

A COMPARATIVE ANALYSIS OF LEARNERS INTERACTION IN THE ONLINE LEARNING MANAGEMENT SYSTEMS: DOES NATIONAL CULTURE MATTER?

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ABSTRACT

Open and distance learning (ODL) connects learners across geographical boundaries. Through the support of the Internet and Learning Management Systems (LMS), learners nowadays are conveniently learning and communicating via the online mode. Nevertheless, will the cultural diversity of learners affect their learning and interaction behavior in the web-based environment? This is viewed as one of the relatively unexplored scope of research areas worthy investigating via a comparative analysis of two countries from Asia but with different contexts of society. This article investigates the learners' online interaction of two open universities, namely Shanghai TV University in China and Wawasan Open University in Malaysia. Based on the findings of this comparative study, the authors are of the opinion that national cultural diversity of learners affects and influences their learning and interaction behavior in the online platform. The effect of cultural diversity of learners is in fact prominent in several aspects in their online learning and interaction behavior as observed in the synchronous chat sessions and asynchronous forum board discussions. In order to better guide the learners as well as to eliminate the negative impact of national cultural diversity on learning outcome, several suggestions and recommendations are proposed.

Keywords: learning management systems, learners interaction, national culture, open and distance learning

In the past few decades, open and distance education has been rapidly developing in Asia as well as globally. Many researchers have studied the learner's learning from the aspects of learning material, capability to utilize information technology, the role of learners, etc. Nonetheless, the analysis of the learner's learning behavior within the context of open and distance education and the impact and influence of national cultural diversity on this mode of learning is viewed as a new area of study.

National culture can be broadly defined to include the language, behaviors, values, norms, beliefs, and practices shared by a group of people in a particular country. China has more than five thousand years of culture and the people in China are strongly influenced by the

Confucian philosophy. For the past 30 years, China has experienced rapid economic growth as well as a more open society. Those are among the factors that have enabled the people of China to adapt to new things more easily. 'Han' is the major ethnic group in the population of China and the 'Han' language, or Mandarin language, is the official language of the country. Malaysia is located in the Southeast Asia, a country with an open economy and stable socio-economic development. Malaysians comprise of three major ethnic groups, namely Malay, Chinese and Indians. The Malay language or *Bahasa Malaysia* is the official language of the country.

Table 1. Course Delivery Model of SHTVU and WOU

Course Delivery Model		SHTVU	WOU
Printed Learning Materials		Study units and textbooks are provided to all students	
Student support services	Face-to-face tutorial sessions	Once a week during the semester (2-3 hours per session)	Once a month during the semester (2 hours per session)
	Online learning	Learning Management System: <i>Oclass</i>	Learning Management System: <i>WawasanLearn</i>
	Telephone tutoring	Not available	Tutors are available for telephone tutoring during pre-specified time slots with the learners
	Digital library resources	E-library (e-books, e-journals etc.)	
	Regional Center support	Students can go to the nearest Regional Center for administrative related issues and support.	
Course Assessment	Course work: • Number of assignments: • contribution:	3 – 5 10-40%	3 50%
	Contribution of participation in LMS towards course work marks	Supported by some courses.	Not applicable.
	Final written examination	60%-90%	50%
Communication between Course Coordinator and Tutors	Frequency	At least 3 times in a semester	
	Mode	Face-to-face, telephone, email	Face-to-face, telephone, email, LMS forum discussions

Shanghai TV University (SHTVU), as an open and distance learning (ODL) institution was established in 1960 with three campuses and 53 learning centers covering 10 undergraduate programs and 15 junior college programs which offer 31 major fields of study. Wawasan Open University (WOU) was launched in 2006 as Malaysia's first private and non-profit ODL University dedicated for adult learners. WOU currently offers 11 degree programs and has just introduced a postgraduate program. The authors are of the opinion that it is meaningful to undertake a comparative study of this area of interest, as WOU operates in a multi-cultural environment while SHTVU takes roots in the traditional framework of Chinese culture. Both

institutions have very similar mode of delivery of courses and learners support provided, as depicted in Table 1.

