Cultural and pedagogical implications of a global e-learning programme

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An eleven country internal evaluation of the Cisco Networking Academy program across Europe, the Middle East and Africa, revealed a number of issues related to the globalization of e-learning. The Academy program is a 280-hour web-based course that teaches students to install, maintain and troubleshoot computer networks. It was developed in the US by educators and Cisco network specialists and is taught in educational institutions in over 150 countries worldwide. Hitherto research on cultural influences on teaching and learning have been limited to overseas students being taught in an unfamiliar culture or online by teachers with unfamiliar pedagogical strategies. Through interviews with both students and teachers and observation in classrooms, this study reveals how important local tutors are in helping students adapt to the style of the material and to make a course developed in another country both culturally and pedagogically relevant.

Introduction

The Cisco Networking Academy Program is a comprehensive instructor-led, web-based curriculum designed to teach Internet technology skills and prepare students for industry certification. Through an e-learning model developed in the US it includes web-based, media-rich content, online testing, student performance tracking, and instructor training and support, as well as hands-on labs. The Program is designed to be scaleable and self-sustaining. Cisco Academy Training Centres (CATCs) train instructors at regional academies, which in turn recruit, train and support up to ten local academies. The local academies teach the students. The Program is designed to create a reciprocal relationship between Cisco and the educational institution where the academy is hosted. The institution implements, administers and runs the 280-hour course. Cisco provides the curriculum, learning materials, and networking technology to create the academy’s networking lab. A typical lab will consist of computers, five routers, two switches and five hubs.

The Program has been developed jointly by education and networking experts in
order to equip students with the skills to be economically active in an area of employment vital to the Internet economy. It is taught in 149 countries worldwide with over 10,000 academies, nearly 300,000 students currently enrolled, and more than 123,000 have graduated from the Program. It has been operating in Europe, the Middle East and Africa (EMEA) since early 1998. In this time the number of academies in this region has grown to over 3000 in 97 countries in the region with about 10,000 instructors, 88,000 students and nearly 23,000 students having completed the program to date. With such rapid growth it became important to examine the development of the Program in order to take stock of the deployment to date and to explore the underlying issues influencing successful implementation, particularly those relating to culture, pedagogy and Internet access within the different countries in the region. Countries within EMEA have very diverse cultures and cover the whole spectrum of economic development from the most developed to the least developed, thus giving a broad perspective of the Program’s development over a range of economic, cultural and pedagogical environments.

Data was gathered through a web based questionnaire available across EMEA in four languages and interviews with 300 students and 100 instructors in academies were conducted in 57 academies in 11 countries within the region in order to gather more detailed profiles of students and instructors. Pedagogical practices were examined in each of the countries visited, as was the subsequent impact on how the Curriculum was taught. These were compared with the social constructivist framework within which the Program has been devised by the developers at Cisco.

This paper sets the evaluation in the context of research on pedagogical practices and cultural influences on teaching and learning, and seeks to address whether a global curriculum can serve the needs of students in all countries; what adaptations need to be made; how Internet access affects the pedagogical process; and to identify the challenges facing locally based tutors.

**Globalization of education**

Developments in information and communications technology have led to a proliferation of educational courses available globally and distance learning is offered irrespective of time and space with virtual tutors and students who rarely, if ever, meet. Yet, how relevant are course offerings to students situated in different cultures from that of the country originating the course and whose first language is not the language of instruction? Robin Mason (1999) considers the meaning of global education, as opposed to distance learning, and suggests it comprises of five elements of which very few programmes contain more than two or three of these elements:

- Students in more than two continents of the world able to communicate with each other and with the teacher.
- An express aim on the part of the teacher or institution to attract international participation.
- Course content devised specifically for transnational participation.
• Support structures both institutional and technological to tutor and administer to a
  global student body.
• Operations on a scale of more than one programme and more than one curriculum
  area, with more than 100 students.

Mason suggests that this pure model ‘grows out of the theory, traditions and
experiences of peer learning, of interaction with course materials and with other
students and tutors, and of collaboration as a means of developing team working
skills, reflection and critical commenting abilities. But the added element is a
culturally diverse student body’ (Mason, 1999, p. 4). The difficulties with global
education of this nature are the different views of the role of the teacher and the range
of student learning experiences. However the richness of a cross-cultural dimension
can add to a programme as long as these differences are recognized and catered for,
and local tutor support takes cognizance of the learning styles and preferences of
students. Mason’s model also assumes that students are learning together with
students from other countries and cultures, and does not include courses which may
be delivered locally using web-based resources developed in one country.

