Why Continuing Education in eHealth

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Abstract

Continuing Education in health informatics is suggested as a necessary part of achieving suitable IS in the health sector in order to address the long term needs of the health professions, the providers and those who design and maintain the ICTs. Our approach is to include both healthcare workers and those working with health ICT in our educational program so that they may to learn together. The aim is to harness relevant experiences through reflection and learning both during their studies and in their future work practices.

Keywords[1]:

Continuing Education, Health Informatics, Multidisciplinary

Introduction

At any level, Information and Communication Technologies (ICTs) figure prominently in current strategies for improving the provision of health care. Governments aim for a healthcare system that addresses the public's expectation of timely and fair assistance for each and every citizen. Both the private and public health care providers seek to produce efficient and competent services. A number of businesses seek markets for their ICT services and products in the health care context. And, citizens want timely and correct treatment for themselves and their close ones. The potential benefit of using ICT to leverage all these aims and more seems obvious.

On the other hand, reports of the utility previous investments in IT for health care provision vary greatly. In Norwegian media the past years, optimistic stories of newly acquired state of the art mingle with more shaming tales of system updates and reports being sent on minidisc by postal mail, patient data in the municipalities sent on by newly acquired fax machines [1] and examples of patients dying because their referrals for urgent treatment went missing somewhere in paper-cyber space. So, while ICTs by the hundreds are in use throughout the sector for various purposes, the desired benefits seem elusive and the systems in use often come with downsides as well as added value. A case in point being the fate of the British NHS' attempts at establishing a common IS [2].

Research on the adoption and use of information systems (IS) over the last decades has reported on the challenges of introducing new technologies into existing work practices. The difficulties increase with scope and scale, and are not unique to the health sector. However, the health sector with its traditional sense of organizing activity, numerous and continuously evolving knowledge bases and circumstances, along with a variety of professions presents itself as extremely complex and intricate to support with IS. Reported problems range from the basic and local to the kind of functionality that supports coherence across time, space and organizations. On the one hand that of impractical functionality, outdated technology/legacy systems with poor fit to present organizational needs, and poor usability. On the other hand the difficulty of achieving up to date practices and fluent collaboration relates to for instance poor compatibility/integration, lack of supportive functionality or simply to the fact that the IS for some reason fails to be adopted by relevant users in a way that supports other than some actors' individual short term needs of getting a local task done [2].

One approach to understanding and thus dealing with the establishment and uptake of large scale information systems is to see them as socio-technical ecologies that need ongoing nurturing [3] and sustainable conditions [4] as circumstances and ambitions are in continuous drift [5]. This implies not only designing usable and suitable technology that actually affords the practices they are meant to support, but also supplying the professionals who are meant to use the systems with the abilities to do so also in the long run by supporting the revision and evolution of their disciplinary knowledge base [6]. We venture that the eHealth integrated health care system will do no better than its weakest links – including both the people that design and maintain them and those who use them. Beyond the immediate challenges of working systems there are long term issues to address in order to support the evolution of both the health care practices and the technical systems and their use. How may IS support trust for collaborating across interests and domains [7], support learning for the individual practitioner as well as improve the knowledge bases of the professions and the organizations they belong to?

2 Continuing Education in Health Informatics as Strategy

In order to design and use IS for leveraging knowledge based services and practices we venture that the practitioners themselves must be involved in their creation and introduction.

Continuing education is a means to bring this about. Harnessing the expertise of those already in the sector is vital to secure relevant solutions and ownership in introduction, reorganization and maintenance. Research based teaching combined with language and experience allow for new insights and learning. Adding methodology for cross disciplinary collaboration allows for future technical and organizational innovation [8]. The following description is based on [9].

2.1 NTNU's Continuing Education Master Program in Health Care Informatics

NTNUs Continuing Education Master Program in Health Care Informatics may be entered by both those with a bachelor or equivalent in a health care profession or with an ICT profession. Also a minimum of 2 years working experience is mandatory. As part time students they receive a few courses aimed at giving them a basic knowledge of their counterparts' discipline, but mostly they have a common curriculum where they study together in multidisciplinary groups. Being confronted with the realities and experiences of fellow students and insights from research is central to establishing cross disciplinary communication and collaboration both in their studies and for their working life. The first year of the four year program aims for establishing some mutual language and common ground. The second year teaches through practical projects methodologies that allow for bridging the gaps of differing perspectives and objectives. Finally a two year master project allows the students to put into practice and internalize insights from some of that which they have learned in theory. The list of courses is shown below in Table 1.

