

Socio-Cultural Considerations in International Geomatics Training

Carolyn Jans
Training Co-ordinator
FirstMark Technologies Ltd.
(613) 996-9818
jans@nrcan.gc.ca

Carolyn Goodfellow
Environmental Scientist
Canada Centre for Remote Sensing
(613) 947-1189
goodfell@nrcan.gc.ca

Willy Bruce
Head, Training and Technology
Transfer Section
Canada Centre for Remote Sensing
(613) 996-2648
bruce@nrcan.gc.ca

Abstract

The perception of science and scientific findings can vary significantly between different cultures. In order to meaningfully convey scientific and technical information to international audiences, particularly in a training context, an appreciation of cross-cultural communication differences is essential.

This paper is derived from a curriculum developed by the Training and Technology Transfer Section (TTTS) of the Canada Centre for Remote Sensing for trainers and scientist/trainers who are new to international projects. The TTTS curriculum is directed at improving the delivery of geomatics training to different countries and cultures. It places primary emphasis on socio-cultural considerations, as they relate to effective cross-cultural training and technology transfer. The discussion includes measures of effectiveness of such training and elements of culture that have the greatest effect on learning. The concepts of adult learning are also discussed.

Based on the TTTS experience and that of other colleagues from CCRS and elsewhere, this paper provides ideas for geomatics specialists who will find themselves doing double duty as applications specialists and trainers in the international environment. To illustrate the complexity and diversity of international training, references are made to materials in the workshop, such as field-proven models, examples and anecdotal information.

Though oriented towards geomatics, the workshop curriculum outlined in the paper may be extended to other training situations involving complex technology transfer and the goal of sustainable application.

Introduction

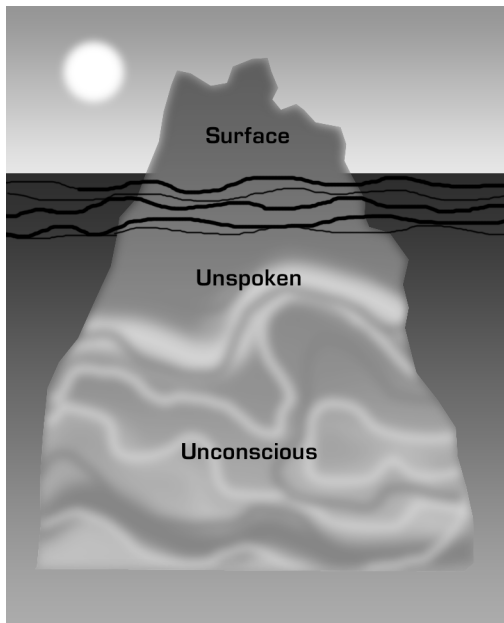
New compact storage media and the Internet are increasing the availability and accessibility of digital data globally. This has a significant impact on education and training in emerging technologies such as geomatics, particularly with regards to cross-cultural awareness and sensitivities. Training technology and models, curriculum content and teaching practices must keep current with evolving needs, domestically and internationally. International cooperative programs and global companies require skilled staff at technical, scientific and management levels who are trained to deal with international markets and organizations. To be successful, these staff must be aware of issues such as cross-cultural communications, technological and human capacities, and international sensitivities.

Understanding the International Trainee Cultural Models

Research has shown that individuals acquire knowledge and skills in different ways. Preferred ways of learning and training are influenced by many factors including age, gender, education level and personality types of individuals. Learning and training styles are also strongly shaped by culture. The Iceberg Model provides a visual perspective into the varying levels of culture (Hoft, 1995).

This model recognizes three categories of cultural characteristics: surface characteristics, unspoken rules and unconscious rules. Surface characteristics are visible, apparent and researchable (e.g. language, time, date formats) Unspoken rules are less obvious (e.g. business etiquette and social protocol). Unconscious rules are not part of a person's awareness and thus can be difficult to establish (e.g., body language, idiomatic speech, physical distance, use of

humour). It is often the unspoken and unconscious rules that are important when organizing a training session.



