
Pergamon

Internet and Higher Education
4 (2002) 301–310

THE INTERNET AND HIGHER EDUCATION

Integrating e-Learning into the workplace

Mohd Hishamuddin Harun

Medical Online Sdn Bhd, Level 54, Tower 2, Petronas Twin Tower, Kuala Lumpur City Center, 50088 Kuala Lumpur, Malaysia

Abstract

The significance of e-Learning and knowledge management at the workplace cannot be overemphasized. With the rapid change in all types of working environments, especially medical and healthcare environments, there is a constant need to rapidly train and retrain people in new technologies, products, and services found within the environment. There is also a constant and unrelenting need for appropriate management and leveraging of the knowledge base so that it is readily available and accessible to all stakeholders within the workplace environment. In addition, within the medical and healthcare setting, certain other factors reinforce this need for constant refreshing, training, and retraining of its workers. These factors are outlined below:

- Heightened expectations for improved quality of healthcare services from an increasingly aware and empowered public,
- Acute shortage of doctors and other healthcare professionals (requiring "multitasking" efforts from individuals and thus "forced" learning of new skill sets),
- Heterogeneous standards of healthcare as practised by medical practitioners necessitating policies designed to audit and streamline medical and healthcare practices as per enforcement of minimal credit points to be tied up to issuance/renewal of annual practicing certificates (APC),
- Increased complexity of healthcare services, technologies and products, and,
- Accelerated technological changes.

Our TeleHealth Initiative intends to implement this integration into the healthcare setting workplace via the following applications, namely:

- Just-in-time Continuing Medical Education (CME), which refers to significant and relevant information that can value-add to patient management at the appropriate time and appropriate segment of encounter,

E-mail address: mhisham@medical-online.net (M.H. Harun).

1096-7516/02/$ – see front matter
PII: S1096-7516(01)00073-2

- Formal Distant Education (FDE), which refers to electronic courses delivered online resulting in award of certificates conferred by accredited academic institutions or agencies,
- Modular Distance Learning (MDL), which refers to packaged learning modules designed to maintain competencies and to excel at relevant knowledge and skills which are tied in to issuance/renewal of practising licenses of the healthcare professionals, and,
- Personalised CME, which refers to knowledge, information, and skill sets pushed to healthcare professionals tailored to their areas of expertise, interest, and need.

The solutions as outlined above will be delivered via Internet-based content accredited by relevant authorities. This paper describes our mission to integrate e-Learning into health-related settings and into the routine daily life of medical and healthcare professionals.

Keywords: e-Learning; Integrated TeleHealth; Continuing Medical Education (CME); Knowledge economy

1. Introduction

1.1. Why learn and why learn at the workplace?

During the last century, we have moved from the Industrial Age through the Information Age and now, to the Knowledge Age. The ability to obtain, assimilate, and apply the right knowledge effectively will become a key skill in the next century. Learning is the key to achieving our full potential. In fact, our survival in the 21st century as individuals, organisations, and nations will depend upon our capacity to learn and the application of what we have learned to our daily lives.

Nobody learns in isolation. There is a wide range of factors that either motivate or discourage us from learning. A few key factors that affect learning include: learner's resources, the rewards associated with that learning activity, the availability of information about learning opportunities, the availability of appropriate learning environments, and the climate in which learning takes place, especially those created by the government and the employers. As an example, in terms of learning environment, it is assumed that most of us learn best in a highly challenged, low-threatening environment. Therefore, much thinking and consideration needs to be applied when designing and creating such an environment for learning. Also, there are many barriers that exist which prevent, delay, or hinder people from learning. These include lack of motivation, incentives, employer support, inappropriate timing and inaccessibility of courses, and geographical barriers. Hence, these factors need to be minimized before learning can take place among the people in the workplace (Campaign for Learning, UK, 2001).

The bottom line is that learning at the workplace is essential for an individual, an organisation, or even a nation, to thrive in the 21st century. Learning at the workplace, specifically in the context of this paper — in the healthcare setting, may include simple steps such as observing and learning from peers or superiors, on-the-job training, applying

healthcare guidelines to everyday work, and including the complex steps involving formal learning resulting in certificate qualifications.

