Who's learning? Responding to the needs of a culturally diverse world of online learners

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A literature review shows that online learning may be impeded for some learners of different cultural backgrounds. Therefore, guidelines are needed to help design courses that are culturally conducive for learners. This paper proposes that Vygotsky's sociohistorical theories provide a basis for designing these guidelines because they suggest that the sociohistorical background of a community can explain the learning processes of the community. A design research approach was used in this study to evaluate and modify the guidelines designed for an online course for learners from an Arabic community, exemplifying the use of this approach. Preliminary findings support the use of these theories for the design of guidelines for pedagogically sound, culturally favourable online learning environments.

Keywords: culture, online learning, sociocultural, design guidelines

Introduction

Today's world is becoming increasingly multi-cultural, and online courses are being designed for a growing number of cultures across the planet. But are people from these diverse cultural backgrounds learning successfully online? Research has shown that learners from different cultural backgrounds responded differently in their online courses. For example, in research on online learning courses, learners differ in the amount of interaction they feel comfortable with (Tu, 2001); support they require from each other and the tutor (Gunawardena et al. 2001); what they feel is important in building an online presence (Ku & Lohr, 2003; Morse, 2003); length of messages they write or read (Goodfellow et al. 2001); and the way they deal with conflict and group work (Gunawardena et al., 2001; Kim & Bonk, 2002). It has also been shown that some learners in a second-language environment interacted less online due to the amount of stress they felt in using a second language (Tu, 2001; Yildiz & Bichelmeyer, 2003), and some found it difficult to complete collaborative tasks successfully (Sarker, 2005), probably due to task types that require a richer environment of trust and community (McGrath & Hollingshead, 1993). Therefore cultural issues can have a significant impact on many aspects of learning online. As social presence, interaction, student centredness, collaborative learning and the development of cognitive skills are all inter-related aspects of the learning environment, then if one aspect of the learning environment compromises student learning, all areas will be affected and learning will be impeded. Therefore cultural values must be considered in course design. This means we need to understand the cultural issues that affect learning and use this to guide the design and implementation of our courses. In this study, the context of Oman will be used as an exemplar in suggesting how principles and guidelines may be proposed and tested to design online learning environments that are conducive to learners' cultural values and are pedagogically sound, giving the opportunity for everyone to learn.

Aim of the study

The aim of this study is to propose a means of developing theory-based and empirically refined guidelines for the design of online learning environments. These guidelines should be pedagogically sound and conducive to learners' cultural values. The development of this approach is exemplified in an Arab culture within an Omani context.

Literature review

Guidelines for considering cultural differences in the designing of courses

Some recommendations have been made for designing courses for cultural differences, such as those by Collis, Moonen and Vingerhoots (1997) and Henderson (1996). Their recommendations were based on a model Reeves (1992) proposed for analysing interactive learning systems; these were not intended to be

'mutually comprehensive or mutually exclusive' (p 100); that is, his model was incomplete, untested and unrelated to cultural issues. Others have recommended that increased flexibility in different areas in course design would make courses more culturally compatible. Collis (1999) suggested that courses should be designed with flexibility in each of Reeves' 14 dimensions to provide for differences within the cultural backgrounds of the learners. Others, such as Geer (2001) and Joo (1999), listed suggestions of issues that should be considered for courses that are culturally inclusive; for example in considering different decision-making styles, the usage of grammar in conveying meaning differently or the need for flexibility in learning goals. None of these recommendations have been shown to be based on empirical research, and neither do they justify why the particular recommendations have been selected; that is, it is not known to the reader if the proposals were intended to be a complete description as the researchers understood it, or if these were a random selection of recommendations. However, these untested models and recommendations, the lack of a theoretical basis for proposing a cultural model for learning, and the complexity in designing for cultural preferences all indicate the need to approach the preparation of a model or proposal from a more structured and justifiable basis.

Using a sociocultural approach for designing cultural models

Lev Vygotsky developed theories about learning that may be applied to understanding cultural preferences in learning. His theories essentially propose that learning requires other people in the process, that 'social relations underlie ... all higher functions' in learning' (Vygotsky, 1981 p. 163). This would mean that learning is a social activity and the thinking tools developed would be cultural tools, as learning is mediated by people in that environment. These theories also propose that the history of the society affects its culture, and therefore would also affect the tools learners develop and use in the learning process. This means that there may be a link between history, culture, and cognition; and thus a way to understand the learning processes of a society may be through understanding its social history.

