Communities of practice in nursing and its implications for change management

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Abstract

Dette speciale forsøger at kortlægge implementeringsprocessen af IT systemet Sundhedsplatformen i det danske sundhedsvæsen. Specialet tager udgangspunkt i slutbrugerens oplevelse af systemet, mere specifikt sygeplejerskerne. Implementeringen er forsøgt kortlagt, ved at operationaliserer Wengers teori om praksisfælleskaber og Kotters forandrings styringsteori, til et værktøj der er egnet til at undersøge praksisfælleskabers rolle in en implementeringsproces.

Content

Introduction

In the context of healthcare provision, information is key to ensuring appropriate healthcare interventions are administered and an efficient use of resources. This is done via keeping detailed patient records using the electronic health record (EHR) system and a log of healthcare interventions administered by healthcare providers. EHRs encompass everything from prescription data to monitoring heartrates of hospitalized patients, as it was, there were many systems all specialised to service one or two functions. Ideally these records should be part of an integrated network allowing for healthcare providers across the country to have access to a patients latest medical records to allow for the patient to receive the healthcare they need anywhere they are in the country.

The design of EHRs to be used by healthcare providers in each region is left to the regional governments where data collected on key performance indicators (KPI) must comply to a set of basic requirements decided by the national government. These requirements allow healthcare providers a measure of freedom in the implementation of the designated EHR system for that region, resulting in vastly different approaches to workflow, and in general a different ICT (Information and Communications Technology) infrastructure. This results in the development of multiple EHR systems which are incompatible with each other and therefore, resulting in inefficient data collection. For example, in the Region Hovedstaden, there were seven different systems all running in tandem, each being a vital part of the day to day running of the hospitals in this region. As the systems were not necessarily compatible with each other, this results in unnecessary friction and additional administrative burden. In the words of Region Hovedstaden,

" De eksisterende systemer var enten forældede eller usammenhængende. Derfor var det nødvendigt at anskaffe et nyt system"(Appendix 5, P.3)

To combat this, Region Hovedstaden, and Region Sjælland are working in tandem to implement one of the most ambitious overhauls of ICT infrastructure seen in Danish healthcare. Their goal is to replace seven existing systems with a single integrated system with the functionalities of the seven systems currently in place. The intention is to not only strengthen existing record keeping but also to facilitate the sharing of information. There is also the potential to create cost savings in the longer term in terms of licensing fees as there would only be the need for one license rather than seven separate licenses.

However, this is not without massive upfront costs as replacing the current EHR platforms would, require extensive retraining of the existing staff as for most of them, their daily workflow will be affected to some extent. The process of implementation has been segmented, and will roll out the

system at different hospitals, starting with Herlev and Gentofte, where the system is already in use, followed by Rigshospitalet and Roskilde Hospital. This is mostly due to logistical constraints as training tens of thousands of healthcare professionals all at once would not be feasible.

The system itself is manufactured by the American company Epic, which has not only successfully implemented Electronic Health Records (EHR) systems in an American setting but has also managed to sell systems to healthcare providers based in England, Holland and France. Other than some issues at start up in England, the ventures into the European market seemed successful. Ultimately, the new EHR system was a success in England as well;

“"well over 90% of implementation [had] proceeded successfully" (Addenbrooke’s Hospital paperless system’s, 2014)

This thesis is centred around the reception of the new EHR system by healthcare professionals and the impact of the initial implementation strategy on healthcare professionals’ perception of the EHR system. As the implementation strategy of Sundhedsplatformen is based around user education, as the primary implementation strategy, any inquiry into the implementation of Sundhedsplatformen must be primarily based around the educational aspects of the process, not only in and around the education, but also how the social learning aspects of the system meeting the reality of the different hospitals and specialities. Wenger communities of practice will be one of the primary tenets in this paper, which is also reflected in the problem statement.

Problem statement

The project builds on the assumption that an effective user education builds on the communities of practice as a mediator for the appropriation of Sundhedsplatformen.

The project is centred on the overall problem statement:

How is the user education and implementation carried out in relation to the different communities of practice of the involved hospitals and sub-departments?

- How are the communities of practice used to mediate the user education?
- How are the communities of practice used to mediate the implementation?
- What can be done to better incorporate the different communities of practice in the user education, and the implementation in general?

The primary objective of this research project is to explore how the process has been streamlined to fit into a Danish context, to determine if there is a difference in the teaching and learning process

when teaching the involved hospitals, and through a user-driven process to present some ideas of how to make the user education more efficient and streamlined.

As mentioned above, the roll-out and initial implementation of the new EHR system is heavily dependent on user education and re-training the healthcare professionals using the system in their day-to-day work. In addition to learning theories, change management theories will also be applied in understanding the situation at hand to give a broader perspective on the situation. A knowledge of these might help with a better overall understanding of the process and alleviate potential blind spots for the researcher.

Background

As outlined previously, EHRs are specialised content management systems (CMS) used for controlling the data stream of hospitals. The lack of compatibility between the different EHRs, makes it difficult to transfer data from one region to another, and even between two hospitals in the same region. The goal of the new system which is being introduced in the two regions is to allow easy access to all necessary data, even when moving between hospitals and regions. Current plans to integrate the new EHR are based on the retraining of the healthcare professionals and fitting the EHR into the present workflow. All Epics EHRs are tailored to the specifications of the clients and therefore, the system should be able to handle the operational demands of the hospital systems provided, the current requirements of the users are correctly captured in the specifications. This was done by;

"Siden 2014 har 400 fagfolk, deriblandt it-specialister og tidligere klinikere, udviklet Sundhedsplatformen, så systemet er tilpasset til de danske hospitaler. Over 500 læger, sygeplejersker og andre faglige eksperter har rådgivet som faglige eksperter, så Sundhedsplatformen er tilpasset de mennesker, som skal bruge det i hverdagen." (Appendix 5, P.4)

As there are relatively large differences in how things are done between the different hospitals, being able to create a platform, which suits the requirements of various departments and hospitals is a challenging task. The requirements were specified by bringing in nurses and doctors from key specialities, sitting them down and asking what features where needed and how to tailor the system to their day-to-day practice. This was done with using the senior members of each speciality, as these where deemed to be most knowledgeable.

The initial focus of this thesis was on how successful the implementation process was, but during the observations, the researcher became aware that there was a very distinct difference in how the healthcare professionals approached the education, by the end of the observation it was clear that

there were some behavioural tendencies associated with the respective hospitals and specialities. The researcher also questioned if the differences in work flow and work culture between the participating hospitals and specialities were adequately addressed in the development of the new EHR system and if it is even feasible for a single system to fully capture the complexities associated with different communities of practice. When looking further into Epic and what they offer, they advertise that every system is very flexible and should therefore be able to accommodate almost anything. The idea is that the users will further customise the system to their needs and that this should help alleviate the problems, which might arise from the different requirements specific to each branch.

The education on the other hand, as far as this researcher could observe, there was no distinction between the two observed hospitals. The scope of the education also seemed very limited, most would have one or two courses that only covered the basics of what they needed, and never addressed the how and why behind the implementation. This seems to be a general trend in regards to the implementation of EPIC systems, as evident in the quote bellow;

"Most nurses had three four-hour courses, with some specialty nurses getting an extra course. Some of the courses were led by Epic employees, but most were by nurses taken off the floor, trained on the system and then sent back to teach the other nurses." (Monegain, 2013)

This quote and the one below are taken from an article regarding the implementation of a similar system in Maine.

A similar strategy was used in the implementation of the unified EHR platform in Region Hovedstaden and Sjælland where the educators are recruited from healthcare professionals who would be day-to-day users of the new EHR platform and have undergone dedicated training courses prior to leading training sessions for their peers who are also potential users of the new platform. The educators would then be considered as 'loaned out' to the regional taskforces for the EHR implementation and are not beholden to their respective hospitals and specialties for the duration of the training. This has been confirmed by one of the current educators.

The educators are active participants in the refining process of the system and are encouraged to report any problems and discrepancies to the developers who will almost immediately apply new features or change existing to suit the needs of the different groups involved. However, these changes would not necessarily be reflected in the training of the educators and therefore, had the potential of disrupting the structure of the peer-led training sessions as new changes were implemented every weekend. This allowed for fast bug fixes and rapid changes to optimize the

system based on user feedback. This also added an additional layer of complexity to the education, as the educational material would have to be constantly updated and, as mentioned previously, updates to the platform would not be reflected in the training of the educators. These constant changes could be because of inadequate requirement specifications beforehand, and are sure to affect the quality of the education as Is evident in the quote below.

"[The education] didn't follow a workflow at all," she said. "It was really sort of patchwork." Moreover, she said, when people had questions about the workflow, they really weren't addressed.

"I felt we were not educated well at all. When we actually went live, it was scary. People did not know what they were doing." (Monegain, 2013)

Per one of the educators, these problems were also reflective of the Danish experience and the educator in question described it as:

''a very different workflow, "patchwork" education and an altogether too short training period.''

This was during an informal talk before the actual observations and is therefore only paraphrased by the researcher and not an actual quote.

The fact that some of the issues plaguing the implementation in Maine are still a concern seems to be confirmed by the current educators. A short review of the current state of the research surrounding the topic of this thesis.

Literature review

The implementation of said new system is going to be the handled through education, with the principle of train the trainer. Education seems to be the primary source of change management. As the primary focus of the thesis will be on education as change management, this will also be the primary search parameters of this review. The body of this review will consist of a concept based synthesis matrix. (Webster & Watson, 2002)

Search strategy

The overall search strategy is centred around keywords more than authors, this is because the initial search was intended as a scoping exercise to see what was in the literature on this topic and was conducted in parallel with the observations of the education sessions on the EHR platform to help the researcher identify a specific angle to take on the researched topic which will be a novel

contribution to the existing research in the general field of EHR implementation. After the research focus was decided on, it emerged that the theories by Wenger and Kotter will be a good fit for the research topic and therefore, the search was modified to include these authors to identify their works which can inform the actual analysis. This study is considered of an emergent topic and will therefore focus on mapping the current state of research. This will be done primarily using concepts. Those concepts figure more in this type of review than names of established theorists as there is no guarantee that the more established forces have written anything on said topic (Webster & Watson, 2002)

Keywords: implementation, EHR, CMS, Education, change management, instruction, change agent, system, Epic, communities of practice, COP, Wenger, Kotter.

Most of this researchers search, has been through Google Scholar, which when using Aalborg's university library access credentials, allows access to a significant amount of academic writing. There has been a few tries of perusing specialised library databases on the topic of content management systems (CMS), but given that a conscious choice has been made to only deal with implementation of CMS in a healthcare context, the relevant findings from searches of these databases were marginal. By using Google Scholar and the databases available through there, this approach allowed the researcher access to several medical journals, such as the Journal of General Internal Medicine, PubMed, Health Services Management Research and other large databases of medical knowledge.

This is also reflected in the results from Google Scholar, around half the used articles were from different medical journals. This makes sense with such a setting and was expected. Almost all the searchers have been by keyword instead of subject, as keywords make more sense when combining concepts and seems more fitting than focusing on a specific author or specific journal. The searches themselves have generally consisted of at least two of the above keywords. In some cases, a higher number of keywords where used at the same time and at one point four was tried simultaneously, but because of the complexity of the questions sought answered, the obtained hits were spread throughout topics which were not necessarily of interest to the topic at hand. A hand search was also done through the references of papers which were found via the Google search method to ascertain the theoretical foundations of the paper and to identify relevant papers on the topic to minimise the chances of missing out on something relevant. This approach, coupled with looking at how many times an article was cited, who was it cited by and the impact factor of the journal in which it was published, was the primary way of ensuring that the used articles where not only relevant but also of a certain quality. (Webster & Watson, 2002)

Literature synthesis matrix

The matrix started out consisting of four different main articles, which was supplemented by a fifth as the scope of the research changed. Each article is relevant to a different aspect of the implementation process. These four articles will be used to shine a light on different aspects of the current state of research into this subject. The fifth which was a later addition will be analysed in a different way to the first four; the rationale for this will be explained later. The five main articles will be the foundation of this review, and will each be supplemented by several "lesser" articles. The main search parameters were centred on education, change management and the space where these intertwine. This is explored in more detail as Wenger and Kotter was chosen as the primary theories used which resulted in a fifth article being added to the review.

The first article

The firsts of the main papers presented (Ludwick & Doucette, 2009) is a literature review pertaining to implementation of EHRs in seven different countries, and is therefore not only useful on the basis of what goes into an implementation of a EHR system, but also in terms of cultural differences which could have influenced the implantation process and its success. Therefore, the purpose of this article is to gather and reflect on the state of knowledge in the field. This paper pertains only to a healthcare setting and the respondents are purely nurses, doctors and their administrative personnel. As this was a literature review, the author did not conduct original research but consolidates the findings of others. In consolidating the data, an analysis was carried out, which had the function of giving a broad perspective on the different aspects of adopting electronic health records. There is no clear conclusion as the objective of the paper is to ascertain the current state of knowledge by summarising the literature available on the topic of EHR implementation at the time the literature review was done. The focus is the different approaches taken to the same problem at different times and places. Now the researcher will use a few articles to help support the claim that this literature review is typical for the current state of research.

Another article which was also found independently during the researcher's literature search (Boaden & Joyce, 2006) is cited in the review. In this article, the focus was on patient safety and the potential impact an improper EHR implementation would have on this. Among the examples used was how being unable to rectify incorrect patient data in the system would endanger the patient's safety or healthcare professionals being unable to access the patient's records at the right time would compromise patient care. The concluding message from the authors was that the implementation process should not be viewed as a purely technical process and when shaping the

implementation strategy, the implications on patient care be put above everything else and should not be lost sight of when defining the implementation strategy.

Another article presented is (Prada et al., 2004) where the best practices for an EHR system are discussed. The perspective is on the different processes in some of the countries who were early adopters of the EHR concept, such as Sweden and Switzerland. The aim of this article is to show the current state of healthcare in each country taking into consideration parameters such as funding, availability and organisation. The aim of the article is to descriptively summarise the differences between the EHR usage in the countries included in the article as no definitive conclusion is made regarding these differences.

Another cited article is (Schuster, 2003) where a case study of the implementation process of an imaging order entry system in a podiatric clinic was used to describe the process of implementing a new computerised health information system and increasing its acceptance amongst users. The steps described in this paper mirror the change implementation process described by Kotter, in that obtaining buy-in from the would-be users of the system early on and creating 'quick wins' via pilot projects to demonstrate the potential success of the system was crucial to the implementation of the system. The last step required for continued success was to ensure continuous improvement for the system, which is also aligned with Kotter's change implementation theory.

These different aspects show that (Ludwick & Doucette, 2009) have considered aspects of the literature related to implementation of different systems in the healthcare industry from the potential impact of an EHR system on patient care to the practicalities needed for a successful EHR implementation. The broader perspective of this article makes it a good place to start as it contains a basis of knowledge surrounding the subject, the main problem with this article is its age. This was the first of the five main articles, with minor articles supporting the premise of the main article.

The second article

The second major paper (Kushniruk, Kuo, Parapini, & Borycki, 2014) describes a way to handle the education of trainee nurses in the workings of EHRs, in particular education through a cloud based service. In addition, what moving from in-house computing to a cloud based approach will entail. This paper is interesting because the moving from an in-house approach to a cloud based, and the requirements this entails, should face some of the same perils as the move from a decentralised system to an interconnected one in regards to the implementation of Sundhedsplatformen. The setting is the University Hospital of Virginia, and the sample is their current and proposed systems. This paper is used to illustrate a point; that the general focus of the research in education and EHRs lies mostly on facilitating the technical aspects, and what monetary gains are possible when

switching systems. The authors of the paper noted that an evaluation of how switching systems will impact performance will be addressed in further research.

That the focus is on the monetary and technical aspects, is supported by articles such as, (Haux, 2006) that focus on how the technical aspects of EHR´s have changed through the last twenty years, and how this affects the use of EHRs.

