THE EFFECT OF CULTURE ON ONLINE LEARNING

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Abstract. The author is conducting survey research to identify possible effects of culture on online learning success. The research will consider the cultural dimension of uncertainty avoidance identified by Hofstede (2001). The research participants will be students at Canadian post-secondary institutions. The survey will ask learners about their perceptions of the online learning tools they had used, their own impressions of their learning success as influenced by the online learning tools, and information about their cultural values. This paper will outline the research underpinnings, approach, and expected results.

1. Problem Statement

Online learning environments have grown in popularity and application in educational settings. Usage of these tools continues to grow, placing continued demand on instructional designers to develop appropriate applications of these information and communication technologies for the benefit of learners. The devices and their software did not necessarily arise with educational purposes in mind but they find their way into educational settings, nonetheless. In order to best support learner success, online tools must be subject to pedagogical consideration and effective instructional design.

Designers of resources such as online learning environments are informed by the human cultures in which they function (Callahan 2005a; Callahan 2005b; Dormann & Chisalita 2002; van Heerden & van Greunen 2006; Hargittai & Shafer 2006). This enculturation is reflected in the resources the designers create. At the same time, the users of these resources approach them with their own cultural perspectives. If the cultures of the designers meet the cultural expectations of the users, the environments may be most effective. However, the many cultures and subcultures that animate human societies do not necessarily overlap so conveniently. In an increasingly globalized world, in increasingly diverse communities of individuals, the likelihood of cultural friction increases. It is into this global context that this research cautiously treads.

This study will examine the relationships between the cultural backgrounds of post-secondary learners and their level of satisfaction with an online learning environment. The level of satisfaction will be considered in terms of the learners' self-assessed academic outcome as well as their affective appraisal of an online learning environment with which they have interacted. The participants may be satisfied with

their academic outcome, as in the grade level achieved, but this may be independent of their satisfaction with the online learning environment used in their program of studies.

The potential applications of this study are several. Developers of software for online learning environments could use the findings to identify aspects of the environments that require particular attention with reference to the cultural dimensions identified. Such aspects can then be made adequately flexible for subsequent cultural adaptation by instructional designers. Software developers might also be better able to compensate for their own cultural influences. Instructional designers may use these findings to identify the aspects of online learning environments that require adjustment or special treatment to address the cultural expectations and needs of their target learners. Literature addressing cultural aspects of software and web site interfaces is plentiful. There is far less to be found that addresses the intersection of culture, online environments, and pedagogical concerns.

On the international stage, developing and newly-industrialized countries, to varying degrees, have been relying on online learning environments in order to compensate for shortcomings in physical facilities and resources (van Heerden & van Greunen 2006). Much of the software that is available for online learning has been created in developed, Western countries. Because of the potential cultural divide, the design of online learning environments ought to be carefully considered.

The key issue in this current study is that culture may significantly influence the design and use of online learning environments and an approach that supposes online learning environments as culturally neutral may not serve the needs of learners. Online technologies were not designed necessarily for education. Pedagogical considerations that apply to traditional learning environments ought to apply to online learning. Such considerations include the cultural backgrounds of the learners (Vygotsky 1978). The human and social environments of classrooms are the result of the interactions of the classroom participants. So, too, are online learning environments the sum of the interactions of the learners, instructional staff, and all contributors to that learning environment.

This study, then, aims to identify possible correlations between cultural influences and the effectiveness of online learning environments. The very question it will address can be stated as follows: how do generally accepted cultural dimensions correlate to learners' expectations, experiences, and academic success within the context of online learning environments?

LIMITATIONS

The scope and resources allocated to this study will create limitations in the type and quantity of data that is gathered. The study will be in the form of a survey limited to a group of learners at several post-secondary institutions in Canada. The respondents will be learners who have already participated in courses delivered with online learning tools. Learners uncomfortable with online learning may not be well represented since they may not choose to participate in an online learning course of studies.

Another limitation is the use of the Hofstede model for cultural dimensions (2001; Geert Hofstede et al. 2008b). The current study makes the assumption that Hofstede's

dimensions are valid and that the scrutiny to which they have been placed will adequately support the assumptions of this study.

With regards to the online learning environment, this study will consider interactions with a single online learning system, WebCT. However, this study will not be considering the broad range of configurations that may be available nor specific interactions with the software. An experimental research design, as done by Adeoye & Wentling (2007) may be more appropriate in order to control for such variations. This study, instead, considers online learning tools in a more general sense (Salaway & Borreson Caruso 2007) with respondents considering their overall perception of the tools they used.

