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Intercultural Factors in Web-based Training Systems[1]

Edith Denman-Maier
(Donau-Universität Krems, Austria
emaier@donau-uni.ac.at)

Abstract: This paper is based on on-going research carried out in the framework of an EU project aimed at enhancing knowledge management (KM) in enterprises. It deals with the impact of intercultural factors on the accessibility and presentation of eLearning content.

It reports on preliminary findings and discusses the issues which have emerged so far in the contextual study and requirements analysis conducted in preparation for designing Web-based training modules.

Once the empirical research is completed and the data analyzed, guidelines will be proposed for developing Web-based training modules for culturally heterogeneous user groups sharing the same professional background. Special consideration will be given to interactive and community features.

Key Words: user interface design**,** usage-centered design, knowledge management, Web-based training, interaction patterns, cross-cultural / intercultural factors.
Categories: H.5.2, J.4

1 Background and Context of Research

This paper reports on on-going research carried out in the framework of a transnational European project co-funded by the European Commission under the Information Society Technologies Programme.

The aim of the project concerns the creation of customized Web-based training (WBT) courses for a major manufacturer of helicopters in France, who boasts a culturally highly diverse range of customers. Training is normally included in the sales contract and precedes delivery of the aircraft. Although all trainees are expected to be proficient in English and share the same professional context, it can be assumed that their varied cultural values, traditions and attitudes have an influence on their understanding of the content and their cognitive approach to its presentation.[2]

Generally speaking, apart from cultural background, factors such as age, experience, profession (e.g. pilots vs. technicians), rank and gender tend to play an important role in classroom behaviour. In this study, however, gender is a negligible factor, given the extremely small number of women involved in helicopter training.

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[1] A short version of this article was presented at the I-KNOW '03 (Graz, Austria, July 2-4, 2003).
[2] This also applies to the instructors, whose mother tongue is French, but who are expected to teach courses in English.

At present, the customization of training to user requirements is accomplished exclusively by the individual instructors. Based on their experience, didactic skills and/or intuition, they adapt the courses to the requirements, level of experience and prior knowledge, as well as to the cultural expectations and traditions of the trainees, especially as far as the interaction between teacher and students is concerned.

A major challenge faced by the helicopter manufacturer is the need to recognize and integrate the different requirements and expectations of its culturally diverse customer base into its training activities. Increased customer demand and cost savings are the main motivating factors behind its eLearning initiatives. The company intends to set up a learning management system for its clients worldwide so as to reduce the time pilots and technicians have to spend on-site to learn about and familiarize themselves with new equipment.

2 The Objectives of the Project

At an early stage in the project the project partners realized that intercultural factors would have to be taken into account at all levels (analysis of user requirements, development and design, implementation and evaluation) for the application to succeed. If on-site training is supplemented by eLearning components, cultural adaptation and adaptability, respectively, will have to be integrated into the design of the modules.

The crucial question addressed by the research is whether it is possible to design Web-based training modules for a culturally heterogeneous, but professionally homogeneous user group in such a way that they can be understood and are acceptable without further customization or localization. A corollary to this question is the extent to which particular requirements are truly culture-specific or genre-specific, i.e., for example, whether in the case of pilots - as opposed to technicians - professional background including a special process of selection tends to override cultural influences.

Given the shared professional background of the trainees and thus their familiarity with the context of use, it is assumed that at least as far as the information transfer part is concerned, it should be possible to design culturally “neutral” modules acceptable to all or most users. This assumption is based on studies like the one by [Bourges-Waldegg and Scrivener 2000], who argue that cultural differences affecting usability and design are mainly representational and that the meaning of a representation is determined by its context of use.

This hypothesis will be tested with the help of a pilot application about the VEMD (Virtual Engine Multifunctional Display). The WBT module being developed will impart know-how about the basic functions, components and operating modes of this instrument now common to most helicopters. For the development of the pilot application, the guidelines and recommendations with regard to interface design for an international audience are taken into account (see for example [Del Galdo and Nielsen 1996]). This will ensure that the modules are designed in a way that future customization is possible without any major redesign.

With regard to interactive and community features, however, intercultural factors are expected to have a major impact on the accessibility and acceptance of the

eLearning initiative which is why the usability tests, and in particular the end-user tests, will focus on these features.

