



E-Learning and Continuous Education within the Health Facility Setting

Perspectives from European Esther Alliance Partners

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Disclaimer

The views and ideas expressed herein are those of the author(s) and do not necessarily imply or reflect the opinion of the Institute.

Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
EEA	European ESTHER Alliance
ESTHER	Ensemble pour une Solidarité Thérapeutique Hospitalière en Réseau
HIV	Human Immunodeficiency Virus
ICT	Information and Communication Technology
IDI	ICT Development Index
ITU	International Telecommunications Union
SCIH	Swiss Centre for International Health
Swiss TPH	Swiss Tropical and Public Health Institute
SWOT	Strengths, Weaknesses, Opportunities and Threats Analysis
WHA	World Health Assembly
WHO	World Health Organisation

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Executive Summary

Recognizing the importance and need to use Information and Communication Technology within its health projects, the European ESTHER Alliance developed a joint ICT & Health Strategy with representatives from France, Germany, Ireland, Norway, Portugal and Switzerland.

The present study aims to assess the needs in continuous education and the quality of e-Learning tools used in health facilities in European ESTHER Alliance partner countries, both in Europe and Africa. The report presents an assessment of the current e-Learning environment; the opportunities and challenges of further developing specific e-Learning methods in the health facility setting; the continuous education needs of healthcare professionals and other hospital personnel; the current and future interest and capacity in further developing e-Learning initiatives; the state of cooperation between partner institutions; and the state of IT and internet access and use.

The study was designed as a mixed-methods research, relying on both quantitative and qualitative methods to explore the current e-Learning landscape in Europe and Africa. Collecting data on the general trends (quantitative) as well as more in-depth explanatory information (qualitative), supports a holistic understanding of stakeholders' perceptions on e-Learning. A total of 230 people participated in the study.

Findings show a weak policy environment in e-Health in most African countries and a lack of infrastructure and personnel to support e-Learning activities. However, the interest in and use of Information and Communication Technologies (ICT) to support training and communication among health professionals is increasing at a steady pace. Chapter 3 and 4 present in detail the perspectives of health facility personnel on the future of e-Learning in the health facility setting.

Based on study findings, this report recommends the EEA to further invest and support e-Learning as a relevant approach to providing knowledge and skills exchange among health facility staff, with a preference for interactive methods such as Telemedicine. E-Learning tools offer many possibilities for under resourced health systems, but their design and implementation should be carried out through participatory and collaborative means to ensure they reflect context specific needs as well as limitations.

1 Study Background

1.1 Introduction

Recognizing the importance and need to use Information and Communication Technology (ICT) within its health projects, the European ESTHER Alliance (EEA) organized a working group on ICT & Health in June 2012 in Rome to discuss the development of a joint ICT & Health Strategy. Representatives from France, Germany, Ireland, Norway, Portugal and Switzerland contributed to the working group. The Swiss Tropical and Public Health Institute (Swiss TPH) was mandated to carry out the present study on behalf of the EEA offices to assess the pertinence of ICT in the context of continuous training/education in the hospital setting.

1.2 The European ESTHER Alliance

The European ESTHER Alliance is a network of governments and their institutions/organizations. It mobilizes health expertise and health institution partnerships to contribute to the global health agenda as part of international development cooperation involving low-income countries. Originally established in 2002 to face the HIV/AIDS emergency in developing countries and to counter the inequalities between the global North and South in access to treatment and care for people living with HIV/AIDS, the initiative gradually expanded its mandate and fields of intervention.

Each member country has ratified a Ministerial Declaration and committed to develop the ESTHER Initiative by implementing capacity building activities and developing partnerships between hospitals in Europe and hospitals and health structures in partner countries. From this initial framework, the EEA has further included additional and complementary approaches: partnerships with other institutions than hospitals (research institutes, universities), Civil Society Organization partnerships, and engaged in areas such as Extra Hospital Technical assistance, Information and Communication Technologies (particularly Spain and France), operational research, and monitoring and evaluation.

The European ESTHER Alliance is involved in several Global Health priorities (MDG 4 – Child health, MDG 5 – Maternal health, MDG 6 – HIV, TB, Malaria and other diseases) and other broader topics such as health systems strengthening, hygiene and patient safety, etc.

1.3 ICT and Health

Although several ICT and health projects are currently active under the EEA framework, these activities still represent a rather small proportion of EEA continuous education projects. E-learning in healthcare can include the following approaches:

- **Telemedicine** (Teleradiology, Telepsychiatry, Telepathology, Teledermatology) that enables exchange of information, diagnosis, treatment, prevention, training and education.
- **Mobile Health** (mHealth) that supports health services by sending information via mobile technology (mobile phones, personal digital assistant (PDA)).
- **Computer-based training** which can include training via the internet or via software.

These approaches and technologies can be used for various purposes:

- Support patient communication with health services and vice versa (hotlines, emergency numbers, treatment adherence strategies, referrals)
- **Support training and communication among health service personnel (Telemedicine, Data Transfer, e-Learning)**
- Support monitoring and surveillance (surveillance, patient Monitoring)
- Support hospital management and reporting (data management, procurement and distribution/allocation, reporting).

1.4 Study Objectives

The main objective of the survey is to assess the needs in continuous education and the quality of e-Learning tools used for continuous education in health facilities. It is foreseen that study findings will be used to develop joint EEA capacity building projects in this area. The study focuses on the following areas:

Mapping of current e-Learning projects and landscape

- Identification of existing national policies in e-health, especially in e-learning in target countries
- Mapping of e-Learning and continuous education in/for/between hospitals in target countries;
- Presentation of key e-Learning initiatives outside of ESTHER network
- Assess the development perspective of internet access in target countries

Assessment of e-Learning within European ESTHER Alliance partnerships

- SWOT analysis of e-Learning within the hospital setting (strengths, weaknesses, opportunities and threats);
- Advantages/disadvantages of various e-Learning methods and in comparison with more traditional training methods (face to face teaching, clinical supervision);
- Identification of continuous education needs of healthcare professionals and other hospital personnel (clinical staff and administrative staff) in target countries;
- Analysis of perceived effects of e-Learning on quality of care in hospitals;
- Level of awareness of continuous education opportunities within hospitals;
- Current and future interest and capacity to participate in e-Learning initiatives;
- State of cooperation between partner institutions;
- State of IT and internet access and use.

2 Methodology

2.1 Data Collection Methods

The study was designed as a mixed-methods research, relying on both quantitative and qualitative methods to explore the current e-Learning landscape for continuous education within hospitals/health facilities in Europe and Africa. Collecting data on the general trends (quantitative) as well as more in-depth explanatory information (qualitative) supports a holistic understanding of stakeholders' perceptions on e-Learning. The study is based on three different data sources to ensure a reliable overview of the e-Learning landscape: an electronic questionnaire, semi-structured interviews and a desk review.

Literature Review

A brief desk review of documents related to e-Learning was conducted with a focus on training and continuous education in the partner countries participating in the study. Information sources are as follows:

- National eHealth policies in target countries;
- Grey and peer-reviewed literature (e.g. articles, reports, proposals, unpublished material) where accessible.

Electronic Questionnaire

A questionnaire was designed in collaboration with EEA coordinators to ensure all involved parties agreed on the content and structure of the questionnaire, which was developed in two versions. The first questionnaire was specifically developed for African partners, and the second one for European partners. Both questionnaires were made available in French and English. An open-source instrument (FlexiForm) was used to develop a web-based version of the questionnaire.

Before sending the questionnaire to participants, it was first pilot tested by Swiss TPH staff and EEA coordinators, who provided their comments and feedback to improve its quality. To promote participation, a reminder email was sent to African respondents, and 3 to European counterparts between November 2012 and January 2013.

Interviews

A total of 19 semi-structured interviews were conducted between December 2012 and January 2013. Interview themes were also developed in collaboration with EEA coordinators to ensure all topics of interest were covered by the schedules. Separate interview schedules were developed for European and African partners, and interviews were conducted in the French or English language depending on the interviewee's preference. Interviews were conducted using a semi-structured format with open-ended questions which gave respondents the freedom to share issues which were not necessarily addressed by the interview schedules and enabled the interviewer to probe further in a flexible manner.

Numerous invitation emails were sent (2 reminders) as well as direct phone calls to encourage participation.

Data Analysis

Quantitative data (questionnaires) were imported into excel and analysed using descriptive statistics, through frequencies and cross-tabulations. Qualitative data from interviews were summarized and compiled into a matrix that enabled the analysis of data by theme.

2.2 Sampling and Recruitment

Questionnaire sampling was based on the following criteria. EEA decided to limit the survey to African and European partners, because of the growing development of IT infrastructure in Africa, and secondly because all EEA members (except Spain) are currently working in partnerships with African institutions/organisations. The hospitals themselves then selected the candidates based on criteria in the study Terms of Reference: 2 management staff, 3 medical staff, 3 paramedical staff, 2 other staff (e.g. lab tech), 1 teaching and training staff. EEA was responsible for providing the Swiss TPH valid email addresses of participants.

The sampling was done under the assumption that most identified hospitals had internet connections and interviewees had access to internet and an email account. It was anticipated to have 150-180 respondents for both European and African partners. In total, there were a satisfactory 158 African respondents (41% response rate), and 53 European respondents (23% response rate), with a total of 3 reminder emails.

Table 1: Questionnaire response rate

	<i>Number of questionnaires sent</i>	<i>Number of responses</i>	<i>Response rate</i>
<i>Francophone Africa</i>	298	125	42%
<i>Anglophone Africa</i>	88	33	37.5%
<i>France</i>	205	47	23%
<i>Anglophone Europe</i>	25	6	24%

Interview sampling was based on several criteria. Each country (France, Germany, Ireland, Norway and Switzerland) was to provide the contact details of 5 key stakeholders in the field of e-Learning from their partner institutions in Europe and Africa (European ESTHER secretariats, ESTHER hospital partners and national authority representatives in partner countries). Selected candidates corresponded to the following criteria:

- have a good vision of the situation at national level
- have a good knowledge of e-Learning
- have a good knowledge of training, and particularly continuous education
- have a good knowledge/experience in North/South partnerships

Although it was hoped to conduct up to 25 interviews, it was only possible to secure 20 interviews from a pool of 64 candidates that were presented by the EEA.

Table 2: Interviewee profiles

	<i>Total number of interviewees</i>	<i>Country of residence</i>
<i>European interviewees</i>	6	France (2), Norway, Germany, Spain, Ireland
<i>African interviewees</i>	13	Mali, Niger, Malawi, Tanzania (3), Chad, Rwanda, Benin, Sudan, Burundi, Cameroon (2)

2.3 Ethical Considerations

No ethical approval was sought to carry out this study, as all participants were EEA partner institution staff, acting in their professional capacity. However, the main ethical issues were assured through different measures:

- The aim of the study was fully explained to participants;
- Interview participants were informed of their right to refuse to answer questions and to stop their participation at any time;
- The protection of the identity of questionnaire participants was guaranteed by retrieving any identifying information out of the data.