Vygotsky proposed that learning is mediated. Caregivers or teachers use mediating tools such as signs, symbols and texts, and learners need to be taught how to use these tools. These tools are found twice: first externally with the caregiver, and, second, within the learner as psychological tools that have been appropriated. The type and structure of the tools reflect the values of the society, as they are selected and shaped by members of a society, especially parents and other relatives. Thus, according to Vygotsky's theories, the role of the mediator is very significant in the learning process and in the type of cognitive strategies that are developed. Some studies have shown a link between the values of the society and the way caregivers taught their children. For example, a field study on Mazahua people in Mexico found that knowledge was considered to be that which is 'acted out'(De Haan, 2002 p. 36); learning in this culture was through work, where parents would create opportunities for their children and where the parents could observe and direct or guide them. Their concepts of knowledge determined the way they taught their children. Other studies have shown that people from different cultures have different ways of thinking and use different cognitive strategies in the learning process. For example, Norenzayan, Smith, Kim and Nisbett (2002) found that when people from East Asia and the United States observed the same situation they evaluated it differently: where the Asians noticed the background or context, the Americans described the central object. In another study, Norenzayan et al. (2002) found that when Koreans made predictions about a situation, they included situational factors, whereas the Americans favoured personality factors. These studies suggest that learners from different cultural backgrounds focus on different issues in the same situation, and process knowledge differently. The cognitive development of these learners would therefore be dependent on the values and concepts of the caregivers and their cultural values, and this affects the types of tools that are selected and developed in the learning process. Thus the social environment and the learning are part of the one system: cognitive development is a 'process of acquiring culture' (Cole, 1985 p. 148). Therefore the social environment and learning may be a way of preserving the values and traditions of the society. It may also imply that changes in the cultural values of the society may change the way a person learns: that is that culture and learning have a historical perspective.

Vygotsky's theories are often described as sociohistorical theories because of the historical nature of culture and because an individual's cognitive development is essentially a historical process (Luria, 1974; Nell, 1999). Cultural practices and values appear slowly in society, building and adapting the previous practices; 'everything cultural is historical' commented Scribner (1985 p. 123). Thus according to these theories, the historical background of a culture may provide an understanding of the values and

psychological tools used in learning. Luria (1974) proposed that if history affects the cognitive processes, then changes in social organisation may cause changes in these processes. The Russian Cultural Revolution provided an ideal opportunity for him to test this hypothesis. He found that people whose villages had undergone social changes caused by the revolution showed changes in their cognitive processes, in comparison to those in villages untouched by the revolution.

The above studies were not well known and were not felt to be of great significance (Cole, 1985; Nell, 1999) until recently. However, more recent studies may help support these findings. The cultural psychology theories of Richard Nisbett (2003) proposed that the constraints and context of the social environment shape the world view and belief systems of a community, and therefore affect the development of people's cognitive processes. In their research, Nisbett et al. (2001) compared two ancient cultures, Greek and Chinese, to determine how social practices affect cognitive processing. They postulated that the social organisation of cultures affects belief systems, epistemologies, and cognitive processes, as can be seen in the examples in Table 1.

Table 1: Examples of the effects of social practice on cognition

	Social organisation	**Belief systems and cognitive processes**
Greeks	• Strong sense of individual identity • Absence of social constraint • Personal freedom, • A tradition of debate	• The world is made of discreet objects to be categorised • Analytical, and logical • Debating valued
Chinese	• Identity was within roles and relationships with obligations to others • Confrontations discouraged • Group expectations and relationships between individuals are prescribed by the society	• The context described by relationships, not by rules or categorisation • Harmony valued, • Relationships valued. • Believed cosmic and earthly events were in harmony