The third article

(Palvia, Palvia, Xia, & King, 2011) has similar aims as this paper, but in a broader perspective. What is examined here is the implementation of EHRs but with the theoretical focus of stakeholder theory. This paper determines there are three distinct fazes to an implementation process, pre-implementation, during implementation, and post-implementation. The paper then goes on to determine seventeen different key issues that affect an implementation process. The paper also examines which issues concern the different stakeholders. The paper does not go into an in depth, analysis of the different stakeholders but mostly keep the discussion on a macro level of vendor and customer. The article tries to identify the possible conflict between vendor and customer, but argues that these have not fully been explored in the literature. This is based on an idea that the current state of research regarding ERHs and their implementation, is sorely lacking. Again, the context is healthcare, but the focus is, unlike the other papers, not only on the customers but the perspective of the vendor is also treated, as a part of an implementation process. The method is using a range of different data gathered surrounding the implementation of EHRs to construct a survey, which was distributed with the help of two different EHR providers. The survey was not only distributed to the users of the EHRs but also to the different parts of the vendor's organisations. This approach arguably makes for a more complete picture of the implementation process. This article was atypical because of its focus on end user instead of monetary gains.

The fourth article

Is an honour thesis about the need for education of healthcare personal (Leapaldt, 2016) , on the use and functions of EHRs in the training of said personal. Currently there is no formal training regarding EHRs in the education of neither nurses nor physicians. Madeline Leapaldt states that EHRs improve the healthcare sector in a myriad of ways. However, there are also downsides to the use of EHRs these mostly manifest through lack of training. There are some concerns about using real EHRs to teach the use, of such systems. These concerns mainly focus on the restrictions of personal data, billing and liability. This could be alleviated by making an educational EHR. This EHR would have to be very broad to accommodate every healthcare profession. She then goes on to describe the features such an educational EHR would have to contain, to be useful to not only every

type of healthcare worker, but also to be useful for both novices and students with some experience handling EHRs. The conclusion is that the healthcare field would benefit greatly from making EHRs a part of the regular curriculum of the education of all types of healthcare workers. This statement is mirrored in the 2010 article made by (Borycki, Kushniruk, Armstrong, Ron, & Tony, 2010) that states there is a need for an overhaul of the current education of medical personal, in regards to the teaching medical personal, how to use the electronic systems, as these are now an integral part of the workday of a medical worker.

The fifth articles

As the addition of communities of practice was not part of the initial project scope, but as it later became intrinsic to the research. This segment will be treated differently than the above four. A more general work through of how communities of practice are used in a healthcare setting, instead of the format above where one article is the primary and the rest is used to underpin the point of the primary. The first article examined is (Ranmuthugala et al., 2011) How and why are communities of practice established in the healthcare sector? A systematic review of the literature.

Like the first article presented in this literature review, this is also a literature review, that shows the state the theory of communities of practice in healthcare, the reason behind this choice as one of the primary articles is that because of the type of article allows for a single examination of a broader range of perspectives. Another earlier literature review was found before Ranmuthugala et al. this paper, (Andrew, Tolson, & Ferguson, 2008) though only written three years before shows a major change in the state of research into communities of practice in healthcare. The older paper by Andrew, Tolson and Ferguson talks about a lack of research into communities of practice in healthcare, where the one from 2011 describes an abundance. The review identifies a shift in how communities of practice where perceived, where earlier papers on the subject would focus on information, and learning and how these where affected by the communities, the later articles where more focused on using communities of practice as a tool for improving practices, mostly the purely clinical, but the communities where also seen as a tool for streamlining practices throughout the communities. This type of improvement is not particularly relevant to the thesis, as there has been no shaping the communities in question beforehand, and as far as it has been ascertained there is no plans of shaping the communities retrospectively.

It is hard to determine of single method of communication when trying to ascertain how a community shares knowledge and solutions, and as such, this might be because of how much the types of communication and cadence varies between different communities. The main weight of research seems to be on how to assess the effectiveness of communities of practice, though it seems

to be almost impossible to give a coherent answer thanks to the complexity of the situation, and lack of control over the different variables in a healthcare contexts ensures that it is almost impossible to directly attribute a change to a community. Also the vast majority of studies reviewed by (Ranmuthugala et al., 2011) where of a qualitative nature, and only utiliced a single data collection method this was the case for 24 out of the 33 papers reviewed.

The review concludes saying that even though the current effort into understanding and measuring the effect of communities of practice, the communities vary so much in form a purpose that the current state of research is not enough to understand and utilise the communities as a tool, to improve healthcare. The review was conducted by no less than six researchers and consisted of going through over 6000 abstracts, which was narrowed down to 33 articles. the sheer scope of the review should speak volumes, and is it will be taken as a state of research from 2011 and backwards, the researcher therefore tried to find supplementary texts which where newer than the 2011 review. The Oxford Handbook of Health Care Management, (Ferlie, Montgomery, & Pedersen, 2016, pp. 255–279) has an entire chapter dedicated to communities of practice, this chapter reiterates many of the findings of the review above. But also, emphasizes other aspects, such as the different focus of communities in healthcare, where in corporate life it is about transcending the hierarchical structure, in healthcare there is a more general focus on spanning the divides between the different healthcare professions. They further state that there are two major routes taken when studying communities in healthcare. The first is how communities can be used to share and create knowledge, develop skills and to continue the education of healthcare professionals outside of an educational setting. The second are more concerned with how communities help build and maintain a professional identity. What is done in this paper seems to be in the cross-section of the two. The communities of practice are a way of better defining the flow of information in an organisation and the limits of them, and using the informal channels as a means of sharing and creating knowledge between different healthcare professions.

Like in the previously mentioned literature review, the main problem is that the approach seems to have been lacking a single direction. It has been expanded to try and encompass not only the emergent communities, but also mandated ones, that are forced on the practitioners, these do not form identity, nor shape the narratives of the participant. This broadening of perspective makes in almost impossible to generalize about communities, it also makes it increasingly difficult to outline what, and how they contribute to an organisation. Not only has the definition about what constitutes a community been moved, there is also no one form communities in a healthcare context, like the different myriad of different tasks and challenges which are present in healthcare, the communities will take form after these, which results in a myriad of different communities, in all

forms and shapes. As the communities spring from different roots, they serve different purposes, some will be an hindrance to organisational change while others might embrace it. (Swan, Scarbrough, & Robertson, 2002). This diversity might also cause divides between different and unaligned communities, that might knowingly or unknowingly work against each other's interests. It seems there is a lack of conformity in the research surrounding communities of practice, this could be because of their divergent nature, or simply because different researches have defined communities differently. This means that there would have to be work done to identify the type of community, its boundaries and so on before anything meaningful can be said about a community, and especially before it could be used to facilitate learning or change.

Article	Education	Organisational aspects	Efforts for/against change
Adopting electronic medical records in primary care: Lessons learned from health information systems implementation experience in seven countries (Ludwick, D.A. Doucette J.2009)	Before education begins, there must be a collective understanding of the existing processes, to understand the effect of a new system and therefore the educational demands. Previous experience with ERHs, affect the reception of a new system. The intensity, availability and timing of the education. The availability of on call experts improves user experience.	Large organisations with complex cultures should choose an incremental approach as this permits time to adapt to change. Some organisations pressure the employees, into changes they are not ready for.	The leadership must support the implementation and assigning champions led to a higher rate of success. The implementation has a higher rate of success if change management methods are employed.
A virtual platform for electronic health record EHR education for nursing students			Monetary and perceived gains from moving from a local to a cloud based system.

moving from in house solutions to the cloud (Kushiruk, A. et al. 2014)			Likely lead to improved performance.
Critical Issues in EHR Implementation: Provider and Vendor Perspectives (Palvia, Et al 2015)	Integration between current work processes, it system, and the new system minimises friction and need for education.	Security is often overlooked as a key factor. Communication between vendor and costumer is often misunderstood. The physical infrastructure has a direct effect on the implementation process. Difference in which of the seventeen issues, the provider and the costumer finds important.	Cooperation between the vendor and the provider is essential. Recruit champions, to aid in the process. Three implementation steps, seventeen issues applicable on each step. Among others these; getting everybody on board, separate support systems for each type of user, nurses, physicians, and support staff.
ELECTRONIC HEALTH RECORDS IN THE ACADEMIC WORLD (Leapaldt, M. 2016)	Poorly trained users can lead to errors in decision-making. Ease of use makes even the inexperienced comfortable with a new system. Formal training will help alleviate the anxiety. Sense of security and a feeling of accomplishment in	The users experience with EHRs are influenced by their mentor's way of using such a system.	Ease of use is a key component. Cloud based storage is helpful as it makes it easier to share experiences both geographically and between different types of healthcare worker. Largest barrier to use of EHRs is often staff anxiety. Slow feedback leads to mistakes, and

	new skills learned. Etiquette training to reduce loss of patient-care-giver interaction		repeated.
Communities of practice in Healthcare	Communities can be used to facilitate knowledge creation, and sharing. Communities can also hoard knowledge and become gatekeepers to essential knowledge.	Communities vary from place to place, this not only in form but also how they are defined. Communities can work against each other both knowingly and unknowingly	Communities can work both for and against a change, depending on the approach and the community.

The papers presented above should help give a clear picture of the current state of research on implementation of EHRs, and the state of communities of practice in healthcare. The former focus on how to make an implementation of a EHR a success, the later focus mostly on trying to identify and use the communities as a tool. In more than one of these articles the current state of research into the topics of EHRs and communities of practice is described as lacking, or if not lacking then lacking in direction in the case of communities of practice. This is clear as one of the articles states that the use of ICT systems prevalent throughout the medical care sector is not addressed in general, when educating nurses, this also implies this is not an active part of the identity formed during their education and therefor outside the realms of their Communities of practice during their education. It seems a general trend to point out that there are problems but not much is done to solve them.

Looking at the research paper presented by (Palvia et al., 2011), the focus is on both vendor and costumer. Instead of finding out what makes an implementation process successful, the focus is on finding out what the different stakeholders find the most important, this might indicate what makes an implementation successful but is by no means a given. The seventeen steps presented in the same article, will be very useful, to supplement Kotters change management steps. The same is the case in the article by (Kushniruk et al., 2014), where the focus is on the beneficiary effects of using EHRs, the focus is mainly on the least important aspect, at least when looking at the problem from a

purely academic perspective, the monetary. The actual effects other than less money spent is glossed over as being the less important aspect, or at least they have no part in the investigation. The same seems to be the case when specifically targeting communities of practice, the focus seems to first identify and then change a community to suit the needs of the organisation, this could have been very useful to this thesis, but as it seems no one

The researcher has tried to find mostly newer articles, this is not the case with the article by (Ludwick & Doucette, 2009). This article is also a literature review, which is even quoted by the (Palvia et al., 2011) This article has been chosen as it sums up the research conducted into the implementation of EHRs until its publication in 2009. In the case of communities of practice, the two larger articles are very new, but both have an older foundation, which was also evident as parts of this has been used to underpin statements made by the newer articles. There seem to be a significant gap in research surrounding the implementation of IKT systems in a healthcare context in the later years, also touched upon in two of the articles in this review. This gap seems to be broken the last few years, as quite a few articles touch upon the subject in recent years. In the case of communities of practice the opposite seems to be the case, as to many definitions makes it almost impossible to navigate what is meant by a community of practice in a healthcare context.

That there is a wide variety of different interpretations is not deemed to be a problem in regards to this thesis, as the communities will not be sought identified, all that is needed in the context is to verify that they are there. It could even be argued that some of the work has been done for the researcher, as that communities in healthcare vary greatly has been confirmed by the existing research.

Significance

Even though there is an abundance of literature surrounding the implementation of EHRs and even CMSs in general, only a fraction seems to consider the educational aspects, and out of those there is a lack of research on the relationship between education and the communities of practice. This implementation is the largest of its kind in the Danish healthcare sector, and the system will affect every patient interaction in the two participating regions. This thesis is meant to discover and map a previously unexplored aspect of the implementation process: how the organisation affects the educational process in regards to implementing CMSs in a healthcare context. This paper will be focused on the Danish healthcare system, but its findings may also be applicable in a more global context. As there seems to be a gap in the research in this area, the aim of this thesis is to fill this gap building on current theories on education and change management.

Method

Philosophy of science

This paper uses various theories with different backgrounds, roots, core philosophies and how these interact is going to be the focus of this segment. The two primary types of theories used here are change management theories and learning theories, more specifically Wenger's work in communities of practice and how they relate to the learning process and an adaptation of Kotters theory on successful implementation, will serve as the main theoretical points of reference. The origins of the Wenger's theories of communities of practice, have their roots in the social sciences. Wenger was the one to coin the term Communities of practice together with an anthropologist named Jean Lave. Wenger was studying apprenticeship as a learning model when he discovered that the relationship between student and master was much more complex than anticipated and affected by a wider variety of variables than first expected. The theory of Communities of practice was built around the idea of apprenticeship as a learning form,(Lave & Wenger, 1991) but it was soon found to be applicable across a wide spectrum of learning situations. This was expanded upon in a later book by Wenger called communities of practice, learning meaning and identity, where the terms where fleshed out and given a more robust theoretical foundation, a foundation that is still being built upon to this day, and as such, newer research featuring communities of practice, by Wenger will be used when available.

The theories of change management have much newer roots and are based mostly in business theories. These theories are built with the explicit goal of understanding the process of change and how this is perceived and received in a professional context. Although change management today is mostly perceived as a business theory. It too, partially has its roots in anthropology Arnold van Gennep's work on rites of passage in various cultures across the world served as the basis of change management theories, However, van Gennep believed that change was a gradual process. Kurt Lewin was one of the foundation that modern change management theories are built where he introduces the concept of change being a manageable entity and bears many similarities to Kotters theory of change being used in this project. That both theories share anthropologic roots, will ease the operationalization, that should merge the two theories into a larger framework for the analysis, both have their origin in the study of man, but both have evolved to study man made systems instead. The theories and their use will be elaborated on in a later segment of the methodology.

Phenomenology

The use of phenomenology is supported by the anthropological roots of the used theories, as in phenomenally there is no clean truths in the form of true objectivity, only subjective interpretations

made by the people involved. That means all phenomena observed in the phenomenological tradition will only be considered from the observer's perspective, as it is impossible to disregard the aspects of the self when observing, it is possible to try to remain as unbiased as possible, but it is not possible to separate the person observing from the observations.

Ethnography

To answer the questions of the problem statement, there is a need to understand not only the individual motivations of the nurses, but also the healthcare professionals as a group, here an ethnographical approach will help us try to understand the cultural and societal contexts in which they work. the choice of merging two philosophies of science, is the result of an almost hermeneutic approach to the problem, first the individual's role and work must be bared, for this an ethnographical approach is not appropriate, as it mostly studies the movement and challenges of a group of individuals(Hammersley & Atkinson, 2007). To both get an understanding of the individual and through the individuals understanding the group, is the reason for meshing the two philosophies. To use the best parts of each, the understanding of the individual, through phenomenology, and through understanding the individual, to help get a better understanding of the context in which they reside.

The nature of the observations.

When approaching a field, there is often interference with the actual goal, as is the case with this study. (Hammersley & Atkinson, 2007, s. 46) The researcher's original impression of the education program for Sundhedsplatformen users was that the curriculum was insufficient to adequately train the Sundhedsplatformen users, based on a preliminary interview with one of the educators. However, during the classroom education sessions, the researcher observed that other factors seemed to have the potential of playing a bigger part in the learning of the course participants. For example, there was a vast difference between the attitudes of participants from different hospitals towards the new Sundhedsplatformen and the training topic and this was also displayed in their behaviours during the training sessions. One group would openly question the systems and the need for change, while the other group was meek and respectful. The planned case study was replaced with what is presented, as a direct result of the observations made in the field.

During the observations to keep interference to a minimum, the researcher tried to find the most unobtrusive seating and interacted very minimally with the students and teachers during the classroom sessions as to avoid distracting the students and teachers and to allow for the student and teachers to behave in a natural manner (i.e. as they would without an external observer) as much as possible. However, the presence of an external observer would still affect the behaviour of the

individuals who are being observed to some extent (Hammersley & Atkinson, 2007, s. 41) despite the measures taken to minimise this and this would also be evident in the presentation of the research. Every round of observation would start with a quick presentation on the topic of the research to everyone present at the classroom session

This presentation would outline the nature of the research. During the presentation, the researcher would explicitly state that anyone who is not comfortable with being observed can opt out and alternatively, the researcher would stop the observation session and leave the room if multiple participants are uncomfortable with being observed during the classroom session. This approach was not only to put them at ease but also to address any lingering doubts about the nature of the data gathered by the researcher during these observation sessions. This approach was chosen as it would allow for a mode of consent while still being less disruptive to the classroom sessions than asking the respondents to read and sign a consent form.