Finally, in line with this collaborative project, it is foreseen that findings will be disseminated back to EEA network partners. This ensures reciprocity between researchers, EEA and its partners as well as study participants.

2.4 Study Limitations

- 1) The response rate of European partners was rather low both for questionnaire and interviews. The limitation is partially compensated by the sufficient African partners' response rates, who remain the key informants of the study.
- 2) The effect of the interviewers' characteristics on participants' responses is a potential limitation. Interviewees sometimes perceived the interviewers as representing a funder/donor. When these situations occurred, it was made sure that the purpose of the interview was reinstated, so as to limit to a minimum the occurrence of biased responses.

3 Findings and Data Analysis

3.1 ICT and Health Overview

The use of Information and Communication Technologies (ICT) to support and improve health care services is expanding and increasing worldwide. This is especially relevant at a time when health systems at a global level face economic constraints, and in addition, a shortage of human resources for health.

eHealth Policies

In 2005, the World Health Assembly adopted the WHA 58.28 Resolution on e-Health urging the World Health Organization and its Member States to endorse e-Health as a way to strengthen health systems. E-Health was defined as *“the cost-effective and secure use of information and communication technologies in support of health and health-related fields”*. The resolution focuses on:

- Strengthening health systems in countries through the use of e-Health
- Building public-private partnerships in ICT development and deployment for health
- Supporting capacity building for the application of e-Health in country and the development and adoption of standards

Within this framework a Global Survey on e-Health was undertaken in 2005 and 2009 to determine a series of benchmarks at national, regional and global levels for the adoption strategies to support e-Health expansion. The 2009 Global Survey on e-Health [1] provides an e-Health profile for numerous countries and covers a range of topics including policy frameworks, legal and ethical frameworks, expenditures and their funding sources, and capacity building interventions. Country fact sheets are available at the following WHO webpage: <http://www.who.int/goe/publications/atlas/en/index.html>.

The data shows that African countries such as Burundi, Morocco, Mali and Sudan have national e-Government policies and national e-Health policies. However, none of the policies were found on WHO’s Directory of eHealth policies [2], nor on government websites. The only official document found is the “Morocco Health Plan 2008-2012” [3] that includes two actions in the field of e-Health, namely the modernisation of ICTs in health (Action 41) and the improvement and reinforcement of paramedical training through the use of ICT (Action 52).

Other countries such as Cameroon, Senegal, Benin, Ethiopia, Burkina Faso and Niger have a national e-Government policy but not a national e-Health policy. Finally, there are others like Togo which have neither governmental nor e-health policies. The most cited barriers to e-Learning development are mentioned as follows:

- Underdeveloped infrastructure
- Lack of policy framework
- Lack of skilled course developers
- Lack of knowledge of applications
- Perceived costs too high.

ICT and Internet in Focus Countries

The establishment of new submarine cables along the African coast, Internet exchange points and optical fibre networks in recent years, is increasingly leading to better internet access in Africa [4]. However, Africa is still lagging behind in comparison to other regions, with also many discrepancies between African countries [5]. These restrictions must be taken into consideration when setting up internet-based e-Learning tools in these countries. The transmission of specific types of information, such as high-resolution images and videos demand very good internet connectivity; which is a challenge for most health facilities, especially for those situated in rural areas.

In its annual publication “Measuring the Information Society” [5], the International Telecommunications Union (ITU) measures the state of development of ICTs among its Member States. This measurement, the “ICT Development Index “(IDI), is based on three indicator groups: ICT access, use and skills.

To calculate ICT access per country, the following indicators were considered:

- a. Fixed-telephone lines per 100 inhabitants
- b. Mobile-cellular telephone subscriptions per 100 inhabitants
- c. International Internet bandwidth (bit/s) per Internet user
- d. Percentage of households with a computer
- e. Percentage of households with Internet access

Despite the fact that governmental institutions, including health facilities, may have better (or worse) access to ICT than the country average, it is interesting to see how the different ESTHER network countries position themselves in ICT access within the global context. Many EEA countries are ranked at the bottom of the scale (see Appendix 1 for an overview).

The EEA countries that have made most progress in ICT access since 2010 are Morocco (0.49 points higher) and Rwanda (climbed 6 positions in the list). In general, African countries have made the most progress in the ICT access sub-index from 2010 to 2011. Despite that, basic infrastructures still needs to be developed in order to narrow the digital divide between Africa and other regions of the world.

The IDI for 2011, combining access, use and skills is available in appendix B. Use is measured by taking into consideration the percentage of individuals using Internet, the fixed (wired)-broadband Internet subscriptions per 100 inhabitants and the active mobile-broadband subscriptions per 100 inhabitants. Skills relate to the adult literacy rate plus secondary and tertiary schooling gross enrolment ratio. As it was the case for access, the countries that progressed the most in terms of IDI between 2010 and 2011 are Morocco and Rwanda.

E-Learning Initiatives

Several e-Learning projects are currently active in EEA partner countries. Table 3 summarizes the characteristics of these initiatives.

Name	Description	Timeframe	Institutions involved	Methodologies	Web address
RAFT network	Initiative developing a network for eHealth comprising several activities such as the establishment of distance learning courses and telemedicine platform	Since 2000	Geneva University Hospitals, plus institutions in Canada, France, Switzerland and in 18 countries in French- and English-speaking Africa	Telemedicine for case discussion, distance learning through webcasting	raft.hcuge.ch
ESTHER Formation Continue	ESTHER France e-Learning platform	Since 2011	ESTHER France, several institutions in Africa	Distance learning through online seminars, presentations and videos	www.estherformation.fr
Online Master in HIV/AIDS	ESTHER Spain online Master in HIV	Since 2009	ESTHER Spain, several institutions in Latin America	Distance learning through online modules and forums	www.campusesther.org
ESTHER-MAGNET ePlatform	Malawi German Networking for Capacity Building in Treatment, Training and Research at Kamuzu Central Hospital	Since 2008	University Hospital Bonn, University Hospital Heidelberg, University Hospital Cologne, Kamuzu Central Hospital	Blended-learning incl. tele-teaching sessions	www.esther-magnet.org
Africa BUILD project	EU FP7 program Coordination Action aiming to support and develop advanced Centres of Excellence in health care, education and research in the African countries, through Information Technologies	2011 - 2014	WHO and higher education/research institutions in Belgium, Cameroon, Egypt, Ghana, Mali, Spain and Switzerland	Research programme oriented towards developing e-learning courses, validated learning resources and methodologies	www.africabuild.eu/consortium

Table 3: e-Learning initiatives within EEA network

The following table (4) presents other e-Learning initiatives that are not part the EEA network. These were selected based on the following criteria: they have a global character; they are related to EEA key thematic areas or are taking place in countries that are a part of the EEA network.

Name	Description	Timeframe	Institutions involved	Methodologies	Web address
Health Academy eLearning Courses	eLearning package of health courses on disease prevention and health promotion	Since 2003	World Health Organization	Distance learning through online courses	www.who.int/healthacademy/courses/en/
GIZ E-Academy	Online courses for those who are working towards sustainability and development, including in the health field	Since 2011	GIZ (German International Cooperation)	Distance learning through online courses	www.gc21-eacademy.org/
eSCART	Electronic short course on antiretroviral treatment	Since 2009	Institute of Tropical Medicine, Belgium	Distance learning through online courses	http://www.itg.be/itg/generalsite/Default.aspx?WPID=679&l=n
E-Learning Incubator for Health Workers - Tanzania	Support to health training institutions in Tanzania in integrating e-Learning in their programmes	Since 2006	IICD (Netherlands), School of Hygiene of the Allied Health School (Tanzania)	Development programme oriented towards developing e-Learning in training institutions	www.iicd.org/projects/tanzania-e-learning
IMPACTt	Development of electronic learning tool on Integrated Management of Pregnancy & Childbirth	2010 - 2014	Novartis Foundation for Sustainable Development, Swiss TPH, World Health Organization	DVD and web-based tool supporting learning workshops and self-learning	N/A
HINARI Access to Research in Health Programme	Project enabling developing countries to gain access to a large collection of biomedical and health literature	Since 2002	World Health Organization and more than 150 publisher partners	Project oriented towards enabling access to scientific knowledge around the world	www.who.int/hinari/en/

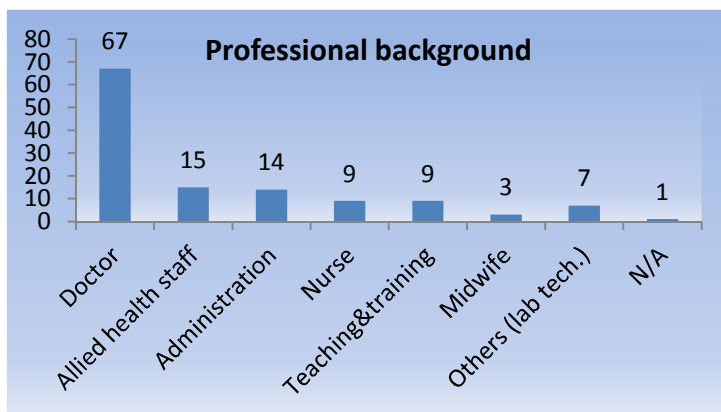
Table 4: e-Learning initiatives outside EEA network

3.2 Francophone Africa Findings

Sample Description

In Francophone Africa (FA), the questionnaire was sent to 298 people with a 42% response rate (125 participants). The majority of respondents were male with 84 men versus 41 women (67% and 33%, respectively). 39.2% of participants were in the 30-39 age group, 36% were in the 40-49 age group and 24% were over 50 years old. Only one respondent was less than 30 years old.

Country	Number of participants
Benin	24
Burkina Faso	13
Burundi	15
Ivory Coast	9
Mali	14
Morocco	8
Niger	10
CAR	13
Senegal	7
Togo	12
Total	125



More than 50% of respondents were medical doctors, followed by allied health staff and administration staff as shown in Figure 5.

Figure 5: Professional background

E- Learning Exposure and Involvement

Overall, e-Learning involvement and exposure from key EEA partners does not seem strong. 64% of respondents stated having never been exposed to an e-Learning course, with only 27% having participated at least in one e-Learning course. Participation in the development of e-Learning tools and/or providing e-Learning training is quite rare as shown in Figure 6.

Sex does not seem to be a determining factor in explaining stronger or weaker e-Learning involvement;

the percentage of men and women is distributed equally amongst the different eLearning involvement categories. However, age group seems to have an impact on e-Learning involvement and exposure, with younger age groups being more active in this area.