Nisbett (2003) and Lloyd (1996) both found that the differences in social organisation of cultures, such as the Chinese and Greek, can be explained through an understanding of their historical backgrounds. The ancient Greeks lived by the sea, were engaged in individualistic activities such as fishing and came into contact with many other cultures. The ancient Chinese, by contrast, lived in a more homogeneous situation in their villages where they worked together on farms, and where group harmony would have been important to enable the community to function. Geography is a key factor in how a society lived; for example if peaceful relationships between people are necessary for the community to function, as in the rural Chinese society, then it is likely that relationships would be more highly valued than other concerns. The geographical setting of the Greek civilisation allowed a more individualistic lifestyle and personal identity was valued. Lloyd's (1996) studies of these ancient cultures included the writings of their early mathematicians and showed their different ways of cognitive processing. The Greek mathematicians in the third century AD used a deductive approach, and the Chinese by 'an explanation of how and why it works' (Lloyd, 1996 p 18). Thus it can be seen that for these two cultures, the economic and geographical history of the society affected the way they lived and what they valued and focused on. This in turn affected their epistemologies, their worldview and their cognitive process; these views and values would then be either affirmed or modified by the society and passed on to the children.

All these studies suggest that changes in the social organisation of a society may be reflected in changes in the cognitive processes of the learners. That is, history shows that the constraints on the social organisation of a society affect the epistemologies and worldview of the community members which then shape their values and practices. These values and practices are passed on to others through mediated learning. Changes to the constraints on the society may change the worldview or cultural practices, which in turn change how learning is mediated and the cognitive processes that develop. Although more research would be required to establish these conclusions, the findings are consistent with Vygotsky's theories of the relationship between culture, its historical foundations, and the learner. This suggests that a socio-cultural approach may be a way to understand how to design learning environments of learners in either single culture or multi-cultural classrooms. As Gutierrez and Rogoff (2003) noted, a sociocultural approach defines culture, not as individual traits, rather as values and practices of a community. Therefore, determining the 'history and valued practices' (Gutierrez & Rogoff, 2003 p 20) of learners will help describe what cultural practices and values that group of learners may have. Gutierrez and Rogoff

(2003) suggested that studies on the different communities represented in the classroom should aim to find commonalities between the groups for the design of teaching and learning processes; and this will help teachers to respond to the diverse cultural needs of the learners. Thus, the initial step for course design for multicultural or single cultural classes is in researching the social history of a particular group of learners, as is exemplified in this research for learners from an Arab community.

Sociohistorical view of an Arab community

The Arabian Peninsula is characterised by a large expanse of desert and an overwhelming lack of water, thus defining the lifestyle of the inhabitants. A large number of early Arabs were Bedouins who had a nomadic existence in the search for water and other resources. The harshness of this existence forced them to live in small tightly knit tribes, and Arabs who settled often lived around oases with a similar lifestyle to the nomadic Bedouin. Clans were the basis of their society, and were made up of several families with a number of kindred clans making a tribe, and Hitti (1996) commented that this 'demands boundless and unconditional loyalty to fellow clansmen' (paragraph 6). Thus the early Arabic civilisation was collectivist (community oriented) in its nomadic existence and in the closeness of the tribe, with harmonious relationships and shared understandings being characteristic of their lifestyle. The Arab culture is still collectivist today, especially in the Gulf, with an emphasis on family and tribal loyalties (personal observation).

Vygotsky's theories described language as the most powerful tool in mediating culture and a 'profound part of the higher psychological processes' (Vygotsky, 1978 p 126), therefore this can be another tool that shapes thinking. In his seminal studies on oral cultures and language, Walter Ong (1982) proposed a similar viewpoint, that the way a language is used affects the way people think, as this would determine how knowledge, skills and traditions are transmitted within the society. The Arabic language historically has been valued for its poetic characteristics, and as a 'device for social means as much as it is for carrying information' (Zaharna, 1995 p 246). Thus the way the Arabic community values its language promotes and affirms the historical participatory values of their community. The Arabic language also is primarily intended to be heard or recited, not just read. This oral characteristic affects the values of the community (Ong, 1982). Knowledge held in a spoken (oral) form is 'designed to be remembered after simply having been heard' (Jousse, 1990 p 231), and the rhythm and rhyme to help in recalling information in a sustained manner, and these are proposed to promote more a visual and participatory approach in the learning process. Therefore, if language does shape the psychological processes as Vygotsky proposed and Ong supported, then these characteristics of language should be used to propose cultural values in learning for people from this cultural background.