Seely Brown and Duguid (2001) also suggest that centralization of course
development ‘overlooks the significance of place and location of knowledge’ (p.
228). However they consider this in situations where courses relate to the context
such as history, where the curriculum will reflect the national perspective and
interests, not in the case of vocational courses which vary little from country to
country or within a country.

Cultural influences on teaching and learning

Woodrow (2001) also suggests that cultural traditions and beliefs relate not just to
social behaviours and interests but affect assumptions about ways of learning, and
even the meaning of ‘learning’ may be different within different social constructs.
Bourdieu (1977) and Kelly (1973) both emphasize the impact of cultural context on
thinking and learning, with different communities providing different cultural capital
to their youth.

Bierhoff (1996) in a comparison of European texts indicates that these are more
structured in continental Europe, and showed more progression and continuity than
English texts, which often introduce more complex ideas early in the process.
Educational systems in different countries tend to adhere to a dominant field
psychology and although there has been some change over the last twenty years,
Woodrow (2001) argues that there has been little fundamental movement. By way of
example he compares the dominant psychology in three education systems:

British education has been dominated by Piagetian developmental psychology; American
education dominated by the notions of behaviourist psychology; European education
underwritten by gestaltian traditions in which grand ideas are the object and end points
rather than particular skills. (Woodrow, 2001, p. 7)

Much research on comparison of learning styles has been criticized as tending to be
Table 1. Comparison of ‘Asian’ and ‘Australian’ learning styles

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<th>Asian</th>
<th>Australian</th>
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<td>Rote learning is common</td>
<td>Evaluative learning is preferred</td>
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<tr>
<td>Non critical reception of information</td>
<td>Critical thought is expected</td>
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<tr>
<td>Students work hard to learn everything</td>
<td>Students selectively learn the central concepts as well as detail</td>
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<tr>
<td>Students are inclined to seek clarification</td>
<td>Students are willing to seek assistance as part of the learning process</td>
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<tr>
<td>Few initiatives are taken</td>
<td>Independent learning and research are rewarded</td>
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<tr>
<td>A willingness to accept one interpretation</td>
<td>Students are encouraged to apply general principles to specific situations and to test various interpretations</td>
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<tr>
<td>Overall concepts are seen as important to understanding</td>
<td>Analytical thinking is encouraged. Students are expected to support opinions with logical argument.</td>
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‘based on perceptions of the learning behaviour of cross-cultural students. They fail to demonstrate accurate understanding of how these students conduct their learning, nor do they acknowledge, as suggested by Biggs (1999), prior learning and cultural influences’ (Ramburuth, 2001). Ramburuth adapts Phillips’ (1990) work to critique the comparative learning behaviours of students with Asian and Australian backgrounds (Table 1).

Some literature has suggested that Asian students are ‘relentless rote learners, surface learners, syllabus dependent, passive and lacking in initiative, not expressive of opinions, and lacking in independence’ (Gatfield & Gatfield, 1994, quoted in Ramburuth, 2001, p. 4). Generalizations can be misleading and Ramburuth’s study indicates that deep learning was achieved by students of Asian ethnicity and suggested that these students used both deep and surface approaches to learning. This research suggests that approaches to teaching may need to be modified in order to support students from different cultural backgrounds to achieve deep learning.

Both Hofstede and Trompenaar’s research has been influential in this arena. Hofstede (1997) suggests that culture affects not only who we are, how we think and behave, and how we respond to our environment, but also how we learn. Trompenaar’s (1997) likens culture to the layers of an onion: ‘the outer cultural levels are the most visible and the easiest to change, whereas the inner core that determines our cultural assumptions is hidden from view, more difficult to identify, and not easily changed’ (Dunn & Marinetti, 2002, p. 2). Dunn and Marinetti have provided a useful overview of Trompenaar’s value orientations and Hofstede’s uncertainty avoidance dimension to indicate the ways in which people from different cultures vary, and to help in planning for cultural adaptation in a global learning context (see Table 2).