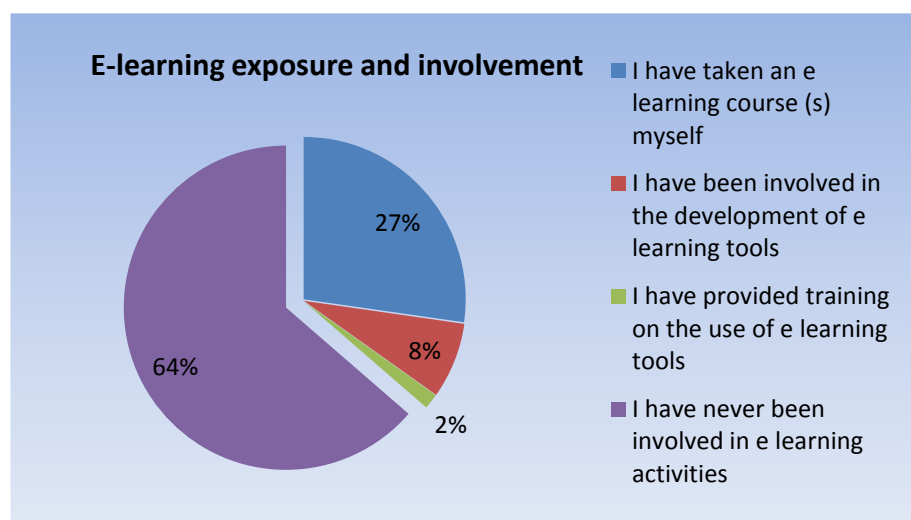
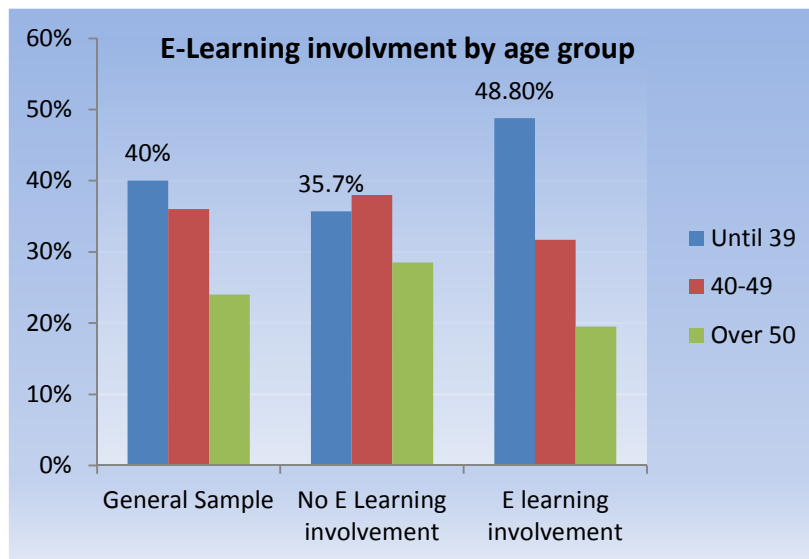


Figure 6: E-Learning Exposure and Involvement

As shown in figure 7, the younger age group (less than 39 years old) is almost 9 points over the general sample threshold with regards to eLearning involvement (courses, tool development and training were calculated jointly). Additionally, this age group is approximately 5 points below the general sample threshold for the category “no e-Learning involvement”.



Although is the size of the sample makes it difficult to make steady conclusions with regards to e-Learning involvement by professional group, medical doctors show slightly more involvement/exposure to e-Learning activities than other professional categories (35.8% versus 29%).

Figure 7: E-Learning involvement by age group

Half of the sample (52%) stated that e-Learning courses were not available within their present institutions; 24% of the respondents were not sure about the availability and 24% confirmed the availability of courses (30 respondents). 28 of those participants named concrete themes of available courses, the most common themes being related to HIV/AIDS (10/28 courses).

Of the 30 respondents, 20 have access to the e-Learning tools for their own professional development. Most of the 30 respondents think that the content of the e-Learning activities available within their institutions is of good quality (19 respondents strongly agreed or agreed with this sentence). Six respondents did not agree or disagree and the remaining five strongly disagreed or disagreed.

With regards to the utilization of the eLearning tools amongst the 30 respondents having available courses within their institutions, half of the respondents (15) assessed the utilization as very low; 10 respondents said there is some level of utilization and 3 respondents rated the utilization as very high. One respondent said that the tools were not used at all and another one did not know about their utilization.

Concerning the breadth of available e-Learning methods (see figure 8), data shows that computer-based training via the internet is the most frequently available method (16 respondents) followed by the combination of e-Learning through computer with/without internet (5 respondents). Other respondents (10) stated using a combination of methods which includes computer-supported collaborative learning (blogs, wikis or social networks) and mobile phone based training. Only 2 respondents mentioned telemedicine as a main e-Learning method.

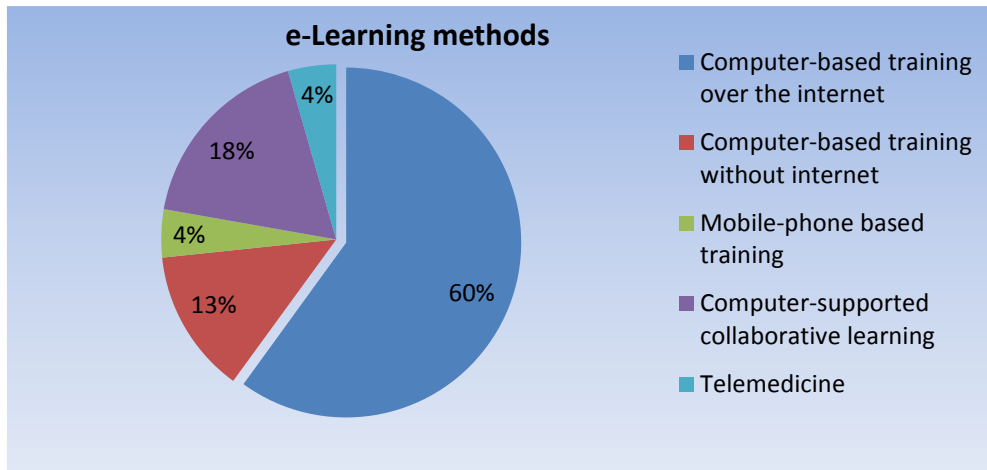


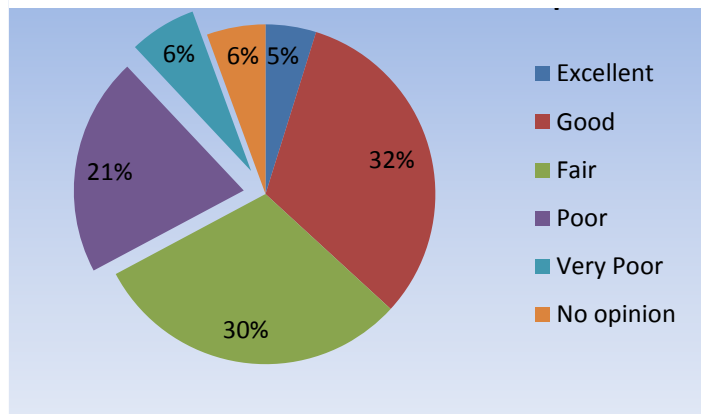
Figure 8: Available e-Learning methods

Infrastructure

Almost all the questionnaire respondents have access to computers at work (120/125); amongst the 120 which have access, 114 actually use those computers for professional reasons in their work (90% of them use it on a daily basis and the remaining 10% use it on a weekly basis). In addition to this, almost 61% of respondents rated the condition of those computers as either excellent or good; 33% think that their condition is fair and only 6% rated the computers as either bad or had no opinion. In the overall sample, 115/125 respondents stated to have access to the internet at work and more than the 92% claimed to use internet at work for professional reasons.

When evaluating the internet access in terms of speed, the general opinion is also positive as shown in figure 9, with 67% of respondents rating the internet speed as excellent, good or fair. However, it has to be pointed out that 27% of the sample rated the access in terms of speed as poor or very poor. No specific conclusions could be drawn by country. Internet access in terms of reliability shows similar rates even with a slightly better perception (just 19% of respondents qualify the reliability as poor or very poor).

Figure 9: Internet Speed



Relevance of e-Learning

The general opinion about e-Learning activities in Francophone Africa is generally positive. Most respondents either agreed or strongly agreed (123/125 respondents) that continuous education via e-Learning can improve the quality of care delivered within a facility. No respondents disagreed with this affirmation. See figure 10.

When asked about the areas of interest for further training (open list with some predetermined options, multiple choice allowed), the main topics that were mentioned were:

- HIV/AIDS diagnosis and management
- Infectious Diseases
- Management and Statistics
- Psychosocial counselling
- Facility Hygiene and Security.

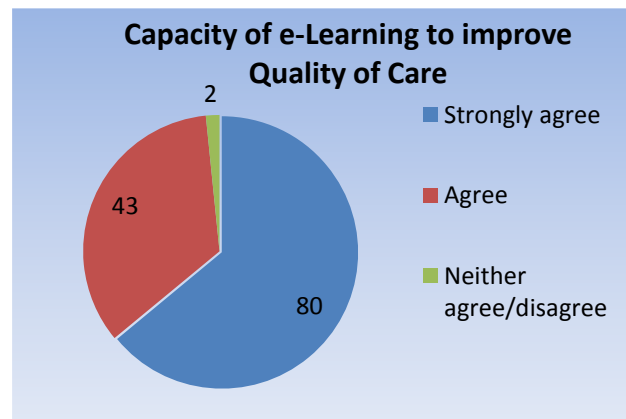


Figure 10: E-Learning and quality of care

On the other hand, when respondents were asked about the existence of sufficient internal capacity in terms of human resources to organize e-Learning activities, 53% think the capacity is sufficient, whereas 20% disagree and the remaining 27% did not provide an opinion.

Language issues seem to have some impact on accessibility to e-Learning content. Although, 51% of the sample strongly disagreed or disagreed with the statement “*The French used in eLearning material is sometimes too complex to understand*”, 11.2% of the sample agreed or strongly agreed with the statement. The need to develop e-Learning in national languages is not rated as a priority with respondents showing quite varied opinions (35% neither agree nor disagree; 35% agree or strongly agree; 30% strongly disagree or disagree). However, 92% of the sample agrees or strongly agrees with the statement “*It is appropriate that e-Learning courses are in the French language*”.

When rating e-Learning interest from an individual and an institutional point of view (figure 11), answers show a great area of opportunity. The graphic below shows the high level of individual interest (“*As a professional, I would be interested in contributing further to the development of eLearning partnerships*”) as well as well as institutional interest (“*My institution is interested in further developing these partnerships*”) from Francophone African respondents.