Our aim is that our students may make informed choices with realistic ambitions and strategies for systems design and their implementation and revision. Our starting point being innovation grounded in working practices and a usability focus for all relevant users or roles.

Table 1. *Courses given in the 4-year program. A student with a health education background will do the topics in the first two columns. Those with an ICT background will do topics in the middle and right columns.*

Topics for health personnel	Topics for both groups	Topics for ICT personnel
	Master's thesis	
	Pilot study	
	Chosen theory (two topics)	
	Research Methods	
	Human-Computer Interaction	
	Epidemiology and Community Medicine	
System Development	Clinical Information Systems	Clinical Decision-Support Systems
Programming	IT, Organization and Collaboration in Healthcare	Medicine and Healthcare Services
Databases	Introduction to Health informatics	Introduction to Biology and Disease

2.2 Experiences So Far

Five years into the running, the program has students, ages thirty to fifty, from all over Norway. They form a balanced mix across gender and private or public occupation. While a third has a technical background, the others include nurses, doctors, radiographers, pharmacists and bioengineers. Pedagogically it is a challenge to cater for the variety of backgrounds. On the other hand they are highly motivated and inspired by new found language and understanding. "Finally, there is someone to talk to about my experiences." Discussion runs high both in class and group projects. Several state that they feel more self-assured: "I plan differently now as I can support my opinions", or "Suppliers answer when I ask questions instead of moving on to another issue." But also they want hear of more success stories, rather than all the potential difficulties and problems. For our teaching staff these students present an opportunity for direct contact with real organizational and technical life issues through the case material these students often have access to.

However there also challenges to teaching these students, most of who are in full time employment. Activities need to have flexible time frames, and they often need more coaching time than ordinary students who stay on campus in the thick of student activity. In terms of teaching outcome this is amply made up for by the level of understanding many reach given their relevant experiences.

3 Conclusion

In striving for eHealth – not only do we need to acknowledge the legacy technologies when new systems are to be designed and put to use. We also need to attend to the objectives and requirements of those working to achieve innovation – both those with a technical perspective and those with a health background. In supporting the harnessing of experience from both these groups, more comprehensive innovation involving ICTs may take place within the health sector.

Acknowledgments

References

[1] adressa.no. Støre vil ha slutt på disketter og faks på norske sykehus (Støre [Minister of Health] wants an end to minidiscs and fax machines in norwegian hospitals) Trondheim: Adresseavisen. 2013, May 6th 06.05.2013.

[2] Greenhalgh T, Stramer K, Bratan T, Byrne E, Russell J, Hinder S, et al. Adoption and non-adoption of a shared electronic summary record in England: A mixed-method case study. BMJ; 341:(c5814), 2010.

[3] Aanestad M. and Jensen TB. Building nation-wide information infrastructures in healthcare through modular implementation strategies. Journal of strategic information systems: 20(2), 2011; pp. 161- 176.

[4] Aanestad M. Information Systems Innovation Research: Between Novel Futures and Durable Presents. In: Chiasson M, Henfridsson O, editors. IFIP WG82; 6.-8. June, 2011; Turku, Finland: IFIP, 2011.

[5] Ciborra CA. From Control to Drift. The dynamics of Corporate Information Infrastructures. 2 ed. New York: Oxford University Press, 2000.

[6] Faxvaag A. Utvikling av faget Medisin og helsetjeneste for inofrmatikere (Development of the course Medicine and the healthservices for informaticians). NTNU, 2013.

[7] Berntsen KE. IS supported service work: A case study of global certification [PHD]. Trondheim: NTNU, 2011.

[8] Nonaka I. and Takeuchi H. The Knowledge-Creating Company, How Japanese Companies Create the Dynamics of Innovation. USA: Oxford University Press, 1995.

[9] Berntsen K. Improving the Odds for eHealth - Continuing Education as a Socio-Technical Approach. In: Gilstad H, Melby L, Jaatun MG, editors. Proceedings of the European Workshop on Practical Aspects of Health Informatics (PAHI) March 11-12, 2013; Edinburgh, Scotland: Ceur-ws.org, 2013; pp. 89-92.

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