Some of these dimensions are important to consider in the design of electronic learning environments that involve discussion and online teaching, while others are
Table 2. Overview of Trompenaars’ value orientations and Hofstede’s uncertainty avoidance dimension

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<th>Orientation</th>
<th>Description</th>
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<td><strong>Universalism vs Particularism</strong></td>
<td>Universalist cultures tend to adhere to societal rules and not to make exceptions for particular circumstances.</td>
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<td>Particularists adopt a relative perspective, pay more attention to unique circumstances, and feel obligations to personal relationships.</td>
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<td><strong>Individualism vs Communitarianism</strong></td>
<td>Individualists regard themselves primarily as individuals, ideally achieve alone, and value personal responsibility.</td>
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<td>Communitarianists regard themselves as primarily part of a community, value group achievements, and tend to assume joint responsibility.</td>
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<td><strong>Neutral vs Affective</strong></td>
<td>For neutral cultures, the nature of interactions should be objective and detached. Feelings should not be openly revealed, and self-possessed conduct is admired.</td>
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<td></td>
<td>For affective cultures, it is acceptable to express openly thoughts and emotions—verbally and non-verbally.</td>
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<tr>
<td><strong>Specific vs Diffuse</strong></td>
<td>Specific cultures tend to separate personal from professional life and people are more direct, purposeful, and transparent when relating to others.</td>
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<td></td>
<td>For diffuse cultures, personal contact pervades every human transaction and relations with others tend to be indirect.</td>
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<tr>
<td><strong>Achievement vs Ascription</strong></td>
<td>Achievement-oriented cultures judge people according to what they have accomplished. They make limited use of titles and respect to superiors is accorded depending on their knowledge and performance.</td>
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<td></td>
<td>Ascription-oriented cultures attribute status depending on birth, kinship, gender, and age but also connections and educational record. They make extensive use of titles.</td>
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<tr>
<td><strong>High Uncertainty Avoidance vs Low Uncertainty Avoidance</strong></td>
<td>Cultures with a high uncertainty avoidance score try to avoid ambiguity. Teachers are expected to have all the answers and students are comfortable in structured learning situations.</td>
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<td></td>
<td>In cultures with a low uncertainty avoidance score, students are comfortable with unstructured learning situations, open-ended questions and discussions.</td>
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also applicable to the creation of e-learning materials. E-learning materials can be customized for different cultures, particularly with e-learning tools that make use of reusable learning objects, so that different approaches can be taken that take account of cultural differences when teaching the same content. These cultural differences also have implications for how locally based tutors support students, and any advice ought to take such differences into account and not advocate one approach.

Research on web design also makes use of Hofstede’s work. Marcus and Gould (2000), for example, suggest that different cultures look for different data to make
decisions and they exemplify Hofstede’s cross-cultural dimensions. One specific area of relevance to the design of e-learning materials is the influence of high and low uncertainty avoidance (UA). Marcus and Gould believe that:

High-UA cultures would emphasize the following:

- Simplicity, with clear metaphors, limited choices, and restricted amounts of data.
- Attempts to reveal or forecast the results or implications of actions before users act.
- Navigation schemes intended to prevent users from becoming lost.
- Mental models and help systems that focus on reducing ‘user errors’.
- Redundant cues (colour, typography, sound, etc.) to reduce ambiguity.

Low-UA cultures would emphasize the reverse:

- Complexity with maximal content and choices.
- Acceptance (even encouragement) of wandering and risk, with a stigma on ‘over-protection’.
- Less control of navigation; for example, links might open new windows leading away from the original location.
- Mental models and help systems might focus on understanding underlying concepts rather than narrow tasks.
- Coding of colour, typography, and sound to maximize information (multiple links without redundant cueing). (Marcus & Gould, 2000, p. 17)

**Language of instruction**

Other implications of global education relate to the language of instruction. E-learning may only be available in the home language of the originating country, or be translated into a small number of languages, and this may not be the first language of students studying the programme in some countries. Learning in a second language through a school or college curriculum is very different from foreign language learning (Collier, 1995). Collier identified four major components that are interdependent when acquiring a second language for learning. These are socio-cultural, linguistic, academic and cognitive processes. The socio-cultural processes relate to the fact that others may have the language of instruction as their first language and therefore may not be as relevant when students are learning at a distance through a second language or with other students who all speak the same first language, as in a global education programme being delivered virtually. To learn effectively through a second language, students need to have a high level of cognitive development. For students to succeed in learning through their second language, ‘their first language system, oral and written, must be developed to a high cognitive level at least through the elementary-school years’ (Collier, 1995, p. 3). Academic knowledge and conceptual development transfer from the first language to the second language, and second language can be taught effectively through meaningful academic content. Tasks in the second language must also promote cognitive development and not be ‘watered down’.
The research