In a survey performed in the UK, it was found that the majority of e-Learning occurs at the workplace, although nearly a third of e-learners do most of their e-Learning in the comforts of their homes. The Web is the means reported as the most preferred for people to do their e-Learning; however, directed learning methods such as packaged courses in CD-ROMs are also favoured by a significant number of the participants of the survey, especially among those working in the private sector. It was also revealed that involvement with e-Learning tended to be work-related and on those required by employers, although personal interests outside of their work scopes are also a significant motivator. The survey also found that facilities were in place for e-Learning in most organisations. Almost all have some computing facility for employees to access e-Learning materials, although this tended to be limited. The majority of e-learners have positive associations with e-Learning, although there were mixed views on this issue, and the less educated tended to be less positive. e-Learning was thought to be more convenient, allowing people to work at their pace and to gain fast access to information. Among individuals, the negative associations with e-Learning included that it is impersonal, frustrating, and lonely. The main disadvantages of e-Learning were thought to be time-wastage (easily distracted), unreliable computer systems, and poor quality or too gimmicky learning programmes. e-Learning providers, employers, and employees all believe that the main disadvantage of e-Learning is that it is not sufficiently developed yet to be able to replace other forms of training. Other disadvantages include prohibitive development and setting-up costs, prohibitive cost of hardware as well as lack of knowledge about the possible opportunities available from e-Learning (Attitudes to e-Learning, 2000).

2. Learning and the knowledge economy

K-economy is the buzzword today. In such a global knowledge economy, people have been identified as the key for success of organisations and businesses. To thrive in such an economy, organisations and businesses need to recruit, retain, and update highly skilled people. e-Learning has been identified as the enabler for people and organisations to keep up with changes in the global economy that now occur in Internet time. As companies, organisations, and governments around the globe look for more efficient, dynamic ways to update workforce skills and knowledge, e-Learning is emerging as one of the fastest organisational uses of the Internet. e-Learning has the advantage of being applicable across all areas of workforce training including career development training, new employee orientation, new service or product information, or just updating and upgrading of work knowledge, competencies, and skills. By leveraging training and learning over the Internet, organisations can eliminate the need for classroom time, dramatically reducing costs and improving real time access to information (Future of Corporate Learning, 2001).

Embracing e-Learning by organisations is not just a good idea, but it is a necessity. The national healthcare organisation in Malaysia is no exception. Maximising e-Learning will provide the support it needs to attract and retain the very best healthcare professionals,

bearing in mind the "brain-drain from public to private sector phenomenon" taking its toll on an already-depleted and overworked public workforce.

In some areas, traditional sources of learning and training such as colleges, universities, and training organisations, continue to provide what is required. But just as the needs of organisations are rapidly changing, so are the ways that learning opportunities are being delivered. Mobile telephony, electronic simulation, interactive and modular delivery, the Internet and the Worldwide Web, and digital television are some of the more obvious examples. New learning environments are also emerging, examples of which include learning centres and corporate universities. Online delivery of learning, often supported by coaching and mentoring, is increasingly becoming the norm. Online learning is allowing learning to be tailored to an individual's need. Skills and knowledge can be developed faster and when they are needed, just-in-time learning.

Now that human capital has become the most important of competitive advantage in any organisational or business setting, a different strategy for learning and training of the workforce needs to be instituted. As organisations face the demands of the knowledge economy, the workplace is becoming dynamic and interdependent. The contribution of the employees in terms of their knowledge, skills, competencies, and creativity is vital not only to competitive success but also, especially in the healthcare services context, to the quality of lives of the nation's citizens.

Successful organisations have always invested in their people. As is well recognised, the greater the amount of learning and training that goes on within an organisation, the better the performance and the competitive edge. Recent evidence suggests a 76% profit gain per employee in businesses which have invested in its people. As the recruitment, motivation, and retention of staff become more competitive, learning and training become key elements of the package of benefits offered to employees.

In times of great change (as in current times), learning to learn is the key skill. When organisations have to transform or restructure or just change the way they do things, learning ensures that people understand and act on their new insights. This ability to adapt and the capacity to be flexible by the workforce will ensure that services will continue even in the midst of external pressures and turmoil.

It can also be seen that the half-life of knowledge is getting shorter by the day. It has been predicted that the stock of human knowledge will double every 73 days in 2020 as opposed to 5 years today. Hence, it can be anticipated that almost constant updating and upgrading of knowledge, information, and skills will have to be ensured to keep track of exponentially increasing knowledge gains.

