A COMPARATIVE ASSESSMENT OF HOW NATIONAL CULTURES DRIVE BEHAVIORS ASSOCIATED WITH THE USE OF LEARNING MANAGEMENT SYSTEM TECHNOLOGIES

UNA EVALUACIÓN COMPARATIVA DE CÓMO LAS CULTURAS NACIONALES IMPULSAN COMPORTAMIENTOS ASOCIADOS CON EL USO DE TECNOLOGÍAS DE SISTEMAS DE GESTIÓN DE APRENDIZAJE

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Abstract

Our classrooms are becoming increasingly multinational, multicultural, and technology rich. The objective of this paper is to understand how the diverse national cultural contexts of instructors and students might influence the finer choices they make with regard to the use of various technologies that make e-learning possible. The national cultural dimensions identified in the literature are used as the basis of comparison. Findings may be used as guidelines to design and implement culturally inclusive educational technologies. The research provides vital cues to answer the more general question of whether we could possibly implement a universal design of 'culture-neutral e-learning technologies' that work in multi-cultural classrooms.

Keywords: E-learning; learning management system; culture; technology; international education; adaptation.

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Resumen

Nuestras aulas se están volviendo cada vez más multinacionales y multiculturales. El objetivo de este documento es comprender cómo los diversos contextos culturales nacionales de los instructores y estudiantes pueden influir en las elecciones más finas que hacen con respecto al uso de diversas tecnologías que hacen posible el aprendizaje electrónico. Las dimensiones culturales nacionales identificadas en la literatura se utilizan como base de comparación. Los hallazgos pueden usarse como pautas para diseñar e implementar tecnologías educativas culturalmente inclusivas. La investigación proporciona claves vitales para responder a la pregunta más general sobre si podríamos implementar un diseño universal de "tecnologías de aprendizaje electrónico neutrales a la cultura" que funcionen en aulas multiculturales.

Palabras clave: *E-learning*; sistema de gestión de aprendizaje; cultura; tecnología; educación internacional; adaptación.

Introduction

Technology is not a stand-alone system with an objective and impartial meaning that is universally applicable for everyone: various studies have shown that individuals and societies make sense of technologies through the lenses of culture (Rotolo, Hicks, & Martin, 2015). Cultures define the meaning of technologies and technologies embedded in a culture embody, reflect, and sustain the values of that culture. Technologies do change the fabric of a culture, but only in accordance with the archetypal delineating rules of that culture. E-learning technologies are not exempt from this general principle (Spector, 2015; Winn, 2002). The pedagogical beliefs of teachers, students, and educational administrators are bound by their cultural beliefs and these pedagogical beliefs in turn determine the appropriate use of educational technologies (Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, 2017).

According to Seels & Richey (1994), instructional technology refers to both the theory and the practice of design, development, utilization, management, and evaluation of processes and resources for learning. Instructional technologies are also known by various other names such as learning technologies, educational technologies, learning management systems, etc. The technological processes and resources are expected to facilitate learning and improve the performance of the teacher and the learner (Januszewski & Molenda, 2008).

While information technology adoption followed a natural progression in various other fields despite the educational struggles potential users had to overcome, quite ironically, adoption of these same technologies for educational purposes lagged behind. Technology use became more prominent in educational administration much before it began to be used in instruction (Spott, 1999). Even when instructors used technology, that was mostly for general communication than for advanced learning activities (Russell, 2003).

Blended learning and hybrid course structures received more acceptance among the senior teachers, according to Bernard, et al. (2014). Also, appropriate use of information technologies offers the best operationalization of the idea of flipped classrooms (Davies, Dean, & Ball, 2013). Most flipped classrooms these days are built around the idea of blended learning where the students prepare themselves for the in-person sessions based on technologically mediated support materials.

Mainstream educational technology research has examined issued related to e-content development, presentation of learning materials, and learner-technology interactions. Relatively less attention has fallen upon the nuances of employing technologies in culturally diverse settings. Arnesen, Elstad, Salomon, & Vavik (2016) argues that educational technologies should be the key drivers of "polycontextual bridging" in the 21st century. This paper will delve into the potential associations between some of the prominent dimensions of national culture (uncertainty avoidance, power distance, individualism-collectivism, masculinity-femininity, time orientation, indulgence-restraint) and the Educational Technology Acceptance (ETA) by two key stakeholder groups: the

instructors and the students. It will present the findings of a cross-national study being undertaken by the researcher on this topic.