Cultural Differences

Two researchers who have greatly influenced today's understanding of cultural differences are Edward Hall and Geert Hofstede. Hall (1959) divided cultural characteristics into two broad categories: high and low context. Hofstede (1984) identified four dimensions of national culture: power distance, uncertainty avoidance, individualism and masculinity. Both Hall's and Hofstede's ideas have been developed upon and widely used in international management circles. The importance of cultural differences in developing and delivering effective international training is demonstrated with the help of three tables.

Table 1 indicates the specific characteristics that are reflective of a High or Low context culture (Hall 1959). Table 2 identifies the four dimensions of national character that result from collectively held assumptions about way of life, behaviour, social interaction, response to change etc. (Hofstede, 1984). Table 3 defines the dimensions of national culture specifically in the context of teaching and learning (Hofstede, 1991). It can be seen that the mixing of trainers and trainees from High and Low context backgrounds can set the stage for both obvious and subtle problems in the learning environment.

Cross-Cultural Communication

Communication, as defined by Kolpf (1991), is "the process by which persons share information meanings and feelings through the exchange of verbal and non-verbal messages." (Harris and Moran, 1996). In every exchange of meaning there is a sender and a receiver. It is essential to ensure that the receiver is interpreting the meaning intended by the sender.

In cross-cultural training, both the trainer and the trainees need to have an honest desire to communicate, and to recognize that culture influences understanding. (Samovar and Porter, 1985). Assumptions and attitudes can unwittingly sabotage an honest and sincere desire to communicate across cultural lines.

Cultural Assumptions

Assumptions are essential. Without them, people would constantly need to inquire about the meaning of things. Assumptions influence perceptions. When assumptions and perceptions coincide, feelings of comfort or harmony or at the least, neutrality result. When assumptions and perceptions clash, discomfort or disharmony results. It is a common human reaction to distort what is perceived to match what is assumed.

The tendency to make perceptions and assumptions congruent can have serious implications in cross-cultural training. Real differences in assumptions are often unrecognized or dismissed. Many people express the opinion that "underneath it all, we're all the same". This is not true. Relying on long-held assumptions, may result in negative perceptions of other groups of people. Behavior that seems strange or wrong by one set of standards, may be the norm according to another. Such misunderstanding often results in negative stereotyping of other cultures.

Psychologists have divided assumptions into two categories: substantive and process. Substantive assumptions deal with beliefs, concepts and facts. Process assumptions are specifically related to communication or interaction between people (Adler, 1991). They include the following:

- The other person sees the situation the same way that I do.
- The other person is making the same assumptions that I am.

- The other person is (or should be) experiencing the same feelings that I am.
- The communication situation has no relationship to past events.
- The other person's understanding is - or should be - based on (my) logic, not (their) feelings.
- The other person is the one who has the 'problem' or does not understand the logic of the situation.
- Other cultures are becoming, or want to become, more like my culture and, therefore, the other person is becoming more like me.

The dangers of process assumptions in cross-cultural training are obvious. Inaccurate perceptions and misinterpretations may lead to a loss of confidence and a mistrust of motives on both sides. A hardening of attitudes and resistance to change can result, with potentially dramatic impacts on the effectiveness of the training.

Researching International Differences and Similarities

There are many basic considerations which should be considered when preparing and editing course content for trainees in other countries. Some considerations relate to the written materials and include units of measure, calendar, page size etc. Others relate to the training presentation itself, including conventions on the use of humour, gestures, references to popular culture, religion and politics.

By researching the political, economic, social, environmental, religious, educational, linguistic, and technological issues and characteristics of the training clients, it is possible to customize the 'Iceberg Model' for a specific international context. The trainer can then develop a questionnaire or checklist for internal verification. Such a questionnaire would require statements related to the current training requirement in several key areas:

Political:

- Are there current trade issues? (e.g., related to the import of specific technologies)
- Are there current legal issues that could affect training?
- Does the curriculum reflect acceptable political tradition and symbolism?

Economic:

- Wealth perception
- Overall economic status

Social Organization:

- Importance of age
- Business etiquette
- Family and social interaction
- Discrimination and prejudice
- Popular culture

Environmental:

- Attitude towards the environment
- Ability to control or live with the environment

Religious:

- Significance of religion
- Forbidden foods or behaviours
- Calendar and scheduling considerations

Educational:

- Literacy
- Common body of knowledge
- Learning style

Linguistic:

- The target language
- Official national language
- Text orientation
- Writing style

Technological:

- Level of technology

An analysis, such as that described above, can assist in identifying unintentional bias in training materials.

