

Computers & Education

Using Hofstede's cultural dimensions to interpret cross-cultural blended teaching and learning

Johannes C. Cronjé*

Faculty of Informatics and Design, Cape Peninsula University of Technology, South Africa

article info

Article history:

Received 30 April 2007

Received in revised form

28 September 2010

Accepted 30 September 2010

Keywords:

Adult learning

Computer-mediated communication

Cross-cultural projects

Learning communities

Pedagogical issues

Teaching/learning strategies

abstract

This article reflects on the cross-cultural communicative experiences of professors from South Africa and students from Sudan, during a two-year Internet-supported Masters' course in Computers in Education. Four of Hofstede's cultural dimensions were considered as categories of interpretation. The purpose of the research was to determine the extent to which Hofstede's static quantitative, research could be used as a basis for an essentially qualitative dynamic interpretation. While Hofstede's work focuses on cultural differences, this article tries to uncover what commonalities were constructed in the process. It was found that in this case, dimensions such as power distance and uncertainty avoidance tended to amplify each other, while together they resulted in a movement away from individualism towards collectivism. Accommodating across cultures did not mean that one should move into the other culture. Three elements seem to play a role when cultures meet: Reduction of communicative uncertainty, construction of shared meaning, and appropriate use of technology. More research should be conducted to uncover the elements that are common to cultures because emphasising commonality seems more useful than trying to overcome differences.

1. Introduction

Educational technology is creating a new society in which we need to consider how we grow together in spite of the differences that Hofstede has identified and elaborated on in the past thirty years.

This article reports on a qualitative interpretation of the cross-cultural experiences gained when a two-year Masters' programme was presented to twelve students in Sudan by three professors from South Africa, sponsored by the UNESCO Institute for International Capacity Building in Africa (IICBA). The course was presented using a blend of contact sessions supported by web-based learning and email. It continues the argument by Signorini, Wiesemes, and Murphy (2009) when they call for a more crucial approach to Hofstede's cultural difference model.

Khartoum, Sudan is an African-Arabic desert city with a predominantly Islamic religious tradition. Pretoria, South Africa is an Anglo-American style city with a predominantly Christian religious tradition. The two are quite far apart on most of the cultural dimensions described by Hofstede (1980, 1991, 2001). Hofstede's work, concentrates on cultural differences, while this article tells the story of the twelve individual Masters' students, their professors and their supporters, and how they constructed shared meaning with their South African instructors in order to accommodate their individual and collective differences. It investigates the work that the students did, and the way in which their professors facilitated it. The sample is small, and the instructors were selected for their experience, enthusiasm and ability to adapt. Likewise the students were selected volunteers. Thus the sample is atypical and the results are presented here not to "prove" or "disprove" anything, but to contribute to the unfolding stories of successful cross-cultural communication. In this way we wish to assist in the development of "small" models, which can gradually be expanded into larger models of 'culture' and intercultural learning" (Signorini et al., 2009, p. 262).

* Tel.: +27 82 558 5311; fax: +27 21 429 1001.

E-mail address: johannes.cronje@gmail.com.

2. Literature review

2.1. Theoretical framework

Four of Hofstede's five cultural dimensions, developed between 1968 and 1972, and further refined in 2001, form the foundation of this research. Hofstede formulated these dimensions by surveying the staff of the IBM Corporation in 72 countries by means of a pen-and-pencil questionnaire. He defines culture as "the collective programming of the mind that distinguishes the members of one group or category of people from another" (2001, p. 9). In his research he identified the dimensions of power distance, collectivism vs. individualism, femininity vs. masculinity, uncertainty avoidance and long vs. short-term orientation. Signorini et al. (2009) present a comprehensive discussion of Hofstede's dimensions.

Table 1 contains Hofstede's description of each dimension, as well as the index score on each dimension obtained by South Africa and the Arab-speaking countries, in which Sudan may be included. The scores of the United States of America are shown for the sake of comparison. The highest index score that can be obtained is 104.