To provide a facilitated web-based learning environment, both SHTVU and WOU utilize the online LMS. The LMS of SHTVU has developed in-house. It has been in use for a longer period and has a larger number of users; as compared to the open source LMS – “Moodle” adopted by WOU. It can be said that asynchronous forum boards and synchronous chat have become important features of the LMS operated by both universities. Table 2 compares some basic information of the LMS of SHTVU and WOU.

Table 2. LMS Features and Functions of SHTVU and WOU

Features/Functions	SHTVU	WOU
Source	Developed in-house	Moodle – an open-source course management system
Number of users (as of June 2007)	112,000	597
Duration in-use	Since year 2000	Since year 2007
Language used in LMS	Chinese	English
Programming language used to develop the LMS	.net	PHP
Editing capability of LMS pages	Weaker editing capability	Stronger editing capability – GUI-based
Integration with Learning Centers	Separate LMS platform for main campus and branch schools/learning centers.	LMS for all learning centers are integrated into the same platform.
Course coordinator monitoring of tutors online teaching activities	Weaker	Stronger
Accessibility of previous semesters' forum discussions	Able to access previous semesters' forum discussions	Not applicable
Statistical reporting features e.g Log	Weaker	Stronger
Functions available in LMS	Static Course Materials (E.g. uploaded files, text pages, web pages, links, directories) Interactive and Social Course Materials (E.g. online quizzes, asynchronous forum boards, synchronous chats)	

The efficiency of a collaborative and constructive learning environment is vital to ensure effective learning, especially in ODL. Learners participate and interact with peers and tutor in discussions not just merely to seek course related information and clarification, but also to exchange and share knowledge. Thurmond (2004) defined Interaction as:

“the learner’s engagement with the course content, other learners, the instructor, and the technological medium used in the course. True interaction with other learners, the instructor and the technology results in a reciprocal exchange of information. The exchange of information is intended to enhance knowledge development in the learning environment. Ultimately, the goal of interaction is to increase understanding of the course content or mastery of the defined goals.”

Various researches were conducted to examine the dimensions of interaction in distance learning. Providing a basis for analyzing the relative significance of different types of interaction, Moore (1989) defined the three types of interaction as learner–teacher, learner–content and learner-learner. Other researchers have also examined possible combinations of interaction based on teacher, learner and content. Kearsley (1995) noted that few studies on interactivity isolate the interactive component from other aspects of distance learning activities. Picciano (2002) distinguished interaction and presence in which the former is related to the nature of communication and influence. Robson (1996) classified interaction in terms of the pattern of exchanges between the teacher and students and highlighted the need to address pedagogical issues to maximize interaction within a web-based learning environment. Oliver, Omari, and Herrington (1997) explored the student interactions in a collaborative World Wide Web learning environment using a set of four dimensions, i.e. social, procedural, expository and cognitive. Oliver and McLoughlin (1997a, 1997b) studied the social, procedural, expository, explanatory and cognitive dimensions over various categories of exchanges between the teacher and students. Rourke *et al.* (1999) developed a framework for interpreting the online teaching and learning environment by analyzing the components of cognitive presence, teaching presence and social presence. High quality online participation in web-based learning promotes collaborative group support which subsequently results in quality online learning. (Garrison, 1997; Gunawardena & Zittle, 1997) Garrison and Cleveland-Innes (2005) found that design of courses had a significant impact on the nature of the interaction and whether students approached learning in a deep and meaningful manner. Othman (2005) found high frequency communicative exchanges with instructional purposes on asynchronous forum boards which have created a positive learning environment. However, the interactions observed were lack of active collaborations at the cognitive dimension level. Harasim (1997) suggested that high rates of student participation, group interaction among students, high quality of intellectual exchange and spatial metaphors used as mental models to help students adjust to an online structured course are essential factors for successful and efficient online learning.