Removing bias from the course content is not in itself sufficient. Trainers should also assess themselves to identify their strengths and weaknesses with regard to cultural context.

The Learning Client

While learners and learning styles differ from country to country, common traits exist. Training is often aimed at adults. Certain personality traits and needs can be recognized in the psychology of the adult learner:

- Adult learners are experienced. The participants should be helped to recognize the importance of their experience and convert it into a vehicle for learning
- Adult learners make choices.

- Adult learners are not used to restricted classroom environments and need some freedom of movement.
- Many adult learners are shy and need to feel encouraged to participate.
- Adult learners expect to be informed reliably.
- Adult learners are social beings and require interaction.
- Adult learners are experienced consumers and want their money's worth.
- Adult learners want things to be relevant.
- Adults participate in workshops for many reasons. Thus the trainer should be prepared for a variety of attitudes, ranging from resentment to nonchalance to genuine interest.
- Adult learners want to be treated with respect and honesty.

During the development and delivery of training programs, these common traits need to be addressed. How they are addressed is, of course, influenced by cultural differences.

The Learning Environment

Effective training requires an open, comfortable learning environment. Creating such an environment is only possible if trainers understand the participants and their objectives in attending the training sessions.

Techniques for establishing a rapport with participants are crucial when training in another culture. Studying the culture, requesting trainee profiles or consulting with host culture contacts are ways to learn more about a specific audience. In high context cultures (Table 1), trainers frequently note the difficulty of addressing the needs and expectations of participants from different levels in the same organization. Technicians may not feel comfortable asking questions in front of their managers.

Conducting a pre-workshop visit to the country where training will occur is always a good idea, but costs may prevent this. In any case, every effort should be made to obtain information through the international client or workshop organizer. This effort will be rewarded through improved training performance.

Tips for creating a good learning environment

- Greet people as they enter the room, as this not only makes them feel welcome, it will set the mood for the workshop.

- When the time comes to begin the workshop, welcome the group as a whole.
- It is a good idea to get the administrative and logistics details out of the way first.
- Demonstrate awareness for the needs of others by informing the group about washrooms, smoking, breaks, etc.
- Once the introductory information has been taken care of, make a clear but smooth transition into the learning material.
- Take frequent breaks.

Course Design

There are a wide range of factors and constraints that influence program designs, including: cost; lead time; media preference; instructional methods; logistics and communication; equipment requirements and availability; and, on-site support.

The specific implications of these factors can be assessed based on the development of a written training objective.

In order to design an effective training program, some basic considerations must be taken into account. These balance the training objectives with the participants' backgrounds. (Notice how each of the following points relate to the psychology of the adult learner).

Basic Design Considerations

- The goal of the workshop is to bridge the gap between the participant's current capabilities and their desired level of skill or understanding. Taking prior account of the educational levels, backgrounds and positions of the participants during the design process will help accomplish this objective. This type of information helps the trainer to be sensitive to the cultural expectations of the audience.
- Incorporating the existing skills of the participants into training exercises can facilitate the introduction of new practices and skills. Where skill levels vary widely, those with advanced abilities can be encouraged to coach beginners.
- Attitude, motivation, self-esteem and responsibility affect the participant's willingness and capacity to learn. The workshop design should include a blend of activities that will stimulate and motivate through involvement, measurable skill development and positive feedback.
- The workshop design should be flexible, accommodating and cost effective. The

biggest obstacle is typically translation. Well-structured units will allow the necessary repetition of key concepts and skill-building exercises, while keeping redundancy and costs to a minimum.

- Utilizing a variety of training methods within the workshop solves a number of potential problems. There is no single training method that is optimal for all learners, therefore, diversity can help reach a wider audience. Variety in training techniques guards against boredom and reinforces concepts without obvious repetition.

Localization of geomatics products and services

“Localization is the process of creating or adapting an information product for use in a specific target country or specific target market.” (Hoft, 1995).