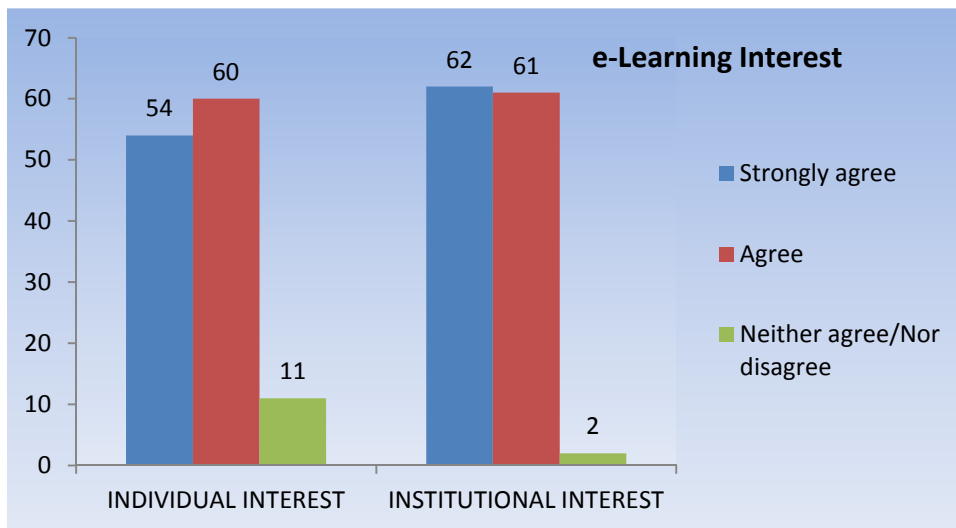


Figure 11: Interest in further e-Learning involvement

Partnerships

Most of the respondents (96 over 125) were aware that their institution was in a continuous education partnership with European Institutions alone or together with national, African and/or American institutions. 23.2% of the respondents did not know about existing partnerships. The most frequent was the partnership with European institutions as shown in Figure 12. These collaborations were positively rated (60% of respondents rate them as excellent or good and 34% as fair). However, it seems important to highlight that more than 60% of respondents have not been in direct contact with colleagues from those partner institutions.

When asked if their institution designs and/or supports e-Learning activities for partner institutions, 44% of the respondents replied no and 46% were not aware about such partnerships.

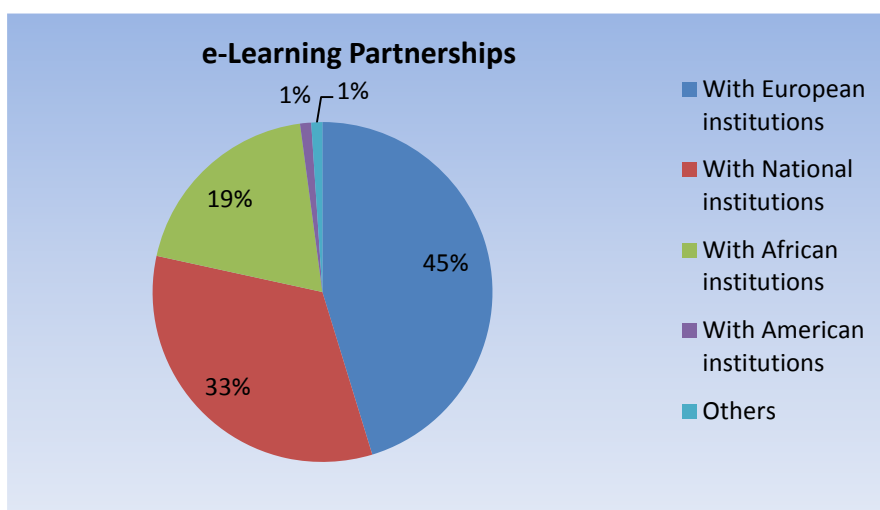


Figure 12: Current e-Learning partnerships

Key Findings

- ✓ E-Learning involvement (course participation, development of e-Learning tools, role in e-Learning training) is rather low among study respondents, especially in regards to the development of tools and training.
 - Age group seems to have an impact on e-Learning involvement and exposure, with younger age groups being more active in this area.
 - Medical doctors show slightly more involvement/exposure to e-Learning activities than other professional categories.
 - Sex does not seem to be a determining factor for eLearning involvement.
- ✓ Availability of e-Learning courses within surveyed institutions is rather low: only 24% of respondents confirmed the availability of courses within their present institutions.
- ✓ Where e-Learning courses are available, the majority of respondents had access to e-Learning tools for their own professional development and the quality of e-Learning activities was rated very positively. However, the utilization of these tools is rather low.
- ✓ HIV/AIDS related courses seem to be the most frequently available e-Learning topic. Respondents stated an interest in future courses that would address Infectious Diseases, management and statistics, as well as HIV/AIDS.
- ✓ The majority of respondents agree with the idea that e-Learning can contribute to improving Quality of Care within facilities.
- ✓ Computer-based training via the internet is the most frequently available method.
- ✓ Availability and access to computers and internet was positively assessed by respondents. Internet speed and reliability were also well rated although internet speed is sometimes an issue.
- ✓ Although the French language was deemed as the appropriate e-Learning language by the large majority of respondents, a non-negligible 10% of the sample assessed the level of French as too complex.
- ✓ Partnerships with other institutions are rated positively although most participants have never been in direct contact with colleagues from partner institutions. The majority of these partnerships are with European institutions.
- ✓ Both individual and institutional interest for further e-Learning development is ranked high by the large majority of Francophone Africa respondents.

25% of respondents have taken an e-learning course before

Utilization of e-Learning courses is rated low

50+ year old professionals are less involved in e-Learning than other age groups

Most of the available e-Learning courses are related to HIV/AIDS

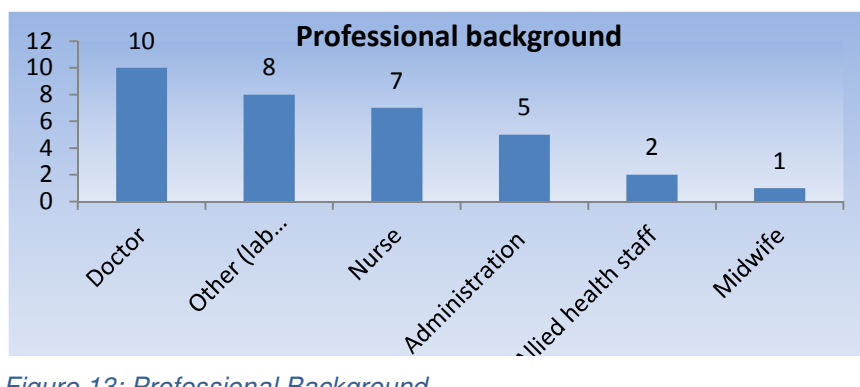
There is a High individual and institutional interest in further developing e-Learning

3.3 Anglophone Africa Findings

Sample Description

In Anglophone Africa, the questionnaire was sent to 88 key stakeholders with a 37.5 % response rate (33 respondents). The majority of respondents were male with 25 men versus 8 women (76% and 24%, respectively). 48.5% of participants were in the 30-39 age group, 27.3% were in the 40-49 age group, 15.2% over 50 years old. Only 9% of the sample was less than 30 years old.

Country	Number of participants
Tanzania	18
Zanzibar/Tanzania	6
Cameroon	3
Ethiopia	2
Malawi	2
Rwanda	2
Total	33



30% of respondents were medical doctors, followed by other hospital staff (lab technicians, etc.) and nurses, as shown in Figure 13.

Figure 13: Professional Background

E- Learning Exposure and Involvement

The number of respondents having participated at least in one e-Learning course was equal to the number of respondents who had never been exposed to eLearning activities (42%). On the other hand, providing e-Learning training and involvement in the development of e-Learning tools is quite minimal as shown in figure 14.

Sex does not seem to be a determining factor that would explain stronger or weaker e-Learning involvement; the percentage of men and women is quasi distributed equally amongst the different e-Learning involvement types.

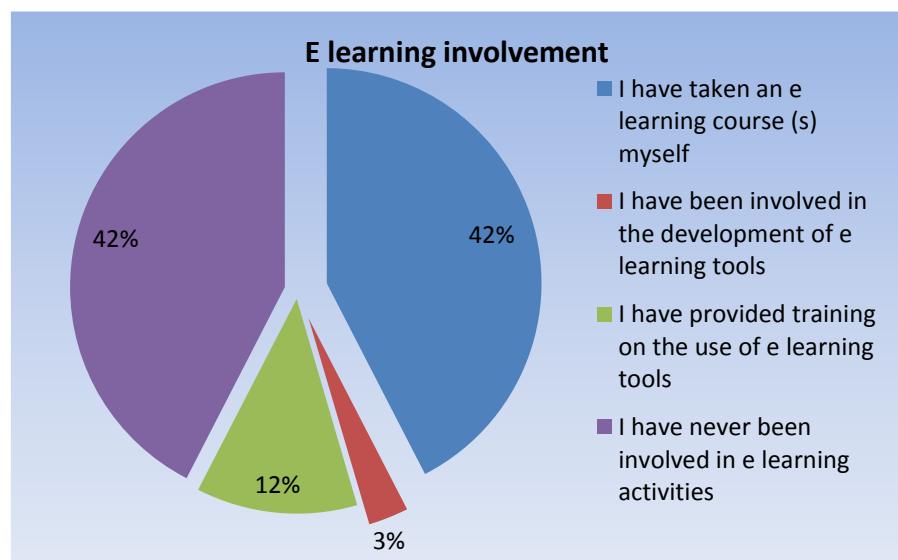


Figure 14: E-Learning Exposure and Involvement

However, age group seems to have an impact on e-Learning involvement and exposure, with the age group 30-39 being more active in this area.

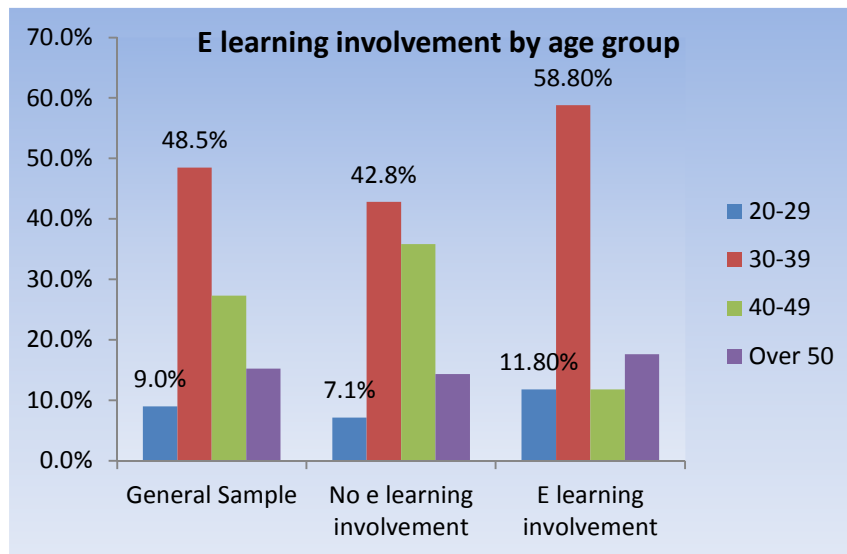


Figure 15: E-Learning involvement by age group

As shown in figure 15, the 30-39 age group is more than 10 points over the general sample threshold with regards to e-Learning involvement (courses, tool development and training were calculated jointly). Additionally, this age group is approximately 6 points below the general sample threshold for the category “no e-Learning involvement”. A similar, although less strong correlation can be observed in the 20-29 age group.