The Cisco Networking Academy Program is probably the largest global e-learning course in the world and certainly taught in more countries worldwide than any other course. It is currently only localized through language translation and is available in ten languages. The language of construction is English and all translations are based on the latest English version. New tools and network architecture are now available to provide more customization and localization, and the next version of the Academy program, which was launched in 2003, takes advantage of these features. Data from this evaluation fed into current developments.

It is known from registration data that the profiles of students vary considerably from the US with the Program being taught to older and a more diverse range of students than it was originally designed for. Additionally the range of institutions in which the Program is taught is broad and the experience and background of instructors varies enormously.

The aims of this internal evaluation were therefore:

- To gather more detailed profiles of students and instructors across EMEA.
- To examine pedagogical practices in different countries and the subsequent impact on how the Curriculum is taught.
- To look at the effectiveness of the cascade model of instructor training as the locus of control is moved further away.
- To determine the extent of issues and concerns relating to culture, curriculum, assessment and teaching models.
- To determine the impact of cost and availability of Internet access on teaching and learning.
- To examine the career aspirations of students.
- To provide useful feedback to Cisco to inform future curriculum developments.
- To provide regional and country specific promotional materials for Area Academy Managers (AAMs) and for general marketing and publicity.

Methodology

The methods of data collection included web-based questionnaires made available to all student and instructors across EMEA, face-to-face interviews with students and instructors and lesson observations in eleven countries. Members of the US-based development team were also interviewed prior to the commencement of the study to ascertain the pedagogical model on which the Program is premised and to understand more fully the aims and intentions behind the Program’s development since its inception in 1997.

The eleven countries identified for this evaluation were countries in which the Program was becoming well established, and represented both developed, emerging and developing economies. They were Denmark, France, Germany, Hungary, Italy, Poland, Spain, Sweden, South Africa, United Arab Emirates and the UK. Pilot
studies were carried out in the UK and Germany in order to trial and develop the web based questionnaires and to develop a semi-structured interview schedule. The questionnaire was made available in four languages, English, French, German and Spanish, and used to collect information about students and instructors, to gain an impression of career aspirations, and to collate views of the Program and how it was taught. Area Academy Managers (AAMs) across the whole region were asked to inform academies about the questionnaire and to encourage main contacts, instructors and students to complete them. This ensured that data from countries not included in the visit was also sought. The first tranche of data was heavily skewed towards South Africa and towards students in the first two Semesters, so the questionnaire was modified slightly and pushed out again though the same route. This time the data gave a wider spread and the two sets of data were combined to give a sample size of around 1600 representing a response rate of 4.5% of students and 1% of instructors.

Interviews and observations were used to provide qualitative data that could be validated against the quantitative data from the questionnaires. Interviews with students were usually in groups of three or four, and interviews with instructors were usually one to one, but occasionally two or more instructors were interviewed together. A translator was used where the interviewee was unable or lacked confidence to speak English. Classes were observed where possible, but this only happened in about 30% of academies visited. The interviews were fully transcribed. AAMs accompanied the evaluator in all countries except Sweden, Denmark and UAE.

The number of academies visited in each country did not constitute a representative percentage of the number of academies in that country, but they did attempt to cover the range of institutions and type of academies in which the program was taught in each country. In total 57 academies were visited, and around 100 instructors and 300 students were interviewed.

The results

Pedagogy

Pedagogical practices were examined in each of the countries visited, as was the subsequent impact on how the Program was taught. These were compared to the social constructivist framework within which the Program has been devised by the developers at Cisco in the US. There was little significant difference between countries in the ways in which the Program was approached by instructors, but where the cost of and speed of access to the Internet was problematic, this had an impact on the ability of instructors to teach in the way they wanted. Reactions to the pedagogical approach of the online curriculum varied considerably between countries.