Hofstede (1980, 1991), the most widely cited author in culture-related studies, identified four dimensions, i.e. power distance, individualism/collectivism, masculinity/femininity and uncertainty avoidance in his original study. He rated 53 countries on indices for each dimension, normalized to values of 0 to 100. The GLOBE framework extended Hofstede's work by adding some dimensions which give managers additional information in identifying and managing cultural differences (GLOBE, 2007). Many researchers found that groups of people from the same nation or society are perceived to act similarly on social, business and education context. Based on Hofstede's dimensions applied to teaching and learning (Hofstede, 1986), knowledge dissemination stresses on 'impersonal truth' in small power distance societies while the large power distance societies emphasizes 'personal wisdom'. In a collectivist society, individual students will only speak up in small group settings when called upon and education is a way of obtaining or facilitating upward social mobility. This implies that obtaining paper qualifications is of higher concern than acquiring competence. Learners from feminine societies behave modestly compared to those from male-dominated societies who are assertive and competitive. In the less aggressive uncertainty-avoidance societies, students

feel more comfortable with less structured learning situations. Prior studies developed generalizations about cultural learning styles based on an analysis of national cultural characteristics (Kim & Bonk, 2002; Munro-Smith, 2002). Besides, different cultural dimensions would influence user perceptions about the general accessibility of the online environment (Tylee, 2001). The extent to which learning is learner-centered or teacher-centered also appears subject to cultural variation. Asian learners are generally found to be teacher-centered based on the findings of previous studies such as Bauer, Chin, and Chang (2000). Asian learners who are passive in interaction sometimes feel more comfortable contributing to the forums and chats within the context of the online environment (Bauer, Chin, & Chang, 2000, Conner, 2000).

Research Framework and Objectives

The personal development of both learners and tutors are influenced by their respective regional or national culture. Activities and behavior of learners and tutors are frequently structured and guided by cultural norms/values and the effect is often subconsciously deep rooted. In the learning process, it is observed that learners' online interaction behavior is influenced by their cultural background. This study may be undertaken by using three indicators, namely dimensions of interaction, categories of exchanges and depth of discussions to analyze the interaction of learners in a web-based environment. Through Hofstede culture diversity framework, we demonstrate that cultural elements affect and influence learners' web-based interaction. We present our research framework in Figure 1.

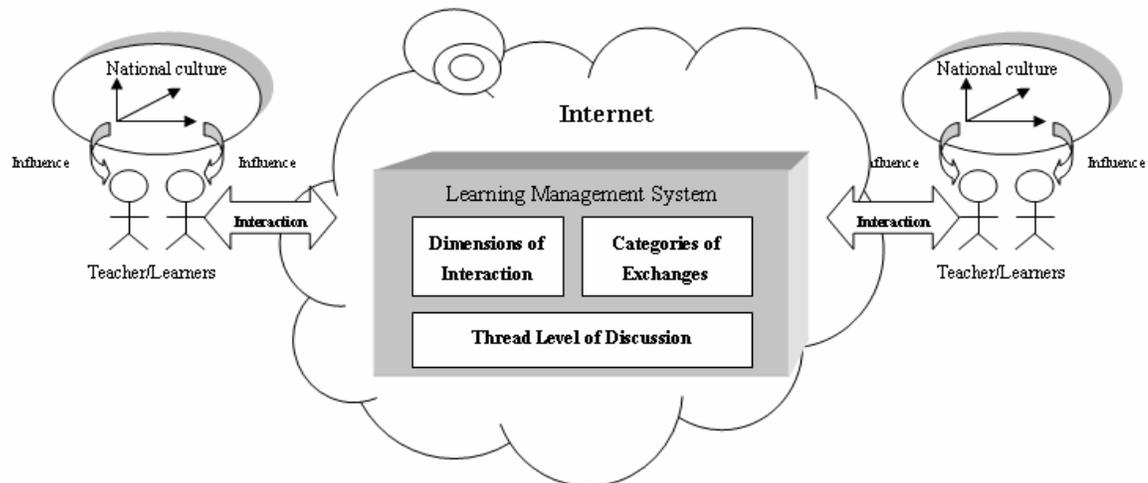


Figure 1: Research Framework

The main objective of our study is explored through the following questions:

1. Does national cultural diversity affect the learner's web-based interaction and behavior?
2. Which areas of web-based interaction are influenced by the diversity in national culture dimensions?
3. What are the strategies that would be useful to minimize the negative impact of culture on learning behavior?

METHODOLOGY

To ensure comparability, we obtained the research data from the LMS of a similar course offered by the two institutions within the same semester, as shown in Table 3.