2. Existing Research

CULTURE AND LEARNING

Culture has been accepted as a meaningful factor in learning and development (Woolfolk et al. 2010). The research and theories of Vygotsky (1978) have been recognized for their key insights in this area. Vygotsky identified sociocultural factors of cognitive development that were rooted in language and the communication transactions between learners and their instructors. Language is considered the most significant of the cultural tools (Woolfolk et al. 2010). Cultural tools can include computers and symbol systems such as numbers and graphics. These "allow people in a society to communicate, think, solve problems, and create knowledge" (Woolfolk et al. 2010, p.41). Social constructivist theories of education further support the ideas of cultural influence on learning (Woolfolk et al. 2010).

CULTURAL DIMENSIONS

Culture has been defined in various ways but Callahan provides a definition that is practical for the purposes of online interactions—that culture is a "complex construct encapsulating shared values, group behavioral patterns, mental models, and communication styles" (Callahan 2005b, p.261). Blanchard and Frasson considered definitions of culture that would directly relate to online education, where culture is a "process of production of meanings" (2005, p.2).

Social scientists have sought to define and measure the aspects of human behaviour that comprise culture. Among these are Hall (1977), Hofstede (2001), and Trompenaars (1994). Hall's contributions in this arena have included the ideas of high- and low-context communications which may have applicability to software interface design (Marcus & Gould 2001). Trompenaars noted several cultural dimensions with which cross-cultural communication could be viewed within online environments (Marcus & Gould 2001). It is Hofstede, however, who provided a model of bipolar cultural dimensions that have been used with some regularity and success for evaluating online resources and communications.

Hofstede's research involved an initial 116,000 surveys to global employees of IBM during the period 1968 to 1972. Subsequent research expanded this work. Based on this volume of data, Hofstede was able to identify four initial, then a fifth, cultural

dimensions. These he categorized as power distance, uncertainty avoidance, masculinity, individualism, and long-term orientation (2001; Marcus & Gould 2001).

Criticisms of Hofstede's work are several. Some argue that cultures are not constrained by national boundaries. Some suggest that the generalizability of Hofstede's findings are limited because he evaluated cultures only with a single corporate superculture. Hofstede's work has been cross-validated in other studies, however, and he has countered these concerns to some degree (Callahan 2005a; Geert Hofstede 2001).

The applicability of Hofstede's work was apparent to a number of researchers involved in studying online interactions and communication. In one case, a study by Dormann and Chisalita (2002) made use of Hofstede's cultural dimensions to evaluate the influence of culture on the design of certain web sites. They found that the national cultures of designers appear to play a role in the design and layout of the web sites under study. They considered just one of Hofstede's dimensions, that of masculinity. In another study—this one conducted by Singh, Zhao, and Hu (2005)—Hofstede's cultural dimensions were used to evaluate several web sites, this time comparing business web sites in China, India, Japan, and the United States. The study included Hall's (1977) high- and low-context communication measures. The study concludes that these cultural frameworks can be used to design culturally appropriate web sites.

CULTURAL MEASURES OF ONLINE LEARNING ENVIRONMENTS

Hofstede's cultural dimensions have been considered in research pertaining to online learning. In one of these studies, Strother (2003) discussed Hofstede's dimensions in the context of Asian learners and online learning environments. Strother suggested some connections between the characteristics described by Hofstede and learner behaviours in face-to-face and virtual classrooms.

In her doctoral dissertation, Evers (2001) analyzed learners' understanding of online learning environments in the context of their cultural backgrounds. Her study categorized the cultural backgrounds according to Hofstede's research, as well as to the research of Hall and Trompenaars, and found strong correlations between the predicted cultural orientations and learner interactions with the online learning resources. Blanchard and Frasson (2005) considered Hofstede's cultural dimensions specifically for online learning and found strong correlations between culture and online learning approaches.

In an analysis of cultural influences on online learning components, Qi, Boyle, and Xue (2007) examined the design processes with reference to Hofstede and other contributors to this area and they proposed several culturally sensitive design factors to consider in the design of online learning.

Tapanes, Smith, and White (2009) considered learners' perceptions of online learning environments within the boundaries of a single country but were still able to consider original and adopted nationalities. Native languages were also considered as part of their study.

Hofstede provided an example of how one of his cultural dimensions, uncertainty avoidance, plays out in educational settings (2001). Several studies in online learning considered precisely this relationship. Research conducted by van Heerden and van Greunen (2006) considered uncertainty avoidance specifically, identifying a number of

criteria by which web sites can be evaluated. These criteria are echoed in research by Callahan (2005a) and by Marcus and Gould (2001). Adeoye and Wentling (2007) observed participants in a usability laboratory to determine any correlations between uncertainty avoidance and how learners interacted with an online learning environment. This research found strong correlations between the learners' cultures and how they interacted with the learning resources.