The curriculum development team emphasize the importance of students interacting with real equipment, and the written materials are viewed as important but secondary. The whole Program is premised on a social constructivist view of learning in which students construct their own knowledge and understanding through
interaction with other learners, and knowledge emerges between people. Learning is ‘scaffolded’ by an instructor who facilitates the learning process by guiding students to the next stage by asking relevant questions, and fully engaging students in activities through which their knowledge can be furthered. Features of social constructivism included in the Program are:

- Making skills more relevant to students’ backgrounds and experiences by anchoring learning tasks in meaningful, authentic, highly visual situations.
- Addressing motivation problems through interactive activities in which students must play active rather than passive roles.
- Teaching students how to work together to solve problems through group-based, co-operative learning activities.
- Emphasizing engaging, motivational activities that require higher-level skills and pre-requisite lower-level skills at the same time.

The differences in pedagogy in each country visited were noticeable in various ways:

- How students were treated:
  - How much autonomy they were given.
  - How much prior reading was set before a class.
  - How older and younger students were treated.

- How instructors perceived their role:
  - As a leader.
  - As a guide.
  - As a supporter (or scaffold).

- How instructors perceived students:
  - Homogenous.
  - Individuals with different needs and learning styles.
  - Teaching is helping students learn how to learn (constructivist).
  - Teaching is telling and students learn by rote (behaviourist).

Examples from some of the countries visited are given below in order to illustrate how this appeared in practice.

**South Africa.** In South Africa the level of education varied considerably between different sectors of the population, and so in many institutions instructors had to give students substantial input prior to commencing the Cisco Networking Academy Program. The instructors spent considerable time helping students to draw links between the theory and labs.

Another limitation was poor and limited Internet access, both in and outside class, and few students had access at home. Students had little Internet experience compared to their counterparts in Western Europe or Scandinavia and needed time to adjust to the e-learning materials. There was far less of a gender issue than in any other
country visited and as a result, many more girls studied the Program. Behavioural skills are taught alongside the Program in some academies, which were described by one instructor as ‘etiquette, decency, timekeeping, all those ways that you conduct yourself in a person’s eyes as well’.

**France.** The tradition of *didactique* is very strong in France so the Program is very much instructor led. However students are given more autonomy where the Program is taught in university. Instructor input is strong in all areas and instructors take teaching very seriously with a good deal of preparation. When questioned about students learning preferences, instructors said that they prepared their lectures in various ways in order to address the range of learning needs. Students are rarely left to read the curriculum alone unless it is a specially designated class, and there is little formal use of group work or peer support in the theoretical aspects of the Program. None of the instructors interviewed made much use of the online instructor toolbox, which contains a range of teaching ideas, because they said it did not fit their view of pedagogy, and pre-prepared presentations were always in English so required translation. They view the French method of teaching as more ‘academic’ than the US or UK. Students are expected to read the online curriculum but an instructor always undertakes the summing up.

**Denmark and Sweden.** There was very little e-reading in lessons in any academy visited. Students are given considerable autonomy and group work is prevalent. The curriculum was perceived as too repetitive in some places. The format for a chapter is to tell students what they will learn, teach it to them, then recap. Often the next chapter starts by recapping the previous chapter and indicating what concepts will be used or developed. In Sweden and Denmark students are usually taught something once and it is then the student’s responsibility to recap, read more or to seek further clarification as necessary. The onus is also on students to be organized and prepared for tests. Teachers often expected students to pre-read the curriculum before coming to a lecture, though not all were that diligent. There was more use of web links from the curriculum to external sites than seen elsewhere which could be attributed to the high level of personal responsibility for learning placed on students.

Few instructors used the instructor toolbox for lesson plans and presentations, preferring to develop their own, but often they projected some of the graphics from the curriculum web pages onto a large screen in order to go over difficult concepts with students. As in France, instructor input is perceived as crucial.

**Poland.** The Program was usually embedded into a module on networking, complementing and adding practical skills to the module. High Internet access charges prohibit students from accessing the curriculum outside classes and especially at home which means that valuable class time had to be used by students
to read the curriculum. One student had spent some time being educated in the US. He described his perceptions of the differences between educational approaches in the two countries. He explained that when he first went to the US he was confused: he was set problems to solve but was never quite sure what he had to learn and consistently failed tests until he ‘worked out the system’. In Polish schools, he said, you learn more by rote and know what you have to learn. In further discussion with this student and a group of his peers, they decided that perhaps the US model was better but the Polish model also had merits in some areas.