The emerging trends and changes in the field of learning in light of opportunities afforded by the knowledge economy include: the drive for consistently high-quality learning opportunities, the need to widen and increase access to such learning opportunities, and the rise of e-Learning. If learning opportunities are not made available to all employees, then the organisation will not be able to harness the full potential of its people. The pace of change at the workplace and the constraints of having employees leave the workplace for training for prolonged periods of time have resulted in greater emphasis on reducing cycle time for learning and the implementation of knowledge, giving rise to the emergence of "just-in-time"

rather than "just-in-case" learning. Using Internet- and Intranet-based learning tools, e-Learning has enabled people to learn at their own pace and at a time and venue which is most convenient to them (The Future of Corporate Learning, 2001).

3. Learning and training in the medical and healthcare setting in Malaysia

Education and training in healthcare is an essential and continuous activity for healthcare providers. In 1996, the Ministry of Health of Malaysia spent approximately RM 91.9 million or 4.5% of its total operational budget for both basic and postbasic/postgraduate training. Continuing Medical Education (CME) or what is currently termed "Continuing Professional Development (CPD)" is deemed compulsory for all healthcare professionals, to ensure that knowledge, skills, and competencies are not only maintained but also regularly updated and upgraded. The current CME system has many unresolved problems and issues such as the high cost of establishing and maintaining physical training facilities, difficulty in meeting changing demands consequent to demographic, disease trends and knowledge economy changes as well as staff shortages in the deployment of knowledge workers, all these arising from the relatively long duration in training and unattractiveness of rural settings. It was with this scenario in mind that the Ministry of Health came up with the CME application nested within the national TeleHealth Project. With the CME application, delivery of CME will be facilitated by online delivery, in other words, transforming traditional CME delivery into e-Learning (Concept Request for Proposal, Ministry of Health, 1997).

As in all types of working environment, but especially more so in the medical and healthcare environment where being complacent, negligent, and out-of-date with work-related advances could make the difference between life or death outcomes in patients, there is a constant need to rapidly train and retrain the workforce in new technologies, products, and services found within the workplace setting. There is also a constant and unrelenting need for appropriate management and leveraging of the knowledge base so that it is readily available and made accessible to all members of the workforce within the workplace environment. In addition, within the medical and healthcare setting, certain other factors reinforce this need for constant refreshing, training, and retraining of its workforce. These factors are outlined below.

3.1. Heightened expectations for improved quality of healthcare services from an increasingly aware and empowered public

The public is no more the docile folks of yesteryear, complacently and uncomplainingly reliant on their healthcare providers for health-related matters. They now demand up- to-date information from their healthcare providers and are not so reticent about medicolegal implicated negligence on the part of their healthcare providers.

In 1999, 67% of physicians, 66% of surgeons, and 80% of obstetricians and gynecologists were in the private sector. This has created unequal distribution of medical services and difficult access for communities in rural areas (Economic Report, 1997). An acute shortage of

doctors and other healthcare professionals within the public health sector has resulted in the emergence of "multitasking" efforts from individuals and thus "forced" learning of new skill sets imposed upon them in facing deployment of these additional duties. Thus, training needs and demands of existing workforce are further increased.

3.2. Heterogeneous standards of healthcare as practised by medical practitioners within both public and private (but more so in the latter case) health sectors, have necessitated policies designed to audit and streamline medical and healthcare practices

This has led to the establishment of an accreditation system managed by both Malaysian Medical Council (MMC) and Malaysian Medical Association (MMA). Medical practitioners are obligated to obtain minimal credit points from accredited CME programmes, which are tied up to issuance/renewal of annual practicing certificates (APC).

3.3. Increasing complexity of healthcare services, technologies, and products has necessitated increased breadth and depth of training programmes

Globalisation and increased access exposure to information has also increased the natural satiety level of the workforce for information and knowledge.

The TeleHealth Initiative has been able to identify these added demands being placed upon the traditional training system within the Ministry of Health and was thus able to preempt the issue and offer effective solutions.

4. TeleHealth and the National Health Vision

Perhaps a short introduction to the TeleHealth concept is required for those not familiar with it. A good point to start off would be the *National Health Vision*, which is stated as follows:

> Malaysia is to be a nation of healthy individuals, families and communities, through a health system that is equitable, affordable, efficient, technologically appropriate, environmentally adaptable and consumer friendly, with emphasis on quality, innovation, health promotion and respect for human dignity and community participation towards an enhanced quality of life.

It is in pursuit of this National Health Vision that the idea of the TeleMedicine Project or what is more popularly called the TeleHealth Project, was conceived. On reaching the threshold of the new millennium, and still unable to achieve the aspired-for "health-for-all" premise for that new century, a new strategy and approach is deemed mandatory. TeleHealth was envisioned as the enabler for that vision, harnessing in its wake the full power of information and multimedia technologies for public good while empowering the public, community, and healthcare providers with appropriate knowledge and skills to ensure an optimal state of health for all involved.