No matter how well you explain the intentions of a study, there might be lingering doubts, when confronted with an outsider. This might result in skewed results as the respondents might not cooperate to the degree necessary for a successful study (Hammersley & Atkinson, 2007, s. 48). However, in this case, this was not a problem as the observed parties were not actually responsible for their own time, and therefore, could not actively sabotage the observation sessions without compromising their own education. This coupled with the format of the education curriculum which placed a strong emphasis on class participation allowed the researcher to remain relatively anonymous as soon as the education started.

The ethnographical approach will be coupled with the interviews. Ideally, the interview participants would be those who participated in the observed classroom sessions to be able to pair their perception of the new Sundhedsplatformen and their behaviours during the observed sessions. To recruit interview participants from the observed sessions, the researcher left a form on educators' table for volunteers to leave their contact details so they can be contacted for a follow-up interview. However, this approach was unsuccessful as none of the classroom session participants left their contact details to participate in follow-up interviews. The reason for wanting the same respondent group are twofold, the first being that the researcher would have observed their education, and as such no aspect would be an unknown, and therefore it would be easier to formulate an interview guide, the second is that even fleeting social ties like seeing each other before puts people at ease, and makes them more willing to voice actual complaints (Hammersley & Atkinson, 2007, s. 48). As this was not possible, the interview guides must be open for change, as one classroom session, even one based on the same subject material, may not be identical to another educational session. This is also the reason why the researcher made sure to observe different educators, and even different

subject matters presented by the same educators to get a better feel for the type and style of education, independent of the educators' effect on the education. Interview participants were then recruited through the press contacts for the participating hospitals (Herlev and Gentofte) and interviews were either conducted face-to-face or over the telephone. The interviews were conducted approximately six months after the launch of Sundhedsplatformen to allow for interview participants to fully integrate Sundhedsplatformen into their daily workflow and to have complete familiarity with the platform. This allows the researcher the opportunity to have a full view of the evolution of the interview participants' views towards the new platform over time and the interview participants can form an informed opinion on the impact of the educational process on their full experience with the new platform.

Access to the field

The theory of gatekeeper's address some of the problems in gaining access to the field, in this case the gatekeepers have been a variety of different characters; initially the educator through whom the initial design and idea originated. The role was then passed down the chain of healthcare professionals and surrounding staff. Without permission, there would be no opportunity to study the education. Gatekeepers serve not only as gateways to a field, but also as facilitators (Hammersley & Atkinson, 2007, s. 49). The initial contact with one of the educators who was a nurse leading the peer-led classroom sessions, was made in an informal setting at a dinner party, which was followed up by a telephone conversation. Access to interview participants required for the next stages of the research was done by contacting the hospital press contacts for the participating hospitals, explaining the purpose of the research and nature of the interviews. This contact was made via email and followed up by a telephone conversation. The reason for initiating with emails, was to allow for the press contact responsible to answer in their own time and therefore, minimise inconvenience to the press contacts and to allow for a controlled burst of information as unscripted human interaction often becomes more chaotic, but as this yielded little to no results, the situation was escalated into phone calls after a few weeks of unsuccessful email communication.

Considerations

Using qualitative methods for data collection creates the danger of bias based on the subjective views of the researcher. To minimise this, the observations of the classroom sessions will be supplemented by follow-up interviews with a section of the interview devoted to exploring the interviewee's perception of the classroom sessions. This will then serve as validation for the researcher's observations. In addition, the observational notes focused on the behaviour of the students and rarely delved into the realm of feeling and motivation, as these types of observations are more susceptible to the subjective views of the observer. To prevent the interviews from being

affected by the researcher' subjective views, a semi structured interview guide consisting of a list of interview questions addressing various sub-topics relevant to the research was formulated. Potentially leading questions were eliminated from the interview guide and interview questions were kept as open ended as possible without straying from the interview topic as to minimise the chances of interviewees assuming there is a 'correct' answer to the interview questions and therefore, modifying their answers to fit this. The interview guide was refined to meet the afore mentioned objectives of minimising researcher bias by conducting mock interviews with sample interview participants recruited from the researcher's field of study.

Ethical considerations

As this study is conducted in a healthcare setting, there is the possibility of additional moral and ethical considerations to adhere to. However, this paper does not involve patients or specific data generated by patient care, directly or indirectly, and therefore, no additional ethical or privacy approvals are required. The primary users, which will be observed and interviewed are healthcare professionals who are users of the newly implemented Sundhedsplatformen. As the focus of the paper and interviews were centred around the users and the education in regards to the implementation of Sundhedsplatformen, patient confidentiality is not compromised via these interviews. However as some of the nurses have expressed a need to be anonymised, their names will be changed, and their specialities will also be removed and replaced with different ones, and what hospital they come from will also be removed from the transcriptions, all said data will still be available to the researcher. This should be enough to ensure their anonymity, this is enough as nurses are part of a large enough vocation that any identification based on their job description is almost impossible. Anonymising the teacher as they are a much smaller group is more difficult, as they are a much smaller group and therefor it is much easier to identify a single individual, they might also be the only ones within their specialisation to become an educator, that being said, the same considerations will be taken in regards to the teachers, furthermore the transcriptions with the teacher will be subjected to an additional round of scrutiny, after finishing the first, this is in an attempt to obscure the origins and specialties of the teachers.

Research design

This paper can be divided into three distinct segments which are also inter-dependent where the previous segment streamlines and shapes the direction of the subsequent segment. For example, the ethnographical approach used in the observation phase of the study resulted in a complete change in direction on the research topic.

Observations

The first phase of this paper will focus around the initial observations of the education, where the researcher assesses the feasibility of the research project and to ascertain whether the current course would yield interesting research. As mentioned previously, an ethnographical approach was used in the classroom observation phase of the research and was based on principles outlined in Hammersley and Atkinson's book 'Ethnography: principles in practice' (2007). As it is not possible to become an active part of the field, the researcher tried to just observe in the least disruptive manner. The nature of the observed education allows for this as the healthcare professionals were not in their usual surroundings, and in a way the researcher was as much a part of this new dynamic as the students. This was especially the case when the group of students were diverse, with respondents from different hospitals or different branches within the same hospital. The nature of the observational phase made this segment take more of an ad-hoc approach where the primary goal was to build a framework based in the observations instead of allowing the researcher's preconceptions and prejudices dictate the initial study design choices. This seemed to be the optimal choice, as the perspective of the paper was completely changed from being about the quality of the education to trying to ascertain whether the different branches and hospitals have the same approach to the education and if the education and system were able accommodate these approaches and differences when the system went live. To answer these questions, the second phase of the study focused on the interviews with healthcare professionals who have attended the educational sessions and are using Sundhedsplatformen in their day-to-day jobs.

Interviews

The second phase was formed by what was observed in the first phase, and attempts to build on the observations and learnings gathered in the first phase. This will be done using interviews as the primary data gathering method where the interview questions were designed to answer the research question which was formed based on the learnings from the observational phase. Therefore, the interview questions will still be centred around the education and the implementation of the platform, specifically how nurses from different hospital branches perceived the education and how they have integrated Sundhedsplatformen into their daily workflow. The data would have to be analysed to gain a new insight and therefore this step is mostly based around the interviews and an analysis of the observed data. The interview phase has the intent of specifying the previously observed factors and is meant mostly to gather the right type of data as observations can only show behaviour. The interviews will allow us to question the process behind this behaviour. Originally the idea was to conduct a larger focus group interview with a group of nurses. However, this concept was not feasible due to a lack of participants as the primary gatekeeper (the hospital

press contact), through whom the interview participants were recruited, would only allow for contact to three different branches and only one nurse from each branch. The questions will be loosely based on the theories referenced in this paper, but still leaving some room for improvisation during the interview if required. This is done so that the answers will make sense when analysed through the lenses of the used theories. There will also be interviews with educators in this phase as they can provide important insight into what were the thoughts and ideas behind the chosen implementation process. As they are also likely to have a different view of the educational process than nurses who have only attended the educational sessions as 'recipients' of the education, they could provide valuable insight into any differences as to how the education was received by the different branches. This phase would then act as a stepping stone for the last phase which will consist of an in-depth analysis of the data gathered through the interviews, supplemented by data gathered in the observational phase and the educational materials used in the classroom education sessions.

Data analysis

The data analysis phase is where the gathered data is analysed, discussed and in the end a conclusion will be drawn from said discussion and analysis. Where the previous phases all involved outside influences, this phase will only be the researcher delving deeper into the already gathered data. This will be done using a theoretical tool made by operationalising the two main theories into a single device for analysing data. The tool will be a merger of Wenger's learning theory, communities of practice, and the more business oriented change implementation theories of Kotter. Both are well known and respected theorists, and even though their fields are far apart, the theories both a have strong focus on the process of change, this will be the focal point of the operationalisation. Wenger's theory is focused on how group learning takes place, one of the main points of the theory is that the communities of practice expand and develop their practices (the domain of the COP) through activities. These activities are what incorporates, solidifies and develops knowledge and practices in a COP. Some, but not all, of these activities coincide with the steps put forth by Kotter that describe how a successful implementation is executed. Since many of the activities and steps in the theories are very similar, this will ease the operationalisation and ensure that this merger will make sense as a single theoretical tool. The tool when finished will be used to determine whether the education, materials and teaching form was made with not only a successful implementation in mind but also whether the different workflows and temperaments of the different hospitals and branches were considered designing the education curriculum and EHR platform. The preceding steps be facilitators for this step which focuses on theory and data analysis, as they pave the way for an actual analysis of the gathered data. This analysis will then be the base of a discussion on the implications of the

findings of this study and how it compares to the current literature on this topic. This will in turn lead to a conclusion on whether the change implementation approach used in rolling out Sundhedsplatformen was sufficient in addressing the diverse needs of its end users and if the pitfalls encountered in the American experience were avoided in the Danish rollout of a similar EHR platform. The operationalisation of the theories will be further discussed in the theory segment that follows.

After presenting the methodical considerations that has shaped this paper, the next segment will be a more though presentation of the theory used, and after a presentation the operationalisation of the used theories will follow.

Theoretical considerations

This segment will present the theoretical framework used in this thesis, as well as establish how the theories will be turned from academic entities into a useable tool to fit the stated goals of this thesis.

Communities of practice

A community of practice is created by people who participate in a collective learning process where the community is a group effort at getting better at a specific task or learning how to tackle a problem more efficiently. These networks can take many forms, but in this case the focus is on COPs in a healthcare setting where there is a vast diversity amongst the problems and challenges faced by various groups of healthcare providers (e.g. the difference in practice between doctors and nurses), even if they are in the same hospital or branch. Therefore, within a specific speciality and hospital, there can be multiple communities of practice. The community of practices studied will be the nurses from Gentofte and Herlev hospitals. Another core tenet of COP is that there must be regular interaction. The different groups of healthcare professionals might be regarded as COPs as there is a municipality wide intranet for all nurses, on top of Facebook groups and similar entities. Therefore, the scope has been limited to the specific group of nurses, and in addition, only Herlev and Gentofte Hospitals have implemented the new EHR platform at the time of writing.

COP come together out of necessity or specifically for learning purposes. In the case of the nurses studied in this research, the communities of practice are built around sharing a common practice in their day to day work. A COP is characterised by three crucial aspects (reference):

The domain

The realm in which the COP shares interest and every member of the COP must have some sort of interest. Every member of such a domain must also share some level of competency as the domain is the place in which the learning takes place and builds an identity for its members as part of said community. The domain is not restricted to academic or professional subject matters as it can also take the form of a hobby (e.g. a group of train enthusiasts).

The community

This relates to the members of the domain: players in any domain that interact and learn from each other, share information and build relationships. There is a sense of responsibility between the members even if they are not beholden to each other in terms of a hierarchical structure. Such a hierarchy might exist but is not necessary, as with the example of train enthusiasts above. The common interest of the group does not necessarily have to be a group activity as it is possible to

practice these activities alone, if there is learning from each other's' experiences and discussion driving the learning.

The practice

The last characteristic of a COP is that all members must actively partake in the common activity or interest which binds them together as a community as that is how new knowledge and experiences is built within the community, where these new learnings can be shared. Such a practice takes time to build and can be a conscious effort at building a community but this also happens commonly simply by continual interaction within a group that shares an activity, or in the words of Wenger, a practice.

The combination and interaction between the three characteristics above is what constitutes a community of practice, some of the activities and practices are shown in Table 1 below to give a better idea of what type of activities define a community.

Problem solving	"Can we work on this design and brainstorm some ideas; I'm stuck."
Requests for information	"Where can I find the code to connect to the server?"
Seeking experience	"Has anyone dealt with a customer in this situation?"
Reusing assets	"I have a proposal for a local area network I wrote for a client last year. I can send it to you and you can easily tweak it for this new client."
Coordination and synergy	"Can we combine our purchases of solvent to achieve bulk discounts?"
Building an argument	"How do people in other countries do this? Armed with this information it will be easier to convince my Ministry to make some changes."
Growing confidence	"Before I do it, I'll run it through my community first to see what they think."
Discussing developments	"What do you think of the new CAD system? Does it really help?"
Documenting projects	"We have faced this problem five times now. Let us write it down once and for all."
Visits	"Can we come and see your after-school program? We need to establish one in our city."
Mapping knowledge and identifying gaps	"Who knows what, and what are we missing? What other groups should we connect with?"

Table 1 : (extracted from Etienne Wenger & Beverly, 2015)

As mentioned before, it is very dubious whether all healthcare professionals as a singular group share enough to be considered a COP due to the very diverse nature of their jobs even though it may seem quite similar at a superficial level (e.g. nurses and surgeons both attend to patients, however,

their roles in patient care are quite different). The nurses with their shared intranet most certainly qualify, there might be more than one COP in regards to the nurses, as they share news and practices. Communities come in all sizes and shapes and it is possible to be part of a multitude of communities as some will have overlapping interests. Such is the case with the nurses, as they most likely are part of multiple COPs as the different branches of an hospital share a very specific interest and therefore form smaller COPs based on their different sets of challenges during a workday. This is one of the main point of this thesis, which is to see if these smaller COPs were taken into consideration when designing the implementation process and by extension the curriculum and educational material.

The existence of COPs is not a new thing even though the term was coined relatively recently. Everyone is part of a community of practice and will drift from one to another as jobs are changed, hobbies are taken up or abandoned and most people are a part of multiple communities at once. The core of this theory allows for a view of not only formal learning institutions like academic organisations, but also more informal and less structured practices of hobbies and other non-structured learning environments. In a community of practice, every member learns from each other, albeit not necessarily to an equal extent as some will have more expertise then others in certain areas, but the possibility of learning is always present and even an expert can occasionally learn from a novice.

Application

The active management of COPs allow an organisation direct the flow of knowledge. This can be done by formalising already existing COPs: this will allow a group to take responsibility for what is learned and direct the knowledge gains in a helpful direction that can help improve productivity, build bridges and connect people across both geographic and organizational boundaries. The way a community of practice is structured does interfere with the classical hierarchical structure of most organizations, as many of a COP's defining characteristics are hard to maintain when a previously autonomous COP is made to fit into a hierarchical structure. The relatively informal structure and how every practitioner is equally valuable in their contributions to knowledge makes it impossible to maintain tight control over the direction of a said COP and any level of bureaucracy can also be a hindrance to the fast and informal sharing of information as extensive paperwork or procedural demands slow the sharing of knowledge. The context in which communities of practice is most fitting might be education but the theory of COPs is not very focused on an instructive teaching style which is how education is traditionally disseminated in schools and as such is not much use in the direct teacher-student relation. When delving deeper, the teachers at a certain school might share ways of dealing with particularly bad students, which parts of the curriculum worked best, or what

methods they use in their teaching as the nurses' COPs in their day to day work are centred around the branch or hospital they are working in, this thesis is focused on their daily use of the newly implemented Sundhedsplatformen as that is where we can see different COPs in action. COPs can be self-organizing but, as mentioned earlier possible to shape and cultivate COPs through leading figures in an organization, but through leading members of the community. Whether this is the case with the nurses will be investigated during the interviews.

