

# E-learning readiness in the health sector

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**Abstract :** Electronic learning is seen as a good solution for organisations that deal with fast changing knowledge and for reducing the cost of training. E-learning is a good opportunity for companies but needs to be well prepared because it takes often high investment costs. That is why it is important for a company to know if it is e-ready. E-readiness is already well covered in literature and several models are suggested. We used these models to develop an e-learning readiness measurement instrument and questionnaire. We used our instrument to check whether the Flemish hospitals were e-ready for e-learning.

## Introduction

Organisations are aware of the value of knowledge and learning for their continual development and for the acquirement of a competitive advantage, which relates to innovation and fulfilment. That's why a philosophy of constant learning in their work environment is developed. Also the healthcare sector is a fast changing environment and it is clear that its performance also depends on the ability of their staff to take up knowledge fast and acquire the competencies which are necessary for the adaptation to that constant changing environment. (S.Psycharis 2005) The advantages of the introduction of an e-learning solution in parallel with or to replace the traditional classroom learning is clear. But an organisation has to be ready to adopt e-learning. E-readiness can be seen as "how ready the organisation is on several aspects" to implement e-learning. E-learning-readiness should be determined before organizations introduce e-learning.

## 1. E-learning

### 1.1.What is e-learning

E-learning can be defined as the delivery of instructional content or learning experiences enabled by electronic technology. E-learning is one of the main innovations that is increasingly diffusing in corporate settings. E-learning requires that the learners use the internet, collaborate with peers and interact with the trainer for support. Experienced e-learners use technology to monitor even their training so that they may ultimately become responsible for their own personal and career development.

### 1.2.Why implementing an e-learning solution?

The number of e-learning initiatives in corporate training settings is steadily increasing. There are several reasons behind it. One of the most significant reasons is related to the cost of training. Industries need a less costly training solution than regular classroom training, and many companies focus on e-learning as an alternative training solution. The literature is filled with reports about how much money companies saved by implementing e-learning. In some cases the implementation of e-learning can save up to 50% from the cost of training.

Advantages such as asynchronous training, training at individual pace, just-in-time training, and cost-effectiveness lure organizations to e-learning (Powell 2000). The opportunity to learn via technology presents an exciting prospect to train even learners with little previous access to computer-based training.

E-learning is a good opportunity for organisations that deal with fast changing knowledge but companies needs to be well prepared because it takes often high investment costs. E-learning offers a lot of advantages, known to everyone that can be fully exhausted when the adoption process is well guided.

## 2. E-learning readiness

## **2.1. E-learning readiness**

Because there are several bad examples of e-learning implementation, a lesson can be taken and one can say that an organisation has to be ready to adopt e-learning. E-readiness can be seen as “how ready the organisation is on several aspects” to implement e-learning. E-learning-readiness should be determined before organizations introduce e-learning. Readiness includes learners ability to adapt to technological challenges, collaborative training and synchronous as well as asynchronous self-paced training. It also depends on their motivation- the discipline to learn in a self-driven mode and to respond to online instructions. The e-maturity of the organization also contributes to the readiness of learners. This includes the availability of infrastructure, clear training objectives, trainer support and guidance and knowledgeable leadership. Therefore, e-learning not only requires readiness from the learner but also from the trainer and the organization to successfully engage e-learning (Bowles 2004)

## **2.2.Strategy to improve learners' online experience**

To improve learners' online experience, strategies need to be found that address the 5 areas of difficulty encountered by people which diminish the quality of their experience and may make people less inclined to e-learning. (Ipsos MORI 2006). The five areas of difficulty are the technical means, autonomy in web use, e-skills, level of social support, variation in motivation

Some cross-cutting components are influencing how people perceive barriers to e-learning and therefore how ready they feel they are to participate in it Influencing components are the organizational culture, self-belief, computer competence and computer training.

## **2.3. E-readiness assessment**

The literature on organizational readiness for e-learning provides managers questions, guidelines, strategies, models and instruments for assessing the readiness of their companies for e-learning.

E-readiness can be assessed by evaluating an individual's technical experience and competency to interact with computers. This competency should be supported by the individual's capability to direct his or her own training through appropriate knowledge, skills, attitudes, and habits.

Following Aydain and Tasci (C.H.Aydin, 2005) questions have to be answered, structured in 7 categories: human resources, learning management system, learners, content, IT, finance and vendor. Another categorization results from *Chapnic (S.Chapnic 2005)*. Questions can be grouped this time in 8 categories: psychological, sociological, environmental, HR, financial readiness, technological skill (aptitude), equipment, content readiness.

