالنسبة لك؟

<table>
<thead>
<tr>
<th>رقم</th>
<th>أهميتك الخاصة على الأهمية</th>
<th>غير مهم</th>
<th>معتدل الأهمية</th>
<th>مهم جدا</th>
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<tbody>
<tr>
<td>1</td>
<td>مهم لملاحظته على الأسماك مع مجموعتي</td>
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<tr>
<td>2</td>
<td>ساهمي مصالحنا ذاتية من أجل مصلحة المجموعة التي أتشري بها</td>
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<td>3</td>
<td>مهم لملاحظة القرارات التي تنخر المجموعة</td>
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<td>4</td>
<td>سامعي مع المجموعة إذا احتداول كنت أو لم أكن سعيداً بالمجموعة</td>
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<td>ساهمي ملاحظة أعمال المجموعة دائما حتى لو أعلنت معي بشدة</td>
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<td>6</td>
<td>غالبا ما أسأ في الملاحظة على علاقتي الشخصية أهن من تحقيق مهاراتي</td>
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إلى أي حد يصدقك الأشياء؟

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<th>يصدقني كلما</th>
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## حينما أقوم بأداء متطلبات المقرر

<table>
<thead>
<tr>
<th>المتطلبات</th>
<th>دائمًا</th>
<th>غالباً</th>
<th>أحيانًا</th>
<th>أبدأ</th>
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<tbody>
<tr>
<td>1. أجد طريقة لإيجاد المهمة الدراسية قبل أن أبدأ بها</td>
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<td>2. أحاول أن أفهم الهدف من المهمة الدراسية قبل أن أبدأ في الإجابة عليها</td>
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<td>3. أخطط منهج عملي للدراسة بعناية</td>
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<td>4. أخطط منهج عملي للدراسة بوضوح</td>
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<td>5. أطرح على نفسي أسئلة فيما تتعلق بالمهمة الدراسية من فصل القيام بأعماله</td>
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<td>6. أجد أهداف واطرح عملًا لتحقيقها</td>
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## حينما أقوم بأداء متطلبات المقرر

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<th>أحيانًا</th>
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<tr>
<td>1. أراجع عملي أثناء كتابته</td>
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<td>2. أسجل تنفيزي</td>
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<td>3. أطرح على نفسي أسئلة تساعدني على مواصلة القيام بإي مهمة</td>
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<td>4. أعرف دائمًا مقدار ما ينبغي من العمل لإنجازه</td>
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<td>5. أصحح أخطائي</td>
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## حينما أقوم بأداء متطلبات المقرر

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<th>غالباً</th>
<th>أحيانًا</th>
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<tbody>
<tr>
<td>1. أعمل جاها لإنجاز جميع المهام الدراسية</td>
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<td>2. أركز كلًا على إنجاز مهامي الدراسية</td>
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<td>3. أبدل قصارى جهدي في إنجاز مهامي الدراسية</td>
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<td>4. لا تسلم حتى ولو كانت المهمة الدراسية صعبة</td>
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<td>5. أعمل بجهد لإنجاز المهمة الدراسية وإن لم يتحبني</td>
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<td>6. إذا ثبت على مهنة دراسية فسأنجح في إنجازها في النهاية</td>
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<td>7. فذن القدرة على إنجاز مهمة دراسية يمكن تعويضه بالعمل بجد</td>
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</table>
١. استذكر دروسي عادة في مكان استطيع فيه التركيز على مترتبات مواد الدراسة

٢. استمتع وقت دراستي جيداً

٣. أجد صعوبة في الالتزام بجدول دراسي

٤. أخص مكاناً معاداً للدراسة

٥. أتأكد من توافصي المستمر مع التدريس والواجبات الأسبوعية

٦. أدخل بانتهاء إلى الموقع الإلكتروني لمواي الدراسة

٧. في معظم الأحيان لا أقضي وقتاً كافياً في مادة دروسي

٨. نادرًا ما أجد وقتاً لاستنكار مذكرة المواد أو الفراءات المفروضة قبل الامتحان

---

١. حتى عندما أواجه صعوبة في تعلم المنهج الدراسى أحاول الاعتداد على نفسى دون طلب أي مساعدة من أحد