Table 3. Data Summary

Items	STVU	WOU
Course name	Principles of Management Studies	Principles and Practice of Management
Degree program	Bachelor of Accounting	Bachelor of Business
Students enrolled for this course	1451 students across 28 learning centers	361 students across all 4 learning centers
Sample	The data from the main campus of SHTVU and three significant learning centers (were used in this study)	Data from all four learning centers of main campus were used.
Average age of students enrolled for the course	28.4	32.8
Language background of learner	Chinese	Comprising mainly <i>Bahasa Malaysia</i> , Chinese, Tamil and English
Initiator of LMS discussions	Male: 37 % Female: 63 %	Male: 62.7 % Female: 37.3%

From our literature survey, we adopted Oliver and McLoughlin's Dimensions of Interaction which explores the dimensions of interaction by classifying interaction activity into five parts, i.e. social, procedural, expository, explanatory and cognitive. Social dimension can be defined as to include discussions of a social nature which are not directly associated with the course content. Procedural dimension involves explanation on course related procedures, requirements and administrative issues. Expository dimension involves demonstration of knowledge/facts without much further elaboration while explanatory dimension refers to elaborate explanation on knowledge and developed content based on learner's response. Finally, cognitive involves providing constructive feedback and detailed commentary on course content via critical thinking which leads to knowledge development.

We categorized the content of the web-based interaction - by initiator and respondents, into six groups, as depicted by Table 4.

Table 4. Categories of Exchanges

Group	Initiator and Respondents	Explanation
1.	course coordinator → groups (CC-G)	Course coordinator initiates a discussion and addresses it to all groups of students at learning centers
2.	student → course coordinator (S-CC)	A student initiates a discussion and directs it to the course coordinator
3.	student → group (S-G)	A student initiates a discussion with his/her own group of classmates
4.	tutor → group (T-G)	A tutor initiates a discussion with his/her own group of students
5.	student → tutor (S-T)	A student initiates a discussion and directs it to his/her tutor
6.	tutor → student (T-S)	A student initiates a discussion and addresses it to another student

We adopted the Hofstede national culture framework to analyze the impact of national cultural diversity on the learners of the two universities. The first dimension, Power Distance refers to the degree a society's culture has respect for authority. A high power distance society is described as having teacher-centered teaching and learning. Individualism refers to culture which emphasizes individual goals and encourages members in the society to be independent while collectivism culture emphasizes on teams, groups, families and society as a whole. Masculine roles refer to assertiveness, competition, and toughness and feminine roles refer to people-orientation and tenderness. The last dimension uncertainty avoidance refers to the degree in which members of a society cope with uncertainty of the future and tolerance of ambiguity. The learning environment of a society with a high degree of uncertainty avoidance tends to be more structured, maintaining group harmony towards a teaching mode.

Using a content analysis approach, every posting in the asynchronous forum boards and synchronous chat sessions was read, examined and manually analyzed. Two independent researchers participated in the classification of the exchanges within the dimension of interaction to ensure reliability and consistency in the process based on the framework defined.

We defined a single interaction by examining the instructional intention and the type of discussion. After investigating the pattern of tutor-learners-course coordinator interactions and the depth of the discussions, the interactions were coded and classified into the five dimensions, along with initiator and respondent communications in the various categories of exchanges. If a single exchange involved multiple interactions, we will record as per the most dominant interaction.

To examine the depth of the discussions, we analyzed the thread levels of discussions. Thread 1 indicates that the initiator's posting did not have any ensuing reply while Thread 2 denotes a single reply to the initiator's posting that shows a two-way communication ensued and so on. A higher thread number denotes a discussion that has progressed to deeper and more complex levels.

RESULT AND DISCUSSION

From Table 3, it is noted that the average age, language used and the mother tongue of the learners' profile are different in the both the SHTVU and WOU. The common language background of learners and the language used in LMS are the same in SHTVU and the average age of learners in WOU is 3.6 year older than the learners in SHTVU. In WOU, the learners came from various racial backgrounds where different languages are used but English is used in the LMS. More than half of the discussion in SHTVU was actually initiated by female learners, as compared to WOU which was the opposite. Table 5 depicts SHTVU LMS number and types of interaction while Table 6 portrays WOU LMS number and types of interaction. Table 7 describes the thread level of discussions in SHTVU LMS and Table 8 shows the thread level of discussions in WOU LMS. Table 9 represents the number of participants in the LMS and Table 10 shows the number of postings by chat sessions and forum boards.

