Increasing Ergonomics awareness in Industrially Developing Countries (IDCs) via distance learning

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Abstract

Keywords:
1. Introduction

The Internet provides a valuable teaching tool for students at all levels (Cheong, 2000). As Palloff et al. (1999) stated, a large number of institutions of higher education are turning to the use of the Internet to deliver courses at a distance. According to international statistics, the worldwide Internet population is rapidly increasing. The figures show a significant growth of Internet access and households connected to the Internet in IDCs. According to (NUA, 1999), Internet users in China are expected to reach 7 million by the year 2005 and 66.6 in Latin America (Jupiter Communications, 1999).

Ergonomics awareness in Latin America and the Caribbean has been limited due to the fact that very few academic institutions offer undergraduate and postgraduate courses in this field (Toro, 1999).

The exponential absorption of Internet technology in IDCs and their limited access to Ergonomics education represent two important factors. These factors have encouraged some worldwide known academic institutions in the field of ergonomics, to direct their efforts in the provision of distance and online ergonomics tuition and training. The delivery of online training over the Internet is a powerful and cost-effective strategy to increase ergonomics awareness in IDCs. A great number of training budgets show high figures associated to the costs of travelling and housing in traditional training programmes. (Toro, M..; Rodríguez, M. 2000)

The exponential growth of Internet access and use in IDCs, confirms the competitive advantage of using this new technology to cost-effectively spread ergonomics awareness, knowledge, and practice in IDCs. It becomes a challenge for developed countries to spread ergonomics worldwide and to fill the unfilled gap in knowledge and in practice in this field in different parts of the world.

2. E-learning – an innovative delivery method
on-line education has adopted new technologies to reach wider audiences. The US Army's Logistics Management College in Fort Lee, Virginia, conducts video and audio training at over 70 remote locations. The Open University in the UK teaches most of its 200,000 learners by distance learning methods. According to Rodriguez (1999), technological innovations have transformed the field from correspondence study to distance education through a wide range of new technologies supporting instruction and new innovative delivery methods.

The World Wide Web (WWW) has quickly became a graphical user interface for the valuable but complex resources on the Internet due to its capability of facilitating human interaction and the exchange of data and ideas. Consequently, universities and private companies using different features to allow easy communication and course management have developed different web-based training programmes.

The large and accessible asynchronous and synchronous capabilities of the Internet in the use of graphics, video, discussion groups, file transfer, videoconferencing, whiteboard and chat, have given way to a different learning medium which has evolved closely based on constructivist (a substantial body of literature has established the principle that students actively build their internal models of the world rather than passively accepting data. Constructivism serves as a theoretical justification for discovery learning and exploratory systems. Moshell & Hughes (2002)) approach to learning.

3. How can the WWW support learning and teaching?

- Course information:
• Teaching materials:

• Links or relevant materials and WWW resources:

3.1 Communication and Collaborative work

Email, mailing lists and newsgroups

Web-based discussion tools

Web-based video conferencing

Other networked tools
4. Web-based learning environments

These systems are often referred to Virtual Learning Environments (VLEs) or Managed Learning Environments (MLEs), depending on whether they provide administrative tools such as student records and student management facilities. Consequently, different VLEs have evolved offering single authentication scheme, directory structure, consistent interface, and simple way to publish and update content. VLEs can be considered as a workbench for combining text, graphics, video and audio files, offering communication features such as bulletin board, chat, e-mail, discussion groups, calendars, online access and student tracking. This accelerated production of VLEs provides features that let instructors adopt components according to learning outcomes of the course.

There are a large number of VLEs widely used in academia and industry at the moment. Some of the most common ones are: Course Info from Blackboard Inc, WebCT, FirstClass from MC2 Learning Systems Inc., Virtual-U from Simon Frasier University, etc. (Lockwood & Gooley, 2001).

5. E-learning in IDCs - Implications

Learning and teaching using electronic communication mechanisms in IDCs has to be well organised and structured. A large number of issues have to be taken into account when planning the delivery of online courses in IDCs.

Some of the issues that need to be thought of when designing and creating online courses for IDCs in the area of Ergonomics are the following:

Professional Background

The participants of an online course in Ergonomics may well come from different backgrounds, ranging from engineering to medical-related backgrounds. It is important to assess the learning needs of the participants in order to provide a meaningful online learning experience.