The collectivist close-knit tribal structure of the Arabic social background and the role and oral nature of their language are therefore proposed to determine and support the cultural values of their society. Accordingly, these values and preferences should be examined to provide tentative proposals for preferred ways of learning for this community.

Developing guidelines for culturally compatible courses

Proposed Arabic cultural values in learning

Following the study of the Arabic community's sociohistorical background, several points are proposed concerning its values and how these may affect the learning process:

- The community orientation of society meant relationships have a high priority. Nisbett (2003) found that societies with this type of social organisation are more likely to see items less as discrete objects, and more likely in context with its environment. This may result in a less deductive approach to understanding and explaining individual items, and a greater awareness of the context of the item to carry the meaning.
- Learners from an oral background tend to be more visual. Zaharna (1995) explains that this is because they are more people or event-orientated, where objects are seen, not as discrete linear objects, but within the context of their environment. Thus, the visual presentation in the learning environment is needed to help learners visualise the concepts, either through multimedia aids, or through creative use of language that can enable learners to develop their own mental images.

- The story has been a very powerful force within an oral culture. Stories provided the social-collective identity of the culture. Learning based in stories could be more meaningful, and should allow for learner participation with other people, for example, with role-plays where appropriate.
- Ong (1982) explained that as knowledge in an oral culture is more human-related, learning therefore was more situational and centred around activities and with other people. Therefore learning should be situated within real world experiences; learning alongside an expert, as in apprenticeship, would be a culturally suitable way to learn (Ong, 1982).
- In an oral culture, the adults or narrators held knowledge; there was no other source. Therefore they were held in great respect. Much of this knowledge was with the narrator, whose stories carried the values of the community, defined the culture's identity and could be a force of disruption or of stability (Folaron, 2002). Therefore in learning, the tutor has a central role.

Thus a sociocultural approach to understanding a community of learners can suggest several different cultural values that may determine learning processes and preferences. These can be used to propose design guidelines for online learning environments

Table 2: Summary of possible learning preferences for an Arabic learning community

Cultural values	Proposed learning preferences
Community	Descriptive analyses may be preferred more than deductive analyses. Items are understood in their context, not in isolation.
Visual imagery	Language should develop rich mental images and concepts. Visual-based content may be preferred to text-based Other visual tools may be preferred
Story-based	Situated learning that is story-based or provides a genuine or vicarious experience may be preferred Use of metaphors may be valued in descriptions
Human-related	Apprenticeships providing scaffolding and other human-based support may be preferred. The relationship with the tutor may be very important.

Using the cultural values for designing learning environments

The learning preferences that have been proposed for a group of learners could be used to propose design guidelines for the learning environment, which can then be tested for their validity. In this study, the aim was to design guidelines for the online environment for the local context. Therefore the following steps were taken:

- research of the literature to analyse the response of learners to their online learning courses
- categorisation of the findings into five concepts of social presence, interaction, collaborative learning, cognitive strategies, and student-centred learning; these inter-related concepts are considered to describe effective pedagogically sound online learning environments
- proposal of guidelines for course design, based on the findings in these categories
- addition of further guidelines based on the proposed cultural learning values of learners from an Arabic community.
- the guidelines were re-categorised to enable their use in course design, namely: design of course, orientation for learners, and implementation of the course.
- an online course was then designed and implemented with a group of participants.
- empirical research is being done to modify and refine the proposed guidelines.

A total of 50 guidelines were proposed based on the review of the literature. Examples of some social presence guidelines can be seen in Table 3.

Table 3: Guideline examples based on literature review

1	Use discussion forums, chat and email; they all contribute to social presence in different ways so they should all be used in online courses (Tu, 2002)
2	Use the social networks that are already in the classroom as they have a significant impact in developing social presence (Wegerif, 1998; Yang & Tang, 2003).
3	Encourage learners to interact frequently. Participants need to cross a 'threshold' in the amount of online interaction. Those who do not interact sufficiently do not 'cross the threshold' and find the environment unfriendly (Wegerif, 1998).
4	Expect that learners may perceive social presence levels differently. As social presence is a perception, people may respond differently to the same environment (Ku & Lohr, 2003; LeBaron *et al.*, 2000; Morse, 2003; Tu, 2001). Learners in this culture may prefer higher levels of interaction than would be expected in other learning contexts (Zaharna, 1995).