Although the size of the sample makes it difficult to provide conclusions with regards to e-Learning involvement by professional group, the data shows medical doctors show slightly less involvement/exposure to e-Learning activities than other professional categories. Only 50% of medical doctors stated to have some involvement in e-Learning activities (course attendance, training and/or development of e-Learning tools) against 63% for all other professionals

Over half of respondents (51.5%) did not have available e-Learning courses within their present institutions; 6% of the respondents were not sure about the availability and 42.5% confirmed the availability of courses (n=14). These available courses cover quite a diverse and broad set of themes; such as general continuous education, cardiovascular medicine, public health, clinical practice and project management.

With regards to the utilization of e-Learning tools amongst the 14 respondents having available courses within their institutions, 6 respondents assessed the utilization as very low or non-existent; 5 respondents mentioned some level of utilization and 2 respondents reported a very high utilization rate. Of the 14 respondents, ten have access to e-Learning tools for their own professional development; meanwhile the other respondents do not have access to these tools. 50% of these respondents (n=14) thinks that the content of e-Learning tools is of good quality (7 respondents strongly agreed or agreed with this statement). Four respondents did not agree or disagree and the remaining three strongly disagreed or disagreed.

Concerning the breadth of available e-Learning methods (see figure 16), data shows that computer-based training via the internet is the most frequently available method (n=5) followed by the combination of e-Learning through computer with/without internet (n=3).

Other respondents (n=6) stated using a combination of methods which includes computer-supported collaborative learning (blogs, wikis or social networks) and mobile phone based training.

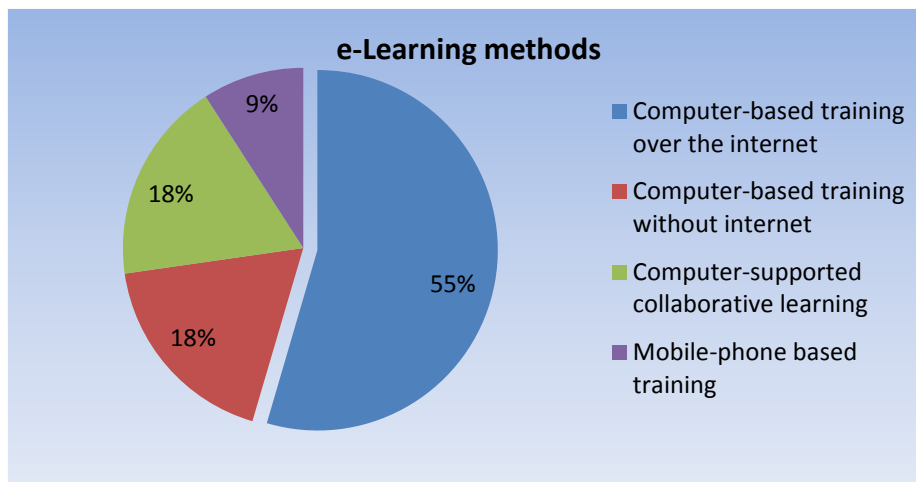


Figure 16: Available e-Learning methods

Infrastructure

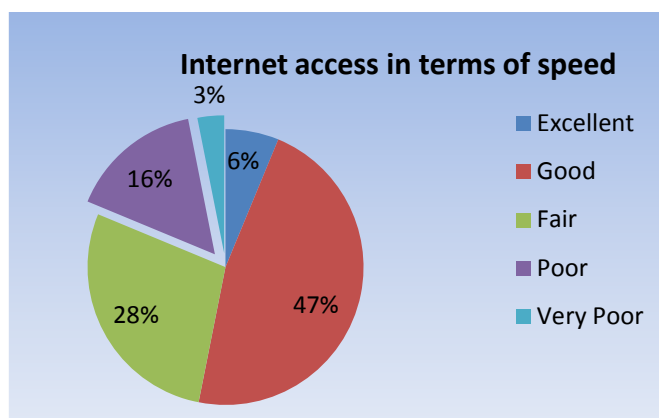


Figure 17: Internet speed

Almost all the questionnaire respondents have access to computers at work (32/33) and use those computers for professional reasons (91% on a daily basis). In addition to this, almost 69% of respondents rated the condition of those computers as either excellent or good; 25% think that their condition is fair and only 6% rated the computers' quality as poor or very poor. In the overall sample, 32/33 respondents stated to have access to the internet at work and all of them

claimed to use internet at work. When evaluating the internet access in terms of speed, the general opinion is also positive as shown in figure 17, with 81% of respondents rating the internet speed as excellent, good or fair. However, it has to be pointed out that a non-negligible 19% of the sample rated the speed of internet as poor or very poor. No specific conclusions could be drawn by country.

Internet access in terms of reliability is rated slightly better, with just 9.4% of respondents qualifying the reliability as 'poor' and none as 'very poor'.

Relevance of e-Learning

The general opinion about e-Learning activities in Anglophone Africa is generally positive. Most respondents either agreed or strongly agreed (27/33 respondents) that continuous education via e-Learning can improve the quality of care delivered within a facility. However it has to be highlighted that 5 respondents strongly disagree with the statement. See Figure 18.

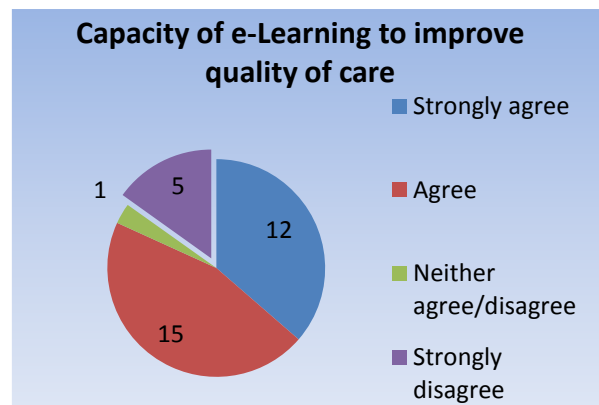


Figure 18: E-Learning and quality of care

When asked about the areas of interest for further training (open list with some pre-determined options, multiple choice allowed), the main topics that were mentioned was Management and Statistics followed by HIV/AIDS diagnosis and management, Infectious Diseases and Psychosocial Counselling.

55% of all respondents thought their institutions' human resource capacity to carry out e-Learning activities is sufficient, whereas a high 36% disagreed and the remaining 9% did not provide an opinion.

Language issues seem to have some impact on accessibility to e-Learning content. Although, 61% of the sample 'strongly disagreed' or 'disagreed' with the statement "*The English used in eLearning material is sometimes too complex to understand*", 18.2% of the sample agreed with the statement. The need to develop e-Learning in national languages seems to be viewed as a priority with 61% of respondents agreeing or strongly agreeing with the statement; 21% neither agree nor disagree and 18% disagree or strongly disagree. However, 85% of the sample 'agrees' or 'strongly agrees' with the statement "*It is appropriate that e-Learning courses are in the English language*".

When rating e-Learning interest from an individual and an institutional point of view, data shows a great area of opportunity (see figure 19). The graphic below highlights the high level of individual interest ("*As a professional, I would be interested in contributing further to the development of e-Learning partnerships*") as well as well as institutional interest ("*My institution is interested in further developing these partnerships*") from Anglophone African respondents.

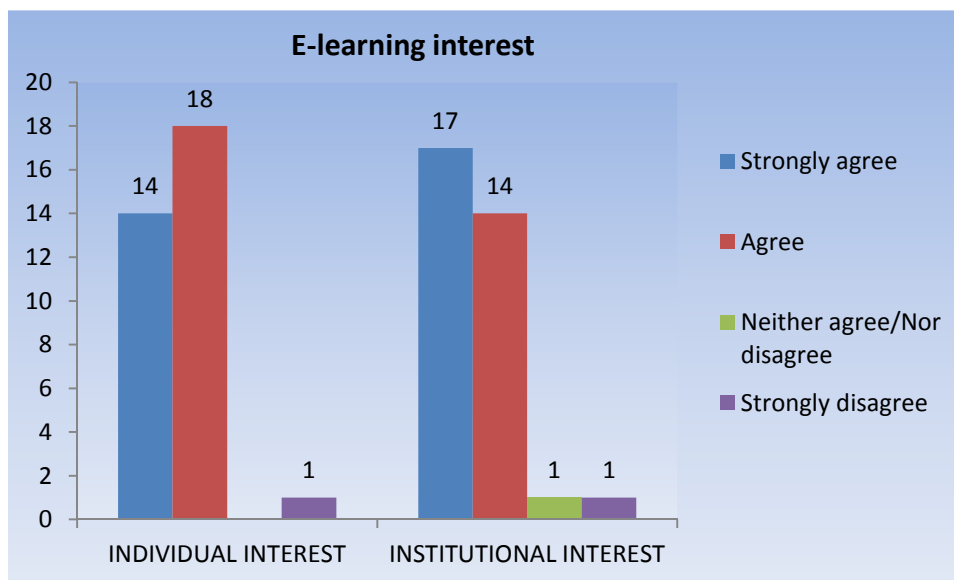


Figure 19: Interest in further e-Learning involvement

Partnerships

Most of the respondents (n=27) were aware that their institution was in a continuous education partnership with European Institutions and other national and regional partners. 18.2% of the respondents did not know about existing partnerships. The most frequent type of partnership is with European institutions as shown in Figure 20. More than 74% of respondents have been in direct contact with colleagues from those partner institutions. These collaborations are positively rated (63% of respondents rate them as 'excellent' or 'good' and 26% as 'fair').

When asked if their institution designs and/or supports e-Learning activities for partner institutions, 39.4% of the respondents replied affirmatively (30.3% replied no and the remaining 30.3% were not aware about any such partnerships).

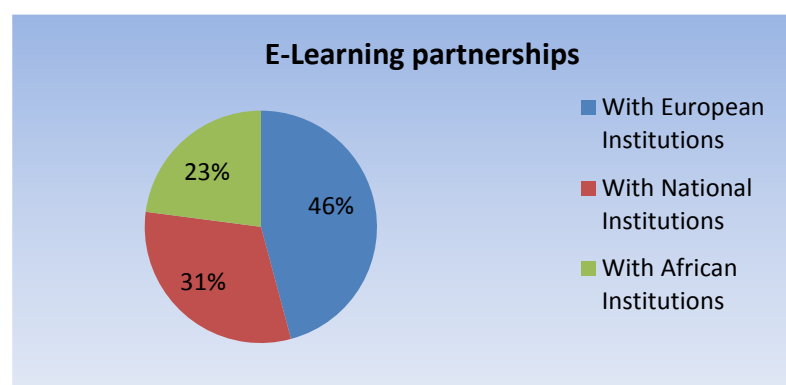


Figure 20: Current E-Learning partnerships

Key Findings

- ✓ A short majority of respondents (57%) have been involved in e-Learning activities (course participation, development of e-Learning tools, providing training).
 - Younger age groups seem to be more active in e-Learning (mainly 30-39 age group).
 - Medical doctors show slightly less involvement/exposure to e-Learning activities than other professional categories.
 - Sex does not seem to be a determining factor for e-Learning involvement.
- ✓ Availability of e-Learning courses is rather high with 42.5% of respondents confirming the availability of courses within their institutions. However, 43% of these respondents assessed the utilization as very low or non-existent.
- ✓ Where e-Learning courses are available, the majority of respondents had access to these tools for their own professional development.
- ✓ The quality of e-Learning activities was very positively rated by half of the respondents whereas the other half ranked it negatively.
- ✓ No trend can be observed with regards to e-Learning topics as there was quite a variety available.
- ✓ The majority of respondents agree with the idea that e-Learning can contribute to improving Quality of Care within facilities, although a non-negligible 18% disagree with the statement.
- ✓ Computer-based training via the internet is the most frequently available method. Availability and access to computers and internet was positively assessed by respondents. Internet speed and reliability were well rated although internet speed was rated as poor or very poor by 19% of the respondents.
- ✓ Although the English language was deemed as the appropriate e-Learning language by the large majority of respondents, 18% of the sample assessed the level of English as too complex and a high 61% of the sample mentioned the need to develop e-Learning content in other national languages.
- ✓ Partnerships with other institutions are rated positively and most participants have been in direct contact with colleagues from partner institutions. The majority of partnerships are with European institutions. A rather high 39.4% of the respondents stated that their institutions design and /or support eLearning activities for partner institutions.
- ✓ Both individual and institutional interest for further e-Learning development is ranked high by the large majority of respondents.