The type of user sample described here, i.e. shared professional background but a very heterogeneous cultural background, is actually far from rare and can be encountered in many international settings such as multinational companies, consultancy firms, banks or non-governmental organizations which operate or have subsidiaries worldwide. Many universities, too, have an increasingly international student body and therefore have to consider the issue of the cultural adequacy of their learning environments, both real and virtual.

The more wide-reaching aims of the present study consist in developing a framework for analyzing the use of ICT (information and communication technologies) in cross-cultural eLearning contexts and to develop recommendations for maximizing successful intercultural communication online.

3 Scope of Study and Methodology

The present study is primarily concerned with the theoretical underpinning for the analysis of the influence of (inter-)cultural factors on the representation and transfer of knowledge in the realm of eLearning. In preparation for the design of WBT modules, a knowledge management system was installed to bring together all the documents, illustrations, graphics, audio and video files relevant for their development. This was accompanied by a contextual and requirements analysis for the future eLearning platform, conducted largely by observing existing training methods.

Training requirements were therefore identified by participating in a varied series of courses and trying to capture the experience and explicit as well as tacit knowledge of the instructors when adapting the training to the requirements of specific target groups. Participant observation was complemented by semi-directed interviews, which were conducted with key roles involved in and/or affected by course development, i.e. instructors, course authors and designers as well as sub-contractors such as interpreters. Trainees, too, were included in the interviews, which addressed human, social and intercultural factors.

Demographic data on the trainees such as country of origin, age, professional background (pilots, mechanics, and avionics specialists) and level of experience will be collected by means of a student profiling tool which trainees have to complete before attending a course. This tool has been developed as part of the project in order to assess the trainees' level of know-how and thus enable the course organizers to form more homogenous groups, which in turn will facilitate the instructor's task.

As far as the usability testing of WBT modules is concerned, the principles of participatory and iterative design are followed, i.e. the involvement of users from an early stage in the development process. In line with these principles, all evaluation results are fed back into the design of the modules. The usability tests consist of systematic reviews, which have been conducted with a series of experts, i.e. instructors, designers and various project partners, to identify possible usability problems at an early stage. These follow the guidelines of so-called "heuristic evaluation" as described by [Nielsen 1994] and precede and complement end-user

testing which will involve trainees from a representative cross-section of the company's culturally diverse customer base.

The end-user tests will include scenarios and tasks taken from real-life. Apart from general usability problems, the aim is to identify the possible impact of intercultural factors, especially with regard to contextual and interactive elements. This is to be achieved by uncovering critical incidents or instances of miscommunication which might be related to cultural background. The tests will be followed by focus group discussions to enrich and possibly clarify the data obtained from the tests.

Ideally, this kind of empirical study should be conducted over several years and in several countries. If time and money permit, the current research will be extended to include the training approach practiced in the training centre of the company's German partner for comparative purposes.

4 Intercultural Factors

4.1 Intercultural Factors in the Field of Usability

Issues such as internationalization and localization are mostly dealt with in the literature on human computer interaction (HCI) and software engineering. More recently, efforts have been made to apply the methods and guidelines developed in these fields to the usability of Web sites (see, for example [Alexander and Tate 1999, Spyridakis 2000]). However, very little research has been done on international and/or intercultural aspects concerning Web-based training modules (see, for example [Chase et al 2002 and Kamentz and Womser-Hacker 2003]).

Overall, we can observe an increasing awareness of the fact that developing truly effective interfaces for an international audience requires more than just translating text, but involves a cultural transfer (see, for example [del Galdo and Nielsen 1996; Luong, Lok, Lok and Driscoll 1995; Russo and Boor 1993]).

The above-mentioned authors tend to agree that interface elements affected by culture, such as images, icons or symbols, must be adjusted for cultural differences. The same applies to color, which can influence a user's expectations about navigation, links and content, and the interpretation of which varies between cultures. Examples frequently mentioned: Whereas in Europe and the United States the color red represents danger, in China it stands for happiness. Similarly, whereas the color green has positive connotations for users in most of Western Europe, the United States and the Middle East, French users might associate it with criminality.

Furthermore, authors agree that number, date and time formats have to be converted and text flow and layout designed around locale-specific user modules. There is a consensus that social norms determine the acceptability of images, symbols or icons in a culture, and that therefore great care must be taken when using images, symbols or icons depicting religious symbols (e.g. crosses, crescents, stars), the human body, women and hand gestures.