Culture has been found to have a significant impact on learning both in and outside the classroom. Cultural dimensions such as those advanced by Hofstede aid researchers in their observations of culturally influenced behaviours. Researchers have applied these cultural dimensions to study the design of online resources. Some research in online learning has been done using these cultural dimensions. Despite this work, there remain opportunities to further study online learning within the context of cultural dimensions.

3. Research Approach

This study will be non-experimental, causal-comparative in nature. The research procedure will be to identify and select research participants from an appropriate population, to group the participants using the identified grouping variables, to administer a questionnaire to the participants, and finally to analyze the questionnaire responses using inferential statistical methods.

SAMPLE SELECTION

Participants will be pooled from students at three Canadian post-secondary educational institutions. Participants will have been enrolled in the previous twelve months as full- or part-time students in courses or programmes that made use of online learning systems. The selected institutions each use WebCT, a widely-used, commercial learning management system.

The available population of participants across the three research sites would number in the tens of thousands. Therefore, to address the need for efficiency in applying the survey instrument, subsets will be selected from the larger group through the use of simple random sampling (Zar 1974; Gay et al. 2009), producing an unbiased and consistent sample of the total population. For each research site 400 potential respondents will be selected. Participants will be sent invitations by email by the system administrators of the online learning systems.

DATA COLLECTION

The primary tool of this study will be a survey instrument. The survey is designed to elicit several categories of responses from the participants. Participants will be invited via email delivered through their respective institutions. Each email invitation will include a link to the online survey.

Respondents will first be presented a consent form to which they must respond. A survey of 40 questions will then be given with the following questions types: 21 questions pertaining to usability (Adeoye & Wentling 2007), four cultural dimension questions (Geert Hofstede et al. 2008a), six demographic question (Geert Hofstede et al.

2008a), four demographic questions pertaining to the respondents' academic context, and five learning self-efficacy questions regarding each respondent's academic progress.

The usability questions will ask about the specific experiences that participants have had with the online learning environment. In this context, participants will be asked about their satisfaction with the online learning environment. Questions regarding perceptions of the online learning systems are based on the work of Nielsen (1994). Nielsen considered factors such as learnability, memorability, efficiency, and satisfaction. An experimental study using such usability questions in the context of Hofstede's cultural dimensions was done by Adeoye and Wentling (2007). These survey questions were adapted for this study, with several key, significant differences: the current study applies the Values Survey Module survey questions (Geert Hofstede et al. 2008a; Geert Hofstede et al. 2008b), the focus is on the one specific cultural dimension of uncertainty avoidance, the focus is on a single national grouping, comparison will be made between the variables of learner satisfaction and culture rather than between national cultural groups, and the use of a survey model allows for a much larger dataset.

The survey questions that pertain to cultural values are taken from a existing survey instrument, the Values Survey Module (VSM '08) (Geert Hofstede et al. 2008a). The VSM '08 was based on Hofstede's extensive earlier work. The VSM '08 questions are aligned with seven cultural dimensions, each dimension addressed through four questions. This research study is concerned with the just one of these cultural dimensions, that of uncertainty avoidance. Thus four questions in the survey are correlated to this specific cultural dimension according to Hofstede's work. Demographic questions from the VSM '08 are also incorporated in this research study.

A series of questions will ask respondents about their overall academic experience. These questions will also ask for comparisons to the online learning experience. These questions will help identify an disparity between online and traditional learning experiences.

VARIABLES

The causal-comparative nature of this research leads to the use of grouping variables. The grouping variable is used to differentiate some characteristic of the participant sample. In this case, the main grouping variable will be respondent cultural values. The online learning environment is an independent variable for which this study will control by limiting the variable to a single software environment. The dependent variables are learner success, which will be characterized through satisfaction of expected learning outcomes, and satisfaction with the online learning environment, as characterized by multiple measures.

Regarding the online learning tools specifically, the definition of what constitutes an online learning tool has been found to vary. Research (Salaway & Borreson Caruso 2007) has indicated that learners who may at one time, for example, have considered email to be a core elearning tool may later overlook or discount email entirely and, rather, have expectations that include social media tools. Such shifts have occurred even over very short time frames. The survey questions will not attempt to consider very specific aspects of online learning tools and will ask respondents to reflect on online learning tools as they themselves define and experience them. The survey will guide the

respondents by asking them to consider the online tools they used in their educational settings, as provided by their educational institutions. This survey design allows for data about possible affinity to aspects of online learning tools in the context of cultural values and norms.

Hofstede's cultural surveys have been used primarily in comparative studies across national cultural distinctions. This research study differs in that it will use a single national context within which a single cultural dimension can be examined against the perceptions of and satisfaction with online learning systems. Because online learning systems are themselves the products of cultural influences, the results of this research study may identify the degree to which conflicts may exist between the cultural values of learners and the cultural values embedded in online learning systems.

Acknowledgements

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