The table helps to illustrate that South Africa and the United States are very similar in three of the four cases. In all cases, South Africa and the United States are towards one side of the scale with Sudan towards the other.

In terms of a qualitative approach, Aaron Marcus (2000) presents a useful refinement of Hofstede's dimensions in terms of elements of web interface design. He argues for example that websites of high power distance countries, for instance, will be characterised by high levels of structured information, controlled access to information, and tall hierarchies in mental models (meaning that there will be many layers of information, going deeper at every level, as opposed to flat structures with all the information being available with one or two clicks of the mouse). High power distance would also stress the importance of security restrictions. Marcus's descriptions of what can be expected for each dimension were used as a model to guide the interpretation of the data.

2.2. Critique of Hofstede

Hofstede's (1980, 1991, 2001) work on dimensions of culture has been described as "probably the dominant explanation of behavioural differences between nations" (Williamson, 2001). The model, however, has not been without criticism, notably by Bhimani (1999); Harrison and McKinnon (1999); Redding (1994), McSweeney (2002) and Signorini et al. (2009). For the purpose of this study, the key critique comes from Peter Smith who warns against the implications of the quantitative, normative nature of his research, pointing out that ".if we compare culture A and culture B on some attribute, the mean scores that we achieve will tell us nothing about variability within each nation, nor will it tell us whether the particular individuals whom we sampled are typical or atypical of that culture" (Smith, 2002, pp. 122–3p. 122–3). Hofstede himself (2001) cautions against ideographic interpretations, admitting that his research describes entire populations, rather than individuals (Signorini et al., 2009).

2.3. Related research

Dodd (1995) considers the principle of *difference* to be fundamental in understanding intercultural communication. Such communication relies both on the content that is communicated, and on the relationship that exists between the communicating parties. For Dodd (1995) intercultural communication is a process of reducing uncertainty about messages and relationships, while Chase, Macfayden, Reeder, and Roche (2002) stress that, to create an online culture, particular attention needs to be given to synchronising participant expectations and facilitator expectations. The emphasis should be on *similarity*, rather than difference.

Bonham, Cifuentes, and Murphy (1995) find constructivism to be a useful perspective from which one could approach cultural problems in education: "A teacher who wishes to have a useful, comfortable climate for interaction and learning will do well to remember that all culture is created by group negotiation and not by authority's fiat." Chase et al. (2002) confirm Dodd's (1995) contention that an important part of intercultural communication remains that we should perform at our best with the best tools available. At the same time, Bonham et al. (1995) point out: "While culture is usually thought to develop over time without much conscious attention, the rapid growth in use of distance education technologies means that a more rapid and deliberate development of cultures is needed".

Li and Kirkup (2007) present a comparative study of gender and cultural differences in Internet use by Chinese and British students. It is a static description rather than a narrative account of bridging cultural differences. On the other hand, Häkkinen and Järvelä (2006, p. 434) stress the importance of "creation of mutual understanding or shared values and goals". This research was limited to short periods (two months) and essentially Western countries (USA, UK and Finland). Our research differs from the first by providing a qualitative, narrative account, and from the second, by telling of a long-term construction of shared meaning.

Table 1
Hofstede's (2001) dimensions of culture for Sudan, South Africa and the USA.

Dimension	Description (Hofstede's (2001), p.xix – xx)	SU	SA	US
Power distance	.the extent to which the less powerful members of organisations and institutions accept and expect that power is distributed unequally.	80	49	40
Individualism vs. Collectivism	.the degree to which individuals are supposed to look after themselves or remain integrated into groups, usually around the family. (0 individual, 104 collective)	38	65	91
Masculinity vs. Femininity	.refers to the distribution of emotional roles between the genders – it opposes "tough" masculine to "tender" feminine societies. (High Masculine)	53	63	62
Uncertainty avoidance	.the extent to which a culture programs its members to feel either uncomfortable or comfortable in unstructured situations	68	49	46

3. Method

3.1. Data collection

Twelve Masters' students of the Sudan University of Science and Technology, and three professors from South Africa participated in this case study. The data sources include the research journal; student term papers; electronic artifacts such as websites, spreadsheets and PowerPoint presentations; discussions with the facilitators, professors and students; as well as emails sent by the students to the professors. The data were produced during the running of the course.