Kotters change management

The other main theory that will be used in the tool that will facilitate the analysis of the existing data is Kotters change management model. This theory and its eight steps will be used to supplement the theory of Communities of practice, with the goal of not only see if the existing COPs are different but also to gain knowledge about how well the implementation was handled at each step and how successful Sundhedsplatformen was applied in the day-to-day work of the nurses. The foundation of Kotters change management theory is an eight-step process that if followed, should cause an implementation process to be successful. A short presentation of the steps follows, with a detailed exploration of the steps which are of relevance to the thesis.

The first and arguably most important step is to create a sense of urgency. This is done by convincing the group affected by the change that this change is necessary. This helps with the initial momentum of the change implementation and minimises resistance. It can be done by showing that there is a need for innovation, either through the data collected, or showing the new opportunities that could be explored given change. Kotter states that for an implementation to be successful, almost 75% of all affected must see a reason for this change and welcome the proposed change. This step can be done well in advance of any actual implementation process. Whether this has been the case with the nurses remains to be seen and the initial observations showed that the nurses displayed a healthy scepticism of the need for a new EHR platform. The interviews should provide valuable insight into how healthcare personnel were groomed for the new EHR before the actual education and implementation took place. This step is also where key obstacles and challenges are identified, be they technical, procedural or even human. (Kotter, 2012)

When a sense of urgency has been created, the next step is to create a working group that will help keep the implementation on track and maintaining a sense of urgency within the affected community. They will be the primary change agents of the implementation. They should therefore consist of key players from all levels and branches of an organisation and not be restricted to people in formal leadership roles. Holders of crucial information or people with social and political clout amongst the COP, might be in a better position to facilitate a staying change than just the

management level. Once these key players are identified, they must be committed to the change, as if these agents of change falter in their positions I will undermine the entire process.(Kotter, 2012)

After creating a force for change, both in the form of obtaining buy-in from the individuals who will be affected by the change but also in the form of a group of powerful individuals to keep both urgency high and the change on track, the vision must be simplified into something easily understood and remembered, or as Kotter puts it, “create a vision for change”. This does not necessarily mean that the proposed change itself must be simplified, just that the vision created surrounding the change should be easily understood and represents the overall values behind the concept of the change. Kotter insists that any member of the change coalition should be able to describe the vision in five minutes or less and the coalition must be well versed in the presented vision, as they are the outward face of the proposed change in the organisation.(Kotter, 2012)

The next step is to communicate the vision from management and the coalition to the rest of the organisation. The message must be, as stated above, clear and powerful, but this alone is not enough. The vision must be also constantly reinforced, as it might get lost in the daily hubbub of an organisation.

This is done by not only presenting the vision formally but also by talking about it at every opportunity and making the vision something that is part of the daily routine of the affected. It must be kept fresh in everyone’s mind constantly for them to respond to the vision which means that not only should the vision constantly be communicated, but the coalition should also make the change believable by demonstrating the behaviour associated with the change. When communicating the vision, it is also important to mitigate any anxieties and concerns that might arise. The vision must be ubiquitous and shared throughout the organisation.

Once the vision has been established and made pervasive throughout the organisation, the next step is to remove obstacles; identifying any discontent or processes that are harmful to the proposed change. This can be done by going through the organisational structure to ensure that the structure is amenable to the envisioned change. Another approach is to identify parties opposed to the change and addressing their reasons for being opposed to the change, where the purpose is to get them to buy-in to the proposed change or to work out a mutually agreeable solution. This step can be broken down into two segments as the identification of nay-sayers and structural problems must come before addressing said issues.

The next step is creating short term wins; giving the affected parties a sense of success in their endeavours regarding the implemented change is key in building momentum. To have the change perceived as an insurmountable or impossible task is a sure way of losing support. Therefore, it must

be ensured that there is a sense of accomplishment attached to the change, where every participant in the change process feels they are contributing and learning. If done right, each win could be a source of further motivation for the entire affected group. This step also allows the opportunity of obtaining buy-in from parties who may have been critics of the change as the successes of the implementation may swing them from being critics to accepting the necessity of the change. The coalition for change must be very careful in choosing and administering the initial task so they would bring about a feeling of success, as if these initial targets are not successful, it may have a negative impact on the implementation process.(Kotter, 2012)

Kotter believes that many failed changes are the direct fault of declaring an implementation to be a success before they are solidified into an intrinsic part of the organisation. This happens when the implementation is an initial success and the coalition for change sits back and rests on their laurels after achieving the above mentioned quick wins. As they are only the first steps on the road to a long-term change, the initial success must be followed by others. A way to ensure the continual success is to be prepared to adapt the proposed change implementation plan to fit the current situation. Each consecutive success can be used not only to create momentum for the application of the change, but also to constantly gauge and improve on the change. This is done by analysing the results of each success, ascertaining what needs improving, but also to find what went right as to cement these parts of the change. (Kotter, 1995)

The final step is to anchor the change into the organisational culture. To ensure that a change stays permanent, the culture of the organisation must either be adapted to incorporate the change or the change must be constructed in such a way that it fits into the already existing culture. This is only possible if the coalition for change has succeeded in showing that the change is valuable to the organisation and therefore has merit. this is not only a question of whether the vision and change is useful but also on how well the change in received by the organisation. If there are still dissenters at this stage that have yet to be convinced that the change is necessary and beneficial, even if it is objectively successful, this can prove problematic for the anchoring of the change. This is done in much the same way as anchoring the vision, only this time instead of just a simplified vision, the change must now become the vision. This is maintained by framing the change as a positive and by incorporating it into as many aspects of the daily workflow as at all possible. This will help in cementing the change as part of the organisational culture. It is also vital to maintain the coalition through this process as losing members or them becoming complacent at this stage can hurt the cementation of the change. It is therefore important to keep the coalition strong even for these last steps in the process. So, it is advisable to replace lost members and keeping existing members continually motivated to be champions for the change. In addition, it is important to make the new

and improved culture part of the curriculum of any training program, be they for new hires or retraining of staff. Managing change is a long and hard process where it is hard to define an actual end to the process of change. However, with the process proposed by Kotter, the chance of implementing a successful change increases significantly. (Kotter, 1995)

Critic of theory

Here the two main theories will be criticised and any flaws will be revealed, as with the above description of the two theories, Wenger will be treated first, and Kotter second.

Wenger

Wengers theory of communities of practice is often criticised for being incomplete, or being naïve in their approach to learning. (Kupferberg, 2004), that he does not believes that the communities of practice are as ubiquitous as Wenger presents them. He believes that Wengers interpretation of communities is to narrow and this has led to a misreading of the professional landscape. One of the primary tenants of communities of practice is that a professional identity is built through interaction within a community, Kupferberg on the other hand believes that this identity is built long before the first contact with a professional community, he underlines this by arguing that individuals that might become an asset to a community later, are sometimes identified, and cultivated before they set foot on a professional arena.(Andrew et al., 2008) They state that kufperberg also believes that the overall definition of communities need to further divide the professional and nonprofessional communities, and sees Wengers idea that motivation to learn is an inherent part of humans as naïve, he believes motivation is more complex than Wenger makes it out to be. This does not reflect the researcher's interpretation of Wengers theory. Wenger understands that motivation is not solely to learn, but also because the consequences of learning are understood. It was stated as early in Wengers theory that part of the motivation in a community of practice is seeing where you will end up. An example is the origins of the theory, which has its roots in the master apprentice relationship. Where the apprentice looking at the master's capabilities and all that follows of prestige and monetary benefits, will be motivated by this, so in essence the motivation to learn can be affected by the communities in which a person participates. A community is in turn affected by its participant, therefore it stands to reason that as communities affect the motivations of the individual, the individual in turn change and shape the motivations of a community. Concerns like these are mirrored by many researcher, the problem being that though many agree there is a problem with the lack of complexity in Wengers theories, there is no consensus on how to most efficiently build on this. Most critics of Wenger seem to think that the core of the theory is valid, but that it has an incomplete or naïve approach to the world. (Hughes, Jewson, & Unwin, 2013) much

like what was discovered in the literature review, there seems to be no clear consensus on where the theory should go next, or how best to supplement it, as each researcher sees different aspect of the theory to be the problem. That the initial theory as presented in (Etienne Wenger, 2008) communities of practice, meaning learning and identity seems to be considered incomplete, will be mitigated by using newer research both done to alleviate some of the general critic points, this newer literature, still mostly by Wenger will help build upon the already existing concept of communities of practice, by introducing new knowledge and terms to supplement the original theory.

Kotter

The critic most often levied towards Kotters theory of change management is that it is common knowledge, that and not being flexible enough to accommodate the realities of ever changing organisations and their desire to control and manage change. One of Kotters critics *"agree with most of the ingredients in Kotter's model, but not its recipe."* (Dinovenk, 2014) he argues that it is not possible to plan a complete change management progression beforehand, and that the linear approach of Kotter is counterproductive. That each step is not undertaken as one after the other, but will be in a constant state of flux affected by the previous and what comes next. He also argues that some of Kotters steps are misguided, such as creating a sense of urgency, which in his optics are less important than instilling a sense of priority. *"As sustained urgency will lead to exhaustion"* he further argues that the model of Kotter would have to be adapted to each new situation, as in some organisations creating and communicating a vision is key to success, but in others the effect of sustaining a vision is almost negligible, and that the short-term planning can be as important as the broader strokes used in Kotters theory. There is also a problem with keeping a coalition in check which Dinovenk addresses, each member of the coalition will have their own agenda and therefore pull the change in a direction that suits their needs. This seem to be a purely theoretical consideration as Dinovenk does not back it up with gathered data. The main point of criticism is that many see Kotters model as an end all solution to change leadership, but in Dinovenk´s view, taking into consideration the organisations needs and placement, should help tailor the theory to each individual change management course. As the tailoring in this case should have been done by the implementing parties, and all that is done during this thesis is trying to look at whether the different steps seem to have been taken into consideration, most of the critic will not directly impact the way change management is used in this paper.

The two theories share a similar line of critic, that they are too broad and not elaborate enough, but there seems to be a consensus that at their core they are interesting and true concepts that just needs to be elaborated and researched to yield a more complex

theory, in this paper their simplicity makes what comes next possible. Two more complex theories might not mesh as seamlessly as is the case with these two. Most agree that the core tenants of both theories are true, and as these will be the focus of the operationalisation below, the hope is that the weaknesses of both can be turned to a strength

Operationalisation

The two above mentioned theories have many common points and should mesh into a single operationalised tool. One of the core tenets of a community of practice is that it is an entity which is possible to exert some control over, but complete control is either not possible or at the very least, will stifle the learning potential of the Community. On the other hand, Kotters theory of managing change calls for complete control on every step, this is the primary contradiction found by this researcher. This issue can be mitigated by letting the community of practice be part of the implementation process from the beginning. This would mean that before any implementation processes would take place, the key members of the community of practice would have to be identified and included. This thesis is built on the assumption that the nurses share a community, at least in their respective branches. This was very much verified in the behavioural patterns that differed greatly with the user group being educated. This was also confirmed through the literature review. Therefor this paper will only in a superficial manner confirm the existence of a community, and focus more on how these communities affect the outcome of an implementation. The way this operationalisation will be done is using Kotters' steps as a framework, as these are more readily quantified, this framework will then be fleshed out by using Wengers' learning theory. The format of Kotters' theory makes this the approach of least resistance.

Therefore, the initial step is going to be the first step in Kotters' change implementation theory. In the context of this paper, steps of Kotters theory will be treated only peripherally. This approach is to understand whether the communities of practice where taken into consideration when planning the implementation, but will also serve as a means of gathering possible best practices on how the implementation process should have been carried out when the different COPs are taken into consideration.

Step one: creating urgency

How does one create a sense of urgency in a community of practice? Change in a in COP is mostly created by including new members, but can also be brought about by the addition of new knowledge brought into the COP by already existing member. This is done as the community must gauge whether this new knowledge, in this case a piece of technology, is going to

be incorporated into the existing knowledge base of the COP. The members of the COP must therefore see an advantage, as COPs constantly strive to better their knowledge base and problem-solving skills.

"Because communities of practice are voluntary, what makes them successful over time is their ability to generate enough excitement, relevance, and value to attract and engage members."(Etienne Wenger, McDermott, & William, 2002)

This means that the environment of the COP allows for excitement to be generated internally automatically once the COP members realise the value of the proposed change. This can be helped along by support from management or the realisation that there is an immediate problem, which the change can help address.

Step two: create a coalition

The coalition for change is already in place as a COP is capable of absorbing new knowledge and distributing it among its members. This step coincides very well with the theory of Communities, and reinforces the idea that management alone cannot be the cause of a change as the key players of the Community must be identified and brought on *board to ensure the success of any implementation. A community of practice has many forms and layers of leadership and these must be identified; formal leaders play a part but the informal leadership of a community is at least as important for a change to be successful. There are three different levels of participation in a community of practice, there is a peripheral group, which rarely participates in the activities of the community; these are uninteresting as they will go along with what the more active members and generally have little power to cement or affect a change. The next level is the active group who will attend meetings and have input into the running of the community while only being occasional users and contributors of the community. This group holds around 15-20 percent of the community. The core of the community are the most active members who contribute to the COP's knowledge base regularly and therefore are instrumental in shaping a community. This group is relatively small in terms of people, as they only make up between 10 and 15 percent. This last group often also holds a coordinator who is the primary leader of the COP. As the name implies the coordinator is instrumental in the creation and coordination of a COP.(Etienne Wenger et al., 2002) The coordinator is there as a key factor in creating a coalition with enough clout to make a change stick. In addition, the coordinator is among the key factors who determine what lies within the bounds of a given community of practice.

Step three: create a vision for change

Within the boundaries of a community of practice is where the practice of the community intersects with others communities and should be the limits of the gained knowledge of a COP. Creating a vision of change in a COP will therefore entail moving a boundary. This is normally done when a Community encounters new members with other experience and knowledge than the conventional wisdom of the community. (Etienne Wenger, 2000) This normally happens organically as members of a community are slowly changed, or introduced to new stimuli and ideas. These ideas often are a direct result of interaction with other communities of practice where their boundaries either overlap or touch. The new vision must therefore prove to be valuable enough to justify the community moving its boundaries to accommodate it. The coordinator mentioned above can affect the existing boundaries, but as communities grow, the role of coordinator is diluted into the group of very active users as no single person has the capability of keeping track of the complex entity that is a large community of practice. The creation of this vision must have been shaped with the boundaries of a COP in mind, if the vision is completely out of the scope of what is accepted by the community, this will make any implementation more difficult. Therefore, as mentioned above, the coordinator or coordinators of a COP will have important insight into what will be acceptable to the community in question.

Step four: communicate the vision

To effectively communicate the vision, the coordinator/coordinators must be recruited. As this should already be the case as to create the vision prior to communicating the vision, input from the coordinating members must be sought so that the proposed change is compatible with the needs of the community. If the coordinator can convince the active user group, the rest should follow, as this group is responsible for defining the community, so if they are convinced that the new vision has merit, the community will accept it. This is only possible if all the steps have been followed, as the vision must be acceptable to this core group and that is only possible if the community has been part of the process of shaping the vision.

Step five: removing obstacles.

In a Community, there are two types of potential barriers to any change: one being the people involved in the community and the other being the created artefacts of a community. They are primarily means of ensuring that the participants of the community are all aligned. In terms of COPs, alignment is the term used to describe the coordinated effort of the community to keep the members in line with the overall idea of the community. It ensures that the unwritten rules of a

community are followed, that activities are coordinated and that the intentions behind are within the confines of the community. This alignment is as hinted at earlier, not a question of obedience from the community, but a constant process of negotiation and renegotiation within the community, and it is therefore challenging, if not downright impossible, to force a realignment as an outsider. For example, a manager demanding change while not being part of the community of practice in question. This means that often the ideas for a change comes from within the community that in turn turns to management to change existing policy. The alignment of a community is a deeply ingrained part of the community's identity. Rather than removing or forcefully changing it, the optimal way of effecting change would be though negotiation where the community must agree to change their identity to accommodate the change(Etienne Wenger, 2010). The artefacts produced can be anything from words, written protocols or even physical entities. They are created by the community to reflect their shared experiences and can potentially be used as guidelines when trying to understand the community as an external observer. Artefacts can be a more physical manifestation of the community's will and wants. As mentioned above, this step becomes more of a realignment rather than removal of obstacles.

Step Six: create short term wins.