**Germany.** The widest diversity of teaching styles was seen in Germany. In some institutions the students were given lectures on aspects of the curriculum in which there was very little class interaction with the teacher. In others the classes were used for students to work together, not for reading the curriculum on their own. Extra assessments were given to make the course relevant to student needs, and individual students were catered for. In one academy a small group of students had been allowed to go ahead on the proviso that they helped others in the class. This group worked closely together, using instant messaging at home to discuss the curriculum and to sort out any difficulties they had in understanding the curriculum, involving their instructors where necessary. In lessons all students in this academy took it in turns to prepare a presentation on a chapter for the rest of the class, and instructors encouraged students to use mind maps.

The use of the instructor toolbox for lesson plans, presentations, etc, was used most by countries with similar pedagogical principles like the UK and the UAE, where many of the instructors were from the US, UK or Canada. Many countries used the animations and graphics from the web-based curriculum materials, projecting these images on a large screen when teaching difficult concepts. In about half the countries visited the ideas for teaching available on the instructor site were hardly used. Only half the instructors completing the web based questionnaires said they found the toolbox useful too. However most instructors interviewed did report looking at the toolbox, taking away some ideas (often timings for each chapter) and then developing them to their own style.

A UK instructor from a regional academy said he had seen some of the local academies using PowerPoint presentations really effectively, but another instructor from the UAE said that his students perceive PowerPoint presentations as extra work so he rarely used them. ‘It’s a very oral culture’, he explained, ‘and the students explain ideas to each other that they have read’.

The relevance of the course to networking in the work place was also more apparent in countries where the Program was linked to work placements and Germany, Italy, Sweden and Denmark had the strongest tradition in the integration of vocational education with work experience, although this was also noted to a lesser extent in France.
Language issues

Where there was no translated version of the curriculum, the language barrier sometimes posed a problem. A Hungarian instructor explicitly stated that he wanted not only the student materials to be available in Hungarian but also the instructor support materials. The presentations and other teaching resources in the instructor toolbox all tend to be in English, which means that instructors either have to translate them, which is time consuming, or they talk to the slides in their own language. Some non-English speaking academies like the Italians did translate the resources but rarely shared them by posting them to the instructor toolbox, although they did sometimes email them to other academies in the locality. Several non-English speaking countries wanted an area where they could share resources for their country and in their own language. For example, an electronic community for Spanish instructors was started in Spain but not used extensively as it relies on instructors logging onto a separate system. One instructor said that if a Spanish instructor community was made available on the Cisco Networking Academy Management Server (CNAMS) then it would certainly get more use, and instructors would be willing to share ideas and resources through this forum. In the web-based questionnaires instructors were asked if they would like a localized discussion forum, 70 responded positively and 30 gave no response. (This facility is now available in the new version of the management system that was launched at the beginning of 2003.)

Students who were reading the Curriculum in English as a second language said they preferred it when their teacher explained the content of a chapter before they read it. As one student from the United Arab Emirates said, if she read the curriculum and misunderstood a concept, then re-reading it would not help to remedy that understanding. However if an instructor had explained it first and then she read it, the sense made would be more correct and she was not left with a misconception. Where students had read the Program in English, only a few said they would prefer to read it in their own language and thus contradicting many instructors’ views. They recognized that English is the medium of communication in networking, and also, as so many networking terms were English, they said there seemed little point in learning them in their own language. In an interview with students in the United Arab Emirates (UAE) the difficulties of learning the Curriculum in English were discussed. Despite the fact that they had to make extensive use of dictionaries to understand new words, most students did not want to read the Curriculum in Arabic. They explained that English would be used in future jobs, and that as many of the words were English anyway, it was better to learn the Program in English.

Occasionally the curriculum was used as a vehicle for teaching students English and this practice was observed in both Poland and the UAE. In such situations language teachers would use the Curriculum for English lessons and they would also support students struggling with English in their academy classes. One instructor from the UAE said she told the students, ‘When you go across to your English course they’re going to help you with formatting, spelling, grammar, how to present this, presentation skills, ideas like that’.
Instructors who used the English version of the curriculum with non-native English speakers said that students starting the Program with poor English might struggle with the first of the four semesters into which the Program is divided, but as they worked their way through the chapters, their understanding improved very quickly. In Poland an instructor said he would like the students to study the first two semesters in Polish and then to complete the Program in English. In Sweden language issues were overcome with translation software, but this was the only country visited in which such software appeared to be used. However, students were encouraged to use printed dictionaries in other countries.