Table 5. SHTVU LMS: Number and Types of Interactions

Dimension	CC-G	S-CC	S-G	T-G	S-T	T-S	Total	
Cognitive	1	3	12	2	14	0	32	6.9%
Explanatory	0	1	6	3	44	0	54	11.7%
Expository	0	2	12	1	28	0	43	9.3%
Procedural	3	61	49	9	86	1	209	45.1%
Social	1	29	51	7	37	0	125	27.0%
Total	5	96	130	22	209	1	463	100%
	1.1%	20.7%	28.1%	4.8%	45.1%	0.2%	100%	

Table 6. WOU LMS: Number and Types of Interactions

Dimension	CC-G	S-CC	S-G	T-G	S-T	T-S	Total	
Cognitive	6	3	10	17	3	0	39	9.3%
Explanatory	3	2	38	59	18	0	120	28.5%
Expository	4	1	12	80	15	0	112	26.6%
Procedural	18	8	9	43	3	0	81	19.2%
Social	6	1	24	31	7	0	69	16.4%
Total	37	15	93	230	46	0	421	100%
	8.8%	3.6%	22.1%	54.6%	10.9%	0%	100%	

Table 7. SHTVU LMS: Thread Levels of Discussions

LMS	Frequency				Total
	Thread = 1	Thread = 2	Thread = 3	Thread ≥ 4	
Headquarters	37	97	16	30	180
Learning Centers	114	134	19	16	283
Total	151	231	35	46	463
	32.6%	49.9%	7.5%	10%	

Table 8. WOU LMS: Thread Levels of Discussions

Forum Heading	Frequency				Total
	Thread = 1	Thread = 2	Thread = 3	Thread ≥ 4	
Announcements from CC to Students	4	1	2	27	34
Public Forum	3	11	8	36	58
Forming Study Groups	7	5	2	9	23
Chat Sessions	0	0	0	15	15
Announcements from Tutor	102	38	26	50	216
Group Forum	10	19	17	29	75
Total	126	74	55	166	421
	29.9%	17.6%	13.1%	39.4%	

Table 9. Number of Students Participated in the Chat Sessions and Forum Boards of SHTVU and WOU

Number of Participants in the LMS of :	Synchronous Chat Sessions				Asynchronous Forum Boards				No. of Students Participated				Total Students Enrolled			
	SHTVU		WOU		SHTVU		WOU		SHTVU		WOU		SHTVU		WOU	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Head-quarters	43	3.0	23	6.4	86	5.9	80	22.2	121	8.3	93	25.8	1451	100	361	100
Learning Centers	84	35.9	0	0	8	3.4	71	19.7	86	36.8	71	19.7	234	100	361	100

Table 10. Number of Interactions in the Chat Sessions and Forum Boards of SHTVU and WOU

Number of Interactions in the LMS of:	Synchronous Chat Sessions				Asynchronous Forum Boards				Total No. of Interactions			
	SHTVU		WOU		SHTVU		WOU		SHTVU		WOU	
	n	%	n	%	n	%	n	%	n	%	n	%
Headquarters	65	36.1	15	11.5	115	63.9	115	88.5	180	100	130	100
Learning Centers	274	96.8	0	0	9	3.2	291	100	283	100	291	100
Total	339		15		124		406		463		421	

Analyzing results depicted in Table 5, we found that the Procedural dimension of interaction was the most dominant (45.1%) in SHTVU, followed by Social (27.0%), Explanatory (11.7%), Expository (9.3%) and the least dominant dimension was Cognitive (6.9%). Most messages were S-T, followed by the exchanges with classmates. The least dominant category of exchanges was T-S. Based on Table 7, we observed that most forum exchanges (49.9%) proceeded to the second thread while 32.6% exchanges remained in the first thread. About 10% of the discussions proceeded to the fourth thread and beyond.