Functionality, too, can be affected by cultural factors. Certain features, e.g. for encouraging interaction, might be taken for granted in one society, but be met with disapproval in another. One example cited in the literature refers to a poetry teaching tool developed for use in France. It was designed in such a way to accept the teacher's comments but not those of students. This was acceptable in France, but not well

received in Scandinavia, where students are encouraged to contribute and interact with teachers [Russo and Boor 1993].

Whereas many software products and international Web sites are translated into various languages and their design customized to address the needs of users in other countries and language communities, catering for a culturally heterogeneous user group as is the case with this application requires a different approach. Rather than selecting the user groups on the basis of cultural background and customizing the eLearning system to suit their specific needs, the design has to integrate cultural diversity and aim for cultural neutrality, respectively.

A similar case has been described in a study conducted by Bourges-Waldegg and Scrivener. Like the trainees of the French project partner, their users had a good command of English, but nevertheless misunderstandings occurred when users were asked to evaluate two English Web sites aimed at an international audience [Bourges-Waldegg and Scrivener 2000]. As already mentioned, most misunderstandings could be attributed to the lack of shared context, which made it difficult to grasp the meaning of certain icons or expressions. In their study the authors therefore emphasized the importance of using unambiguous, concise as well as simplified English rather than the type of idiomatic, jargon-rich language usually cherished by Web site designers.

In this case and in contrast to the user samples described by Bourges-Waldegg and Scrivener, the future users of the WBT modules share the same professional context. Regardless of their country of origin or cultural background, they all have a great deal of experience of either helicopter flying or maintenance. It is therefore to be expected that the meaning of terms, symbols and images which relate to their professional context will not pose difficulties.

The areas where problems can arise and where cultural factors will have an impact on the usability and thus acceptance of the application are those in which interaction occurs, e.g. in online exams or quizzes aimed at testing students' progress, including the way in which results are communicated. Problems can also arise with regard to community features, e.g. in discussion fora used for exchange between trainer and students as well as among students. Both interactive and community features are highly relevant in an eLearning context.

4.2 Intercultural Issues in Learning and Teaching

Most authors regard cross-cultural learning situations as fundamentally problematic. Geert Hofstede, one of the most prolific and most frequently cited authors in the field of intercultural studies, is also one of the few authors in this field to have paid particular attention to cultural differences in teaching and learning [Hofstede 1986]. In his article "Cultural Differences in Teaching and Learning" he draws on three sources of information:

1. his earlier research on differences in work-related values in over 50 countries which led to his famous 4-Dimension Model of cultural differences,
2. his and others' personal experiences in teaching and learning in different cross-cultural situations and
3. his experiences as a parent of school-age children attending local schools abroad.

His investigations and experiences lead him to identify four main problem areas:

1. differences in the social positions of teachers and students
2. differences in the relevance of the training content,
3. differences in cognitive ability profiles between the populations from which teacher and student are drawn and
4. differences in expected patterns of teacher-student interaction

Differences in student-teacher interaction are listed with reference to the four dimensions of Individualism versus Collectivism, large versus small Power Distance, strong versus weak Uncertainty Avoidance, and Masculinity versus Femininity.

In the current investigation, "problem areas" 1 and 4 are relevant and as far as Web-based training is concerned, it is the last “problem area”, i.e. differences in mutual role expectations between teacher and student, that plays a particularly important role. It addresses the training process and thus issues of interaction rather than the content of training, which – given the shared professional background of the trainees – should prove to be relatively unproblematic.

In one of the few papers dealing with intercultural factors in online training Chase and his co-authors write about “Intercultural Challenges in Networked Learning” [Chase et al 2002] and describe phase one of a longitudinal, large-scale analysis of intercultural communications factors in the ICT elements of international, networked learning courses. The authors identify differing communication patterns and instances of miscommunication in online exchanges between culturally diverse learners and online facilitators. Subsequently, using ethnographic methods and informal discourse analysis they proceed to cluster these instances and try to develop taxonomies of intercultural communication problems. This has resulted in a list of themes such as online culture, format and participation, face-to-face versus online issues, identity creating, technical issues, participant expectations, academic discourse versus ‘stories’ and time.