## **3. E-learning in the continuing education for healthcare professionals**

E-learning has become a valuable and legitimate learning method for healthcare professionals in the 21st century; (Bernhardt et al., 2003). A study on the adoption of e-learning for public health nurse continuous education showed an affirmative intention towards adopting e-learning as their way of continuing education. (Shu Yu et al. 2006).

Reasons for adopting e-learning are including achieving life learning, fulfilling personal interests, time-saving, based on job needs, info diversity, flexible in time and space, self-regulatory learning, cost-effectiveness, less impact on family duties and life. Reasons to reject e-learning include poor computer competence, lack of personal computer and without internet access, heavy workload, lack of motivation, low self-control.

Despite the low use of the internet or an intranet to find out about work-related issues, on the whole, employees are keen to see e-enabled training and staff is interested in e-learning. 3 in 5 employees think e-learning is a practical option in their own organisation. Healthcare workforce is e-ready

### **3.1. Key components of e-learning readiness and why some employers are sceptical.**

In the study of Ipsos Mori (study Ipsos Mori 2006), key components of e-learning readiness have been identified: social context, content delivery, technology access, learning style, collaboration capacity, organisational learning environment and personal motivation.

Over two-thirds would like to see their organisation make more use of e-learning. Three in four employees feel e-assisted training could be useful to them as trainers or to other trainers in their organisation.

Employers who are more sceptical about e-learning's potential, say that they are limited by resources, half feel they don't have the budget while three in five believe that employees will just not be interested. The key reason why some employers are sceptical about the potential of e-learning is that of technical resources. One of the main barriers to effective e-learning is the lack of accessible computers at the workplace.

### **3.2. Home-based own time e-learning**

The employees strongly supported the use of ICT resources in their own time as an option for learning and training. We believe that home-based, "own-time" e-learning could be promoted to employers and staff as an enhancement to current training practices.

Home-based own time e-learning is the most practical option. The promotion to employers of home-based, "own-time" e-learning can be promoted as an enhancement to their staff's training, provided that staff are offered the support and time in which to do it.

## **4. Measuring model for e-learning readiness consisting of 3 main criteria, including criteria and subcriteria**

How can we measure whether or not an organization is e-ready? The idea is that an organization must fulfill certain criteria before a successful introduction of e-learning can be guaranteed. Which criteria will be included is open for discussion. Several models are developed to measure the e-readiness. If we examine the models closely we see certain common parameters that always come back. Three large categories are suggested (S.Psycharis 2005): resources, education and environment. Each category contains certain criteria. In the category resources the technological readiness, the economic readiness and the human resources readiness are investigated. Education means the readiness of content and the educational readiness. Environment includes entrepreneurial readiness, leadership readiness and readiness of culture.

### **4.1 Resources**

First of all we want to investigate the **technological readiness**, about the available technological systems that are provided and the way they are used. The **economic readiness** examines the willingness of the organisation to invest in e-learning. Implementing e-learning brings along large costs and the organisation needs to be prepared to make the necessary investments in infrastructure but also foresees a degree of administration support. The **human readiness** refers to the knowledge and the skills of the employees being the e-learners. An important question is if staff has the necessary basic skills and if they do feel at ease with used technology,..

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### **4.2 Education**

Whether or not an organisation is ready from an educational point of view will be determined by the measurement of the readiness of the content. Is the educational content easily available, is it structured good and is it reusable? But also the educational readiness is important. It is about the learning styles and the educational needs of the employees.

### **4.3 Environment**

The criteria of this category are the entrepreneurial readiness and the readiness of the culture. So the Flemish hospitals of our case all have their own authority on decision making on how they train their staff.

## 5. Our E-learning readiness measurement instrument

Studying the already existing theory and using our insights of e-learning and quality aspects of e-learning we developed an e-learning readiness measurement instrument. (Schreurs,J. 2008). We developed a structure for the instrument and developed a set of questions based on our self assessment quality questionnaire. This questionnaire can slightly be changed, and adopted according to the sector in which it is used.

### 5.1.Components of e-learning readiness

Learner characteristics

- ICT skills of the trainees
- Motivation for use of e-learning of the trainees
- Do they have a preferred learning style? (prefer presentations including audio, video, ....)

Available facilities for e-learning

- ICT aspects / infrastructure
- Learning management system

Management

- Investment in physical environment
- Organization of e-learning in-house
- Investment in good user systems
- Investment in e-learning infrastructure
- Learning time during working hours?