Creating short term wins in a community of practice boils down to the individuals participating in said community. This can be tied to the creation of personal and collective narratives in a community. The personal narrative is tied to the experiences of the participants, while the collective is tied to the community. These narratives not only represent the events that shaped community in the form of joint activities that the participants have engaged in or their shared experiences, but also help create and determine value and what the community aspires towards. There are several types of value present when dealing with communities of practice. Immediate value is represented by activities and interactions where some activities could potentially be used to create value surrounding the implementation of the proposed change (E. Wenger, Trayner, & Laat, 2011). Such activities include everything from helping a co-worker with a particularly difficult order of business to sharing information to establishing new connections. The tension between everyday activities and the aspirations of a community are the primary source of value creation. Therefore, changing the aspirations to suit the vision would allow for value to be created, and thus change the perception of the community. This in turn leads to activities being in line with the intended change which should allow them to be used in the context of creating wins, but as above this not about creating wins, but more about realigning activities into something that will support and sustain the change.

The above steps are the only ones at this point, which are relevant, as the last two take place later in an implementation process. Building on the change would also be quite like the above sections as there has been a focus on making the change an intrinsic part of the organisation which is what the aim of the last two steps are. Arguably, the nature of the systems also dictates that if the steps above has been followed, then the actual cementation of the system will be automatic. The system is used in almost every interaction with patients and further to document these interactions. It will therefore be used multiple times a day, regardless of how the healthcare professionals perceive it. Therefore, the earlier steps are the most relevant as the nature of the system dictates the nature of its use in such a way that it will be come ubiquitous, regardless of planning and strategy surrounding the implementation

Data Gathering

Observations

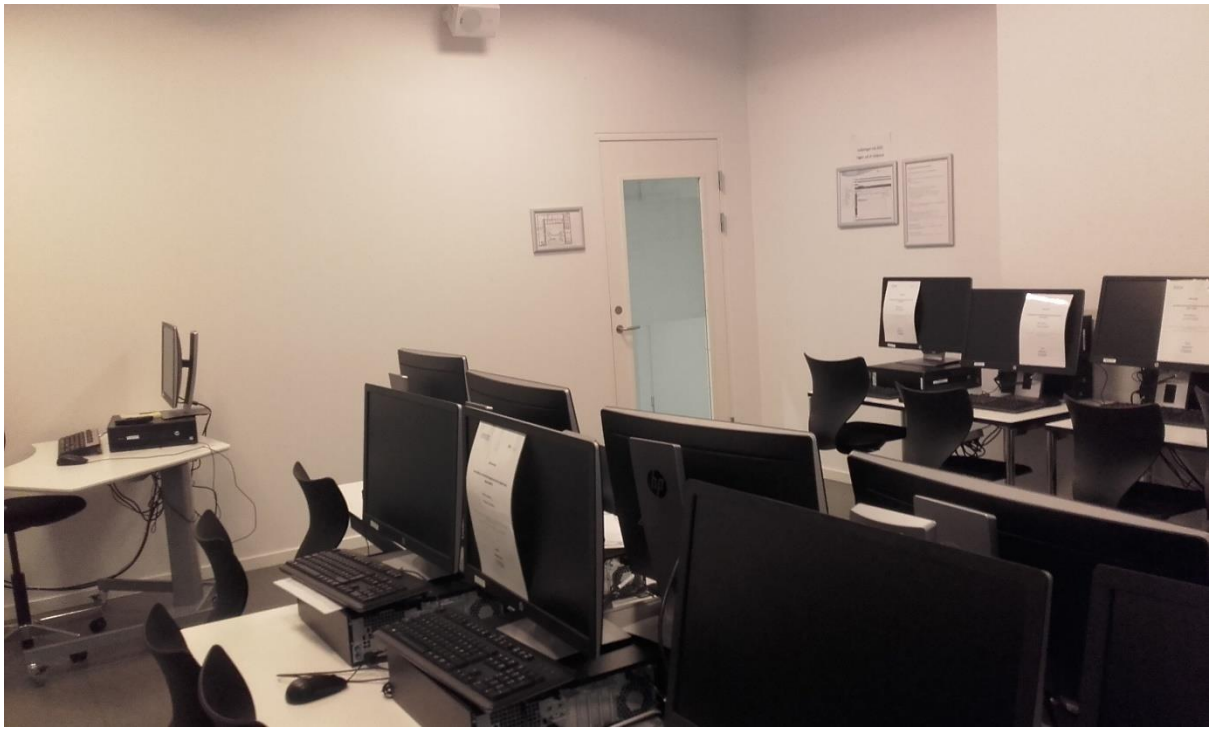
The first step in this thesis was the observations and the findings of theses. How they shaped the rest of the thesis will be discussed here. As mentioned earlier in the thesis the original purpose of the observations was simply to have a look at the education, to ascertain whether the education was well crafted and well executed. That journey of discovery is documented in this segment.

This segment starts out by describing the generally observed, the things that were commonly seen throughout (evt. among) the three educators observed.

The education was located at Gentofte hospital in their education centre. This centre is located on the outskirts of the hospital grounds apart from the more healthcare oriented main complex. The few buildings part of this separate complex where partitioned into rooms of varying sizes, the interior was identical. It always consisted of tables with computers either around the walls of the room, with some, depending on size, having an isle down the middle of the room. Most of the computers are placed so that when looking at the screen the users will be facing the wall as evident on the pictures below, taken in one of the larger rooms at Gentofte.

The picture is taken slightly to the left of where the educator would be standing, the table that pokes into the picture in the bottom left corner was used by the teacher. The picture below shows the same room from the angle of a trainee instead of from the angel of educators. The below picture

illustrates that the computers are in focus, even more so than the teacher. Placing the tables differently would allow for the students to sit facing their educator instead of as is where they are looking at walls or at each other. That the computer was the focal point of the education will be further elaborated on later in this segment. Every room was also equipped with a projector connected to the educators' computer.



Mostly there was no screen just plenty of white walls. The complex was large enough to house many separate tracks of education all taking place simultaneously, and on most days where observations took place it seemed to be at capacity, there was around 40 different rooms of varying size. The observations where conducted over a month, each educational round took somewhere between four and eight hours, the researcher tried if possible to stay from beginning to end of each segment. Consent for observing their education was given by three separate educators, and the around fifty hours of observation was split as evenly as possible between the three.

After addressing the location, facilities and surrounding circumstance this segment will continue with an overview of what was observed.

General observations

There was always as a minimum one educator and one helper, the helpers would be users who already had gone through some education in Sundhedsplatformen. This education did not have to be the one the trainees where going through, so sometimes the helpers would be of very little help, though they had some understanding of the system, it would not always be knowledgeable in the

parts relevant to a given training session. The one teacher one helper paradigm was the bare minimum, training sessions where there was as many as three helpers where observed, though only once, but two helpers seemed to be the norm. the usefulness of said helpers varied greatly, sometimes other educators would be assigned as helpers, but as the only requirement seemed to be having used the system before, this was more of an exception then the rule, there also seemed to be no correlation between the size of the class taught and the number of helpers, smaller classes would have a larger number of helpers than when bigger groups where being taught. That there was a discrepancy between how well educated the helpers were was evident during one of the observations where there were three helpers, two that were there from the beginning, but had never been educated in the segments of the system being taught, and another that showed up later during the process that was.

"that the helpers have not had this education, becomes more evident in this assignment, as they often stop and have to look at the assignment sheet. The new helper seems to have tried this specific segment before. She is much more active." (appendix 2, P.21)

The educational material was left in front of each free computer in the room, this material was just an assignment sheet, with no explanations only the predesigned tasks. This was also very much reflected in the general style of education, were the teacher showed how to do the tasks with the help of first a few PowerPoint slides and then moved on to show how this task was done in the system, this followed by the trainees mimicking the teacher.

Every training session start out with a general introduction, this was a staple across all the observed educators, where the educator would present themselves and what where the goals of the specific educational round. This is also where the observer would be presented, and ask for content from the observed parties. This was always given, but a couple of times this introduction, resulted in a few jokes.

After the general introduction, the students were asked to login to the system using dummy credentials that where given to them as part of the introduction. This was followed by a more systematic rundown of the part of the system being taught. This introduction varied in length depending on the educator and whether the students would remain quite during.

This introduction was a rundown of the entire part of the system taught, showing what the trainees should be able to reproduce after finishing the education. The next step of the education was also always very similar across different specialty fields, the registration of a patient.

This covered how to register a patient in the system, the system was set up with dummy patients to go along with their dummy credentials. After this the education, would become more tailored to the specific use of the system relevant to the group being educated.

The form would always be the same, the teacher would demonstrate how operate part of the system, and then time was given for the trainees to follow suit. Even though these parts where only segments of how to operate the system as a whole, each part like the initial one would be a complete action within the system. The first being how to register a patient, the second could be how to register a patient to a bed, the third how to move a patient from a bed to an operating table.

As mentioned these tasks varied depending on the speciality of the involved healthcare professionals. Every time the students where to register the initial patient there was a bit of a problem because all the test patients had the same name. The fake patient where all assigned different problems, and had a journal that where tailormade to the situations and task assigned to the respective specialities of healthcare workers. The first few educations observed, this was not addressed before, but on later observations this would always be articulated at the point where the trainees where supposed to register their patients. this did not stop the trainees from assigning the wrong patients.

"They made all the patients that are supposed to be registered to have an identical first name. which both today an last night resulted in some confusion" (appendix 2, P. 2)

The above being from one of the first sessions observed, the two below quotes are from a later training session that shows it was a known problem, but even if it was a known factor it still caused problems.

"starts out with an introduction, and the same warning about the names as the other trainers." (Appendix 2 P.15)

"problems with registering the right patients again." (Appendix 2, P.16)

This was almost a constant problem, was made evident in that it was the case in every one of the observed educations, except for the instances where the trainees where already familiar with the system. This problem was so evident an easily fixable that one of the trainees even suggested;

"ask if they could not change the names so that they don't share a first name and middle name." (appendix 2 P.3)

The last name of each patient was the only distinguishing feature, and as the patients where sorted by first name instead of last, it would take scrolling to find the correct person. The educator tried

mitigating this issue by telling the students to be careful, when assigned patients. The question posed by one the students seemed the easiest fix for the problem, this solution was requested at the second observation done, but it had not been addressed around a month later when the last of the observation was conducted.

After a few assignments, there would be a break of varying length, the length of the break depending on how behind schedule and whether it was lunch or dinner time. There was provided sandwiches for the participants, but nothing to drink other than tea or coffee. There would generally be a break around every hour, sometimes every two hours again depending on the delay. As mentioned above there was a general tendency of lagging behind schedule, this was the case with all the educators, and seemed primarily to be a fault of the educational material that had nominated times on every assignment set. This allotted time was almost always shorter than the time needed by the trainees. It seemed to be a case of going for the mean of how long it takes the average trainee to finish an assignment, the problem was that there was always one or two for whom the system was harder to navigate than seemed the norm. and as everybody would have to wait for them to finish.

The amount of time allotted to breaks varied greatly between the trainees, as they were generally allowed breaks in between assignments. The problem with some trainees being vastly superior in terms of how quickly they acquired familiarity with the system, was mitigated by having extra assignments after each required one, but again some trainees would be done with both the extra assignments and the curriculum long before others where anywhere nearing completion with the required assignments. This is where the helpers became useful, at least when they possessed knowledge of the taught parts of the system. they would try to get the few slower trainees up to speed and as such would concentrate their efforts around the slowest of the trainees. And as such the education seemed to flow smoother and faster when the helpers possessed knowledge useful in the specific context of segments being taught, and when they did not, they at times seemed a hindrance as they would follow along on their own, but sometimes take up the educator's time with questions as would any trainee.

This complete lack of consistency surrounding the help, seemed constants and the helper did not know the educators and vice versa, this resulted in the educators being the consistently most helpful party every time the trainees had to work on their own.

During most of the different specialities trainings, there would be a point where the trainees would have to learn to gather data from machines connected to the system. As this step relies on data gathered outside the system, said data had to be generated, this was done by the teacher either

leaving the room to physically go talk to it staff that would be on standby to run a dummy script that would supply the program with data equivalent to what would be gathered by whatever instruments where relevant to the trainees. As there was multiple classes taking place at any given time, each would be assigned a specific domain at the beginning of each class, this was done to ensure that there would be no overlap and that only the script relevant to the group would be run on the specific dummy domain used. That the educator had to contact IT staff to get them to run the specific script often resulted in this being a chokepoint as the assigned IT personal would often be busy, out for to lunch, or due to miscommunication run the wrong script. That the educator would have to leave the room to go find the IT responsible person, was an excellent indicator of how this ate up valuable time, especially when considering that in general the time allotted to the exercises was almost always to short, at least when taking the slower trainees into consideration.

"trainer leaves to call another supervisor to get the scripts that will supply them with data on their fake patients to run." (Appendix 2, P.3)

"This topic is the one that requires running a script, as this is done externally, they cant get a hold of the lady supposed to do it, this takes a few minutes." (Appendix 2, P.12)

This along with the problem with the names did not help keep the education on track timewise, the main culprit was the overly optimistic timeframes of the assignments. That where consistently took longer than the allotted amount of time, at best the assignments would take around if was intended, but most of the time they took much longer. A 25-minute assignment could easily drag out to twice the allocated time.

"16:20 exercise start this one is supposed to take around 20 min…. 16:55… the older man is the only one still working" (appendix 2, P.9)

"17:57 the last exercise starts this is nominated to take 20 minutes…. 18:27 the primary again goes to the board to make a few points more clear, people are mostly done. "(appendix 2, P.14)

the primary in this case is the primary educator, as mentioned the educators where sometimes delegated the task of being helpers.

The timeframes for the different assignment where not changed during the observational period, that the timeframe was off, also affected how inept the explanations of each part of the system where, as time would have to be found to make up for time lost on assignments. This would mean that the slides would be skipped or glossed over, and that there was less time for questions. This generally become worse and worse progressively the further the classes advanced.

The result of the education was a certification where the respondent would face a multiple-choice test, that would determine whether they had obtained an acceptable level of knowledge sounding Sundhedsplatformen. This could be done on the spot, but the trainees would also be allowed to choose a later time as to allow for further study of the platform before jumping to a test, only at one out of seven observations did anyone choose to take the test on the spot.

Discrepancies

Within the first twenty minutes of the second time this researcher observed the education, it was already found that there on the first observation the trainees where allowed to ask any questions relevant to the system, this caused the introduction to take much longer then the allotted 10 minutes. Having the respondents not ask any questions allowed the educator to present the system and what was to follow within the allotted time, even allows the educator to show additional features

"The run down of the system is therefore much faster. Icons are presented, what they mean and so on. Showing more functionalities then yesterday." (Appendix 2, P.2)

After the general introduction was the first time that showed the different approaches of the educators, some would allow for the trainees to login to the system, right after the greeting, so that they could follow along on their own monitors as the system was more thoroughly introduced.

What varied was more a result of how the different trainees would interact with not only the system and the educator, but also with each other. This and the very varying degree of help provided meant that no two educational rounds had a similar feel. the educators also had slightly different approaches to the same material, one had a much more explorative method, in which she would allow her students much more freedom in blundering around the system, another always asked questions of her students, both to keep them participating, but also to better understand how the different branches specific approach would shape their use of the system, and would after understanding how the system would fit into their workflow she would shape the education in such a way that it would accommodate their needs. This happened with all the teachers, but the other two would mostly do it when prompted by questions from the trainees, and not the other way around. Trying to shape the education to fit the system seemed possible on most occasions, but sometimes the system did not seem to accommodate workflow of the nurses, or when the group being trained came from different hospitals or branches that needed to use the same functionalities of the system. this was very evident in some of the observed educations.

“most are from Herlev, and this creates some small problems, as they document things differently from the nurses from Gentofte.” (appendix 2, P.17)

the other cause for problems regarding workflow was as mentioned above when the system simply did not accommodate the functions needed by the different specialised healthcare

there is another discrepancy between the system and how things are done in their specific department. (appendix 2, P.6)

this happened quite often throughout the observations, sometimes the educators would try to get focus back on the bigger picture behind the implementation.