The Explanatory dimension of interaction appears to be the most dominant (28.5%) in WOU, followed by Expository (26.6%), Procedural (19.2%) and Social (16.4%). The least dominant dimension was Cognitive (9.3%), as depicted in Table 6. Most messages were in the T-G category of exchanges (54.6%) while S-G category accounted for 22.1%. The least dominant was the category of exchanges of S-CC which was about 3.6%. There were no messages initiated in the T-S categories as the students used the message function to communicate with individual students or tutors. Analyzing Table 8, we noted that most forum exchanges in WOU were in the fourth thread of interactions and beyond (39.2%), with about 29.5% of the discussions remaining at the first level. About 17.9% of discussions proceeded to the second thread and 13.3% went on to the third thread level.

Based on Table 9 and Table 10, with regards to the learners' participation in the forum boards and chat session, we found that in the LMS platform of SHTVU headquarter, more learners participated in the asynchronous forum boards (5.9%) compared to the synchronous chat sessions (3%). We found the opposite for the learners' participation in the platform of learning centers. In WOU, the chat sessions were conducted by the CC at the headquarters level. Besides, learners' participation rate was observed to be higher in WOU forums at head

quarters level as compared to SHTVU. Examining the number of interactions of SHTVU, the interactions were more at the headquarter forum boards (61.5%) as compared to the number of interactions in synchronous chat sessions (38.5%). However, at the learning centers LMS platform, number of interactions in the synchronous chat sessions (96.8%) was more than the asynchronous forum boards (3.4%). As for WOU, it can be noted that majority of discussions and interactions happened in the asynchronous forum boards conducted at learning centers level.

In terms of exchanges, SHTVU obtained the highest level of interaction in the S-T category, registered at 44.5%. When Chinese learners encounter challenges in their studies, most of them prefer to use LMS and have direct contact with their tutor in order to gain more information. The environment of a web-based learning process offers a learning experience with a difference. Online learners are able to bridge the distance or close the gap between learners and tutors easily. A web-based learning environment also reduces the negative effects of the power distance factor. Meanwhile, the high T-G interaction level (about 54.6%) in WOU indicates that the ODL in Asia is still very tutor-centered. The tutor plans learning tasks and follow up with directives or instructions. As such, in Malaysia, the influence of the power distance factor is high compared to China and world average.

In the dimension of interactions, SHTVU shows the highest activity level in the Procedural category (reaching nearly 44.7 %). The demand for skilled manpower and higher education increases in tandem with China's rapid social development and economic growth. More Chinese are considering continued education program and retraining in order to gain personal prestige and improve their socio-economic standing. With many formal education setups still heavily exam-orientated, learners' questions and concerns still tend to gravitate towards examination procedures and strategies. This also implies that the influence of Collectivism is higher in China than in Malaysia. In the depth of discussion, statistics for SHTVU indicate a high level of Thread 2 interaction activity. This is due to the fact that most exchanges were at the Procedural dimension level and were geared towards obtaining a single direct answer to a query.

For dimension of interactions, the Explanatory dimension of WOU reached 28.5%. Furthermore, about 39.4% of the WOU learners achieved depth of discussion of thread 4 or higher. The findings indicate that learners in Malaysia aim to gain more knowledge in their learning activities. At the same time, the results also imply that the learners in Malaysia are quite independent and could easily adapt to a web-based mode of education. This implies that individualism is higher in Malaysian culture with lower degree of uncertainty avoidance.

In our opinion, the low S-S exchanges and relatively few cognitive interactions in the SHTVU forum discussions were mainly to the Chinese Confucian values which believe that the teacher nor students should be put in a position to suffer "loss of face" or embarrassment. Students are found to be unwilling or reluctant to comment on others' opinion or ideas posted in the forums and this reflects the higher degree of collectivism as well. Meanwhile for the dimension of interactions, the social aspect reached 27.4%. The LMS, besides acting as a platform for learning materials, also enables learners to establish friendships with their counterparts. Web-

based interactions not only fulfilled the learning requirement, but also fulfilled the social need for bonding and friendship. This finding also highlights the elements of collectivism in China's culture. Our finding also noted that in SHTVU, the majority of discussions were initiated by female learners. In the Chinese society today, both females and males are playing their social role in a significantly more equitable way. The gender gap in China is gradually becoming smaller. The education opportunities for males and females are generally equal.