٢. أمشى المدرس أن يوضح المفاهيم التي لا أفهمها جيداً

٣. عندما لا أفهم المنهج في مواد الدراسة أطلب مساعدة طالب آخر في الصف

٤. أحاول تحديد زملائي في الصف الذين يمكنني طلب مساعدتهم إذا تطلب الأمر

٥. استخدم التكنولوجيا المتقدمة في مواد الدراسة (مثل المنتديات الإلكترونية والبريد الإلكتروني) لطلب المساعدة من الطلاب الآخرين

---

١. اؤمن بأنني سأصلح على درجات عالية هذا الفصل

٢. اتقن بقدرتي على استيعاب أكثر المواد صعوبة ضمن موادي الدراسة

٣. اتقن بقدرتي على استيعاب المفاهيم الأساسية في موادي الدراسة

٤. اتقن بقدرتي على إدراك واستيعاب المفاهيم الأساسي في موادي الدراسة

٥. اتقن بقدرتي على إدراك واستيعاب المفاهيم الأساسي في موادي الدراسة

٦. مع الأخذ في الاعتبار صعوبة البرنامج وتدريبات البرنامج ومهارات شخصية، أتوقع النجاح في هذا البرنامج
الرجاء تحديد درجة المرونة التي ترغب بها في مقرراتك الدراسية فيما يتعلق بالنافذة التالية

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<tr>
<th>المرونة</th>
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<td>3. مدى سرعة سير المقرر</td>
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كم عدد المرات التي ترغب فيها بالتواصل مع مدرسيك؟ حدد ذلك باستخدام مقياس من 0-100 حيث ترمز 0 إلى الرغبة في أقل درجة من درجات الاتصال بمدرسيك؟

كم عدد المرات التي ترغب فيها بالتواصل مع زملائك؟ حدد ذلك باستخدام مقياس من 0-100 حيث ترمز 0 إلى الرغبة في أقل درجة من درجات الاتصال بزملائك؟

الرجاء التعبير عن أي تعليقات إضافية تتعلق بدراسةك وعاداتك الدراسية في نظام التعليم عن بعد في الجامعة العربية المفتوحة.
VITA

Aisha Salim Ali Al-Harthi

Academic Background

Doctor of Philosophy, Adult Education - Minor in Educational Psychology, The Pennsylvania State University, expected August 2007
Master of Science, Continuing and Vocational Education, University of Wisconsin-Madison, May 2001
Bachelor of education, Teaching English as a Second Language (TEFL), Sultan Qaboos University-Oman, May 1998

Professional Work Experience

Teaching assistant, College of Education-Sultan Qaboos University, August, 1998-1999
Lecturer- College of Education-Sultan Qaboos University, August, 2001-2003

Research Interests

Distance education (mainly web-based distance education), cultural issues in online learning, learner self-regulation, continuing and vocational education.

Selected Conferences

− Presented a paper at the International Conference on Secondary Education Reform titled "Secondary Education for a Better Future: Trends, Challenges, and Priorities" from the 22nd to the 24th of December, 2002. The conference was organized by the Ministry of Education in Oman and the UNESCO. My paper was titled "Secondary Vocational Education: Success Factors".
− Presented a paper Globalization of Distance Education titled “Globalization of Distance Education: Implications for Access, Social Stratification, Interconnectivity, and Cultural Imperialism” at the First International Conference on Globalization and Education in Washington State University, March 3-5, 2005.
− Presented a paper at the Comparative and International Education Society (CIES) 50th Anniversary Celebration Conference, March 14-18, 2006. Presentation title "Distance Learner Self-Regulation: A Model of Cultural Fit”.

Publications