Language

Electronic resources and the WWW has become a meaningful way of reaching international boundaries and stretching geographical distances. Therefore, online courses in
the area of ergonomics are a meaningful way of delivering knowledge from developed countries to IDCs. However, one of the problems that one may find is the language incompatibility between most of those countries. It is advised to carefully assess the potential students' language abilities for the course. The use of a common language is advised although it may be helpful to create local tutor support in different geographical areas, where students could get help and guidance in their own language.

Geographical Time zones

Technology available

Attitude towards technology
5. Online Learning and Ergonomics

There is a great potential in the delivery of online courses in the area of ergonomics to IDCs. This is specially due to the fact that very few institutions in IDCs offer ergonomics courses at academic level. Very few institutions in developed countries have realised this and therefore there are only few institutions offering distance and online learning courses in this area. The first university to take the lead in this area has been The University of Nottingham, which offers a Distance Course in Applied Ergonomics at Certificate level (180 points). This course still requires two face-to-face sessions (Tutorials) in which the learners and tutors concentrate in the university campus. The University of Nottingham is working on the transformation of this course into Online Learning aiming to accommodate international students in the near future. Another university who is taking the lead in this area as well is Luleå University of Technology. The university will offer an online course on Introduction to Ergonomics in September 2002 specially designed for working people in IDCs. (See Table 1). There have been other attempts in the development of online courses in this area, especially on a commercial basis. A more detailed list of online ergonomic courses can be found in Table 1.
Table 1. Some Online Courses in Ergonomic

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Institution</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Course on Introduction to Ergonomics</td>
<td>Luleå University of Technology. Sweden</td>
<td><a href="http://www.luth.se/depts/arb/erg/Course/Course.htm">http://www.luth.se/depts/arb/erg/Course/Course.htm</a></td>
</tr>
<tr>
<td>Fyysinen ja kognitiininen ergonomia</td>
<td>CONNET - Oulu University of Technology. Finland</td>
<td><a href="http://www.virtuasliyliopisto.fi/osahankkeet/connet/">http://www.virtuasliyliopisto.fi/osahankkeet/connet/</a></td>
</tr>
<tr>
<td>Certificate in Applied Ergonomics – Distance Learning</td>
<td>The University of Nottingham. UK</td>
<td><a href="http://www.nottingham.ac.uk/ioe/distance/">http://www.nottingham.ac.uk/ioe/distance/</a></td>
</tr>
<tr>
<td>OSHA Online Courses</td>
<td>Occupational Safety and Health Division</td>
<td><a href="http://www.cbs.state.or.us/external/osha/educate/training/pages/courses.htm">http://www.cbs.state.or.us/external/osha/educate/training/pages/courses.htm</a></td>
</tr>
<tr>
<td>Dental Ergonomics</td>
<td>University of California Berkeley</td>
<td><a href="http://elearning.berkeley.edu:7000/public/ergouc_dental01/">http://elearning.berkeley.edu:7000/public/ergouc_dental01/</a></td>
</tr>
<tr>
<td>Textile Ergonomics</td>
<td>Syracuse University</td>
<td><a href="http://www.cyberu.com/catalog/class_detail.asp?class_id=8318&amp;partner=116">http://www.cyberu.com/catalog/class_detail.asp?class_id=8318&amp;partner=116</a></td>
</tr>
<tr>
<td>Cognitive Ergonomics</td>
<td>Virginia Tech</td>
<td><a href="http://alumni.iddl.vt.edu/course.php?id=DISEM001">http://alumni.iddl.vt.edu/course.php?id=DISEM001</a></td>
</tr>
<tr>
<td>Occupational Safety and Health</td>
<td>Moxie Media Online Learning Centre</td>
<td><a href="http://moxielearning.com/catalog.htm">http://moxielearning.com/catalog.htm</a></td>
</tr>
<tr>
<td>Professional Ergonomics Training Services</td>
<td>Ergoweb</td>
<td><a href="http://ergoweb.com/training/">http://ergoweb.com/training/</a></td>
</tr>
<tr>
<td>Public Health</td>
<td>The Johns Hopkins Bloomberg School of Public Health</td>
<td><a href="http://distance.jhsph.edu/courses/full_web.cfm">http://distance.jhsph.edu/courses/full_web.cfm</a></td>
</tr>
</tbody>
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6. Discussion
The International Ergonomics Association (IEA) should not be forgotten, since this organisation could sketch out a plausible and trustworthy implementation of The Virtual Ergonomics University (Ohlsson, 1999). The Ergonomics Virtual University could follow the extensive and valuable experiences of all the different academic institutions, which have already started with different initiatives in distance and online learning in this area.

References