In addition, in SHTVU, more students participated actively in the LMS discussions at the learning centers level, as compared to LMS conducted at the headquarter level, in which most discussions were actually happened in the synchronous chat sessions. As tutor is online and able to give real time response, learners of SHTVU are more willing to take part in synchronous chat sessions. This can be seen as teacher-centered teaching and learning as rooted in the cultural background of Asian learners. On the other hand, this also reflected that the power distance indicator of the two countries is much higher than the world average. WOU learners participated more in the LMS organized and opened to all students (at headquarter level) and this indicates that the Malaysian learners are higher in individualism.

Based on the above findings, we noticed that culture diversity will have a momentous impact on learners' web-based interaction behavior. Although both universities are located in Asia, the culture of their respective regions, to certain extent, are quite different. Therefore, the learners learning and interaction behavior is also expressed and conducted differently. Clearly, cultural diversity influences web-based learning and interaction behavior in the following aspects:

The initiator of web-based interaction: In the feminine-orientated type of culture and society, learners' activities have progressed beyond gender constraints – both the male and female learners have actively participated in web-based interaction. On the other hand, in the power distance-orientated society, the tutor frequently functions as the initiator of web-based interaction, with learners seldom taking the initiative to commence the interaction process.

The thread levels in discussions: Thread levels depend on whether learners are willing to openly comment on others' viewpoints. Chinese learners, most of them are influenced by the traditional Confucian culture, are reluctant to aggressively display knowledge in order to avoid being labeled as 'unfriendly'. As such, in order to maintain a good relationship, most learners do not openly criticize or comment on other learners' viewpoints. Most of the Chinese learners prefer the assistance of the tutor to directly solve their learning problems. Therefore, the ensuing discussions remained mostly in the level 2 category.

The depth of interaction: The creation and exchange of knowledge is built on the basis of self and independent thinking, not on simply following others' opinion or thoughts (meaning to always say 'yes' to others). Learners who are highly individualistic would be confident enough to voice out their independent thoughts and viewpoints. The level of their web-based interaction is significantly deeper.

The content and benefit of web-based interaction: Web-based interaction is the key tool to connect among learners. Apart from learning interaction for reference materials, web-based

LMS also becomes the bridge to establishing friendships – for working closely with each other to solve the learning challenges faced. Thus, web-based interaction not only fulfills the learning of academic requirements, but provides an avenue for social networking as well. This trend may be clearly observed in those learners with a high sense of collectivism.

CONCLUSION

Based on the above analysis, we conclude that learners from different national cultural backgrounds have demonstrated varied web-based interaction behavior. The web-based interaction activities of the learners are influenced by their respective regional or national culture. Culture is the collective/shared value or perspective adopted or practiced by the people in a certain country or region. The members of society utilize cultural values and conventions to cope with their world and with one another, and the elements of culture are transmitted to later generations through socialization and learning.

It is a fact that culture and cultural institutions have an enduring resilience. As such, the values and practices of a certain culture will not be easily affected or transformed despite being subjected to the forces of external change. The effects of traditional culture towards learning activities are still deeply entrenched in spite of the growing prevalence of new ways and modes of learning. While more analysis needs to be undertaken, this study has discovered various possible ways to improve and encourage learner interaction in online discussions.

In societies with a higher degree of power distance effect, quite a number of learners are known to have acted as readers who did not ask any questions. These groups of learners often wait for the tutor to define their responsibility, and may directly relay their doubts to the tutor. It is crucial to help the learner, regardless of the influence of background culture, to gain a level of confidence in learning, which will lead to greater satisfaction in acquiring and synthesizing knowledge. This factor is crucial as it boosts the learner's satisfaction and interest, and encourages participation in web-based discussions in a more meaningful way.

In societies with a higher degree of masculine-orientation, tutors need to look more into female learners' learning activities. In Chinese society, female learners are usually seldom involved in the decision-making activities and seldom disclose their own view points. Most of them are implementers rather than decision-makers. However, the activities in the learning process require every learner to demonstrate independent thinking, to bravely voice out their views and to be involved in commenting on others' viewpoints. These intellectual processes and discussions would greatly enhance the acquisition of knowledge and understanding. Tutors should support and encourage female learners to participate more in web-based interaction, and positively affirm them when they show improvement and progress.