There are two levels of localization - *general localization* and *radical localization* - that can be used to customize a training session. General localization focuses on superficial cultural characteristics such as language, currency, date and time formats. Radical localization deals with characteristics below the surface, ones that affect the ways trainees think, feel and act. These clearly correspond to the Iceberg Model of culture discussed earlier.

By its very nature, geomatics technology lends itself to (and indeed requires) a significant degree of general localization. In training, this may involve the use of national standards (e.g., measurement units, datums and map projections), and local data examples. Competitive advantage can be achieved through radical localization of training materials and presentation formats. Choosing the methods and degree of localization for a training program is difficult, and is dependent on when and why the training is being conducted. For example, training early in a project, to assist in defining user requirements, will be much different than operational training after a new technology has been installed in a client's premises. The first step is to develop an understanding of the socio-cultural environment and then to determine the processes and techniques that are most appropriate. Both general and radical localization can be expensive in terms of time and cost, but both are essential for achieving effective solutions and greater client satisfaction.

Organization of Geomatics Training Sessions

Training sessions or workshops consist of several subject-specific sections. An outline or lesson plan should be constructed for the session as a whole and for each section. When customizing a training session for a client, the trainer should organize the material such that it will accommodate the specific needs of the audience. A three-step approach to design works well.

1. Define the modules:
 - identify the specific purpose of the training session
 - assemble available material, both on technical content and training methodologies
 - decide on the learning objectives for each session
 - establish sub-objectives for each objective
 - list key points to be made for each sub-objective
 - select appropriate methodologies (for example, job aids, case studies, simulations, skits, etc.) and media for each sub-objective unit
2. Plan the learning process:
 - determine forward and backward linkages for each key point
 - check the design for flow
 - construct process questions to:
 - explore trainees' experience with each unit's content
 - advance the session
 - review the content
 - check for learning after each unit
 - develop checks for learning (questions, demo's, tests, etc) for each unit
3. Write a summary of the purpose, learning objectives, sub-objectives, and key points.

Training Delivery

Presentation skills play an important role in the success of the workshop. Experienced presenters use both verbal and non-verbal communication skills to project ideas in a manner that will stimulate the interest and curiosity of the trainees. Be aware that miscommunication can occur when trainers and trainees fail to understand each other's nonverbal signals. Keep the following tips in mind when preparing for and conducting a presentation.

Presentation tips

- Eye Contact - Maintaining eye contact shows interest and enthusiasm for the subject. Participants are made to feel important when they are treated with some attention. Be careful not to stare too long or too repetitively

at certain individuals or areas of the room. In some countries eye contact is considered disrespectful or even rude. Be sure to determine what is acceptable prior to beginning the workshop.

- Body Language - Body language is not universal; it varies from one culture to another. Facial and hand gestures emphasize the meaning of words, and are a physical demonstration of your attitude towards the subject. However, gestures commonly used in one culture can carry a completely different meaning in another. Pointing and beckoning are gestures that often differ between cultures. While body movement is necessary to communicate ideas and feelings effectively, try not to overdo it.
- Voice - Your voice is the most important tool in making a successful presentation. You should speak loud enough, without shouting, for everyone to hear and at a rate that is comfortable for yourself and your listeners. Care in pronunciation is important and it helps to control acceleration. Varying the pitch of your voice, emphasizing important words and pausing after important statements gives emphasis and allows the audience to consider what has been said.
- Enthusiasm - Enthusiasm can spice up a dry subject, but when feigned, it will backfire. If you believe in what you are saying, it should not be difficult to present it with some gusto. Encourage other ideas and methods; do not ridicule, especially if a participant has contributed. Any show of initiative should be applauded.
- Poise - If you are poised, relaxed and in control, the audience will relax quickly and be more receptive. It is natural to be nervous before a presentation; the key is learning to control your anxiety and make it work for you. A speaker who lacks nervous energy usually lacks vitality and credibility.
- Listening Skills - Listening is essential for success to occur. When there is feedback from the group, whether planned or spontaneous, the trainer should accept without judgment what is said.