E-learning solutions/ courses /processes

- Information about available course
- ICT aspects
- Support learning activity
- Maintenance of systems
- Organization of learning activity itself
- Support of the learner

### 5.2. e-learning readiness measurement instrument.

Criteria /subcriteria	How important for you (scale: 1 to 4)			Evaluation of skills level of learner(scale: 1 to 4)		Quality of e-learning facilities (scale: 1 to 4)		Evaluation facilities by AGFA
	doctor	nurse	ICT	doctor	nurse	ICT	Mgmt/doctor	
<b>Enabling Learning Resources</b>								
Information on available learning opportunities	x	x						x
The electronic online Learning Environment								
ICT and the learning system			x			x		x
System functions facilitate learning activities			x					x
Maintenance of facilities			x					x
The physical learning environment provided for online session	x	x					x	
<b>Investment in e-learning solutions</b>								
Investments in local central ICT learning infrastructure for implementation of e-learning			x				x	

<b>Learners in this new learning environment</b>									
	ICT skills of learners					X	X		
	Motivation of learners					X	X		
	Learning styles of learners					X	X		
<b>Enabling Learning Processes</b>									
	E-learning activities	X	X	X					X
	Course progression								
	Teaching approach/Course design								
	Personalising the learner's e-learning course								
	Personalising your own learning								
	Learner Support	X	X	X					X
	ICT Support								
	Online support								
<b>The resulting Learning Results</b>									
	Knowledge Increase	X	X						
	Using skills learned	X	X						

## 6. Case Agfa

### 6.1. E-learning services of Agfa Healthcare for their customers the hospitals, complementing their IT products

In collaboration with the company Agfa healthcare, we were investigating the e-learning readiness of 10 Flemish hospitals being the customers of Agfa.

Agfa HealthCare is a leading provider of integrated IT solutions and state-of-the-art diagnostic imaging for hospitals and other healthcare centers

The mission of Agfa Healthcare is to support the transformation process to ICT solutions being improving the medical care services of the hospitals. Recently Agfa Healthcare provides e-learning services to its customers, the hospitals. All ICT solutions will be complemented with an optional e-learning component. The e-learning component can be accessed via an e-learning portal of Agfa. By the way the hospital can also change from traditional classroom learning to e-learning. The e-learning course functions also as a help tool afterwards. Agfa also deployed a company-wide e-learning authoring tool.

### 6.2. Measuring e-learning readiness of the customers of Agfa, the hospitals

Agfa is convinced of the advantages of using their e-learning solution for the hospitals, replacing the traditional classroom learning they offer now. But are the hospitals ready to change to an e-learning solution?

First we selected the relevant criteria from our e-learning readiness measurement instrument

We developed a questionnaire of 80 questions that should assess the e-readiness of the hospitals in several areas.

The development of the questionnaire has been based on earlier mentioned criteria in combination with quality questionnaires of e-learning which we developed earlier (J.Schreurs et al. 2008).

We checked first for the preferred situation by the doctor radiologist, the head of nursery of the department and the ICT director. Second we asked to do a selfassessment of their skills, motivation, experiences, .... Third we asked for the evaluation of the hospital ICT infrastructure to be used for e-learning. Furthermore we also asked a judgement from AGFA in which way they are facilitating the e-learning application for the hospital.

### 6.3. Results of the survey

The results of the questionnaire were quite homogeneous for the different hospitals.

### *6.3.1. Learner characteristics: learners accept e-learning only when a lot of conditions are fulfilled.*

Most employees don't have or have only limited experience with e-learning (1.0), although most of them work regularly with pc and have knowledge of the standard packages. All of them use the specialised healthcare systems daily (4.0). The nurses have a good experience with wordprocessing (3.5) and all have less experience with powerpoint software.

The learners are not more motivated for e-learning, than for a traditional course. For e-learning to become accepted as an alternative to traditional classroom learning, they request for a high level of support, for ICT usage (3.25) and for e-learning itself (3.5). Especially an online helpdesk must be available as well as an online manual. The future e-learners also request an optimal learning environment, being a lighted room and provided with a multimedia PC connected with the internet, a printer and a telephone (3.75). It is very important that the first time they use e-learning, they will be guided and they prefer a classroom session organised in advance to coach and enhance the use of the system. It is recommendable that the key-users will be thoroughly coached when they have no experience with e-learning.

The learners have a personal learning style (3.5) and video fragments (3.25) are regarded necessary in an e-learning course and the insertion of simulation modules in the e-learning system creates a large surplus value. So we can say that if those two items are integrated in the system, the readiness of the users will increase. However results also show that they don't prefer audio (2.0) to written documents.

The learners only expect limited learning results. They want to learn only some aspects and want to use the e-course afterwards as a manual.

### *6.3.2. Available facilities for e-learning: insufficient*

First we consider the ICT aspects and their scores. We checked the expected ICT situation, the current situation and the AGFA approach. A first remarkable result is the similarity between the expected situation of the learners and the ICT specialist of the hospitals and the solution for facilitating e-learning as delivered by AGFA. The results from AGFA can be seen as the requirements of ICT infrastructure of the hospitals. We see a good match between the expected situation and the prospected situation by Agfa. Though there is a discrepancy between the expected situation and the actual situation.