Web-based interaction is the key tool to network with other learners. Besides interacting on issues related to learning materials via LMS, learners also communicate and strengthen friendship networks through web-based interaction. Learners who are collective-orientated could also satisfy their social needs besides fulfilling the learning requirement. Social dimension of web-based interaction would foster cooperation among the learners. When faced with challenges in the learning process, learners would utilize the internet to assist each other.

Timely and appropriate training is crucial to equip tutors with necessary facilitation skills towards enhancing learner-centered interaction in the web-based learning environment, acknowledging the fact that tutors are managers of learners learning experience.

From the perspective of information transmission, the interaction of online learning via the web lacks the range of physical expressions and the stimulus of sound. Learners do not experience the impact of live hearing and seeing, but only communication via words. This type of communication is perceived to be less intimate and animated, increasing the feeling of loneliness and alienation experienced by the learners. The learner's experience in the first few weeks of the semester is believed to deeply affect the subsequent learning behavior of the learners. This is the transition period for learners to shift from a traditional learning approach to a new web-based learning environment. Teachers and tutors need to capitalize on various techniques to break the ice as well as to create a friendly web-based learning environment, in order to eliminate the gap caused by distance and non-face to face communication. Once the learners are used to the web-based communication environment, they will adopt and participate in online communication as one of the crucial learning tools available to them.

As ODL learners tend to feel lonely throughout their journey of acquiring knowledge, timely feedback plays a vital role to eliminate the negative feelings associated with on-line learning. Feedback can be broadly defined as the exchange of information between learner-instructor, learner-learner and learner-LMS with regard to an action, event, or process that results in enhanced student learning. A number of researchers have studied the importance of feedback (Chickering & Gamson, 1987; Chickering & Ehrmann, 1996; Sciuto, 2002; Soon *et al.*, 2000). All of them agreed that feedback is critical to assessment and provides students information about their progress in the course. Both asynchronous forum exchanges and synchronous chats are good ways to provide timely feedback. Nonetheless, either due to the large number of students or perhaps the small number of teachers, the difficulties of insufficient feedback persists, in spite of the initiative taken by teachers, tutors and learners to solve the problem.

The learning activities of learners are influenced by various factors, including learning style, capability of using information technology, the attitude of learners towards the internet and computer, as well as the influence of regional and national culture. Amongst all these, the influence of regional and national culture should not be neglected or underestimated. Unlike other influences, the impact of culture is always ingrained and indirect, and will take a longer time to modify or change. For instance, a learner may only require a few weeks to master a range of computer skills, but the impact of culture will require a longer time to be changed, on assumption that it can even be altered at all.

The development of information technology has enabled enthusiastic learners to gain equivalent learning opportunities. Nonetheless, information technology is largely unable to provide a solution for all the problems encountered along the learning journey. Hence, the bearing that culture will not be eliminated with the advancement of technologies and learning techniques. In line with the progress and openness of societies today, as well as the on-going adaptation of new learning approaches, the learning behavior of learners via the Internet is

expected to continuously change, reflecting the progress of lifestyle-changing information technology. Acknowledgement of this fact brings a realization of the many strategies that will need to be implemented to upgrade the efficiency of the online learning process.

This study can be expanded to cover larger sample size and to include analyzing the interaction in courses of a different nature as well as across different cohorts of students in future research undertakings. We acknowledge that there is no single unified culture for a nation, especially with regard to a multi-racial country such as Malaysia. Even in China, there are various ethnicities with different backgrounds which imply different degrees of assimilation of the national culture among the ethnic groups in the same nation. A questionnaire survey can be administered and interviews can be conducted with the learners to better understand how their cultural background affects their interaction. In addition, patterns of interaction in the forum discussion boards can be analyzed throughout the duration of the semester, rather than just a snap-shot at the end of the semester. Besides, interactions in asynchronous forum boards and synchronous chats can be analyzed separately. Learners interaction in a web-based environment is not confined to just online forum boards and chats, but can also be expanded to include studies on how learners interact with the other dimensions of content and self, as mentioned and explained in the related literature.

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