Improving the Odds for eHealth - Continuing Education as a Socio-Technical Approach

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Abstract. This presentation portrayed eHealth in Norway as an issue in much and increasing demand but with varied outcomes so far. Given the urgency, the desired scope and reach of systems we deduce that continuing education in health informatics is needed within the sector, both for healthcare workers and those working with health ICT. This would contribute in a socio-technical fashion to harness relevant experiences through reflection and learning. With implicated actors participating, gaining and disseminating insights from practice and its research, the odds for strategic informed innovation and eHealth use would improve.

1 Introduction

While information and communication technology figures prominently in both the healthcare sector and our private arenas, reports of its utility in actual use for health care provision vary from the glorified to the horrified. The Norwegian Government's recent eHealth White Paper [2] states that expectations are high and opportunities for development many, if efforts are strategically and correctly focused.

1.1 The Status of eHealth in Norway

Reports of the utility previous investments in IT for health care provision vary greatly. In Norwegian media the past year, 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. The eHealth White Paper [2] states that expectations are high and opportunities for development many, if efforts are strategically and correctly focused. Stronger national control with coordinated action plans will now be established in order to address secure overall communication and data access for health care provision. Key initiatives will be aimed at development, research and innovation for the sector's benefit. The backdrop to this is a scenario of an aging population over the next decades, all over Europe, in

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need of more healthcare services than before. Apparently, there is work to be done, systems to design, establish, maintain and revise – by someone.

1.2 Challenges Particular for eHealth?

Are there particular challenges for ICT use and development in the health sector in Norway, as opposed to other public sectors? Reports claim that the coverage of electronic health records (EHR) both in primary and specialist care in Norway are amongst the highest in the world. On the other hand, these are described as separate bins of information that do not lend themselves easily to interaction and communication amongst the collaborating actors involved in on-going treatment with a goal of fluent patient trajectories. There are never the less some characteristics that are prominent in the public sector and in particular the health and welfare services.

Firstly it is mainly publicly funded, meaning that in fairness all solutions and investments seek to be, and politically need to be, all encompassing. On the other hand, funding and implementation often lies in the hands of local authorities meaning that investments and strategies are locally produced and enforced. This results in piecemeal performance and incomplete systems due to the number of decision makers, limited funds for investment and adoption, - and varied priorities.

Secondly, design, introduction, use, maintenance and revision of information systems for large scale organizational use have been found to be a troublesome accomplishment regardless of sector. Reported problems range from impractical functionality, lack of compatibility/integration, outdated technology/legacy systems poor fit to organizational needs, poor usability or simply to the fact that the IS for some reason fails to be adopted by users [3]. For instance a number of professions and specialties have designed and implemented their own IS for their own particular need, meaning that a single hospital has hundreds of different standalone systems in use. In sum a range of socio-technical issues must be addressed to afford eHealth.

Thirdly, the abundance of professions, systems, routines, practices and organizations involved – on top of the diversity of patient ailments and their personal contexts, makes the provision of health care services an extremely complex system – a wicked problem that cannot be altogether untangled. The impetus of this system to keep on going in its original direction is considerable due to size, complexity as well as the length of time it has been in operation – establishing and honing its competencies and purpose, literally over centuries. While change is taking place, especially medical progress, adapting both the organizations and its systems cannot come easy. There is however one constant within this changing complex. While the way medicine is practiced or organized today would hardly be recognizable for a 19th century citizen, or doctor, the central roles within the system are still with us. Such as the idea and purpose of being a practicing doctor, the meaning of being a practicing nurse or a midwife would probably be recognizable to us if we today were to visit the 19th century hospital.

2 Continuing Education in Health Informatics as Strategy

Of the many measures needed, we venture that the Government's mentioned *planned development, research and innovation in the sector* must include continuing education for many already working in the sector – both for those with a health care background or those with an ICT background. The urgency, as well as the desired scope and reach of systems imply that we cannot rely singly on the next generation of newly qualified. Harnessing the expertise of those already in the sector is vital to secure relevant solutions and ownership in introduction, reorganization and maintenance.

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 curriculum is shown below in Table 1.

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

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.

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 practices with a usability focus.

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 more 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 things. 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 system are to be designed and used – we also need to attend to the social legacies of the systems. Substantial change must come from within – and accommodate the legacy purpose of activity for significant user roles.

Therefore, Continuing Education presents itself as a useful socio-technical approach in addition to current strategies. With implicated actors participating, gaining and disseminating insights from practice and its research, the odds for strategic informed innovation and eHealth use should improve.

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