The following were the key objectives that guided this study: (a) appreciate the complex interactions between e-learning technologies and the wider cultural system surrounding it; (b) understand the pedagogic implications of culture-bound learning by means of culture-bound technological systems. The first phase of this study was conducted in Chinese universities that run strong cross-border partnership programs with Western universities. In the second phase, additional data was collected from university campuses in India and the United States. Primary data gathered through focus groups and surveys combined with a review of literature helped the researchers address these questions.

Culture and Technologies

Technologies are meaning making tools and cultures use technologies to understand and also to project themselves (Chun, Kern, & Smith, 2016). Technologies may have culture-neutral functions and purposes; yet, it is the cultural embeddedness of technologies that determine how those functions and purposes are leveraged (Wagner, 2016). For instance, think of an online payment app: if it is successful in, say, China, but not in, say, the United States, that may have more to do with cultures than factors such as the availability of technological infrastructure, education, income, etc. Even when the same app is used globally, we may observe differences in the use of specific functionalities, across nations. Interfaces, navigation pathways, etc., on websites are differently perceived in different cultures. This is why the adaptability of a technology is the key to its worldwide acceptance (Murphie, 2017).

Differences in the kind of technologies in different countries may increase culture shock (Guo, Li, & Pang, 2019). This is a neglected aspect of expatriate management. However, the ability of individuals to take their home technologies with them as they travel across the world could actually have an exactly the opposite effect (Fakir, 2018). This issue is key to discussions on inter-organizational mergers and acquisitions, too. Even as we accept the fact that technology is subservient to culture and strategy in an organizational setting, the relationship is more nuanced because there are imprints of cultures and strategies in every technology tool that we use (Kane, Palmer, Phillips, Kiron, & Buckley, 2015).

Seyfert & Roberge (2016), in the preface of their edited book titled Algorithmic Cultures sketch the fundamental transformation both technologies and cultures have undergone recently without much fuss or fanfare. Cultural changes are gradual and slow, except when punctured by technological disruptions (Mead, 2017). In this wave of change, even that shock was not felt. Many traditional and culturally conditioned jobs have now been taken over by machines following algorithmic rules. Algorithms rather than human salesperson now decides what products should be displayed when and where and for what price. Practically speaking, these algorithms do a much better job than the human agents, and definitely much more efficiently. Do these algorithms recreate the cultural values that once were driving the shopping associates? Unlikely so. This is why we need a social theory

of technology, argues Kirkpatrick (2017). While algorithms took over cultures, humanity had no choice but to shift to a posthuman mode of existence (Waters, 2016).

While cultures ensure the preservation the foundational principles of a society, technologies nevertheless provide vehicle for societies to embrace dynamism needed for thriving in the future. Technologies are not merely servants but rather shows people new frontiers of possibilities (Lai & Hong, 2015). Educational technologies are changing radically and even traditional cultures like those in India and China are embracing them while simultaneously preserving their conventional values. Some of the emerging radical e-learning technologies however challenge the very fundamental assumptions of cultures; in such cases, institutions that are tasked with preserving cultures would impose restrictions on how such technologies could be deployed. This is evident in educational administrators and governmental authorities dictating 'appropriate uses of technologies' by students and faculty. According to Rotolo, Hicks, & Martin (2015), this is expected when an emergent technology exhibits (a) radical novelty, (b) relatively fast growth, (c) coherence, (d) prominent impact, and (e) uncertainty and ambiguity.

Methodology

This study was conducted in two stages, guided by mixed methodology design. The first stage employed qualitative research techniques such as observations of e-learning product use, unstructured interviews with faculty and students, user log analysis, and focus group interviews. These were completed during 2011-2012 when the lead research of this study was employed as a visiting professor in a Chinese university. In particular, three focus group interviews were held: one, an eight-member group of students from various countries; two, another eight-member group of faculties from various countries; three, a random sample of eight members, four drawn from each of the previous groups. The third focus group had to be conducted as an e-focus group because the researcher had moved his jobs. Skype VoIP was used for this purpose.

A survey instrument was developed out of the insights gained from this stage. This survey was administered during 2014-2015 to a convenient international sample of respondents comprised of faculty and students affiliated with a conveniently selected list of universities in China, India, and in the United States. Out of the 690 respondents who responded to the survey, 546 were students and 144 were faculty.