3.2. Analysis of data

The collection, analysis and interpretation of data tended to overlap. As the year progressed, certain tendencies began to emerge. Data illustrating these tendencies were cut and pasted into a Word document and annotated. In the case of slideshows, spreadsheets and movies, screenshots were used in the Word document. Once a sufficient number of artifacts were assembled in the document these were grouped in terms of cultural dimensions. Finally the document was printed out and manually compared with the other printed artifacts in the hanging file journal.

A problem in reporting this kind of research is that the data sources are also the products of the teaching. The reader is therefore referred to the discussion section, where the dialogue between what was done and what was learnt plays out. The next section will give a cryptic overview of the course.

3.3. Description of the Masters' programme

The Masters' programme consisted of 9 courses and a mini-dissertation. A full description was published as [Author \(2006\)](#). Three Sudanese tutors provided local support. The dissertations were produced under local supervision are excluded from this article.

A professor from South Africa would spend four or five days in Khartoum presenting the course material to the students. The first meeting consisted of an orientation session, followed by three days of discussing the learning tasks that students would execute for the next six weeks. For all subsequent visits the first few days were spent debriefing the students on the course(s) they were completing, while the last few days were spent orientating and briefing the students for the work of the next course(s). In the time between contact sessions students conducted research and development projects, supported by the local tutors, while the South African professor remained in regular email contact with the students and facilitators through a *YahooGroups* discussion list, which was selected because it was free, and did not require institutional support or permissions as a dedicated learner management system would have.

A typical course would consist of a theoretical component, where students were required to lead the discussion and engage in debate concerning the main themes of research in computers and education. Upon this would follow a semi-independent practical research component where students would use the theory to conduct some mini-research project that would take about six weeks to design, execute and write up. The projects required the students to construct a computer-based artifact, such as a PowerPoint presentation, a database, a spreadsheet or even a multimedia tutorial. The report-back usually contained photographs and video materials showing how the artifact was used. During this time they would be supported from South Africa via e mail.

4. Discussion

4.1. Limitations of this study

The small sample size ($n/42$) of this study means that the results cannot be generalized – but this is not the purpose of this study. This study wishes to give human voices to Hofstede's numbers.

Hofstede gives no specific figures for Sudan. He groups together "Egypt, Lebanon, Libya, Kuwait, Iraq, Saudi Arabia, and United Arab Republic" (Hofstede, 2001, 52) as the *Arab-speaking region*. Sudan lies directly to the south of Egypt and to the north of Ethiopia, which, together with Kenya, Tanzania and Zambia form the *East African region*. As Sudan is politically divided by the civil war between the Christian South and the Islamic North, and as the population of this study consists entirely of Islamic students from the Arabic Northern city of Khartoum it was decided to use Hofstede's rankings and indices for the *Arab-speaking region*. Although Hofstede identifies five dimensions, he has no figures for long vs. short-term orientation for South Africa or the *Arab-speaking region*, which means that these could not be explored.

This research does not consider language difference that existed between the students and the professors. Some misunderstanding between the two groups may have been the result of linguistic, rather than cultural differences. For this reason, artifacts other than written products, such as videos, graphics and photographs were also used in the analysis for the sake of clarification.

The following section considers the findings organised along four of Hofstede's cultural dimensions.

4.2. Power distance

Fig. 1. shows that South Africa and the United States have a relatively low power distance, compared to the high power distance of Arab-speaking countries. High power distance relates to the extent to which individuals without much power accept their situation.

Marcus (2000) identifies highly structured access to information as an indicator of high power distance. In the same way as high power distance manifests in tall organisational hierarchies, information structures show tall hierarchies too, with information presented vertically, going deeper at each mouse click. There is a focus on expertise, authority, official stamps and logos, together with a strong emphasis on social and moral order. Leaders have a stronger social prominence, and there are explicit, enforced barriers to information.