People of the hospitals are aware that the current situation of the ICT infrastructure is often not sufficient to meet the requirements. We see the problem of incompatibility between the systems (2.5), the online systems are not fulltime available (1.75), the learners have no personal multimedia PC (2.0) and no e-learning room is available (2.25). Some additional investments are required.

We find another remarkable result with the underlying system functions to facilitate e-learning. Learners want to see the builtin functions, chat, discussion forum, calendar and online support (3.2). For Agfa, the supplier of the e-learning solution those functions have a low priority (1.0).

### *6.3.3. Management*

Management is willing to invest in the required updates of the users systems and even in the replacement of them. (3.5). Investments in network infrastructure is also possible (3.0). Less interest can be seen on point of implementation of an own learning management system (2.5).

The learning environment will be improved (3.25).

The learners as well as management are prepared to integrate the e-learning activity as part of their job description and to organise some time for it during their working-hours (3.0). But in practice it seems that due to overload of other activities, not enough time can be spent in learning. (2.75-3.0). Very few learners are prepared to spend their time in e-learning out of their scheduled working hours. (2.5).

For most of the hospitals it is not possible to have an expert user parttime available to support the e-learners.

### *6.3.4. E-learning solutions/courses*

We can identify some drivers to improve the e-learning readiness, by analysing the results of the questionnaire on point of expectations of the learners.

The learning objectives must be clear (4.0), a summary of the course must be included (3.75) and an overview of the course topics must be there (4.0).

A good design and motivating style is important (3.5).  
Personalisation must be an option via a flexible selection of the modules (3.0) and the availability of additional learning content (3.25).

## **6.4. Case results put in the seven components of good e-learning model of SCIE.**

Out of the literature we found some findings on readiness to e-learning in the social care sector. SCIE concluded seven components of good e-learning delivery from a study of international e-learning experiences. The results suggest that without these components put in place by organisations, barriers will form and inhibit the e-learning experience. We will first refer to them short and compare them with the results of our case study.

### *6.4.1. Situational component*

This component includes elements of basic 'know how', but goes beyond this in that it includes elements that influence how e-learning is facilitated within an organisation.

Case: most employees don't have experience using an e-learning course, although most of them work regularly with pc and have knowledge of the standard packages, as stated earlier it is very important that the first time they use e-learning, they will be guided well.

### *6.4.2. Content suitability component*

The subject materials that are made available to e-learners are important too.

Case: here the results all agreed upon that the content of the e-learning course must be clear. Hospitals value high the presentation of the course, the progress of the course, the personalisation of the course and in a lesser extent the self-management of the process

### *6.4.3. Technological component*

There are three distinct technological elements which organisations need to address to be ready to implement e-learning. These include the hardware available to staff, the internet connectivity and how flexible the system is to engage with all the webbased material.

Case: The physical conditions seem to be evaluated of great importance to the learners and score in general well in Flemish hospitals

### *6.4.4. Learning style component*

An organisation has to diversify the types of training and learning resources taking into account the learning styles of the learners. How well is the organisation matching them?

Case: In our questionnaire the video fragments are regarded necessary in an e-learning course and the insertion of simulation modules in the e-learning system creates a large surplus value. Integrating them both in the e-learning course will result in e-learning readiness improvement.

### *6.4.5. Instructional and network component*

This component identifies the elements required for a collaborative e-learning approach.

Case: supporting system facilities are required by the learners of the hospitals but are not yet facilitated

### *6.4.6. Organisational component*

Here we consider the organisational culture or attitude to e-learning, the learning environment it fosters, the applicability of training in the organisation and the way in which it evaluates the impact of training.

Case: Organisational culture is not against e-learning. Management must still be convinced of the value of it compared with the alternative of traditional classroom learning. They are prepared to invest in ICT infrastructure. They are also prepared in integrating e-learning time as part of the job description of the learners.

### *6.4.7. Personal component*

The organisation's ability to influence staff motivation .

Case: at the moment e-learning is not yet be seen as being more motivational then traditional learning. So the advantages of e-learning have to be well pointed out for the learners.

## 7. Conclusions

Everyone is aware that e-learning can offer advantages. Obstructions for implementing can be among others high costs and because of these obstructions, there is still a lot of reservation towards e-learning. An organisation can check how ready it is on several aspects to implement e-learning, this is called e-readiness. In this paper we wanted to see whether the Flemish health sector was e-learning ready. The theory offers several models and approaches. We used our own to measure the readiness. Based upon our results also some drivers are identified to improve the readiness. E-learning readiness requires a team effort from the organisation as well as from the supplier of e-learning solutions, from trainer as well as from the learner.

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