42% of respondents have taken an e-Learning course before

The majority of professionals involved in e-Learning are in the 30-39 age group

Although the **availability** of e-Learning is rather high, **utilization** is low

61% of the sample mentioned the need to develop e-Learning content in other national languages

There is a high individual and institutional interest in further developing e-Learning

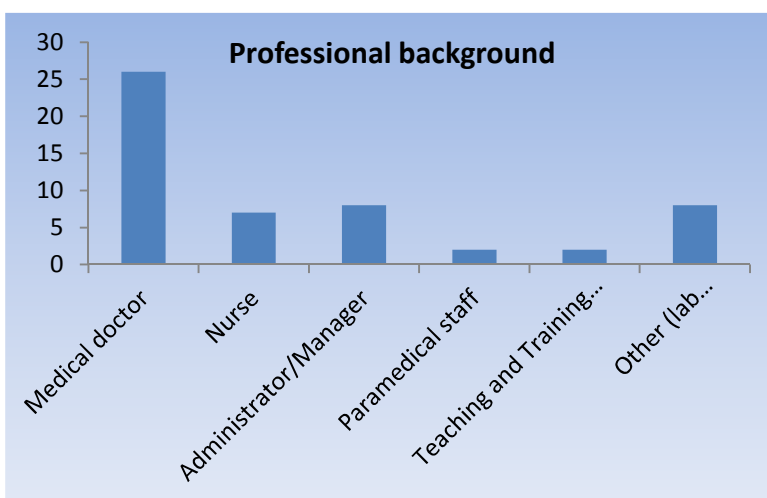
3.4 European Findings

Sample Description

In the European region, 53 questionnaires were completed online out of the 230 people that were sent the electronic questionnaire. This accounts for a low 23% response rate, although 3 reminder emails were sent to encourage participation.

The majority of respondents were women (34 versus 19 men), 51% were in the 50+ age group, 46% were between 30-49; only 4% were under the age of 30.

Countries	Number of respondents
France	47
Germany	4
Norway	1
Ireland	1
Total	53



The majority of respondents were medical staff (26 doctors, 7 nurses and 2 paramedical staff), followed by other hospital staff (2 administrators/managers, 2 teaching and training staff and 8 other).

Figure 21: Professional background

E-Learning Exposure and Involvement

When asked whether their institution supports the design or implementation of e-Learning activities in partner countries, only 26% respondents confirmed their institution's involvement in e-Learning partnerships (10 institutions in total), especially in the area of computer-based training via the internet. Very few respondents mentioned mobile-phone based training.

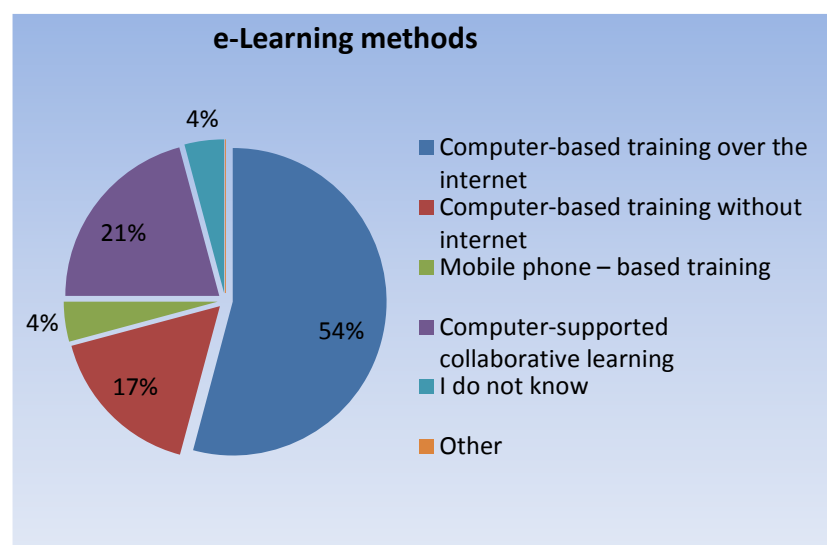


Figure 22: Available e-Learning methods

More than half of these respondents rated the quality of e-Learning content as good, but 42 % did not have an opinion on the matter.

Figure 23 shows that 57% of respondents (n=53) have never been involved in any e-Learning activities and 16% have been involved in e-Learning tool development or training. Interestingly, only 32% of European respondents have access to e-Learning courses/tools for their own professional development; 55% do not have access at all and 13% do not know.

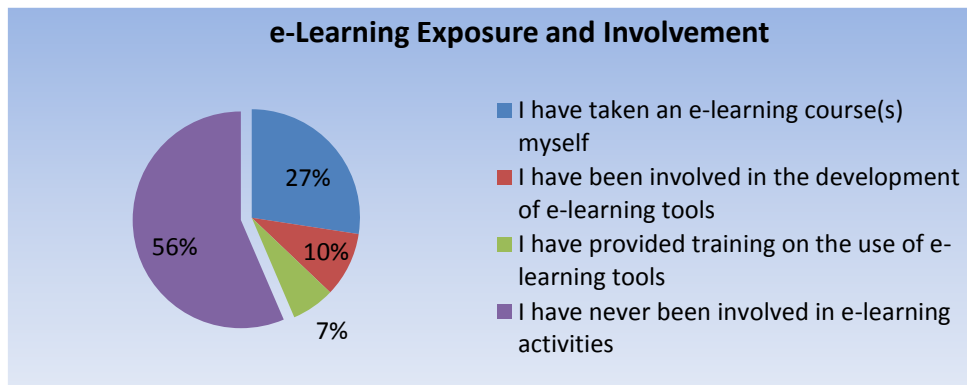


Figure 23: E-Learning Exposure and Involvement

Although a majority of respondents (78%) view a credit system for professional development as an important component of e-Learning courses, to date, the presence of credit systems in the framework of e-Learning courses seems rather minimal.

Partnerships

The majority of continuous education partnerships have been established with African institutions, followed by national institutions, European institutions and finally Asian institutions (see figure 24). 78% of respondents (n=18) rated the quality of these partnerships as “fair” to “excellent”, with 22% having no opinion on the matter. No significant difference in partnership quality can be established between the regions. Only 27% of respondents (n=53) have been in direct contact with partners. The working relationships were qualified as good to excellent.

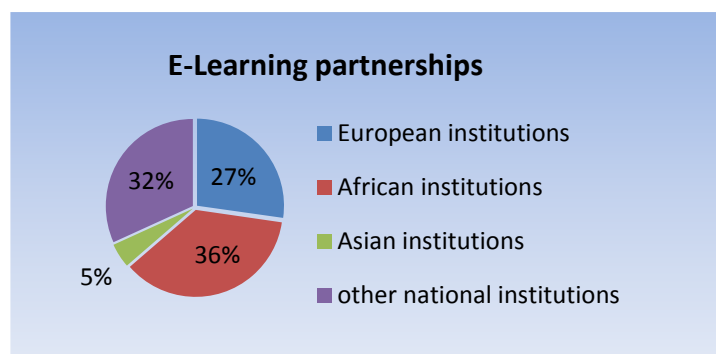


Figure 24: Current e-Learning partnerships

In terms of interest in future involvement, figure 25 shows that individual interest was rated higher than institutional interest in further developing continuous education partnerships.

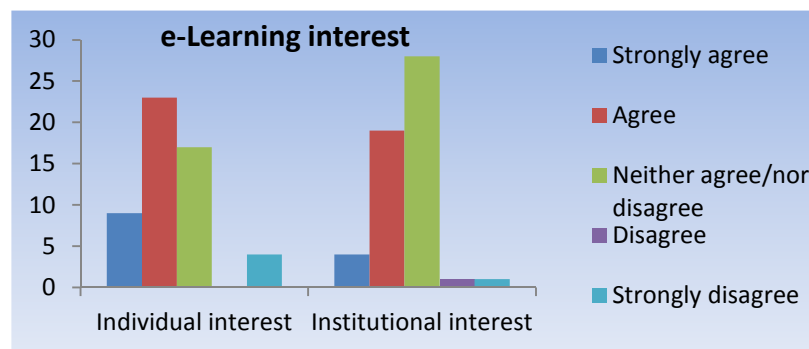


Figure 25: Interest in further e-Learning involvement

Respondents mentioned the following areas in which it would be interesting to further develop e-Learning activities within partnerships:

- Epidemiology
- Biostatistics
- Administration/management
- Hygiene
- HIV/AIDS
- Health economics
- Climate change & health

Key findings:

- E-Learning involvement (course participation, development of e-Learning tools, providing training) is rather low within the European sample, with 57% of respondents never have been involved in any eLearning activities.
- Only 26% respondents confirmed their institution's involvement in e-learning partnerships (10 out of 36 EU institutions); 40% stated no involvement, and 34% were not aware of such partnerships.
- Availability of e-Learning courses within surveyed institutions is rather low: only 32% of respondents confirmed the availability of courses/tools for their own professional development.
- Where e-Learning courses are available the quality of e-Learning activities was very positively rated by the large majority of respondents.
- Areas of interest to further develop e-Learning activities: Epidemiology, Biostatistics, Administration/Management amongst others.
- Computer-based training via the internet is the most frequently available method.
- The majority of continuous education partnerships have been established with African Institutions followed by other national institutions. Partnerships are positively rated by the majority of participants although most of them have never been in direct contact with these institutions.