Low		Power distance								High	
10	20	30	40	50	60	70	80	90	100	110	
US				SA				SU			

Fig. 1. Power distance (SU80; SA49; US40).

I experienced controlled access to information (Marcus, 2000) in the sense that I was unable ever to find an official University calendar or time-table, which means that I had to set deadlines with no information as to their feasibility – leading to a request such as the one given below:

This message by the tongue of all group that the date you determined for us to Submit the assignment or/and research about evaluation of CD is holiday according to the university calendar, that means we are not able to attend university on this day so we need extra day or to delay it to other date that you determine later after [the current course] we will be very pleased if you delay it another thing that all group is not ready to handle it on the exact day you identified

Tall hierarchies are evident from this website produced by one of the students:

From the website depicted in Fig. 2, one can see the tall hierarchy of the information design. The student has only three links on the first page. The student's personal information, curriculum vitae, hobbies, etc. are all located under "About me", while her entire portfolio of work done in ten courses is located under "Projects". Although this is an extreme example, websites produced by other students (see Fig. 7) showed a similar tendency for very few links on the first page with information "hidden" in deeper pages.

In terms of social prominence the students showed much more "respect" and deference to the professors than their South African counterparts would, as can be seen from these extracts from emails:

About reply to me thanks very much my teacher. Thanks..Thanks ..Thanks. your student N

Dear my teacher Salam sorry for ask you more questions may be some of them not in his place; ?

The difference in power distance meant that the professors, used to low power distance, were surprised with the high levels of power assigned to them. On the other hand they were disconcerted with the students' reluctance to take responsibility for their own learning. In terms of Internet-based learning it required regular prompting from South Africa. On the other hand as the students became more empowered by the approach of the foreign professors they started being more demanding on their local institution almost to a point that was regarded as arrogance. It was thus necessary to develop (intuitively) a set of parameters in terms of how much initiative the professors could expect from the students, and how much power the students could try and exert in their home institution.

Although students expected a more authoritarian approach than we wanted to follow, we could transcend this cultural difference by a concerted effort from both parties. The students had to learn to take responsibility for their own actions. It was clear that their anxiety about missed deadlines was more acute than that of South African students. The professors actively engaged in crossing the divide set up by the high power distance by accepting invitations to stay with students in their homes instead of in the local hotels, travelling with them on tours of the city and the local countryside, and the female professor even had some henna patterns created on her arm. In this way, mutual trust was created and students were more likely to trust the visiting professors than their own local facilitators.

I talk that but please don't tell other; [our local facilitator] likes Internet a slowly.

In the above quotation the student has explained her problem, but then asks that the local facilitator should not be told. Her low power distance position makes her scared that her complaint to me might be regarded as disrespect of her local facilitator.

Administratively the process was hindered by the "need to know" basis with which the host institution treated the guest facilitators, and a great deal of administrative flexibility was called for. Once again this required frequent emails to and from the administrators. What was of

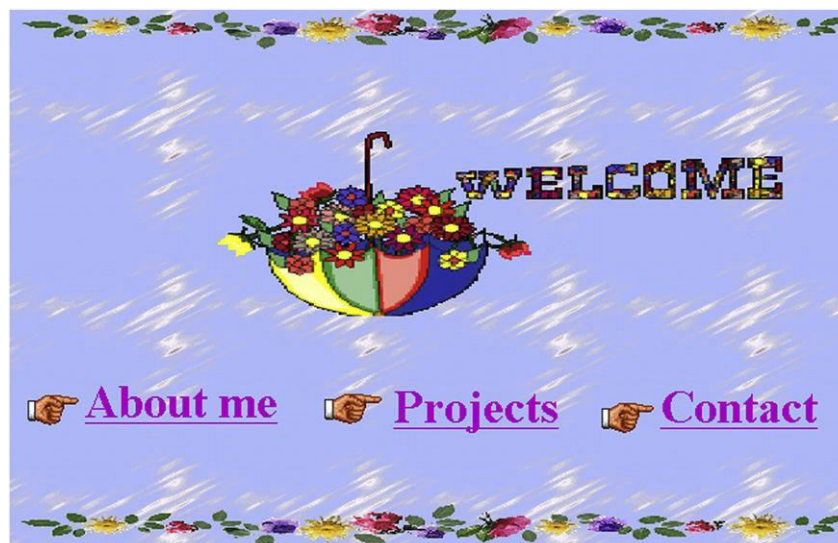


Fig. 2. A tall information hierarchy from a student web-portfolio.