While trying to keep these hints in mind, it is most important to be yourself. Follow your intuition and let your personality guide you. Style will develop over time and as long as adequate preparation has been made, things should flow smoothly. Research has proven three ways of winning an audience:

- Always give praise.
- Use discretion when showing your sense of humour.
- When the situation permits – smile.

Language

Language is probably the biggest challenge in delivering training in another culture. When the proficiency of the trainer in the audience's language (or of the audience in the trainer's language) can be assessed in advance, there is a range of techniques which can be used to reduce the language barrier. The key is to "be prepared". Use a level and style of speech appropriate to the subject and the audience.

- Use common words which have few alternate meanings.
- Use action verbs.
- Avoid redundancy and unnecessary quantification.
- Use punctuation properly.
- Conform to basic grammar rules more strictly than is common in everyday conversation.
- Avoid acronyms, slang and colloquial words.
- Provide a glossary for scientific and technical terms, and clearly define each word as it is introduced.

Language and culture:

- When addressing someone you do not know well, keep the tone formal while expressing personal interest. Learn the structure of names and use proper titles.
- Try to adapt the tone of the presentation to the manner in which such information is usually conveyed in that culture.
- Reflect the cultural values of the participants in areas such as perception of the environment, individual versus collective accomplishments, or quantitative versus qualitative changes.
- Whenever possible, adopt the cultural reasoning style of the people with whom you are communicating.
- Take the time to interact with the class, in small groups or individually depending on the cultural preference.
- Allow for more instructional time per module than you would usually need for presenting the same material to native speakers of your own language.
- Allow for periods of silence; the participants may need extra time to absorb the information and to translate it into their own language.

- Make presentations in a clear manner, speaking slowly, and making one point at a time. Use visual aids whenever possible.
- Do not simply ask participants if they understand the material you have covered, but rather ask them to repeat their understanding using their own words. Paraphrase to confirm your own understanding of participants' questions and answers.
- Even outside of the formal learning environment, it is a good idea to paraphrase in intercultural conversations, and to encourage your counterpart to do the same.
- Provide course notes, including summaries of your presentations, preferably in the language of the participants.
- poor screening of participants' backgrounds.
- weak management support of training activities.
- inadequate assessment of training needs.
- inappropriate training solution (methodology, level).
- poor trainer performance.
- insufficient preparation by trainer and/or participants.
- logistics failures (lost baggage, equipment malfunction ...).
- classroom inadequacies (location, noise, ventilation...).
- poor scheduling (participation stress, organizational support).

(Riddle, D.I. and Lanham, Z.D, 1985)

Evaluation

Evaluation Techniques and Validation

To determine if the training session was a success, feedback from the participants is necessary. The trainer will want to determine if the participants understand the material well enough to proceed on their own. These assessments allow workshop sponsors to justify their investments, as well as to identify requirements for future training.

Also, some form of evaluation is essential to assess and improve the training session. It is important to know that the participants benefited and that the results were worth the cost, time and effort that was expended on both sides. It is equally important to discover where and what kinds of changes need to be made. Conducting an evaluation should provide the necessary information to do so.

How the evaluation is to be administered should be determined in the early stages of workshop planning. It should be closely related to the training objectives, not only to measure success reliably, but also to pinpoint the shortfalls and therefore expedite a remedy for the future.

Not every workshop will be a triumph. The reasons may or may not be within the control of the trainer. An awareness of the common reasons for failure, however, may help ease the trainer's conscience and will definitely help to plan more effectively.

Common problems causing poor workshop results include:

- inadequate on-the-job rewards to motivate participants.

These are only a few examples; it is important to identify potential sources of risk when planning the training, and to assess the actual problems during the evaluation.

Formats for Evaluation

The scope of the workshop evaluation can vary widely. A passive approach relies on voluntary and unsolicited feedback. The response will most likely be limited in volume and magnitude. Facilitated interactive approaches, such as generation of a list of "what went well" and "what should be improved", at the end of the workshop benefit from group dynamics, with participants building on each other's ideas.

The most common form of evaluation is a *post-workshop questionnaire*. This can be designed to provide a good overall feedback on a range of issues which are important, both for evaluation and for future planning. Such questionnaires, however, are limited in the sense that the participants normally complete them immediately following the workshop. Thus, the results may not provide insight into the long-term effectiveness of the training, or the management response to the technology which has been introduced.