LOW response rate from European respondents

16% of respondents have been involved in e-Learning course development or training

34% of respondents were not aware if their institution was involved in e-Learning/continuous education partnerships

Quality of e-Learning content is positively rated

Individual interest in future participation in e-Learning development is ranked higher than institutional interest

3.5 Comparative table of key facts

REGIONS	RESPONSE RATE	% WOMEN IN SAMPLE	% OF RESPONDENTS WITH ANY E-LEARNING INVOLVEMENT	% OF RESPONDENTS WITH E-LEARNING COURSE AVAILABILITY	E-LEARNING COURSE UTILIZATION	MAIN METHODS USED	MAIN TOPICS OF INTEREST FOR FUTURE E-LEARNING DEVELOPMENT
FRANCOPHONE AFRICA	42%	33%	37%	24%	Low	Computer-based training via internet	HIV/AIDS ; Infectious Diseases; Management and Statistics
ANGLOPHONE AFRICA	38%	24%	57%	43%	Low	Computer-based training via internet	Management and Statistics; HIV/AIDS; Infectious Diseases
EUROPE	23%	64%	43%	32%	N/A	Computer-based training via internet	Epidemiology; Biostatistics; Administration and Management

REGIONS	% OF RESPONDENTS WHOSE INSTITUTIONS ARE INVOLVED IN DESIGN/DEVELOPMENT OF E-LEARNING MATERIAL FOR PARTNER INSTITUTIONS	% OF RESPONDENTS WHO AGREE THAT E-LEARNING CAN IMPROVE QUALITY OF CARE	% OF RESPONDENTS WHO AGREE THAT CURRENT HR CAPACITY IS SUFFICIENT FOR E-LEARNING ACTIVITIES (% OF RESPONDENTS)	AWARENESS OF EXISTING E-LEARNING PARTNERSHIPS (% OF RESPONDENTS)	PARTNERSHIPS ASSESSED POSITIVELY (% OF RESPONDENTS)
FRANCOPHONE AFRICA	10%	98%	53%	77%	94%
ANGLOPHONE AFRICA	39%	81%	55%	81%	89%
EUROPE	26%	N/A	N/A	66%	78%

Figure 26: Comparative table of key facts

4 Discussion

This section presents the findings from the qualitative data that was collected through key stakeholder interviews. The discussion is organised under 4 main thematics which are then summarized under a SWOT analysis table in section 4.5.

4.1 Interest in e-Learning

The data highlights quite a broad range of perspectives on the importance and value of e-Learning tools for supporting continuous education within health facilities.

Although the majority of **European respondents** have never been involved (as a participant and/or as a service provider) in any e-Learning activities within their professional activities, more than half of the questionnaire respondents stated they have a personal interest in contributing to the development of e-Learning partnerships. Individual interest was rated as higher as the institutional interest of their employer.

'We are convinced of the usefulness of such activities, but this requires a certain type of expertise, availability of personnel, and political will; which seems to be missing...' [Medical doctor, CHU Rennes]

Although this data shows rather positive findings, it is important to state that these 32 interested individuals represent approximately 14 % of the total EEA European sample (n=230), of which the large majority did not answer the questionnaire although 3 reminder emails were sent. The researchers received a number of emails where individuals commented on their lack of interest in participating in a study about e-Learning.

'Currently, e-Learning is not yet developed within our institution, but we have identified it as possibility for the future' [Administrator/Manager, CHU Nantes]

Among **African respondents**, although involvement in e-Learning activities (as a participant and/or as a service provider) is still rather limited, the large majority of respondents stated a high level of individual and institutional interest in e-further developing e-Learning partnerships. Interest in e-Learning was further confirmed through emails received, as well as during the interviews conducted with key stakeholders. As for European respondents, age seems to be a decisive factor influencing interest and involvement in e-Learning activities. A key stakeholder from Chad comments:

"Young people are interested in e-Learning, because IT has always been a part of their life. But older staff members are basically scared of technology. There is a need to give more information and more time to exchange and learn between younger and elder hospital staff." [Continuous education partnership Coordinator, Chad]

As e-Learning is still in its early stages of development within the hospital setting, establishing a correlation between current/past involvement in e-Learning and interest is rather difficult to establish. However, e-Learning does seem to have a pool of interested individuals in Africa and to a lesser extent in Europe.

The following e-Learning benefits were mentioned during interviews with key stakeholders:

- Reaching professionals working in rural/remote areas that are often isolated in their work
- A flexible way of transferring skills and knowledge (location, timing)
- Wide dissemination of both specialist and generalist knowledge
- Direct support in diagnosis (review of cases/advice) which reduces referral costs and improves quality of care
- Impact mitigation strategy for shortages in human resources for health
- Access to training without leaving the work place
- A cost-effective method that is often free of charge for users
- An up to date knowledge resource because of its interactivity or its regular update
- Increase of two-way North-South medical knowledge exchange (i.e. Tropical disease cases for EU students, NCD cases for African students)

4.2 E-Learning Availability versus Utilisation

Although e-Learning courses are available in many respondents' institutions (24-42% of respondents) quantitative data also highlighted the low utilization rate of these tools. The underlying factors explaining this important finding were further explored during the interview stage of the study.

'The lack of IT infrastructure and the difficult internet connection are a problem. There is also a lack of trained staff that know how to properly use computers. People are busy and don't have the motivation to try and understand a computer or new systems. And here, prioritization takes over. Drugs are more of a priority than getting a good internet connection'. [Nurse, Tanzania]

ICT infrastructure and skills

According to the interview respondents, low utilization of e-Learning is mainly due to IT related issues that prevent staff from using the available tools:

- Poor IT skills to use and maintain material
- Poor quality of internet connection
- Costly and slow transfer of data (i.e. radiographies)
- Unstable electricity
- Lack of cooperation among e-Learning platforms/networks (sharing of material/infrastructure)

Information availability

In general, there seems to be low awareness about the availability of e-Learning courses. In Francophone Africa, a quarter of the questionnaire respondents were not aware whether e-Learning courses were available or not within their institution. Furthermore, there also seems to be low sensitization in general about the pertinence of e-Learning for continuous education within health facilities. A professor and RAFT coordinator from Mali mentioned that students and staff often 'do not believe in e-Learning as an adequate method. They say that it is a European method which is not applicable to the African setting'.

Self-learning

During interviews, it was often mentioned that the motivation and incentives for self-learning were difficult to create in a hospital setting, especially in the case of non-interactive e-Learning activities. The lack of interaction with a trainer and other students did not promote independent learning and language barriers as well as knowledge gaps become more evident in e-Learning than in face to face teaching.

4.3 Methods

Across all African countries, computer-based training via the internet is the most commonly used e-Learning method, with mobile phones and telemedicine ranking lowest. The combination of computer-based e-Learning methods was also frequently mentioned by respondents. In Europe, the picture is similar, with the majority (92%) of e-Learning methods developed for partner institutions being computer-based.

Discussions with various stakeholders during the interview phase highlighted the breadth of opinions on the relevance and quality of the available methods. Many interviewees agreed that a combination of online and offline methods should be prioritized (CDs, telephone, videoconferencing, etc.) within health facilities to reduce the impact of technical limitations, such as weak or unstable internet connections. The importance of human interaction was also emphasised by the majority of respondents - stating a preference for interactive e-Learning methods.

'A blended learning' approach should be prioritized, as internet is not widely accessible. CDs, paper material and face to face training should be combined with computer based training' [Training manager, Malawi]

'I don't believe computer-based training is adequate for clinical training. E-Learning without human interaction is doomed to failure. With Africa's strong oral culture, it makes sense to develop oral e-Learning approaches such as Telemedicine and mHealth' [Medical doctor, Paris]

The possibilities of face-to-face training are quite extensive, whether this involves high tech infrastructure such as Telemedicine or more accessible tools such as the use of mobile phones for supportive supervision (mHealth) or the combination of computer and classroom teaching.

4.4 Visibility of EEA Partnerships

As previously mentioned the majority of questionnaire respondents were aware of their institutions' participation in South-South and North-South continuous education partnerships and assessed positively the quality of these collaborations.

It seems, however, that the exact nature of these partnerships was rather unclear to a majority of respondents. This situation was confirmed by emails sent by questionnaire respondents and through key stakeholder interviews. Many were unclear about the characteristics of the partnerships (partners, training methods, topics).

This lack of information and visibility also applies to EEA partnerships, whether in the framework of e-Learning or broader continuous education partnerships. Numerous questionnaire and interview respondents did not know EEA, its activities or its links to their institution. The low awareness about EEA and its activities was especially noticeable among European respondents. This may have been a deciding factor in the low European questionnaire and interview response rates.

'I am not sure why my name is on the contact list or why I have been contacted for an interview. I am not sure if our Norway-Ethiopia staff exchange programme belongs or not to EEA' [Medical doctor, partnership coordinator, Norway]

4.5 SWOT Analysis

To provide an overview of the current e-Learning context, the following table highlights the strengths and weaknesses of e-Learning tools, as well as the main opportunities and threats which need to be taken into account when planning further e-Learning development. These findings are based both on questionnaire and interview data.

Strengths

- Reaching professionals working in rural/remote areas that are often isolated in their work
- A flexible way of transferring skills and knowledge (location, timing)
- Wide dissemination of both specialist and generalist knowledge
- Direct support in diagnosis (review of cases/advice) which reduces referral costs and improves quality of care
- Impact mitigation strategy for shortages in human resources for health
- Access to training without leaving the work place
- A cost-effective method and often free of charge for users
- A knowledge resource which is interactive or is regularly updated
- Increase of two-way North-South medical knowledge exchange (i.e. Tropical disease cases for EU students, NCD cases for African students)

Weaknesses

- Poor cooperation among e-Learning platforms/networks
- Low motivation/incentives for self-learning
- Costly and slow transfer of medical data (radiographies, etc.)
- High cost of buying and maintaining infrastructure and material
- No direct interaction with a trainer/teacher
- Language barriers are more evident in e-Learning than in face to face teaching

Opportunities

- Interactive e-Learning platforms seem to interest many people
- The increasing mobile phone, internet and IT penetration in Africa
- Present expertise and interest within EEA partner institutions to further develop e-Learning
- Building on already existing partnerships and expertise
- Several institutions have well equipped rooms that could be used for more e-Learning activities

Threats

- The lack of infrastructure, material, funding
- Poor IT skills to use and maintain material
- Lack of IT personnel in health facilities
- Costly and poor quality internet connections
- Unstable electricity
- Reluctance of staff to try new technologies
- Low information dissemination and sensitization on e-Learning
- Interest of government but lack of financial investment
- Lack of e-Learning coordination/leadership within institutions

Figure 27: SWOT analysis matrix

5 Conclusions and Recommendations

Challenges in further developing e-Learning have been mentioned throughout the report, such as limited and costly internet connectivity, power disruptions, lack of technical expertise, maintenance problems, low IT skills among facility staff, language constraints, security issues with the equipment, and the lack of national and institutional e-Learning policies. None of these issues challenge e-Learning as an approach but are contextual constraints that need to be addressed to improve e-Learning availability, but most importantly, the *utilisation* of these tools.

Indeed, the study highlighted the sizeable interest in further developing e-Learning activities among study participants, particularly African respondents. Taking into account the generalized shortages in human resources for health in Africa (especially in rural areas) and the general positive trends in Africa's expanding ICT infrastructure; e-Learning appears as a relevant and complementary method that could be further developed in support of more traditional teaching and training approaches. Based on the study findings, this report recommends the EEA to further invest and support e-Learning as a relevant approach to providing knowledge and skills exchange among health facility staff. The findings do however show that interactive methods such as telemedicine should be favoured as a method of learning.