In its approach to achieving the TeleHealth objectives and backed by a reliable, scalable infrastructure network, the solution proposed focuses on delivering the four applications

contained within, namely, the Lifetime Health Plan (LHP), the Mass Customised Personalised Health Information and Education (MCPHIE), CME, and TeleConsultation in an integrated manner, thereby simulating real-life situations as encountered within the patient–healthcare provider environment as closely as possible (Concept Request for Proposal, Ministry of Health, 1997). Much consideration has been placed on minimising change processes as well as making the makeover as unobtrusive as possible to the healthcare provider while ensuring security and privacy to the individual.

The core service of the TeleHealth Project is the delivery of the LHP, which is seen as an individual's health and medical record from womb to tomb, made accessible, as and when appropriate, to himself and his healthcare providers. The MCPHIE and CME applications are designed to support components towards the competencies of both the individual and his healthcare provider, in ensuring the best optimal healthcare possible in the prevailing circumstances (Concept Request for Proposal, Ministry of Health, 1997). TeleConsultation serves as a mechanism for an efficient referral system for healthcare providers. Fig. 1 is a schematic presentation of the Integrated TeleHealth Project and the interfacing of the various applications within it.

5. CME within the TeleHealth Project

Fig. 2 describes in essence the CME application within the TeleHealth Project. By servicing the healthcare workforce in terms of learning, training, and performance support, CME can indeed be called "The Healthcare Provider's Silent Partner."

It is this CME application that will integrate e-Learning opportunities and implementation into the medical and healthcare setting of the Ministry of Health Malaysia, initially, and later to all healthcare professionals throughout Malaysia.

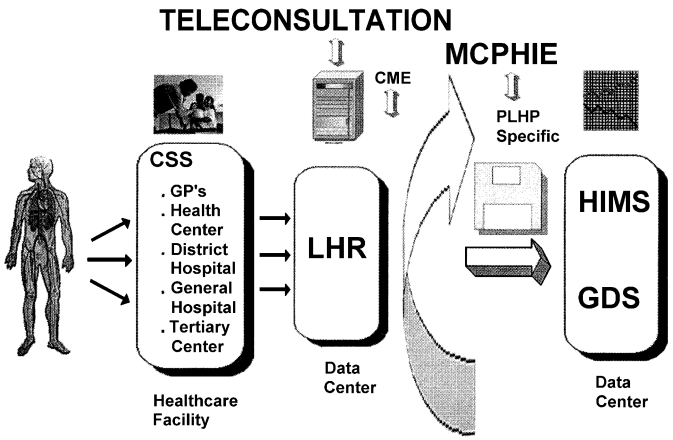

Fig. 1. A schematic presentation of Integrated TeleHealth and its four applications.

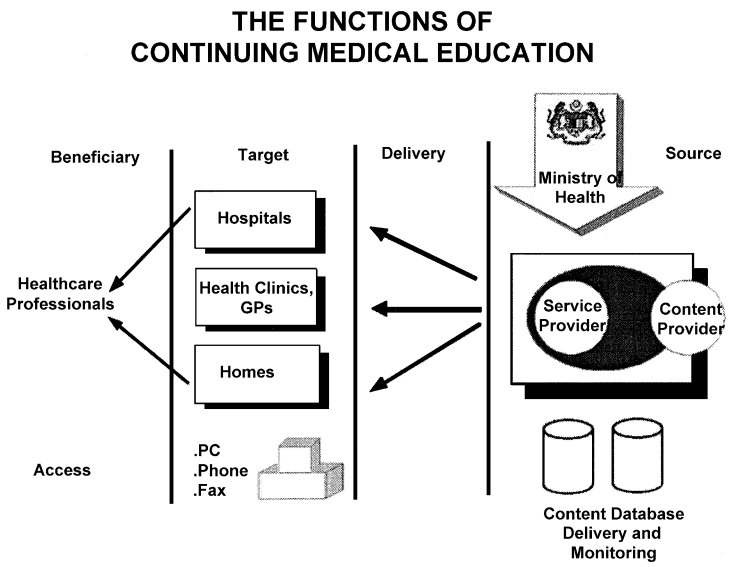

Fig. 2. A schematic presentation of CME functionalities within Integrated TeleHealth.