The *training impact assessment* is the most comprehensive type of evaluation. It involves considerable follow-up with the participants and with management. This method yields more definitive results, and is carried out to assess longer-term technology transfer or as part of an organization's human resource development strategy, rather than to evaluate a specific workshop or training activity.

Summary

The importance of cross-cultural factors should not be discounted in effective training design and delivery. As the marketplace for products and services expands globally, geomatics companies and organizations must meet the challenges of international training. Personnel at the technical, scientific and management levels who deal with an

international clientele can also benefit from an increased knowledge of cross-cultural communications principles and practices. This knowledge will enhance both personal effectiveness and corporate performance.

Table 1. Characteristics of High and Low Context Cultures

<i>High Context</i>	<i>Low Context</i>
• build relationships slowly	• build relationships quickly
• focus on process	• focus on results
• are group oriented	• are individual oriented
• hierarchical	• egalitarian
• value formality	• value informality
• communicate indirectly	• communicate directly
• focus on non-verbal	• do not focus on non-verbals
• delivery of a message is an art form	• message is information exchange
• disagreements are personalized	• disagreements are depersonalized
• time is a process	• time is a commodity
• knowledge is embedded in the situation	• knowledge is compartmentalized

Hall, 1959

Table 2. Descriptions and characteristics of the four dimensions of national culture

	<i>High</i>	<i>Low</i>
Power Distance - the extent to which a society accepts that power in institutions and organizations is distributed unequally.	<ul style="list-style-type: none"> • willing acceptance of hierarchy • inequalities are tolerated 	<ul style="list-style-type: none"> • inequalities must be justified • equality of individuals is the ideal
Uncertainty avoidance - the extent to which a society feels threatened by uncertain or ambiguous situations.	<ul style="list-style-type: none"> • rigid codes of behavior and beliefs 	<ul style="list-style-type: none"> • differences are more easily tolerated • practice is more important than principle
Individualistic -the extent to which people accept responsibility for themselves and their immediate families only	<ul style="list-style-type: none"> • willing acceptance of individual responsibility • strong emphasis on 'I' 	<ul style="list-style-type: none"> • tight social framework where people expect to be looked after by their in-group (relatives, clans, organizations) • strong emphasis on 'we'
Masculine - extent to which the dominant values are achievement, heroism, assertiveness and material success as opposed to preferences for relationships, modesty, caring for the weak and quality of life	<ul style="list-style-type: none"> • social differences are maximized (men work, women bear and raise children) • performance society 	<ul style="list-style-type: none"> • social differentiation is minimized; roles and decision making are shared between genders • welfare society

Hofstede, 1984

Table 3. Learning and the Four Dimensions of National Culture

	<i>High</i>	<i>Low</i>
Power Distance	<ul style="list-style-type: none"> • Teachers are expected to take all the initiatives in class. • Teachers are gurus who transfer personal wisdom. • Students treat teachers with respect. 	<ul style="list-style-type: none"> • Teachers expect students to take initiatives. • Teachers are experts who transfer impersonal truths. • Students treat teachers as equals.
Uncertainty avoidance	<ul style="list-style-type: none"> • Students are comfortable in structured learning situations and concerned with the right answers. • Teachers are supposed to have all the answers. 	<ul style="list-style-type: none"> • Students are comfortable with open-ended learning situations and concerned with good discussions. • Teachers may say 'I don't know'.
Individualist	<ul style="list-style-type: none"> • Low-context communication. • Purpose of education is learning how to learn. • Diplomas increase economic worth and/or self-respect. 	<ul style="list-style-type: none"> • High-context communication. • Purpose for education is learning how to do. • Diplomas provide entry into higher status groups.
Masculine	<ul style="list-style-type: none"> • Best student is the norm. • Failing in school is a disaster. • Brilliance in teachers is appreciated. • Boys and girls study different subjects. 	<ul style="list-style-type: none"> • Average student is the norm. • Failing in school is a minor accident. • Friendliness in teachers is appreciated. • Boys and girls study the same subjects.

Hofstede, 1991

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