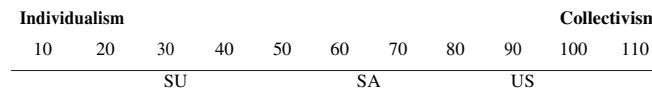


Fig. 3. Individualism vs. collectivism (SU38; SA65; US91).

particular help here was the existence of a course sponsor in the form of the former Vice Chancellor of SUST who was very familiar with both cultures and could intervene when necessary.

4.3. Individualism vs. collectivism

As can be seen from Fig. 3 Sudan is at the opposite extreme to the US on this dimension, while South Africa is somewhere in the middle. Marcus (2000) suggests that one should look for an emphasis on personal achievement in individualist cultures, with success demonstrated through materialism, and consumerism as opposed to political agendas on the collectivist side. Individualist cultures may be characterised by controversial and argumentative speech, rather than official slogans and subdued hyperbole. The social prominence of individuals is preferred, with an emphasis on the truth and what is new, rather than on relationships and tradition.

Strong individualism could be seen from the fact that initially very little communication occurred via the *YahooGroups* discussion list. Students preferred to contact professors individually. Also, peer support was noticeably absent. Nevertheless, when problems occurred the students tended to congregate in a group, discuss the problem and then send one deputy to speak to the professor. The same happened in their email communications. One email would be sent “by way of the group”.

Fig. 4 is a photograph of a typical school computer laboratory showing that, although there is plenty of space for cooperative work, learners work individually. Every student had to analyse a specific school and supply a report with photographs. No single photograph revealed any cooperative work. It was only after we had introduced our students to cooperative learning with computers that they started considering groupwork.

The professors dealt with the lack of a culture of cooperative work by teaching it overtly. We designed exercises in cooperative learning based on Johnson and Johnson's (1991) methods and expected students to hand in work in teams of three, as well as to engage in peer assessment. Johnson and Johnson describe a number of strategies in which learning tasks can be designed in such a way that learners have a common learning goal, positive interdependence, and individual responsibility. Their strategies ensure that learners learn to work together, take responsibility for their own and their peers' learning and avoid taking free rides. Our students were required to go out to schools and teach lessons in which such cooperative learning formed a central focus. Students' video recordings of the lessons showed that they could integrate cooperative learning successfully into their teaching and learning activities.

To encourage groupwork the professors would send emails to the whole group, and even copy replies to an individual to the whole group. Soon students began asking for copies of emails, particularly feedback on assignments. Students realized they could learn not only from their own mistakes, but also from the mistakes of others. In this way the *YahooGroups* discussion list became a very valuable tool of cultural integration.

4.4. Masculinity vs. Femininity

The three countries lie very close together on the scale of masculinity versus femininity, as is shown in Fig. 5. Moreover all three countries lie approximately in the middle of the scale. We found very little difference in traditional gender distinctions, between South African and Sudanese students. The class was divided almost evenly between men and women and the students behaved towards the professors and towards one another as their South African peers would, although their homes are separated into clearly defined male and female areas as in other Arab countries.

Fig. 6 shows websites created by two students during one of the final courses of the first year. Marcus (2000) points out that masculinity reflects in websites by graphics sound and animation being used for utilitarian purposes, while aesthetics are being used to gain attention and appeal. The position of Sudan in the middle of the two dimensions would explain the gender ambiguity. In the two examples, the site with the highly decorative graphics, which is also light purple in colour, was designed by a man, while the darker more rigid site was



Fig. 4. Individual seating of learners at computers.