Another recent publication worth mentioning is by [Kamentz and Womser-Hacker 2003] which deals with the impact of culture on the development and graphical design of eLearning systems. The authors compare existing German and American WBT courses in terms of usability, presentation of content and didactic approach and also examine cultural aspects of computer usage. They conclude that given the considerable differences that have emerged in the course of this study, user-oriented design of interactive learning environments definitely requires cultural adaptation and that the conclusions of their study should contribute to defining culture-specific requirements for the design of WBT courses.

The authors of both papers believe that the design of teaching aids such as WBT modules as well as learning processes in different cultural contexts can be described and analyzed using the theoretical work done by Hofstede and other authors in the field of intercultural studies such as Galtung or Clyne.

The following chapter examines whether this approach is adequate for the present research.

5 Theoretical Framework

Because of its interdisciplinary nature, this study requires a theoretical framework that can supply concepts and models both for human-computer-interaction as well as learning and teaching approaches in a virtual environment. At the same time, this framework has to be able to accommodate human, social and (inter-)cultural factors, cope with computer-mediated collaboration processes and take into account the environment or context in which activities such as learning and teaching occur.

After a very brief outline of some of the major approaches in HCI and educational research - especially with regard to cultural factors – this paper will go on to discuss their shortcomings and consider alternatives such as activity theory.

5.1 Theoretical Models in Human-Computer-Interaction and the Role of Cultural Factors

Different psychological theories in the HCI realm have been applied to usability engineering and testing. Not all of them take into account cultural factors: they hardly figure in Cognitive Ergonomics or Human Factors Engineering, for instance, which appears to be the predominant method in HCI at the moment. This is why more recent approaches such as Situated Action and Activity Theory seem more suited to the present research because they incorporate the influence and importance of context and thus of social and cultural factors.

Cognitive ergonomics with its focus on the computer-user or computer-programmer dyad has tended to neglect the context and the environment in which human-computer-interaction occurs and has largely ignored the real activities users are engaged in. Its research methods have been based mostly upon experimental models borrowed from the natural sciences and focus on measuring.

In contrast, the situated action approach draws on disciplines such as anthropology and sociology and focuses on human activities in particular situations and settings. [Suchman 1987], for example, states that every course of action depends in essential ways upon its material and social circumstances. The extent to which the user is embedded in a specific (cultural) context and a framework of reference is therefore recognized. The situated action approach has also been applied to computer-mediated work and computer-supported collaborative work (CSCW), for example, by [Mantovani 1996]. Furthermore, Mantovani expanded the approach to include not only the interpretation of situations and the local interaction with the environment as in Suchman's work, but also to regard the symbolic order or structure as an integral part of the social context.

Although for many situated action represents a welcome corrective to the dominant cognitive credo, it has been criticized for its lack of reference to overall motives and objectives and for the fact that the approach does not provide tools or models with which to describe them, especially if they go beyond the immediate situation e.g. [Nardi 1996].

However, because of its strong empirical commitment, the situated action approach can serve as the basis for the current empirical investigations and guide the analysis when trying to come to grips with the often perplexing flux of training activities.

5.2 Theoretical Models for Dealing with Cultural Factors in Learning and Teaching

As already mentioned, the concept of cultural dimensions as propagated by Hofstede and his followers is often used to analyze intercultural differences. Much writing on issues of culture in the context of internationalization or globalization, the educational field included, is actually permeated by references to Geert Hofstede and his model of cultural dimensions such as Individualism/Collectivism, Power Distance or Uncertainty Avoidance. His findings are based on data collected in over 50 countries, mostly on managerial values, but have also been applied to account for differences in teaching and learning [Hofstede 1986].

Culture-specific differences in learning and teaching are also addressed by [Galtung 1981] and [Clyne 1994]. The former distinguishes 4 approaches when comparing the structure, culture and intellectual style prevailing in different societies: saxonic (British Commonwealth, USA), teutonic (e.g. Germany, Eastern Europe, Russia), gallic (e.g. France, Italy, Spain, Portugal, Latin America) and nipponic (Japan, East Asian countries). The features of the different styles are analyzed according to four dimensions, i.e. paradigm analysis, generation of hypotheses, theory construction and peer review.