In one of the German vocational schools, where industrial experience is integral, students can choose to learn the Program in either German or English. Some students chose to learn it in English because they were working in companies where English was spoken. Often the English version was made available alongside the students’ own language version and students could select which they studied. The French and Spanish translations of the curriculum were in Canadian French and South American Spanish and these are sufficiently different from their European counterparts to cause difficulties for students in France and Spain.

Discussion

A number of differences between the US and the countries studied that are not necessarily cultural impinge on the way the Program is taught. Firstly, students in EMEA have a different profile to students in the US. The Program tends to be taught to older students who may have differing needs. For example, in many countries universities and vocational schools embed the Program into a networking course and may have covered aspects of the web-based curriculum in more depth, while at university it may be set into a more theoretical or academic context. Mature students often have a background in networking and use the Program to gain the CCNA, the industry recognized qualification that completion of the Program leads to. Since the Program was originally written for high school students from the age of 16, the pedagogical approach may not always suit older or more academically advanced students. Instructors overcame these problems in some cases by telling the students to omit certain sections of chapters, summing up the main concepts and generally proceeding though the material at a faster pace. In some countries, there was a national curriculum to follow and the Cisco Networking Academy Program was used to provide a background or adjunct to the current curricular. It was not always permitted for students in full time education to follow the Program on its own.

Hofstede’s notion of high and low uncertainty avoidance (UA) discussed earlier are of particular relevance here. The program could be said to have a good deal of high UA, particularly as it was primarily aimed at 16-year-old students. Mature students would tend to be given more complexity and autonomy in selecting their routes through the material, and this would also be true in cultures where students are given a high degree of responsibility for their learning as in Sweden and Denmark.

The cost and speed of Internet access also appears to have a greater impact on the
way the Program is taught rather than the prevailing view of teaching and learning. In Eastern Europe and Africa, Internet charges are prohibitively high, few students have access at home, and institutions have a limited number of networked computers for students to access outside the teaching rooms used for the Cisco Networking Academy Program. In such cases students spend much of their time in class reading the online curriculum (which can be cached onto a local server); and they spend less time on hands-on labs. For legal reasons the curriculum cannot be copied onto CD-ROM, so students with access to computers at home or in their institution are unable to access the curriculum unless they have Internet access. There are printed companion guides to the curriculum, but the cost of these books is high and the content does not match the curriculum precisely, since they were designed to supplement, not replace, the web based materials. Given such constraints, the pedagogical approaches will vary. At one South African institution, students worked together on the curriculum, the instructor encouraged a collaborative, problem-solving approach to the curriculum, and he introduced extra practical activities to help exemplify some of the harder concepts. In other institutions students appeared to work alone on the curriculum, occasionally stopping to ask questions of their instructors or their peers, and there was little variety in lessons. Sometimes an instructor would prepare a presentation or use one from the instructor toolbox at the beginning of a new chapter, or they would sum up the main points of each chapter once the students had read it. In other classes students would be kept together on the same chapter, with better students delving deeper into the subject by following some of the web links to more detailed discussion on the concepts being studied.

One of the main conclusions from the study was that, in order to ensure that the Program continues to succeed as it grows, instructors are made fully aware that they are the most important element to its success. From the research it became apparent that their role was pivotal in making the curriculum culturally and pedagogically relevant for their students. Although the Program is culturally neutral in that Internet working relies on international terminology and standards, how the Program relates to an individual country’s infrastructure will vary. Instructors have to ensure that students are prepared for work in their own country. Additionally, they need to make any adaptations to the presentation of the curriculum to ensure that students are comfortable in their normal learning environment. This accords with Hofstede’s cultural dimensions and Trompenaars’ value orientations. In each country visited instructors who were familiar with the norms and preferences of students made the Program culturally acceptable. For example the instructors in the academies visited in Sweden and Denmark taught in accordance with the low-UA category, whereas the Polish instructors used a style befitting the high-UA category. There is a strong risk of stereotyping from the few academies visited, and the German academies made the implications of doing so very clear as the diversity in approaches in two academies illustrated. One was very much instructor led and would lean towards a high-UA culture whereas the other was very much based on a low-UA culture.