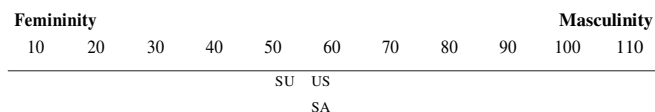


Fig. 5. Masculinity vs. Femininity (SU53; SA63; US62).

designed by a woman. Also, the degree of masculinity and femininity of the two sites does not differ significantly. It is clear that there was no need to construct common meaning along this dimension.

A female professor from South Africa taught two courses to the group and found that the female students were very appreciative of her presence. They invited her to their homes, shared with her the traditions of their marriage ceremonies and went out of their way to make her feel at home. At no stage did any student object to the fact that she wore a slack suit rather than a dress, and that she did not cover her hair. It was automatically accepted that she was from a different country where things worked differently. She did comment, upon her return, though that she was often stared at whenever she walked around in public places.

Both the male and the female students often used pictures and clip art from the Internet using women in bathing suits or women with uncovered hair. Upon being questioned about the appropriateness of these pictures in the Sudanese situation they explained that they were making the slideshows for us and therefore it should not be a problem. We had to explain that we wanted them to make things that were useful to their people and that they should not try and please us culturally. Some of the pictures they used would even be inappropriate in our educational programs.

4.5. Uncertainty avoidance

As can be seen from Fig. 7 Sudan has the highest uncertainty avoidance of the three countries. Marcus (2000) sees high uncertainty avoidance in error prevention, simplicity, limited choices, and smaller amounts of information. Redundant coding is used to reduce ambiguity. Low uncertainty avoidance shows in complex tasks, avoiding over protection and maximisation of choices rather than redundancy.

The South Africans' lower uncertainty avoidance is evident by the fact that the course schedule was designed entirely independently of the SUST calendar, since that was never available. The professors were usually invited to stay over in the private homes of students, go on expeditions and get to know as much as possible of the country and its people. The students, on the other hand, were timid and sometimes even terrified, as can be seen in the following quote.

We are in fire position waiting your reply. Your Sudan university group. With our best wishes

The students' overarching fear of the unknown led them to work together. Thus one cultural trait (uncertainty avoidance) overrode another (individualism).

Much of the fear that the students had was related to their unfamiliarity with the English language, with the subject matter of computers in education and with the flexible, constructivist approach of the professors.

I worry about everything happen here; I worry to E-language – I can't good to read all those material send to us, I don't know what I want to doing.

In keeping with lower levels of uncertainty avoidance in South Africa, the professors prescribed an abundance of additional recommended reading. This increased rather than reduced the anxiety levels of the students who would have preferred really crisp instructions with exact assessment rubrics.

What you need from us to know? By other words: what we will be going know.allthings.General idea..Something exactly..?What is purpose of this term?



Fig. 6. Masculine and feminine websites.

Low		Uncertainty avoidance								High	
10	20	30	40	50	60	70	80	90	100	110	
US				SA	SU						

Fig. 7. Uncertainty avoidance (SU68; SA49; US46).

In response to this desperate plea from a student an essay evaluation rubric was created that contained 54 criteria, as well as a skeleton article that served as an example of what the professor required. The result was twelve almost identical essays that conformed so closely to the rubric that very little originality was evident.

Low bandwidth and limited access to computer laboratories meant that students missed their original deadlines. The professor urged them to finish the work as soon as possible, but in their own time, and then continue at their own pace with the preparation for the next course. Again, this flexibility from the professor distressed the students:

Please, teacher: I need time-table about the work after the evaluation essay other than that leave to us – it not clear.

Once a brief had been clarified the relief from the students was clearly evident:

Thanks for sending comment on my webpage and I will make other fixes so as to be completely agreeable.

It was not always clear if uncertainty avoidance had to do with culture, or with the general nature of students. Students work for grades. They need to know exactly what it is that they must do to obtain those grades. They want clear, unambiguous instructions. This becomes problematic in a constructivist environment where the aim is for students to create their own understanding. Clear instructions lead to uncreative work. A relationship of trust should be built up across cultures and in the absence of clear instructions much corrective and encouraging feedback is required. Cross-cultural communication is about uncertainty and about building trust.