Clyne, in his analysis of student essays, has identified several categories with regard to cultural discourse and scientific writing styles, namely linearity vs. digressivity, focus on form vs. content and integration of data.

There is no doubt that Hofstede's work has a sound empirical base and is rooted in practical experience. But his concept of culture as essence and difference has limited explanatory value for this research since it tends to be intrinsically linked to language, nationality and ethnicity, notions which in the globalize or rather globalizing world of international computer networks do not play the kind of role which was accorded to them by anthropologists in the nineteenth and twentieth centuries. Even though cultural orientation systems that are acquired early in life – Hofstede calls them the "collective programming of the mind" – have a strong influence on human beings, they are insufficient to account for behaviour differences in learning situations, for instance, where factors such as profession, status or corporate culture also play a major role. Furthermore, when it comes to the actual design of products such as WBT modules we also need a precise understanding of work objectives and work contexts.

Hofstede's dimensions and the categories proposed by Galtung and Clyne can certainly provide useful signposts for observing student behaviour in the classroom, but they are unlikely to prove adequate to account for the complex web of interactions which characterizes these kinds of training situations. Rather than promote awareness about the influence of cultural factors in general, it seems important to identify cultural standards and/or requirements that apply to a concrete application or product.

According to [Thomas 1996] cultural standards can be identified by investigating so-called 'critical incidents' which (may) occur in intercultural interaction. By studying such incidents, we can identify cultural and mental models that the parties involved are usually not aware of. Thanks to their strong empirical bias, cultural standards are particularly useful for the study of specific spheres of action such as WBT, for example. Even though Hofstede includes human actions (which he calls

"practices"), it is basically values and cognitive processes which motivate behaviour in his approach.

[Ratner 1997] criticizes this focus on cognition from a different perspective and puts forward his own approach based on activity theory. According to this theory, culture consists not only of shared semiotic or symbolic processes and social concepts but also of concrete social institutions which are arranged in a division of labor and governed by definite principles of behaviour, forms of control and power, allocation of opportunities, rewards and punishments.

5.3 Activity Theory as an Integrative Framework

As already pointed out, activity theory with its integrative nature and goal-based structure appears to be a more promising conceptual approach for dealing with both intercultural issues in usability and online training. From it we can derive models and concepts for analyzing social and cultural structures and processes in usability engineering as well as computer-mediated learning and teaching. It offers us a unified framework for looking at using computers as tools to achieve certain goals and for exploring issues connected with these activities. It also helps to overcome the shortcomings of the information processing models of cognitive science, which have dominated in HCI research.

Publications in the field of human-computer interaction rarely deal with cultural differences beyond interface design. Authors, on the whole, make little effort to define the concept of culture or to establish links between existing concepts in cultural psychology with HCI theories. One of the few authors to actually do so is [Hoft 1995], who refers to Hofstede and other "interculturalists" and uses their models and concepts as tools for optimizing internationalization. However, given the shortcomings of cultural dimensions cited above, the cultural standards approach suggested by [Thomas 1996] appears more useful to identify the influence of cultural factors in a virtual learning environment.

Even the more empirically grounded situated action approach, which takes into account cultural and contextual factors has been found to be inadequate because it offers a conceptual framework which is on the one hand too global to provide guidance to applied studies, and on the other hand has been criticized for being too concerned with microscopic and detailed analysis resulting in the investigation of "trivial" matters [Cuff, Sharrock & Francis 1992].

Overall, practical case studies still tend to prevail in the HCI field and the lack of theoretical foundation endangers a constructive tackling of problems. This is why more recent HCI researchers such as [Ratner 1997] or [Honold 2000], who has written on intercultural usability engineering, have turned to activity theory as an alternative framework in HCI research.

Activity theory is a set of basic principles that constitute a general conceptual system rather than a highly predictive theory and, being a dynamic and systemic approach, it can cope with a rapidly changing environment. People are seen as embedded in a socio-cultural context with which they actively interact. The complex interaction of individuals with their environment is called activity and is regarded theoretically as the fundamental unit of analysis.

Activity theory traces its roots back to psychological perspectives in the Soviet Union and now supports studies in developmental psychology and educational

technology around the world. It also provides a broad framework for describing the structure, development and context of computer-supported activities and a foundation on which HCI researchers might base common discourse and from which they can derive tools for design and evaluation (see [Kaptelinin and Nardi 1997]).