One of the trainees says that there is a part of the medicine “udskrivining” that makes no sense on their end, this results in laughter, and a few jokes, the trainer tells them that they are not wrong, but tries to tell them why Sundhedsplatformen makes sense in the bigger contexts. (appendix 2, P.16)

this might be interpreted as an attempt of getting the focus back on what was possible instead what is not. It also seems that the inherent scepticism that was observed would swell in strength every time there was a problem with either how the system operated or it did not suit the needs of the participating healthcare professionals. the flaws in the system where mostly chalked up to the not being completely done yet, as is evident in the quote bellow.

the trainer has 3 times today said I don’t know about this feature/segment of the system, we hope they will finish it in time. (appendix 2, P.6)

the system clearly had enough flaws and designs that did not suit the needs of the healthcare professionals involved for it to be a problem especially in the eyes of the trainees. This brings us to the general mood during a given training session, the mood and approach varied so much that it is almost impossible to say anything conclusive about it some departments seemed happy about the implementation of the new system, where the disdain was very visible with others. Some departments where quiet and respectful while others joked and poked fun at every opportunity. Some made positive statements about both their own and others proves in the system, and appreciated every new feature in the system, the while others grumbled about it being unnecessary and then new system being stupid or full of flaws. This complete lack of any consistency in how the system was received was what prompted a change in scope of the thesis. As the initial approach was too gauge whether the education, the format and the materials where well-crafted and suited a Danish context. This question was specified upon, as during the observational phase no clear pattern emerged other than that there was no pattern in how the education was perceived. This lead to the question how much the different interest of the changing specialities where considered. This was

specified even further when two of speciality staff was observed, acting completely different in regards to the education, this confirmed that every branch of the hospitals, and not only that but even the same type of branch from different hospitals acted completely different.

This lead to the current shape of the paper, where the focus is on finding out if enough was done in making sure the different communities of practice where taken into consideration.

Interviews

Discussing the interview process

During the previous segment the shift in paradigm from focus on the education to a broader approach was described. The shift from just focusing on education to also focusing on how the different Communities of practice reacted, to both the educational process but also the entire implementation process. As mentioned this was a direct result of the observed behaviour and how greatly it varied between the different specialities and hospitals. In this segment, we will discuss the process of interviews, the considerations and problems faced in trying to gather said data. These consideration, will mostly be of a practical nature as the theoretical and methodical background where discussed earlier in this paper.

Contact

The initial push for contact happened through unofficial means and was by no means a success, this was done through an acquaintance of the researcher, whom turned out to be further down the hierarchical structure of the hospital than first thought. She turned out to only have access to her own department, where she was working as a temp. This avenue of inquire therefore seemed unfeasible, and the researcher tried more official means of contact. The press coordinator of Gentofte and Herlev was contacted. The contact was only meant as a means of getting the contact information of people more suited to help, but she set herself up as primary gatekeeper. She refused to facilitate the researchers contact with the different speciality branches, insisting on a one-way stream of information. This can be explained by the nature of the field, and the nature of the work. The healthcare professional work in an environment that is very sensitive, both due to the confidentiality of the contact between healthcare professionals and patient, and because of the importance and scope of their work, in that it is lifesaving or life improving at the very least. There might also be some guidelines from both the region and the individual hospitals surrounding giving out information of the different speciality branches. During an interview, one of the nurses also insinuated that there could be negative consequences for stepping out of line, in regards to talking about Sundhedsplatformen, though it has not seemed a universal concern. But a more likely scenario than the gatekeeper trying to control the information, is simply that most specialities are very busy with the implementation of the new system and therefore not motivated to allocate time or capacity to accommodate the researcher requests. This resulted in a longwinded email communication that stretched over the course of almost two months. This communication ended up resulting in the information provided by the researcher being sent to some different speciality branches. During this process, other options where explored and a Facebook group of some 18.000 nurses where found. After gaining access, and posting information about the thesis, and the need for

respondents, there was only two points of contact. One positive and one negative, the positive turned out to be useless as the nurse in question had not even partaken in the education yet, as she was from one of the hospitals that would implement the system in May 2017. The negative being a nurse from outside the regions affected by the implementation, who had a grievance with at price being offered to participants. The price being a gift card, that would be raffled away to one lucky participant. As no respondents were gained though the Facebook group this did not become relevant. This resulted in trying to gather respondents through any means, friends of friends, targeted ads on Facebook even though that avenue had previously been proven fruitless. All with very little success, at the end of the process and after a few phone calls to the gatekeeper, a few speciality branches started reaching out to the researcher. this resulted in a satisfactory number of nurses from different branches being interview, as soon as the contact was no longer with the press responsible, the chance of success multiplied. The coordinators of the different branches and in some cases individual nurses proved very helpful in regards to gathering respondents. this could be because job of the press coordinator is to ensure, that outside contact, unless relevant is kept to a minimum, and the general nursing staff is therefore much more inclined to help.

The interviews

As the prospects at one point seemed bleak, the form of contact was not a point of contention, and therefore some interviews where done face to face, while other where done over the telephone. The different richness of media where evident in that it was much more common to ask for clarification during the telephone interviews than during the face to face ones. But as a telephone is only a marginally less rich tool of communication than an actual face to face conversation, and the capability for instant feedback is not diminished using a phone this only affected the time table and hopefully not the content. Each of the interviews conducted over the telephone where significantly longer due to the need for clarification. (Lengel & Daft, 1989) The interview guide presented earlier in this thesis, was meant as a guideline, and where more envisioned to keep the conversation on track than stringent guidelines on what to ask. This is also why each question had a bit of text associated with it, to clarify what was the purpose of the question. Every interview situation is different and so is every respondent, the nurses as a group where very willing to give out information. Not only was there a tendency of answering multiple questions with each answer, some answers to questions where so long winded that the transcription of said answers where longer than a standard page of 2400 keystrokes. This resulted in a peculiar interview situation where the primary concern was keeping an eye on what was answered, and where to steer the conversation to fill gaps instead of which question to ask next. This resulted in the questions being less useful, than the subtext designed to remind about the rationale behind each question. This seemed to be a constant

throughout the interviews, this could be a symptom of how the sample was obtained. As there was no chance of approaching the respondents, the respondents had to approach the researcher, this could result in a bias of only the very willing and the ones who had something to say about the system being heard. Another concern was that one of the nurses said there were restrictions on what could become public knowledge in regards to Sundhedsplatformen, could result in a skewered picture being presented, instead of a more accurate representation. The latter of those two concerns have mostly been put to rest, as both educators and nurses where critical of many aspects of the system. This lead to an assumption that the reason for the readiness of the nurses to offer up information, was more of cultural aspect, and stemmed from a willingness to help. There are certain dangers associated with respondents being too willing to offer up information, as there is a chance they are trying to help and in a sense, give the answers they believe you want to hear instead of the truth as they perceive it. This could hardly be the case as all the information they had been given surrounding the thesis was:

"Jeg er i færd med at skrive mit speciale, der omhandler den nyligt implementerede sundhedsplatform. Mere specifikt behandler specialet de kulturelle forskelle afdelinger og hospitaler imellem, samt hvordan de påvirker implementeringen af systemet." (appendix 3)

This only gives a general direction of where the thesis is headed, and only allow them a knowledge that the thesis is mostly based around the cultural differences in each specialised branch. if this results in the nurses being more forthcoming about the aspects specific to their specialities and branch, this would be more helpful than harmful. This assumes that they understand they are useful because of their knowledge in their own branch and that they stick to talking about their own specialty and does not try to talk about other branches where they lack an in-depth knowledge. This did not seem to be the case during the interviews, and had it happened it would have been relatively easy to steer the conversation back to their respective fields. The experiences from the first interviews were used during the later interviews, as a means of fact checking said data, by finding if there were similar issues in different fields, or if this was just a problem faced by a single department. The earlier interviews were also used modify the interview guide, to weed out the not useful questions and in finding what questions prompted the most suitable, and in the context useful answers.

Sample

The previously mentioned problems gathering respondents created some issues, in regards to sample size and variety. the ideal situation would have been a large group of nurses split over a host of different fields. The current state is four nurses, spread over three fields, and two educators, this

is not a catastrophically low number and should allow for a relatively broad interpretation of the differences in communities of practice. That there is only four respondents is mitigated by both educators also being nurses, and one talking extensively about the current state of the department she is on loan from. This means that knowledge was gathered about not four departments but five, and as this is a qualitative study, the sample size is not as important as the depth of the subjective knowledge gathered. One of the three nurses were also a super user during the implementation process, and therefore possess a larger knowledgebase surrounding the system then would a regular user. She was also a floorwalker during the implementation, this means she has had contact with both other super users from other departments before the education and the nurses from other specialities during.

The focus on different communities of practice also puts an emphasis on finding respondents from different fields, as gathering data points from the different fields is the only way of finding how the different communities of practice affected not only the educational process, but also the implementation.

As this thesis is trying to gather an in-depth knowledge about the world as perceived by the nurses, a few but very through interviews is arguably better than a larger but more shallow set of data. The data gathered through interviews will also be supplemented by the larger amount of data gathered earlier in the process, during the observations. The observations and the observed behaviour of the nurses will be used as a means of shoring up any data points to ensure that they are not just outliers, the hope is that the combination of the two-data set will allow for a more complete depiction of reality then either would on their own.

This segments intentions was to supplement the methodology with the actual results of the interviews, while not dwelling on the gathered data, as this will be analysed in the next segment. This analysis of the interviews and the behaviour observed during the observations should be able to answer the questions posed by this thesis.

Data Processing

The primary data set collected, is the interviews, therefore the interpretation of these have been key to understanding and answering the questions posed in this thesis. The primary way the data will be processed is using content analysis. This type of data processing requires a full transcription, this transcription will be made without accounting for body language and tonal interpretations. This is a conscious choice as some of the interviews were conducted over the phone, and the difference in media richness, could result in inconsistencies of the data sets. Therefore, all the data sets will be treated equally without the consideration of body language, and as tonal interpretations are a

subjective matter, as where one would interpret anger, another might see it as exasperation of frustration they will not feature either., This might weaken the validity of the dataset slightly, but is a conscious choice to create a more homogenous data pool. Completely ignoring how things are said during the interviews would contaminate the data to such a degree that it would almost be useless, another route was chosen. (Bailey, 2008) Instead of writing how things where said into the transcription, the researcher tried to capture the essence of what was said, anytime a phrase would be to confusing or nonsensical, the researcher would reword slightly so that the intended meaning, as the researcher saw it, came across clearly. There is a very real risk for bias doing things this way, but after listening to the interviews a second time while simultaneously reading the transcriptions to ensure there was no misinterpretations, and having a person unrelated to the thesis do the same, the researcher is reasonably sure that the transcriptions are an accurate depiction of what was said during the interviews. Pauses will be represented with punctuation, commas in the case of a slight pause and a full stop in the case of a longer one. Very extreme outburst will also be documented, laughing, or very clear emotions will be written down to supplement the chosen approach. The chosen approach has been deemed sufficient because of the nature of the transcribed data, as these are interviews with willing participants. This type of interaction would not be filled with sarcasm or extreme body language. This is not only caused by the type of conversation but also the participants. It seemed to the researcher that the nurses where very earnest and straightforward in their answers, this should help justify the low level of detail that was deemed necessary.

The transcriptions will be used to thematically code the data, this will be done using the constructed theoretical tool, and will be used as the overall themes to divide the transcriptions into. Thematising the data, is going to be helpful when analysing the content later. (Bailey, 2008)
The thematization process was done after the secondary data processing of the interviews and will therefore only use the transcribed data, as this has been deemed to be as accurate as possible taking into consideration that there has only been one researcher doing the processing, with help to validate said data by outside sources.

Analysis

This part of the thesis is where the all previously gathered data is consolidated and analysed, this will be done using the theoretical framework assembled earlier in the thesis and will use the modified version of the eight steps of Kotter that has been adapted to also understand the effect a community of practice has on a change which is being implemented. As Kotter's eight consecutive steps of organisational change is the back bone of the theoretical framework this approach will be used as the foundation of this segment. The modified steps of Kotter will be used as the basis for the structure and this segment will reflect this, in that each step in the theoretical framework will have its own subsection, with a more general reflection after each step has been examined.

Creating a sense of urgency

The first of Kotter's steps towards a successful implementation is arguably one of the most important as the sense of urgency dictates the level of commitment from the parties in question. To create urgency in a community of practice, you need the members to see the value of a change. This can be done in many ways, but did not seem to be a priority when presenting Sundhedsplatformen. As the nurse mentioned when asked, they were made aware of the system through an internal memo around a year before the educational process started;

"puh det gjorde jeg faktisk først i 2000 og hvad var det et år før det gik i gang 2015 tror jeg…. det var bare på intranet" (appendix 1, P.9)

The fact that the system was announced in an intranet email would imply that it was a notice sent to all staff members of the piloting hospitals to alert the healthcare professionals a year in advance, which seems prudent as to allow them to get used to the idea of a new system. This mail should have been followed up by more information to create an idea of why the new system was needed, which also seemed to be the case.

"vi var til sådan et eller andet fælles møde men jeg slet ikke huske hvor lang tid det var i forvejen, men jeg kan huske vi var til det, hvor vi fik introduceret programmet hvor der var nogle der stod og klikkede lidt rundt i det og fortalte hvad det kunne bruges til" (appendix 1, P.18)

This was around a year before the implementation began and it seemed like this was the end of given information until the education commenced. The nurse in question did not seem enthusiastic about the idea of the system, but it at least should have caused the healthcare professionals to understand the value of the system. Since this happened a year before and no follow-up emails were sent after that, it was insufficient to keep the idea of a new system fresh in the mind of its would-be users and indirectly gave a signal that it was not particularly urgent. Management plays a big role in

creating a sense of urgency as they are often the ones instigating a change; it seemed that management level employees were relatively well informed as one of the nurses mentioned that there where meetings specifically for management level employees to make them more ready for the coming change. It did also not seem like what was learned was redistributed throughout the organisation, as the super user commented;

"så blev vi informeret om at der kom et ny system og det var et amerikansk system men ikke sådan noget dybere med mindre man selv gik ind og søgte selv" (appendix 1, P.32)

It would have been a better option to find ways to ensure that the information would become common knowledge throughout the organisation as expecting busy healthcare professionals to take out time to look up information that will not be relevant immediately is not realistic, which was also showed here, as the same nurse states that she did not find the time. The next step is creating a coalition to help ensure the implementation is a success.

Creating a coalition

As argued when the operationalisation was presented, any community of practice will already have such coalitions as an intrinsic part of what shapes a community. The approach used to obtain support for the proposed change (i.e. the implementation of Sundhedsplatformen) seemed to rely heavily on only management level employees, which both Kotter and Wenger advised against. As mentioned above, the level of user involvement, at least of the non-management level employees, was reduced to a simple show and tell and an internal memo via email to healthcare professionals in the hospital whereas management level employees were much more involved in the process;

"ikke umiddelbart, altså der er selvfølgeligt min leder og dem der er gået til de her parathedsmøder men ellers så føler jeg ikke at vi som sygeplejersker er blevet hørt" (appendix 1, P.18)

The above is the answer given by one of the nurses when asked if she felt they as nurses had been heard where she notes that at least her leader was ready. This implies that the nurses were not consulted for their opinion on the change and were just expected to go along with what is decided by the management levels. It might even follow that management levels in the respective departments are either seen as the primary source for managing a change, or they are also just better informed but kept out of the actual process, in the same way the nurses are. There seemed to be no efforts towards identifying the core group of the communities to get them on board. This lack of care in identifying the key players in each branch and speciality and instead relying on the clout of management, could stem from the belief that management are the key players because of their positions. The fact that only management was involved made the change seem more involuntary

and something forced upon the healthcare professionals from the leadership team. It also seemed that who was involved was not clear to the general healthcare professionals,

"jeg har mødt nogle, blandt andet fra min egen opvågningsafdeling som har sagt, de aner ikke hvem der har været med til at bygge det der" (appendix 1, P.5)

This was one of the educators talking about who had helped design the system in such a way that it was compatible with the day to day workings of each branch. Even this approach seemed to have a top down approach,

"Altså jeg ved at vores lægeleder har, altså det er hende der har siddet og skulle opfinde hvad der skulle ind i vores allergi modul" (appendix 1, P.18)

Implying that the lower level employees have been largely ignored throughout the process.