Evaluating and refining design guidelines

Context of the study

The guidelines were tested in a two-month fully online professional development course for instructors at a university. Approximately one third of the faculty members were Omani, one third non-Omani Arabs, and the other third were from the rest of the world (Sultan Qaboos University, 2004). The Arabic culture was selected for this study, as this was one community that represented a majority of the instructors, and because of the researcher's interest in studying the learning preferences of this society.

Method

A design research method was chosen because the goals of this research are outcomes that benefit teaching practice, and because design research has been developed as a 'means to test and refine educational design' (Collins, Joseph & Bielaczyc, 2004) in the attempt to solve teaching and learning problems. Design research is comprised of four stages:

- recognition of a problem
- a proposal for a solution
- testing and refining of the solution in context of use, and finally
- production of the tested and adapted solution.

In design research, formative evaluations are used, as the proposed solution is tested and modified repeatedly. Data from the evaluations are employed to modify the theory, which then is used to adapt the course. Thus, there are two products: first a theory driven model and secondly a set of guidelines, modified through use (Cobb et al. 2003; Reeves, 2000). Design research calls for data to be gathered from a variety of sources and an in-depth understanding of the learners' responses to the learning environment. Thus a case study approach was assumed to be the most effective method for this research. Mertens (1998) described case studies as being an intense study on a group in a bound system, where data is collected through several means, for example in interviews, participant observations and documents. Three research participants were selected from the twenty faculty members who were on the course. As each case study is similar to an experiment, not to a sample, participants were chosen according to the case study principle of repeatability of results where each case should be able to support the findings of the other cases (Yin, 1999). Participation was through informed consent. These participants were treated as separate cases, with the results being treated separately and then later used as a basis for generalization of findings.

Data collection and analysis

Timetables and templates were used as a basis to organise data collection. There were three cycles of research within the two-month course. In each cycle, data was collected from participant interviews, participant observation records and analysis of discussion transcripts and assignments. The research participants' discussion transcripts were analysed for content using a design developed by Poole (2000),

and for discourse using principles proposed by Henri (1991). As the guidelines proposed were organised into the five different online concepts, the data was categorised in the same way. This occurred in each cycle; each case study, between each case and also between the different cycles. This generated a large amount of data, but the five theoretical concepts helped focus the collection and analysis. The data for each participant in each of the five online concept areas was then analysed for commonalities, and these were compared against the guidelines that had been proposed in each of the five concept areas. Thus, the findings were used to change the theory, that is, the proposed guidelines. The data analysis resulted in a number of proposed changes to the guidelines as can be seen in Table 4; this shows the modifications made to the guidelines exemplified in Table 3. Following the principles of design research, a peer reviewed these proposals to determine if the evidence was sufficient to enable the modifications to be made. Once the modifications were approved, they were then used to modify the online course so that the changes could be then be further evaluated in the next cycle of research. Modifications or additions were proposed in each of the cycles of research, but further testing is necessary in another course before these can be proposed as confirmed findings.

Table 4: Guideline examples following research on one online course

1	Use of discussion forums and chat may not be the main tools to develop (R3) social presence, but they may support it. Other means should be used such as email and instant messaging (R3). More use should made of the chat room from the first week, and individual encouraging emails should be sent by the facilitator regularly until the participants are into the course community. (R1).
2	Use the social networks that are participants already have, or provide groups of people within a close circle, as they may be the most significant factor in developing social presence. (R3)
3	NEW: Expect that some learners will feel more comfortable and motivated when they are accountable and committed to others, therefore design activities that require learners to be responsible to each other in completing the work (R2, R3).
4	NEW: Provide initial face-to-face classes to enable participants to get to know each other visually and to be able to build relationships so they will want to communicate and work together (R1)

Note. R1, R2, R3 indicate which research cycle identified these issues.

Summary of initial findings and resultant changes to the course

It was found that the research participants perceived a lack of social presence, required more structure, more support, more synchronous and face-to-face meetings, and the opportunity to get to know others before the course started. Some expressed a need for accountability, appreciation of high amounts of tutor interaction, and the preference to work in groups where there are commonalities between group members. Discussion forums were not found to build affinity due to insufficient interaction, language barriers, and the more formal nature of interaction, as forum participants felt restricted in sharing freely with those they were not close to.