5. Conclusions

Hofstede's dimension of power distance explained students' lack of self-confidence and the fact that they had trouble taking initiative, preferring to let the apparently more powerful professor take the responsibility. This was compounded by high levels of uncertainty avoidance, which would explain why students required much guidance in terms of requirements and assessment rubrics, and why the student products were very similar in the early stages of the programme. On the other hand, the constant challenge that the professors made to the students to take initiative and to take risks led students to rely on one another, which was unexpected in a highly individualist cultural context. The two cultures were closest together on the masculinity/femininity dimension and both almost in the middle of the range, and not much was observed in terms of constructing new common understanding.

The constructivist educational approach forced learners to produce meaningful computer-based artifacts that the professors could understand. The professors had to adjust their usually democratic stance to provide more structure to reduce the students' anxiety levels. Central to this was an increase in asking questions. The students asked questions to refine specifications, while the professors asked about students' specific learning needs. *YahooGroups* was invaluable in providing rapid communication, copying individual messages to the group and archiving the messages.

Finally, then, what is the value of considering cross-cultural experiences against the background of Hofstede's dimension? From these experiences, and from the literature, three interrelated issues emerge: the reduction of communicative uncertainty by constructing shared meaning by optimal use of available technology.

5.1. Reduction of communicative uncertainty

A dialogue emerges between the professors and the students, as they reduced the uncertainty about their respective positions. Essentially the professors were saying:

1. We're not as autocratic as you expect professors to be in your culture.
2. We are actually here to serve you, and deliver what you want.
3. We want you to develop solutions that will be useful to you, therefore, give us solutions that are relevant to your context. Don't focus on what you think we want, focus on what you need.

To this the students responded:

1. While we respect your relaxed attitudes, particularly to deliverables and deadlines, we regard the tight maintenance of discipline as one of your primary tasks.
2. Regardless of culture we are goal focused – tell us what you want us to do and we'll do it.
3. We want to be internationally competitive and we are prepared to make cultural sacrifices.

As time progressed the expectations of the two groups became synchronized, as they expressed their needs more carefully.

5.2. Constructing shared meaning

The question, then becomes, "So, how was that shared meaning constructed?"

The professors constructed shared meaning by participating in tours of the greater Khartoum, with emphasis on places of educational interest. They stayed with the students in their private homes, developed a sensitivity for body language and learnt to listen and ask questions more than they ever would in South Africa.

The students acted as hosts, and expressed their feelings, often in collaboration and in consultation with one another. They learnt to send emails for clarification, as it allowed them more time to formulate their ideas.

I learnt that attempting too much construction of shared meaning was counter productive. When students made products that they thought would appeal to me – with web-sourced pictures of Western women, they reduced their own cultural richness, and did not enrich mine. At the same time, when we, as a group, constructed a very precise rubric and I provided clear examples of what I wanted, it led to uncreative work.

We also learnt that the creation of shared meaning was an iterative process. Students were allowed to refine their work again and again until it meets the requirements, rather than having deliverables that are too explicitly specified.

Eventually, a third, micro-culture was created, consisting of a subset of rules to which this small group adhered.

5.3. *Optimal use of available technology*

Since the language barrier made essays a poor form of assessment, we started considering alternatives, such as spreadsheets, *PowerPoint* shows and even videos. Now the students integrated their knowledge of computers with the academic content of the curriculum. The visual nature of the *PowerPoint* and videos allowed the professors to see beyond the written word.

The Internet was a unifying medium. It allowed students to source materials from outside their cultural domain, and it allowed them freedom of expression which would not have been possible orally.

On the down side, the limited bandwidth required us to resort to conventional postage of CDRoms. We developed an understanding of what kind of information is necessary immediately, and what kind of information can be relegated to the postal service.

Digital technology, with its multimedia capabilities was a much richer and more useful unifying technology than the written word.