Findings

Most respondents said they had used Blackboard (67%), Moodle (29%), Canvas (16%), or Google Classroom (9%) in the recent past. A few respondents also said their familiarity with LMS solutions like WebCT, Skype in the Classroom, AdobeCaptivate, Docebo, etc. Respondents claiming multiple nationality were asked to choose the one to which they identified themselves the best. The nationality profile of the respondents and the cultural factors corresponding to nationality are presented below in Table 1.

Country	Faculty	Students	Total	PDI	IDV	MAS	UAI	LTO	INDI
China	27	180	207	80	20	66	40	118	
India	77	167	244	77	48	56	40	61	
USA	12	84	96	40	91	62	46	29	
Malaysia	4	26	30	104	26	50	36		
Taiwan	6	19	25	58	17	45	69	87	
UK	7	11	18	35	89	66	35	25	
Japan	2	9	11	54	46	95	92	80	
Germany	1	4	5	35	67	66	65	31	
Mexico	2	17	19	81	30	69	82		
Indonesia	0	8	8	78	14	46	48		
Brazil	2	5	7	69	38	49	76	65	
Kenya	2	0	2	64	27	41	52	25	
S. Korea	0	4	4	60	18	39	85	75	
Israel	1	12	13	13	54	47	81		
Netherlands	1	0	1	38	80	14	53	44	
Total	144	546	690						

Table 1: A comparison of LMS usage and dimensions of culture

For analytical purposes, the country scores of each dimension was categorized into low (1-40), medium (41-80), and high (81-120). This resulted in the distribution given below in Table 2.

	PDI	IDV	MAS	UAI	LTO
Low	133	302	5	499	121
Medium	508	274	674	144	267
High	49	114	11	47	232

Table 2: Aggregated summary for cultural dimensions

Since MAS did not have sufficient representation at all levels, statistical significance of analysis conducted based on MAS could not have been used. The findings presented about MAS in the next section were drawn purely from qualitative data.

Key findings relating the use of e-learning technologies to the dimensions of culture as identified by Hofstede (1990) are summarized below:

Power Distance

Power distance is a way to explain the handling of differences between groups existing in a system of inequality. It reflects a culture's attitude towards human inequality (Auh, Menguc, Spyropoulou, & Wang, 2016).

Instructor-student participants from high power distance cultures consider 'democratizing technologies' to be a major threat; on the contrary, their counterparts from low power distance cultures find in these technologies new opportunities for 'learning together to grow together'. Social media based e-learning is heavily resented by the power distant cultures. This might be because such cultures insist controlled environments for instruction and social media tools loosen such controls.

Asynchronous interaction is preferred by high power distance cultures, apparently due to the ability of such technologies to take a planned course of action. For instance, from the viewpoint of a student, he or she gets more time to think and respond to a classroom question or assignment in more culturally appropriate ways (meaning, without violating the existing power distance). According to the participants included in the study, live online classrooms are feared to shrink power distances much more than live face to face sessions. The servicescape within which live face to face classrooms are structured offers important cues to the learners and the learned in order to behave in ways that preserve the existing order. It is almost impossible to set live e-delivery servicescapes to preserve the same.

However, high power distance cultures continue to try to replicate traditional classroom culture online, verbatim, with varying degrees of success. For example, power distance corresponded positively with the insistence upon hierarchical labeling of e-content (sections and subsections). There must be some kind of assumed symbolic association between the hierarchical organization of information and the extant hierarchy in the society itself, of which power distance an important measure. Also, students from high power distance cultures considered it normal and were gladly willing to make more mouse clicks to read the same content. They said this (i.e., distance implied by clicks) would help them clearly distinguish one concept taught from another. On the contrary, their low power distance counterparts considered it as a design flaw, something that makes learning cumbersome, making the relatedness of concepts and categories difficult to understand.

Peer evaluation option on e-learning platforms are almost never enabled by administrators and the instructors consider it as an 'American joke'. Many instructors and students wondered why there should be professors if students are capable enough to judge each other.

Interestingly, the impact of masculinity upon these attitudes was also somewhat similar to that of power distance. Yet, there were complex interaction effects which the researcher could not clearly resolve given an insufficient sample of respondents.

Individualism-Collectivism

Individualism holds that a human being should think and judge independently, respecting nothing more than the sovereignty of his or her mind (Triandis, 2018); thus, it is intimately connected with the concept of autonomy. On the other hand, collectivism posits some sort of group rather than the individual the fundamental unit of social life. Collectivists insist that the claims of groups, associations, or the state must normally supersede the claims of individuals.