It was also found that the e-learning orientation unit was perceived to have excessive text, and was not valued for its learning benefits. Some of the cognitive tools introduced in this unit were not used properly in the course. These cognitive tools provided support for the chat, forum, group work and assignments.

These responses were used to propose changes in the design guidelines, initially as tentative changes; further cycles of research are necessary to affirm changes. The modified guidelines then directed changes to the course. This included a change from online to face-to-face orientation, formation of groups based on commonalities from the start of the course, more face-to-face time to provide scaffolding, greater use of instant messenger, email, participant-led chats and tutor interaction, as well as the use of cooperative tasks to increase accountability and commitment. The modified guidelines also directed changes in the placement of tool introduction into the context of use, such as chat and forum guidelines being linked to the discussion and chat rooms. Orientation was also redesigned to be an active and interactive example of an e-learning course.

Some of the course and guideline modifications could be tested, as can be seen in Table 4. Other course changes and guidelines, such as those relating to the initial stages of the online course, will be tested in the next cycle of research.

Discussion of findings

There were 12 guideline changes proposed. Eight of these concerned the social aspects of learning. This may have been partly because two of the cases researched did not complete the course and therefore there was insufficient data to propose other changes. However, this large number of modifications required in the social aspect of learning does indicate that the social environment was sufficiently incompatible with the research participants' own cultural values that it prevented them from completing the course. As Dunn and Marinetti (2005) found, many people drop out of courses because of cultural incompatibility.

The eight modified social presence guidelines covered five out of the six guidelines that had been expected to be general principles of online learning, that is, 'non-cultural'. This suggests that learning may be more culturally dependent than is assumed in online learning research; this is consistent with the sociocultural concept that culture and learning are intertwined (Cole, 1985). This also affirms the importance of researching the cultural background of learners to determine what their learning preferences may be.

The results of this study found that the research participants preferred to be part of a committed group from the beginning of the course. This view is supported by the literature which describes the Arab culture as being collectivist (Zaharna, 1995) and based on loyalty and devotion to the family and tribe (Hitti, 1996). Although this concept was in the literature review, it was not realised that this was a learning concept that would be important in course design. Although a literature review can identify social organisation patterns or worldviews, they may not show which of these aspects are important in designing effective learning environments, or researchers may not be aware of how they relate to learning; empirical research is necessary.

The research so far has found three values in the local context that may be important in the design of the online environment for this community: the significance of being part of a responsible committed group, the importance of visual or face-to-face components in the environment and the use of human-related guidance such as scaffolding and modelling. These three values were seen in the literature research on the historical basis of the social organisation patterns on the Arabic community, affirming the value of a histocultural approach to understanding the cultural values of learners' community, and therefore a means to design online courses where everyone may learn.

Limitations

The findings of this research so far are preliminary and incomplete. Even though a large amount of useful data was collected and analysed, two of the three research participants did not complete the course, and so the collection was incomplete. Also, as the course was only eight weeks, it was difficult to carry out sufficient evaluation on some of the modifications to the proposed guidelines. Therefore, another online course will be tested at a later date. Further studies would also need to be done on other learning communities to determine how generalisible this approach can be.

Summary

Who's learning? A review of literature found that learners from different cultural backgrounds might not be learning effectively due to their different cultural preferences. Learning needs to be designed to give everyone an equal opportunity to learn. However, as no empirically and theory based cultural models for designing learning environments have been identified; new theories need to be proposed. This study proposed that the sociohistorical theories of Vygotsky might be a suitable basis. They proposed that the social organisation of a community affects how a person learns, and therefore knowledge of a society's social patterns and history may identify the cultural preferences of a community of learners. For multicultural classes, commonalities can be found and used as a basis for course design. This concept was exemplified in a study on learners from an Arabic community.

Guidelines for designing online learning environments were proposed, based on a literature review of student responses to learning online, and on suggested learning preferences of an Arabic community. These guidelines were then tested and modified based on research on Arabic participants in an online course. The initial findings have supported this approach. Further testing on guidelines for this community is necessary and will be carried out later this year.

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