Create a vision of the change

In a community of practice, the shared knowledge has boundaries and to accept change, these boundaries must be moved. This can be done in many ways, one of the main ways is by is introducing new members, or rather, the knowledge brought by these new members into the community. This is in this case done by introducing new knowledge into the organisation. The vision is meant to be created in conjunction with the coalition to ensure that there are no actual discrepancies between the reality and what is meant to be achieved by the change. However, as the coalition seems to be made up of a group only representing management, special care must be made to ensure that the vision does not only reflect the wishes of management, but also incorporates the various needs of the non-management employees. Kotter states that the vision must be simple and encompass the overall intent of the change. It seems that during the education, the exact opposite was the case where the general healthcare staff left said education with more questions than answers;

mit undervisningsforløb startede 4 uger før andre skulle på, jeg vil ikke kalde det undervisning, og de almindelige brugere vil heller ikke kalde det undervisning vi var på, men mere kalde det information i den ny Sundhedsplatform (appendix 1, P.30)

this was said by the super user, who was better informed about events surrounding the education. Her claim that this was common knowledge was very much disputed by the interviewed nurses who were participants in the classroom education sessions and were not involved in disseminating the education to other nurses.

"Nej jeg tror egentligt at vi troede det var undervisning og at vi skulle kunne gå der fra og så vide hvordan man gør det her." (appendix 1, P.17)

This information should have been conveyed before the actual educational phase or the healthcare professionals should at least have been informed that what they thought to be education was more of a general introduction to the system. It could be argued that they are specifically trying to create a vision through the educational process, but it seemed to be presented as education which caused some confusion and frustration instead of giving a clear idea of what the system was capable of and the rationale behind the implementation. Furthermore, the vision conveyed in the education was not tailormade to the different functions and that is clear from the answer of one of the interviewed nurses when asked what she thought of the education.

"altså jeg synes det var ret dårligt, selvfølgeligt fik man en lille smule grundviden og man så hvordan det hele var bygget op, og hvordan det så ud, men det der med at det ikke tog afsæt i det vi laver her, men var nogle helt andre afdelinger og patienter" (appendix 1, P.16)

The fact that the education was aimed at being a general introduction explains why the nurse felt it was not completely relevant to their specific specialities and this should have been communicated more clearly to avoid misunderstandings and manage expectations.

There also seem to have been some problems getting the people responsible for the system to understand the reality it would face;

"der har været sådan nogle kliniske sygeplejespecialister som har siddet i sådan nogle grupper, jeg vidste også godt at vi ude fra os havde en overlæge og en mere siddende som konsulenter for øjenafdelingen, men det har været rigtigt svært for dem at gennemskue når de har sagt nogle ting hvad betyder det så for systemet." (appendix 1, P.10)

Even the parties involved in mapping the demand specifications were not sure how their demands and suggestions would end up affecting the system, which indicates that the process was not very transparent even to people who were actively involved in the design of the system. It also means that it will just be the builders' interpretation of what is needed based on the suggestions of a discussion between clinical staff. This means that the system risks falling outside the boundaries of what is acceptable in the different communities.

The boundaries that would have to be moved for the community of practice to easily encompass and internalise the change have clearly been ignored. By making the introduction to the proposed change an incremental but constant process could have improved the communities' acceptance and internalisation of the change.

Communicate the vision.

This was mostly done during the education, as stated above. The approach would arguably be well founded had the nurses just been one large community with similar workflows, considerations and temperaments. However, as this was very much not the case and therefore, the vision was not clearly communicated, as stated by one of the educators when asked if there was a difference in how the branches approached the education;

"ja der var nogle meget tydelige kulturforskelle" (Appendix 1, P.5)

She goes on to elaborate that these differences were more dependent on the speciality of the nurses than what branch of the hospital they originated from, which also implies that there was not only a significant difference between hospitals but also between the different functions in the same hospital. As it seems that the vision was muddled, or at least not formed in a way that made immediate sense to the type of healthcare professional being examined in this thesis. Not making it clear that the education was intended as an introduction rather than a full-on training may have escalated this further. Another problem with communicating the vision was that often the one educating nurses and doctors would have no knowledge of the clinical aspects of their work, as many educators were taken from the secretarial staff;

det var generelt, lige præcis, der er sekretærer der har stået og undervist læge, og det har jo været kritiseret også i det offentlig rum, det er meget svært at modtage læring fra en der slet ikke er i det fag de underviser i (Appendix 1, P. 8)

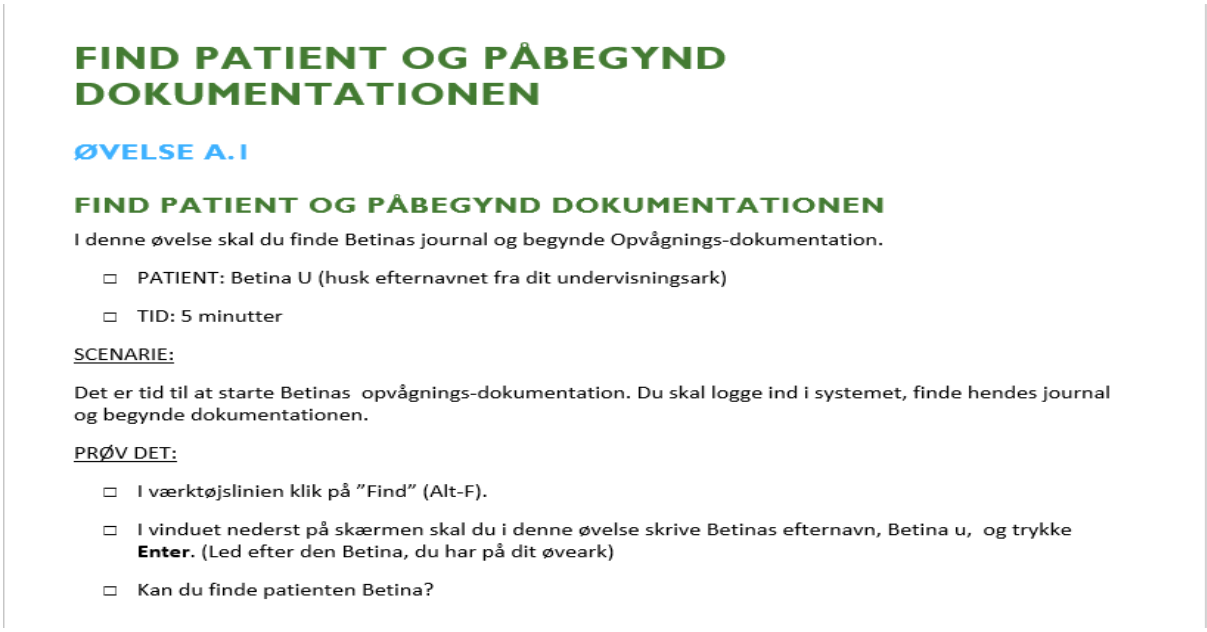
It makes sense that a branch that does not understand the more clinical nature of the work being done will have a hard time presenting this part in a meaningful way. The problem is that to clearly communicate something, you must be able to address questions related to the subject in a meaningful way. She does go on to elaborate on the situation and says the education is not subject specific, and the problems arose when the trainees started asking more in-depth questions surrounding the use of Sundhedsplatformen in a clinical setting. This concern was mimicked in the super user interview.

"der var nogle undervisere der var lægesekretærer og det gør jo noget for undervisningen når man sidder som kliniker og har nogle kliniske spørgsmål til hvordan gør vi lige i forhold til et eller andet praktisk og de ting kunne man ikke tage op på undervisningen" (appendix 1, P.31)

There was apparently also a large variation in how well versed the different educators were in the use of the system

"altså der var også nogle af underviserne der slet ikke havde nogen indsigt i programmet, man kunne godt mærke de havde fået et undervisningsprogram og det skulle de bare køre igennem fra a til c og hvis man spurgte ind til nogle ting, det kunne de ikke svar på, så det var underviserne var meget på forskellige niveau" (appendix 1, P.31)

Such a variation is not conducive to maintaining or communicating a vision of the change. This coupled with the very heavily top down structured mapping of the user needs, could result in the vison which is to be communicated not falling close enough to the boundaries of some groups of healthcare professionals to seem relevant. The educational material was not conducive to communicating the vision of the wanted change either. If the education was indeed an introduction then it would make sense that the educational material should follow suit and help give a more general introduction to the system, but as shown below this is not the case.



FIND PATIENT OG PÅBEGYND DOKUMENTATIONEN

ØVELSE A.1

FIND PATIENT OG PÅBEGYND DOKUMENTATIONEN

I denne øvelse skal du finde Betinas journal og begynde Opvågnings-dokumentation.

- ☐ PATIENT: Betina U (husk efternavnet fra dit undervisningsark)
- ☐ TID: 5 minutter

SCENARIE:

Det er tid til at starte Betinas opvågnings-dokumentation. Du skal logge ind i systemet, finde hendes journal og begynde dokumentationen.

PRØV DET:

- ☐ I værktøjslinien klik på "Find" (Alt-F).
- ☐ I vinduet nederst på skærmen skal du i denne øvelse skrive Betinas efternavn, Betina u, og trykke **Enter**. (Led efter den Betina, du har på dit øveark)
- ☐ Kan du finde patienten Betina?

(appendix 4)

This is the first page of the educational material, more specifically the part directed towards the healthcare professional segment. There is no explanation of context or the rationale behind the exercise, just an assortment of assignments and advice geared towards the successful completion the assignments. This is seen throughout the entire educational material.

This leads to a belief that the vision has only been constructed as something meant for healthcare professionals as a single entity, and that the differences between different specialities, branches, professions and hospitals have been largely ignored in favour of pushing a more general interpretation which was thought to be a one size fits all solution.

Removing obstacles

As mentioned when presenting the theoretical tool, the typical process for lasting change originates within the community as this ensures that a change is both within the bounds of what the boundaries can successfully be renegotiated into. As the change in this case seems to be one caused by management, in this case the Regions, out of circumstance in that the root cause was that the licences to the old systems ran out rather than a pressing need for innovation of the systems. The general staff mentioned only being notified after a decision was made which shows that there seems to have been a minimal effort made into making sure the system was aligned with the way things were done, or arguably that it was not too far out of line to be accepted. This was done as mentioned earlier by gathering groups of clinical personnel, and asking them what functions were needed and what requirements each speciality had for the system. However, as already stated earlier, the group consisted mostly of doctors and these taken from the level of management rather than the ones working on the floor. There was even confusion in regards to who had been a representative for the respective branches in some cases. The way the system was presented and expected to work seems more in line with the expectations of management level employees, which is for the users to align with the system rather than a system that is within what is acceptable to the user's current alignment. The alignment of a community is in part what shapes their identity as a group, and the change without trying to renegotiate clearly caused a lot of frustration, not only in the nursing staff but also in the doctors and seemed to result in wasted time as the system was not aligned with the current processes;

" altså det har virkeligt påvirket folks livskvalitet, altså lægerne har været, jeg ved at på Herlev måtte de modtage krisehjælp og psykologhjælp og sådan noget altså det har virkeligt påvirket afdelingen det her" (appendix 1, P.24)

It should be noted that this nurse seemed particularly sceptical about the implementation, so this is probably an exaggeration, but it at least goes to show that other groups than just the nurses have been suffering difficulties in regards to the implementation. In this case the frustration stems from no longer being able to delegate tasks such as issuing prescriptions or filling in clinical records to nurses and secretaries. This cuts into their time spent with the patients and leads to frustration and anger. Some small attempts have been made to align the system with the workflow, which is a step in the right direction, but aligning the system is only part of the process as the vision that must be communicated is as important as the actual change in terms of making a transaction successful. The vision as it was presented during the education did not even seem in line with the specialities, or as both educators commented, Danish culture in general;

"ja man skal tilpasse det danske tankesæt, danskere reflekterer, og det skal du have lov til for det er der du ligesom lærer noget, det her er alt for amerikansk i deres koncept" (appendix 1, P.6)

They felt that the system was too American and that the method was ill suited was agreed upon by both educators;

"for amerikanere tænker på en måde og vi tænker på en anden måde, for vi er jo ikke delt op i søjler på samme måde som amerikanerne, de har simpelthen skodtætte søjler mellem alle deres funktioner" (appendix 1, P.10)

Both educators felt that the education was not suitable to a Danish context, because of its very authoritarian nature, where the trainees where not expected to ask questions, and just quietly listen instead of engaging, which is not conducive to obtaining buy-in from the trainees for the change as going for an education which encouraged more active participation could have led to the trainees feeling a stronger sense of commitment and ownership towards the new system. Therefore, the approach taken does seem counter intuitive in regards to communicating and making the healthcare professionals accept the vision of the system. As this mismatch seems to be driven by culture, the approach used would have worked in very hierarchical communities of practice, such as the military but this does not seem to be the case with most of the nurses. However, there could be some nursing communities which are more hierarchical than others and this is reflected in the variation in attitudes during the education sessions;

"Very quiet, more than once I overhear sentences like, oh well we will get it eventually, the overall approach seems a bit more optimistic, this is based on the tone of the questions, the trainees do not seem frustrated" (appendix 2, P.2)

These nurses seemed more the exemption than the rule, and a typical training session would be more like this;

"more questions this time they seem sceptical, new lady asking the questions. With this group, it seems that every time someone opens their mouth to ask a question it emboldens the rest, so that the first question is followed up by at least two more." (appendix 2, P.5)

This shows that how the education was received very differently from, group to group. These two groups even came from the same hospital, but the differences in approach was noticeable. This shows that even though the education might not have worked as intended in every way and case, it did seem to meet more resistance in some groups than others.

Creating short term victories

This is very important as small victories when woven into the story being told about the change, will help shift opinion or maintain a positive perception of said change. As it has been established that the vision was presented mostly through the education, the creation of a positive narrative surrounding the change must start there. It does also seem that the education was tailored towards such small victories. The assignments that were part of the curriculum seemed for the most part to be easy to complete. This was the case for most people, but at every training session, there were some participants who did not take easily to the system, and as such did not experience said victories.

"the older man is the only one still working, he seems very adamant in wanting to understand not only how the system works but also why." (appendix 2, P.9)

"break for the quick. The not so quick are still working." (appendix 2, P.8)

This means that even though most of the participants came home with success stories to add to their personal narratives, not all of them did and this could poison the collective narrative. So, instead of being an overwhelmingly positive narrative made up of the success stories of the participants, it becomes more mixed as some will harbour doubts and might even blame the system, which was already a coping strategy employed by some during the education;

"saying things like it is not working, and this stupid program "det driller" and why does it do that." (appendix 2, P.11)

A computer system such as Sundhedsplatformen does not do anything on its own, so this is clearly a way of projecting their failures onto the system. The narratives were also affected by the flaws and the lacking design of the system. However, that is not the case in the above example as most participants did not share the sentiments of the one above. The educators did try to soothe such people by helping them as much as possible and in some cases, one of the helpers would be permanently seated by the trainees who are having trouble with the system. In addition, the trainers would also attempt to create 'quick wins' for the trainees by asking questions easy enough for even the parties who had a harder time understanding the system to answer correctly.

"summary and questions as usually, one lady that seems sceptical around the whole situation, is asked a very easy question, she answers correctly. Every question is again like yesterday answered correctly" (appendix 2, P.2)

This shows that the educators at least tried to get even the worst trainees at using the system to feel a sense of accomplishment. This is all in regards to the situation surrounding the education as the

only efforts that seem to have been made in regards to the actual implementation of the system was a reduced workload, and the floor walkers, who were also the super users.

"der ville være nogen de første tre uger i vores afdeling, både en sekretær en læge og en sygeplejerske, men det var superbrugere" (appendix 1, P.18)

The same super users that took part in the education as helpers, and received the exact same amount of education as the general healthcare professional had a better familiarity with the system because of their roles as helpers throughout the education. However, they were still unable to answer questions unrelated to the specific set of education in which they assisted. This seemed to be the case with the educators as well.