Tool mediation is one of the most important concepts of activity theory. Tools or artifacts refer to culturally produced means for changing the environment and achieving goals. Humans are seen as continually changing tools or artifacts or creating new ones. From an activity theory perspective, computer technologies and the Internet, for example, are considered tools.

The value of activity theory for contextual studies of HCI has been convincingly described, for example in Nardi's book "Context and Consciousness" [Nardi 1996]. According to Nardi the greatest contribution of activity theory might lie in its ability to provide disparate approaches to HCI with a common vocabulary for emergent issues in the study of technology usage.

In this book we also find examples of practical applications of activity theory. [Bellamy 1996], for example, discusses the development of educational software and delineates principles for designing educational environments. [Gould, Verenikina & Hasan 2000] have applied activity theory to the design of interactive Web-based information systems. Gould and his co-authors attribute its appeal to its broad view of the human psyche and behaviour and its well-structured categories for analysis.

5.4 Methodological Implications

Various checklists have been suggested for presenting the theoretical structure of activities in an operational form and moving from theory to practice. Kaptelinin and [Nardi 1997] distinguish between checklists for design and checklists for evaluation. They cover the main basic principles of activity theory, namely:

1. the activity hierarchy, which includes identifying the goals of actions,
2. object orientedness - activities are seen as directed towards an object,
3. internalisation/externalisation – activities include both internal (mental) and external components which can transform into each other, and
4. mediation and development.

The last principle refers to the mediation carried out by a tool, which can be both material in nature (e.g. a computer) and mental (e.g. a tool for thinking). It includes an analysis of the history of the relationship between subject and object, which in turn can help to reveal the main factors influencing the transformation process or development.

Gould and his co-authors have adapted these checklists to usability requirements, which is why their version seems more relevant for this study. They talk of "environment" (instead of object orientedness) or "structure and dynamics of interaction" (instead of internalisation/externalisation). Their example illustrates that activity theory is basically a very pragmatic approach and leaves ample room for adaptation to specific requirements and fields of application. It is hoped that the checklist approach will also prove a feasible tool in the design of the Web-based training module.

As far as the methodology for identifying and analyzing the cultural embeddedness of man-computer interaction is concerned, the following requirements can be deduced from the studies mentioned so far:

- Adequate duration of study
- Contextualization
- Methodological mix.

The current research intends to fulfill these requirements even though the duration of study will to some extent be determined by project requirements.

6 Preliminary Findings

6.1 General Observations

The interviews carried out so far have shown that instructors are very aware of cultural differences and on the whole take a positive attitude to cultural differences, seeing them as a source of enrichment rather than as barriers to be overcome. In the more in-depth interviews, in particular, it became clear that their constant exposure to people of different cultural origin has led to a very sophisticated and differentiated view. Whilst on the one hand they recognize certain cultural patterns, habits or attitudes, they also stress that one should be wary of stereotyping.

Respect for each other is seen as the key to a good climate in the classroom and as conducive to efficient training. This can range from familiarizing themselves with the history and culture of the trainees' countries of origin to providing halal food for Muslim clients. Interpreter(s) at times contribute to the understanding of cultural attitudes or behaviour patterns and some instructors quite consciously "use" interpreters as a source of cultural knowledge. They can also help them distinguish between behaviour which is rooted in cultural background and the idiosyncrasies of an individual student.

6.2 Intercultural Issues in Teaching and Learning

A first investigation of student behaviour on-site showed that two main approaches could be discerned:

1. Trainees, who frequently ask questions, engage in dialogue with the instructor and other students and do not hesitate to pass comment.
2. Trainees who tend to keep quiet and rarely interact with the instructor or other students and hesitate to be openly critical. They tend to assimilate new topics/know-how through systematic, step-by-step individual learning.

Although at first the behavioral patterns observed in the classroom seem to correlate broadly with the cultural dimensions proposed by Hofstede, the professional background of the trainees seems to have similar explanatory value. Pilots, for example, tend to exhibit the first behaviour pattern more frequently, regardless of their country origin. Furthermore, the behavioral differences often do not coincide with the culture-specific patterns one would expect from trainees from the countries and/or cultures examined by Hofstede, Galtung or Clyne. Their categories prove too

broad to accommodate the differences which could be observed between trainees from different Asian countries, for example, Korea, Vietnam or Hong Kong.