Students from highly individualistic cultures greatly appreciated student centered e-learning styles and customizable interfaces. While these students loved instructor free zones (blogs, journals, wikis, chat windows, etc.), one emergent idea from this study is that individualism does not always mean seeking privacy ('distance' from others – or, power distance without seeking power); it was felt that the individualists actually wanted to share how unique they were while collectivists wanted to share how similar they were. That said, it was generally true for the sample we studied that collectivists were far less concerned about the 'privacy and security' features of an e-learning program.

Students from individualistic cultures actively sought to use third part service providers' e-learning solutions, those 'not officially supported' by their school. They could trust a commercial third part service provider like Google and Facebook than their school's network administrator. Also, Individualists skinned their interfaces the way the wanted.

It was noted that, for students from collectivistic cultures, successful completion of group assignments required far less elaboration and explanation. This is explained by the fact that individuals living within a collective culture share a great of tacit knowledge and that 'more is understood in less words'.

Students from highly collective cultures liked to see extensive hyperlinks, interlinking as many 'knowledge bits' as possible. In this manner, collectivism was somewhat akin to low knowledge distance. Collectivists, just like their low power distance counterparts, wanted to see how closely associated various concepts in their knowledge space are. From a different perspective, hyperlinks serve as the substitute for the thick networks of interaction that one would find in real collective societies. Again, as one would expect, collectivists, just like those from low power distance societies, valued 'peer evaluation' possibilities afforded by the e-learning system.

Uncertainty Avoidance

Uncertainty avoidance is degree to which a culture prefers structured over unstructured situations. In uncertainty avoidance cultures, people have an increased level of anxiety about uncertainty and ambiguity. Uncertainty tolerant countries, on the other hand, are less rule-oriented, take more risks, and more readily accept change (Slawinski, Pinkse, Busch, & Banerjee, 2017).

Instructors and students from highly uncertainty avoidant cultures preferred to use officially supported and stable versions of instructional technologies. However, unlike those from individualistic cultures, it was not privacy that made them to prefer thus. Rather, they were more worried about the consequences of not being able to handle the situation of a failed technology. In particular, instructors were concerned when the same e-learning system was presented to them with a 'beta' label.

Another interesting finding emerging from this study is that students from uncertainty tolerant cultures did not demand detailed and pre-packaged e-content or syllabus at the

beginning of the semester; rather, they very much liked content that is 'emergent' and cherished the opportunities to use a multitude of technologies as the course progressed. They also showed a higher level of interest in action learning and project based curriculum.

Masculinity-Femininity

In the words of Hofstede (2001), "masculinity stands for a society in which social gender roles are clearly distinct: Men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life". Also, "femininity stands for a society in which social gender roles overlap: Both men and women are supposed to be modest, tender, and concerned with the quality of life".

Quite concurring with our idea about what femininity is all about, instructors and students from highly feminine cultures gave a great deal of attention to aspects of knowledge interface design. Their masculine counterparts cared far more about the 'content' and the content structuration. Femininity was also positively related to the use of images (diagrams, pictures, videos, etc). Also, live classrooms were more important for those belonging to feminine cultures. They quite felt like asynchronous mode of instruction made teaching learning process lifeless. Being able to engage with teaching and learning 'in the present' and the opportunity to 'mix with one another better' emerged to be some of the common themes from the focus groups. In fact, both feminine and masculine cultures were somewhat equally concerned about these issues: it's just that those belonging to feminine cultures related these more often with live classrooms.

Time Orientation

"Long Term Orientation stands for the fostering of virtues oriented towards future rewards, in particular perseverance and thrift. It's opposite pole, Short Term Orientation, stands for the fostering of virtues related to the past and present, in particular, respect for tradition, preservation of 'face' and fulfilling social obligations", observed Hofstede (2001).

Instructors and students from long term oriented cultures wanted to know how a course would help them far along the career trajectory. This implies a facet of the construct of long term orientation: being able to see clearly the pathways to the future. At least some study participants from uncertainty avoidant cultures too resonated similar views during the qualitative phase. However, the uncertainty avoiders were more concerned to know in advance the course content in entirely and how the content meets the objectives stated in the syllabus. According to this group, an email or tweet announcing a change in the course schedule was destabilizing. It must be added that those from short term-oriented cultures were more or less happy about knowing the "assignments next week".