According to study participants, the main areas that require further development and investments are:

- IT infrastructure and technical personnel (Africa)
- Capacity building of health facility staff in IT skills to increase confidence in using new technologies (Africa)
- Moving beyond the often voluntary basis of continuous education partnership activities (Europe)
- Increasing sensitisation and skills building in the area of e-Learning (Africa and Europe)
- Developing new e-Learning areas, such as psycho-social counselling skills, management and administration, hygiene and health facility security (Africa and Europe)

Based on study findings, we also recommend the following measures:

- Further investment and support to consolidate current best practice e-Learning models to further expand their reach and impact
- Establishment of formal e-Learning governance structures (even within bilateral partnerships), with the definition of roles and responsibilities, decision-taking processes, engagement with stakeholders, collaboration, stewardship, financial control, financial performance, reporting (including quality and access indicators), programme and project management, change management, outcomes.

- Designing an e-Learning information dissemination strategy to sensitize European and African EEA health facility partners and organisations on e-Learning: tool/course availability, partnerships, involvement and investment possibilities, etc.
- Linking key stakeholders, institutions and already established e-Learning courses into a formal partnership (platform) that fosters skills and expertise transfers and possibly pooled investments
- Carrying out in-depth evaluations of best practice models such as the telemedicine RAFT project
- Designing a public relations/communication strategy to make the European ESTHER Alliance better known to its partner organisations in Europe and Africa

This study's conclusions and recommendations seem to correlate to recent findings in e-Health which were presented in a 2012 issue of the WHO Bulletin. The different papers emphasised that e-Health development must be holistic, evidence-based and people centred: it must take into account how people live within their own environments and respond to stakeholders' needs [6]. The importance of creating platforms for knowledge sharing, scaling up interventions, and designing integrated e-Health systems was also highlighted [7]. A study by Alkmim et al [8] concluded that for e-Learning initiatives to be successfully implemented, it requires a collaborative structure in order to meet the real needs of local health professionals, and should employ simple technology and have at least some face-to-face components.

E-Learning tools offer many possibilities for under resourced health systems, but their design and implementation should be carried out through participatory and collaborative means to ensure they reflect context specific needs and limitations.

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7 Appendix

Appendix A: ICT access per country in 2011 (source: ITU 2012)

Rank 2011	Country	Access 2011
1.	Hong Kong, China	9.21
...
76.	Morocco	4.49
...
112.	Côte d'Ivoire	2.59
...
122.	Senegal	2.36
123.	Benin	2.36
...
126.	Mali	2.19
127.	Togo	2.18
...
134.	Rwanda	1.90
...
140.	Tanzania	1.85
141.	Burkina Faso	1.82
...
146.	Ethiopia	1.64
...
150.	Niger	1.44
...
154.	Central African Republic	1.19
155 countries on the list		
n/a	Burundi	n/a
n/a	Sudan	n/a

Appendix B – IDI 2011 per country (source: ITU 2012)

Rank 2011	Country	IDI 2011	Rank 2010	IDI 2010
1.	Korea (Rep.)	8.56	1.	8.45
...
90.	Morocco	3.46	92.	3.19
...
124.	Senegal	1.85	122.	1.76
...
129.	Ivory coast	1.69	131.	1.62
...
133.	Rwanda	1.66	140.	1.50
134.	Togo	1.65	132.	1.59
...
139.	Tanzania	1.60	139.	1.52
...
141.	Benin	1.55	141.	1.49
...
144.	Malawi	1.42	143.	1.37
145.	Mali	1.38	147.	1.24
...
150.	Ethiopia	1.15	150.	1.09
151.	Burkina Faso	1.14	152.	1.06
...
153.	Central African Republic	0.97	153.	0.96
...
155.	Niger	0.88	155.	0.88
155 countries on the list				
n/a	Burundi	n/a	n/a	n/a
n/a	Sudan	n/a	n/a	n/a

Appendix C: Questionnaire to African Respondents

SECTION A

Participant Profile

- A.1. Name of institution?
- A.2. Country?
- A.3. What is your current profession?
- A.4. How long have you been working in your current institution?
- A.5. Sex:
- A.6. Age:

SECTION B

Mapping of e-learning activities

- B.1. To what degree have you been involved in e-learning activities?
- B.2. Are e-learning courses for continuous education available within your institution?
 - b.2.1. If this is the case, in which area(s)?
 - b.2.2. Which e-learning methods are available in your institution?
 - b.2.3. How would you assess the utilization of e-learning tools within your institution?
 - b.2.4. Do you have access to e-learning tools for your own professional development?
 - b.2.5. Please rate the following statement: The content of e-learning activities available within my institution is of good quality.
 - b.2.6. Are the e-learning activities available in your institution based on a credit system for professional development?
 - b.2.7. In your opinion, is a credit system important?
- B.3. Please rate the following statement: Continuous education via e-learning tools can improve the quality of care within my institution.
- B.4. In which areas would you be interested in receiving further training? Please select three priority thematics.
- B.5. Does your institution design and/ or support e-learning activities for partner institutions?
- B.6. Do you have access to computers at work?
 - b.6.1. How would you rate the condition of those computers?
 - b.6.2. Do you use computers at work for professional reasons?
 - b.6.3. How often do you use a computer?
 - b.6.4. Do you have access to internet at work?
 - b.6.5. How would you rate the internet access in terms of its speed?
 - b.6.6. How would you rate the internet access in terms of reliability (whether it functions all the time)?
 - b.6.7. Do you use internet at work for professional reasons?
 - b.6.8. At work, what type of activity do you normally perform on a computer?
- B.7. Have you previously used computers for e-learning activities?

B.8. Please rate the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It is appropriate that e-learning courses are in the English language	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The English used in e-learning material is sometimes too complex to understand	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
It is absolutely necessary to develop e-learning courses in other national languages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION C

Present and Future Collaborations

C.1. To your knowledge, in what types of partnerships in the area of continuous education is your institution a part of?

C.2. How do you rate these collaborations?

C.3. Have you been in direct contact with colleagues from those partner institutions?

c.3.1. If this is the case, please rate the following statement: The working relationship with external partners in continuous education is satisfactory.

C.4. Please rate the following statement: As a professional, I would be interested in contributing further to the development of e-learning partnerships.

C.5. Please rate the following statement: My institution is interested in further developing these partnerships.

C.6. Do you feel there is sufficient internal capacity in terms of human resources to organize e-learning activities?

Would you have any further comments you would like to share?

Appendix D: Questionnaire to European Respondents

SECTION A

Participant Profile

- A.1. Name of institution?
- A.2. Country?
- A.3. What is your current profession?
- A.4. How long have you been working in your current institution?
- A.5. Sex:
- A.6. Age:

SECTION B

Mapping of e-learning activities

- B.1. Does your institution design and/or support e-learning activities for partner institutions?
 - b.1.1 If this is the case, in which area?
 - b.1.2. Which e-learning methods does your institution develop for partner institutions?
 - b.1.3. Please rate the following statement: The content of e-learning activities developed for partner institutions is of good quality.
- B.2. To what degree are you involved in e-learning activities within your institution?
- B.3. Are e-learning courses for your own continuous education available within your institution?
 - b.3.1. Please rate the following statement: The content of e-learning activities available within my institution is of good quality.
 - b.3.2. Are the e-learning activities available in your institution based on a credit system for professional development?
 - b.3.3. In your opinion, is a credit system important?

SECTION C

Present and Future Collaborations

- C.1. To your knowledge, to what types of continuous education collaborations is your institution a part of?
- C.2. How do you rate the quality of these collaborations?
- C.3. Have you been in direct contact with colleagues in partner institutions?
 - c.3.1. If this is the case, how would you describe working relationships?
- C.4. Would you say there is currently sufficient internal capacity in terms of human resources to carry out activities with partner institutions?
- C.5. Please rate the following statement: As a professional, I am interested in contributing further to e-learning activities with partner institutions.
- C.6. Please rate the following statement: My institution is interested in further developing its continuous education partnerships.
- C.7. In which area could there be further involvement?
- C.8. Would you have any further comments you would like to make?

Appendix E: Interview Schedule for African Respondents

1. Please describe your degree of involvement in continuous education activities within your institution and within external networks, especially in the area of e-Learning.
2. Are there any e-Learning courses available within your institution?
3. In your perspective, what are the strengths of using e-Learning approaches?
 - a. Advantages/disadvantages of e-Learning compared to other learning approaches
4. In your perspective, what are the weaknesses of using e-Learning approaches?
5. In your perspective, what are opportunities within your context/facility that could support the development of e-Learning within your facility?
6. In your perspective, what are the challenges in further developing the use of e-Learning in your facility?
7. How would you assess the capacity of e-Learning to positively impact on quality of care? Is this different from other forms of training?
8. In your opinion, what e-Learning method(s) should be prioritized when developing new e-Learning courses for institutions in resource limited settings? (Please elaborate).
9. In your opinion, what areas could benefit from further development and capacity building? In terms of e-Learning content, methods, partnership structure, management, etc.)
10. Please describe briefly your collaboration experience within the ESTHER network (communication, management structure, North-South/South-South cooperation).
11. How would you rate the interest from staff within your institution in contributing further to e-Learning and ESTHER network activities? Please elaborate.
12. Would you say your institution and your national health authorities are interested in further investing in e-Learning? Please explain answer.
13. Would you be able to share a best practice example in the area of e-Learning (within or outside the ESTHER network). This can be related to content, partnership structure, utilization, etc.

Appendix F: Interview Schedule for European Respondents

1. Please describe your degree of involvement in continuous education activities within your institution and within North-South partnerships, especially in the area of e-Learning.
2. In your perspective, what are the strengths of using e-Learning for continuous education? Especially in the context of a resource-limited setting.
 - a. Advantages/disadvantages of e-learning compared to other learning approaches
3. In your perspective, what are the weaknesses of using e-Learning for continuous education? Especially in the context of a resource-limited setting.
4. In your perspective, what opportunities within your context/facility could support the further development of e-Learning for partner institutions?
5. In your perspective, what are the challenges in further developing the development of e-Learning for partner institutions?
6. How would you assess the capacity of e-Learning to positively impact on quality of care? Is this different from other forms of training?
7. In your opinion, what e-Learning method(s) should be prioritized when developing new e-Learning courses for institutions in resource limited settings? (Please elaborate).
8. In your opinion, what areas could benefit from further development and capacity building? In terms of e-Learning content, methods, partnership structure, management, etc.
9. Please describe briefly your collaboration experience within the ESTHER network or another network (communication, management structure, North-South cooperation, etc).
10. How would you rate the interest from staff within your institution in contributing further to the ESTHER network activities? Especially in the area e-Learning. Please elaborate.
11. How would you describe your institution's interest in further investing in e-Learning? Please explain answer.
12. Would you be able to share a best practice example in the area of e-Learning (within or outside the ESTHER network).