At the heart of the CME application are a few main principles, namely the use of computer-based training for teaching information technology skills. However, until recently, training "soft" professional skills had been largely the domain of formal classroom sessions, bedside teachings, instructor-led classes, and/or audiovisual aids. The emergence of Web technology has allowed for the development of Web deployment of soft skills.

5.1. Application of adult learning theory with its emphasis on motivation, relevance, self-management, problem solving, and experiential learning

The learner remains actively engaged in the course content through frequent interactivity, practice, feedback, and reinforcement.

6. Application of learning on-demand theories

People learn best when they can learn exactly what they need at exactly the moment they need it. This allows them to immediately apply their newly gained knowledge, which improves performance. More importantly, immediate application cements the knowledge gain and makes it far more likely that the knowledge will be retained and used in future on-the-job situations. Web-based learning can help learners locate and use the exact piece of information, whether it be 5 min, 30 min, or even an appropriate job aid, that they need at a specific point in time on the job.

The Web-based e-Learning offered by the CME portal has the following benefits, including:

- Just-in-time learning — e-Learning and performance support are available whenever and wherever needed by the workforce.
- Just-enough learning — healthcare professionals can find and use exactly the piece of instruction or information support they need at the moment for the task-at-hand. Why spend many hours or days in a class when only 5 min of e-Learning could suffice and meet the immediate performance need?
- Eliminate travel costs — travel has historically been the most costly aspect of healthcare workforce training, especially as training courses are often held in major cities only or in specialised training institutes only. e-Learning eliminates travel costs and the time away from the workplace and job that travel necessitates.
- Low-cost delivery — upfront costs may seem prohibitive but in the long run, huge savings are made for the organisation as access to training courses and materials will only incur a fraction of traditional classroom training costs.
- Always up-to-date — with e-Learning and performance support resources available a finger touch away, updates are immediately available to all workforce involved.
- Providing e-Learning specific to the individual's environment. This will include personalised e-Learning environment, personalised e-Learning plan support for individuals as well as learning management and administration capabilities.

7. CME services integrated into the workplace

The CME services have been formulated to serve and implement the above principles, as outlined below:

- Just-in-time CME refers to significant and relevant information that can value-add to patient management at the appropriate point of time and appropriate segment of encounter. Application of the right amount of information at the point of need will enhance learning and allow for better retention of information.
- Formal Distant Education (FDE), which refers to electronic courses, delivered online resulting in award of certificates conferred by accredited academic institutions or agencies. e-Learning in its full glory will be implemented in this service, via modular packaged education programmes designed for targeted groups of health professionals and delivered via the Internet for easy availability and accessibility, anytime, anywhere.
- Modular Distance Learning (MDL), which refers to packaged learning modules designed to maintain competencies and to excel at relevant knowledge and skills, which are tied in to issuance/renewal of practising licenses of the healthcare professionals. This will also incorporate elements of e-Learning to facilitate information delivery.
- Personalised CME, which refers to knowledge, information, and skill sets pushed to healthcare professionals tailored to their areas of expertise, interest, and need, will help maximise the impact of the learning environment.

Virtual resources will provide performance support resources to the user and will include such materials as biomedical reference journals, e-textbooks, health magazines, health news and events, etc.

The beauty of the integration of the CME applications is that learning and training activities of the individual healthcare professional will not stand in isolation *outside the workplace and environment*. On the contrary, the healthcare professional will be able to access and immerse himself in learning and training activities not only while on-the-job, but more importantly, while at-the-most-in-need section of an encounter with a patient, at the most appropriate time, in the most appropriate setting, and at the most receptive state-of-mind frame.

8. Conclusion

With the CME applications and using the e-Learning platform, we will be able to assimilate e-Learning activities into the routine working life of the healthcare professional, thus striving for maximum performance improvement in the most convenient manner and in the minimum time possible.

References

Attitudes to e-Learning: a national survey. *Campaign for learning, KPMG, Ufi and Peter Honey learning*. Malaysia: Southgate Publishers, 2000.

Campaign for Learning. *National Learning Forum News*, 2001. [Online]. Available at: http://www.campaign-for-learning.org.uk/news/elearning.htm.

Concept request for proposal. Telemedicine flagship application. *Continuing medical education*. Malaysia: Ministry of Health, 1997.

Economic report, 1997 (Malaysia).

Malaysia's telemedicine blueprint. Malaysia: Ministry of Health, 1997.

The future of corporate learning. Department of Trade and Industry, Department for Education and Employment, FEDA and Campaign for Learning, 2001.