In the classroom, the instructors adapt to the different expectations and behaviour patterns by adapting their didactic methods. In the first case, an interactive, problem- and task-oriented approach is called for and the instructors tend to act more as coaches, recognizing the students as peers and experts. In the second case, they make an effort – through close observation of trainees‘ non-verbal behaviour – to gauge the degree of comprehension and respond accordingly, e.g. by resorting to a more hands-on, “touch & feel” approach.

Any communication problems so far observed in the classroom were dealt with successfully by the instructors. In an eLearning environment, however, different expectations and behaviour patterns of trainees cannot be picked up on and handled by an experienced instructor who is able to adapt his didactic approach. Instructors also play an important role in compensating for certain lacunae or deficiencies in the translation and/or presentation of the training materials. Although all manuals undergo a continuous and complex revision process, discrepancies between different language versions as well as terminological inconsistencies can occur.

This is why in an eLearning environment absolute accuracy and clarity of language are called for when it comes to presenting and transmitting the information contained in the WBT modules. Of course, accuracy is also particularly important for security reasons, since ambiguous formulations can lead to risks that are unacceptable in this industry.

6.3 Emerging Themes

Based on the research conducted so far, and including the first expert reviews, certain themes with intercultural implications appear to be relevant for the present study. The following list is rather tentative and far from final or exhaustive, but will provide orientation for the end-user tests.

Cultural differences may be discerned in:

Attitudes towards authority
These are closely associated with Hofstede’s dimension of Power Distance and may have an impact on the expectations participants might have of the role of online moderators or facilitators, e.g. with regard to the degree of guidance through the course or to resolving technical problems. But as already noted, professional background also seems to be very influential.

Intellectual style or discourse
Different learning and teaching traditions may influence whether trainees expect a formal, sober style focused on their professional role, or if they feel more at ease with an informal and personal style. Some trainees prefer to have information presented to them by way of stories, videos or animations or find long continuous paragraphs difficult to read, whereas others are happy with solid blocks of text. Galtung’s and Clyne’s categories might help cast light on these issues, as might the comparative study conducted by [Kamentz and Womser-Hacker 2003].

Attitudes toward time
Most people have explicit and implicit assumptions about 'time' and what constitutes punctuality. Certain cultures show little tolerance to delay and expect immediate responses, e.g. with regard to communicating results.

The following themes will probably play a role when evaluating the interactive and community features of the eLearning environment:

Group vs. individual focus
In some cultures students are used to learning in a group environment which is why, for example, it might be not advisable to use sound to guide users through the program. Apart from the disturbance this might cause, consideration has to be given to not creating situations in which a trainee might "lose face", i.e. by using sound to indicate if an answer was right or wrong.

High vs. low context communication patterns
Even though trainees share the same professional background, requirements for contextual information might become relevant in a collaborative environment. Therefore, online tutors have to make sure that they are as explicit as possible when communicating with their trainees, especially when giving instructions about problem solving or when devising scenarios.

Cyberculture
A separate issue is the fact that online culture is far from value-free or culture-neutral.

It is rooted in the history of the Internet and therefore strongly influenced by the values of the developers. It includes rules of formality/informality, flexibility, interaction style (incl. greetings/farewells, use of apology) and expectations of response speed.

Of course, individual comfort or discomfort both with the technology involved and with the 'anonymity' of online discourse also depends on factors such as educational level, status, gender or age. Critical incidents in an online environment therefore can also result from role differences, seniority/experience, perceptions of academic ability, professional status and tolerance for criticism and debate. It may also limit the ways in which participants can utilize face-saving strategies.

6.4 Final Remarks

When conducting the end-user tests, special attention will be given to these aspects to see whether they can be corroborated by critical incidents and if these can be attributed to cultural factors rather than to other variables such as age or professional background.

Since the project partners assume that cultural adaptation will mainly be necessary at the level of interaction and community features, these will be implemented separately on the learning management system. This will allow the company to delegate adaptation of those features to affiliated training centers in other countries whilst leaving the training modules unchanged. The results of the end-user tests are expected to yield recommendations with regard to how to adapt to culture-specific requirements.

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