The way in which students were taught English through the medium of the Cisco
Networking Academy Program accords with Collier’s assertion discussed earlier, that students learn a second language effectively in meaningful contexts and that tasks should not be watered down. The students interviewed in both the UAE and Poland enjoyed learning English through the Program and they were highly articulate, no group requiring the assistance of a translator during their interviews.

Mason (1999) argues that in higher education, ‘global courses are a fad’ (p. 5), and she suggests that ‘if the curriculum doesn’t demand a global perspective, if there is no imperative for cross-cultural discussion in the nature of the subject matter then perhaps we should not be side-tracked by the glamour of globalization’ (p. 5). However in vocational education and training, in courses such as the Cisco Networking Academy Program, globalization is achieved through local deployment, and although this program does not fit with Mason’s pure model of global education precisely, firstly because it has a strong face-to-face element and is not taught virtually, and secondly because it was not originally devised specifically for transnational purposes, it has become very much a global course made relevant through instructor support. The Program now includes Mason’s fifth element as it has recently been enhanced with the addition of five new courses sponsored by IT industry leaders that give students opportunities to gain skills in other related technologies. Experience to date would suggest that it certainly is not a fad, and perhaps paves the way for increased industry involvement in vocational education through such public private partnerships.

Teaching with web based resources

What was common to all countries was the lack of experience and understanding of how traditional instruction interfaces with web based teaching materials. Many instructors are unfamiliar with e-learning and in some cases good teaching can be abandoned as students are set to work on their own with little mediation between the web based resources and students, or between students and teachers. Teachers’ practice appears to change when students are given rich multimedia resources to learn from, and teachers are unsure of how to mediate between students and the materials. Cisco provides many examples in the online instructor toolbox of how teachers can make the learning experience more enjoyable with ideas about how to work with students in groups to ensure they are able to understand new concepts, rather than just reading about them. Yet a few academy instructors do not make use of the toolbox or other teaching ideas, they rely on the online curriculum to do the teaching, and lessons can be dull and uninspiring.

Instructor training needs to devote more time on working with instructors to develop a range of teaching strategies aligned to the pedagogical perspectives for both labs and theory to ensure students’ success. Instructors need to work with the curriculum materials and consider the pedagogical adaptations necessary to meet the cultural expectations to enhance students’ learning experience in the same ways as they might with traditional learning resources.
Summary

Despite cultural differences, the Cisco Networking Academy Program was rated highly by students and instructors in all the academies visited during the period of the evaluation. Students and instructors alike were enthusiastic about the Program, its currency and direct relevance to much needed skills in the work place, and the quality of resources and online support. In the web based questionnaire, students were also asked to rate the main features of the Program on a scale of 1 to 5. Scores of 4 or 5 were given to instructor support by two thirds of the students, and to the online curriculum by nearly three quarters of the students and eighty per cent of instructors. Half the instructors also rated the quality of the online teaching materials as one of the best features of the Program.

A Spanish instructor explained what he liked about the structure of the Program indicating how important the instructor was to the cultural relevance of the Program: ‘I like it, the structure because you have, you can change everything at different levels. [If] you don’t know anything about it. You have the material if you want to improve what you know, you have also leads. You have tests, or kit, and also, you have animation and graphics but they explain that more or less well’. He also thought that the animations were very good and that sometimes the ‘analogy is very clever’. He liked the fact that it was easy to check your understanding of a chapter through quizzes and tests and the fact that each chapter started with a review of the previous chapter.

However he also thought that there were some aspects that could be better explained and some of the curriculum could be a little misleading. Additionally, sometimes, he said, ‘you see too many new concepts in few words then it’s impossible to understand, it you don t have all the background’.

The study outlines the need for more instructor support for e-learning and for direct intervention from teachers, outlining the importance of collaboration between students and between students and teachers; introducing a wider variety of teaching approaches when using e-learning resources; and confirming other research findings that cultural adaptation to global education courses is important in enhancing students’ learning experiences. Additionally the speed, level of access and cost of Internet access can have an enormous impact on teaching and learning experiences with e-learning materials, and developers of global curricular need to take this factor into account alongside cultural considerations.

Notes

1. Figures correct as of 6 December 2002.

References


Implications of a global e-learning programme