Long term orientation related positively with the 'difficulty to judge' quality of e-learning, implying that long term oriented cultures are in certain ways uncertainty tolerant, too. Might be, they believe that the results of a course of action (i.e. learning)

would take years to appear and that learning is a long-term investment. However, this view is at least partially contradicted by the fact that most of the participants from long term oriented cultures that we surveyed had majors that rewarded them quickly (majors in engineering, technology, nursing, etc., rather than majors in liberal arts or pure sciences).

A Note on Possible Implications of Indulgence – Restraint

Indulgence stands for a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun. Restraint stands for a society that suppresses gratification of needs and regulates it by means of strict social norms. Indulgence versus restraint describes the extremes of hedonistic behavior, especially with regard to how strictly social norms are followed and gratifications are regulated (Minton, Spielmann, Kahle, & Kim, 2018). The present study did not formally analyze this dimension because of the lack of respondents from countries identified by Hofstede (Hofstede, 2014). However, it might be worthwhile to hypothesize the potential implications of this dimension upon technology use behavior.

For instance, the students from highly indulgent cultures might give a lot of importance to rich and sensually appealing design. They should like it when their instructors give them the option to blog, update status, or customize interfaces the way they want. The may appreciate opportunities to extend the scope of interactions outside of the e-learning space (like group exercises where the students could meet face to face at a campus cafeteria). However, it might be disappointing for them when such needs of students from high indulgent cultures are turned down by instructors who hold restraint cultural values. Likewise, students from high restraint cultures may feel that the indulgent web design features they find on the e-learning interfaces are unbecoming of the sanctity of academic pursuit. Finally, we should expect some correlation between low indulgence / high restraint and long-term orientation: just like their long term oriented counterparts, high restrainers may to find the fruits of their toil far in the future.

Conclusion

Educational technologies are primarily the products of the culture in which they are designed. The home cultural imprints make them less amenable to contextualization in foreign settings. Previous studies on learning management systems emphasized the importance of organizational cultures and institutional policies but not national cultures (Downey et al., 2005; Edmundson, 2006; McLoughlin, 1999). The overarching question with which this research started was to critically reflect upon whether the 'universal design' of e-learning would work effectively in multiple national cultures and in the multi-cultural classrooms. Thanks to globalization and technological revolutions, faculty and students hailing from diverse cultural backgrounds learning together has now become the norm rather than an exception (Portnoi, 2016). A multitude of studies suggest that culture and technology engage with each other in complex ways; yet, researchers have generally shied away from extrapolating generic findings into the specific settings of e-learning systems

applied to multicultural learning environments.

The present research questions the dominant view informed by the proponents of "technopoly" (Postman, 2011): evidence about the use of e-learning technologies suggest that there is no unilateral surrender and subservience of culture to technologies. Certain educational technologies might have the potency to bring in widespread cultural change: gamification, particularly game based group learning, is known to inject participatory culture in the classrooms (Squire, 2011). However, it is likely that these are short term attitudinal changes in individuals rather than triggers of fundamental drifts in a society's cultural basis.

If our intention is to design culture neutral technological systems, such systems are more than likely to be barebones – for, any richness beyond that would increase cultural sensitivity (Croucher, 2011). The other option is to primarily cater to the majority culture. Say, if there are more Chinese students in a classroom than any other racial-ethnic-cultural groups, let the system be designed to their taste. That approach again is against our widely held views about equity and justice to the minorities. So, according to the present researcher, these should not be the objectives of system design. The question is whether to have options in the systems to adjust to cultural realities (Edmundson, 2007). Ideally, the system should understand user preferences and make such tweaking without human intervention. Alternatively, the system manager can present the students and their instructors with a variety of options, the use of all of which should not be made compulsory.

Before winding up this article, one important caveat should be made: there is necessarily no one to one correspondence between averaged national-cultural preferences and preferences at an individual level. It is very likely that you will encounter a large number of uncertainty avoiders in a highly uncertainty tolerant culture and a large number of short term oriented people in a predominantly long term oriented culture. Technology should not be made a handmaid to advance the objective of curtailing cultural diversity and stalling cultural change. What is needed is the development of e-learning technologies that are cross-culturally competitive – in other words, a culturally nonexclusive and multiculturally responsive design. Hence, what this study gives is only a generalized view and it should not be used to advance agendas any more beyond that.

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