Summing up

The overall issue seems to be one of misinformation or lack of information in general. The fact that the education was just an introduction did not seem probably communicated throughout the healthcare professionals. which caused frustration when the participants expected to leave the training sessions with an understanding of the system and how to use it. This misconception was only among the general healthcare professionals as both educators and super users where both aware of the limited scope of what was called education, and as one of the educators said;

"undervisningen er måske 20% af læringen og det de selv skal gå hjem og øve i afdelingen er 80% for det vi kan, er kun at give dem en introduktion til det, de har ikke lært det når de er hos os" (appendix 1, P.10)

having the general healthcare professional be aware of the limited scope of the education, could have alleviated some of the existing problems. The form of the educational material did not seem appropriate for an introduction. The form might be conducive for an introduction in the use of the system, but not a more general introduction to the system. That nonclinical personal would be training clinical personal, could also cause the clinical personal to become more sceptical of the system. As their questions regarding clinical issues in how the system was to be used went unanswered. This could also be attributed to the type of education, as mentioned the educators were mostly reading a script, though later in the process, after this researcher was done observing the educational situation, there was a shift in how the teachers approached the education;

"ja det har de og vi har også aftalt det med vores uddannelses ansvarlige, at nu gjorde vi altså det der, vi sprag det der over og vi ændrede i manuskriftet og vi skar nogle ting af og sådan noget og det sagde hun ja til." (appendix 1, P.3)

She went on to confirm that this was now the agreed upon approach of most of the educators, this is in stark contrast to the very strict, top down and heavily scripted initial education. This apparently started as an initiative between the different educators, and was not entirely sanctioned, but widely agreed upon in the pool of educators.

This might alleviate some of the problems for the later hospitals as the education will be better suited for the context. This shift might give a better understanding of the system as a whole, but might hurt their understanding of how to use the system. As a further explanation of the reasoning behind the system and how it works in a more general fashion take time away from the immediate understanding of how to use the system, this would be further compounded by the allotted time for the later stages of education being reduced.

"altså jeg havde valgt at gøre det på en anden måde selv hvis jeg skal sige det diplomatisk, men taget i betragtning af hvad de skulle igennem så var der meget lidt tid……

… og første bølge havde mere tid end anden bølge for vi blev skåret tid så vi har været nødt til at tage noget ud og tredje bølge bliver kortere" (appendix 1, P.3)

She later went on to say, that the reasoning for shortening down the education was because of a lack of time to properly train the clinical staff, as they apparently where in to short supply for the branches of the hospitals to do without them.

To elaborate on the lack of clinical personal in the educator pool, one of the educators even goes as far as to say that if doctors had taught doctors;

"der er ingen tvivl om at hvis der havde været flere læge som havde været certificerede undervisere så var det blevet implementere bedre blandt lægerne" (appendix 1, P.8)

This could also be applied in the case of the nurses that would arguably have had a more meaningful implementation process if they had been solely trained by nurses, who better understand their concerns. The shortcomings presented in this segment, coupled with the large amounts of flaws, errors and missing functionalities caused frustration and anger in the nurses. what this meant for the implementation process will be discussed in the next segment.

Discussion

In this segment the findings of the analysis will be discussed, possible improvements will be suggested.

The implementation and education seems to already have gone through a lot of iterations, from the time the nurses being presented with the system, almost two years ago, to the current shape of the education which have been taken over by the educators and shaped into something, in their view, more suitable to the situation. The previous section of this paper, where the implementation and education was analysed using the constructed tool, allows for both an examination of the more practical implementation of the system, and for the more abstract reception into the existing communities of practice. This analysis shone a light on the largest failure of the implementation process, which seems to be miscommunication.

Miscommunication between educators and students, in not making it clear enough that this was just a general introduction to the system. Miscommunication between Danish culture and the American system and way of doing things. Miscommunication between the builders of the system and the groups assigned the tasks of mapping the demand specifications. Miscommunication of the management level of the regions who chose the system, and the people on the floor who would be using it. The word miscommunication is meant in the sense of distributing wrong information, failing to communicate in a manner that is understood by the recipient, and complete lack of information seems to also have been an issue. The eight steps of Kotter does not appear to have been taken into consideration, and they are some of the pillars of what is considered good practices when dealing with an implementation. The communities of practice does not seem to have been taken in to consideration, neither the smaller ones consisting of each healthcare speciality, nor the bigger ones that consist of nurses, or even what is considered best practice in a Danish context.

It is clear from the previous segments that the system was not completely done when the education started, this was especially not the case when considering the super user and the educators learning process. The constant updates seems to indicate an iterative process, which is considered good practices from a system development perspective, at least when compared to older models like the waterfall. (Dix, 2010) Normally such constant changes in the system itself, are for the phases before the system is actually taken into use. The strength of the iterative process is, that unlike earlier models where when done with one step this is closed down and not opened again unless there is dire need, in an iterative process nothing is done until everything is done. This allows the developer to work on multiple parts of the system at once, and easier adaption to changing requirements and uncovered flaws and deficiencies.

The most used way of ensuring that each iteration is more in line with the requirements, is done by initially mapping these and through lots of test, stress test, user test and so forth. This is best done long before the actual implementation of a system, here it seems that the user (demand) specifications and generally user tests had not been completed by the time of the education. It is normal for a system to run into unforeseen situations after an actual implementation, and it is here that the iterative process shows its superiority to the older models, as it is easy to go back and change the system after such flaws have been discovered. (Dix, 2010) This is also seemingly the case with Sundhedsplatformen. The problem being that it is not just a few flaws or smarter ways of doing things, when sifting through the interview data, it seems to be at time functionalities that are needed for the healthcare professionals to be able to do their jobs. This should not be possible if the requirement specifications of the system had been mapped properly. It shows either a lack of time or the idea, of using the introduction of the system to the healthcare professionals, as a means of mapping the requirement specifications. In either case, it clearly leads to frustrated and afraid healthcare professionals that had little confidence in the system. The constant iterations seems to have ground to a halt, as when the users of the system report bugs and missing features, only error grave enough to cause major problems are repaired. Minor issues are logged and the users told they will be fixed in the next big iteration which will be in 2018, after the system has been rolled out in every hospital in Region Hovedstaden and Sjælland. This approach suddenly resembles a waterfall model much more than previously, as while there is still a stream of feedback, from the users, which was also the case during the education, the constant updates and fixes have stopped.

Most of the information gathered in this study was gathered through qualitative means. Getting access to the field proved harder than anticipated. This might be because of the gatekeepers reluctance to hand over contact information of the respective branches, to the researcher, and instead opting to do the opposite, in handing over the contact information of the researcher and a bit of information about the project to the departments. This allowed the interested parties to either contact the gatekeeper to tell her they were interested, or they could contact the researcher directly. This is problematic as there is no way of controlling the sample, and this also resulted in two nurses from the same speciality being respondents. That the researcher could not choose a wider variety of nurses makes the paper less valid in the general scheme of things, as it lacks input from more of the different type of specialised nurse, the choice of nurses also makes it difficult to extrapolate the results and the reception of the system to healthcare workers in a more general fashion. But as argued by the nurses the general reception seem, at least in perception, to be very much like the one that was presented by the interviewed nurses.

Before the education

Any information about the system before the actual education was very limited. There was an option spending time looking up information, which was available through the healthcare professionals intranet, the problem with this approach is that people very rarely find the time. You are forcing the healthcare professionals to either, prioritise learning about the system above breaks and patient contact, or expecting them to spend their free time familiarising themselves with the system. A few of the affected parties, would probably spend some time doing just that, but for most it will not be a priority, the expectation that the healthcare professionals would spend their own time learning about a system they thought they were going to get educated about, seems like the first misstep in this implementation process. This could have been alleviated by simply making reading the additional material mandatory or by giving the nurses time, during a workday to read up on the system, but as it was mentioned there seemed to be a high demand on the clinical staffs time.

There did not seem to be any initiatives taken, to ensure that the clinical staff would see the new system as valuable, this means no sense of urgency was created before the actual education surrounding the system commenced, other than a short presentation, where the uses of the system where presented. No additional information was forthcoming unless the healthcare professionals actively sought it out. There where information meetings before the actual education took place but the only participants were management level employees, the very top down centred approach seemed a general trend for the entire implementation process, the mapping of the requirement specifications were also done by the management instead of asking the more general staff. This is counterproductive as management and the lower tiers of employee have different needs, any good management would be expected to understand and know the workflow of their employees, but can in no way be expected to be knowledgeable about every detail in the daily workflow of the practicing nurses.

That the requirement specifications where flawed or inadequate is not a surprise when considering the approach to describing them. That the only involved parties have been management might be one of the main reasons for all the frustration and fear in regards to the system. This fear seemed less in the case of both educators and super user whom have all had more interaction than the general staff. There are in essence two different communities of practice operating here, one is the management level employees, the other the practicing nurses and doctors who have been left behind. No sense of urgency was created, no value adding perspective on the system was presented for the staff. The coalition was only taken from the management levels and this resulted in the coalition being inefficient in terms of the practicing clinical staff, as there will be leaders of opinion

on every level of an organisation. By ignoring the non-management staff the responsible were ensuring the system a rough reception in the lower tiers of the organisation. This was arguably mitigated by the super users, or floor walkers as they were called after go live, but these were found on a voluntary basis and no effort was made to actively recruit the most influential people, only the ones with most organisational clout.

Even if the recruitment of super users had been focused on finding the more influential people associated with the different specialities, educating them a couple of weeks before the rest does not seem a way of convincing them of the systems merits, especially when the system, at the time of education of super users, had a myriad of bugs, flaws and even a lack of a full translation. The only reason the super users had a better understanding of the system than the general healthcare professional, was practice, they were helpers during the education, and therefore had more practice in the parts of the system specific to their education. The simplest way of addressing these issues would be as mentioned to find and recruit the more influence people in each department, and making sure they understand the system and that they understand the value of said system, they would then spread the idea of the system having merit to the more passive parts of the communities. That the super users where in no way involved in the process of shaping the system seems clear, but the same is also arguably the case with the educators, both in regards to shaping the program, but also in shaping the education. This again reinforces that the coalition seems to be very small and almost only consisting of management.

The new system should have been within the boundaries of what could be accepted by the different communities of practice, as no function would be completely new, so all that had to be done was to communicate that the new system would do the same things just better, instead the lack of any coherent vision caused insecurities in the established communities, that did not know what this new change would bring. The overall intent would have been an easy sell as mentioned above, the system is only supposed to replace, not be a completely new system. However, with only management involved, the vision was not communicated or if communicated it did not makes sense to the general staff. The vision is supposed to be a simplified, and arguably glorified description of the change, what the general healthcare professionals got instead was mostly silence, with a single short introduction, before the education, that showed off the capabilities of the system instead of communicating the vision behind it. As nothing in the system would be completely new, except how to access the functions, this failure could have been alleviated by simply communicating the intent of the new system, and why it was better than the seven it replaced. The management were well informed, and not only that but also seemed to have a constant source of knowledge in the form of “readiness meetings” and being part of determining the requirements of the system. the system was

completely new to most healthcare professionals when presented at the education, the only information that they had been given was an intranet message around a year before the education, some seems to have taken part in a single show and tell, session where some of the functionalities of the system were presented. The complete lack of information means that the healthcare professionals had no sense of ownership, and that the system when presented at the education was completely new to most participants. Instead of constantly feeding the healthcare professionals information around the system, so that they could mentally prepare for the change, everything was done all at once. A constant feed of information would have allowed the communities to move their boundaries incrementally instead of all at once which was the case.

The education

As mentioned above the education was formed in such a way that there was not much leeway for questions, which was because of a lack of time allotted to the education. The clinical personnels time was deemed more important than nonclinical staff, and it is the reason why a large portion of the educators are non-clinical personal. The lack of clinical personal as educators was also because of the cost differences in having doctors and trained nurses compared to the secretarial staff. This was worse in the case of doctors as their paygrade is significantly higher than the other clinical staff. As the clinical staff, did necessarily teach their own specialities, and there were no doctors to teach other doctors, a solution would be to only choose non-clinical staff, and due to their lesser importance in lifesaving roles, and lower paygrade, take the time to educate this group properly, this larger pool of educators would also enable an approach of only teaching a single or two of the clinical specialities.

The major problem with the education, and the fact that many of the healthcare professionals were scared and frustrated, is, like mentioned earlier, miscommunication. If the healthcare professionals had been properly informed about the format and scope of their education, it could have eliminated some frustration, and properly prepared the healthcare professionals for what to expect. The tiny amount of information that would have to be communicated to make this issue non-existent, should have been sent out multiple times, hammered into the clinical staff until there was no doubt that they understood that their education was only going to be a supplement, and their use and practice in the system would be the main source of learning. That the education was only an introduction, should have been communicated, as an introduction it would have been a perfect place to try and communicate the vision, and get the healthcare professionals aligned with the change, what they got instead was an education in how to use some basic functions without any context. This seems to be an effect of the miscommunication between the groups assigned to shape the education, and the

ones determining the purpose of it. Either that or they held a belief that the system and purpose behind it had already been successfully communicated to the staff.

The lack of any cohesion in the vision and communications of this is also evident in form of the education. Which seemed fine by standard of most of the nurses interviewed, they like the structure of learning, where they would get a hand on feel for the system, the problems were more with the lack of time invested into it, and the one-dimensional approach that did not allow them to see how the system would function in the "wild". That each function of the system was presented on its own without tie in to the related was one of the largest grievances among all the interviewed nurses, they got a feel for a single function without seeing how it would work when they returned to their respective fields and specialities. This leads back to whether the education was made to reflect reality of the different situations it would encounter. Following a patient from their admission to the hospital, through a complete passage, through the system with everything mapped out, assigning them to a bed, how to administer medicine, how to prepare the patient for an operation, and so on, which would end with the writing the patient out of the system. This approach would seem to be the preferred by the nurses and was even mentioned directly by two of the interviewed nurses when they were asked what they thought could have been done differently. This preferred structure would help them understand how the system worked and how they would operate it, which would arguably make for a better introduction than the current segmented and heavily assignment focused one would.

The educators tried to create a positive mood surrounding the system, this was done by ensuring that the participants who needed help would be helped, by framing the system in a positive light and by asking leading and very easy questions, this could help shape the narrative of the system into a positive one, but as is evident from the gathered data, this was not an actual part of the curriculum and they were fighting an uphill battle against a system that had flaws, and management who did not seem to care about the process. Their education was scripted down to minute details like what to say and when. The educators where left to fend for themselves, and in the end, they created their own coalition, or small community of practice, as it seemed that no one would take responsibility for the overall flaws in the education, the educators went around management and changed the education into something more in line with what was efficient and acceptable to their trainees. This means that each educator changed the standardised teaching methods into something more persona, it could have resulted in varying levels of efficiency and practice, but it seems that the educators have come to an agreement about what should be done about the teaching, and like any community of practice they will share and shape knowledge. This should in time turn the personalised practices of each educator into the joint practice of a community.

Go live

As mentioned above the requirement specifications of the system did not seem to be completely aligned with reality, which makes sense considering it was shaped by only management level employees. This caused frustration among the general healthcare staff and a waste of time among the staff trying to figure out how to align a system not suited with their needs to their workflow. That the older systems were put into read only mode when the other system came online did not help as this stranded the staff using a system that at the time of go live still had many flaws. The reasoning behind this is clear, this would force the staff to familiarise themselves with the system, and is again very aligned with a heavy-handed management approach, where the non-management staff is just supposed to follow instead of being an active part of the process. Appropriating the help of the general staff instead of alienating them could have helped alleviate some of the resistance to the system. That resistance to the system existed was very clear when talking with the nurse. The creating of short terms victories to help shape the narrative of the system into one of success and changing the mood, seems almost impossible as none of the ground work for this has been done. It almost seemed like the management did not care, or at best just expected the healthcare professionals to accept the change without a fuss, despite no preparations or help during the upstart phase.

The floorwalkers and the reduced workload could not equate proper training or an actual understanding of the system. Despite this, the floorwalkers were a very useful tool to some of the nurses, the problem was just that they all had different areas of expertise and competences, there was even a few brought in from America, that held a better understanding of how the technicalities of the system worked, though they had no experience with the context or configurations of the Danish version of the EPIC system. This would mean that asking one person when a problem was encountered was often not enough and would result in the staff running from floorwalker to floorwalker trying to find one where the expertise matched the problem at hand. Most floorwalkers where taken either from the ranks of the super users or educators, and did possess a greater familiarity with the system, but in the case of the super users, not much else as their education was just an earlier version of the same education given to the general healthcare professionals. This and that the floorwalkers where often staff unaffiliated with the specialisation in which they had been trained, made it impossible for them to be a resource in regards to crossing the often-wide gap between the setup of the system and the day to day of the different specialities of healthcare professionals.

it seems that the system was brute forced into working, the implementation process did not follow any kind of best practice, and the programs that it would replace were shut down or turned into read only versions as soon as Sundhedsplatformen came online, this took away any choice for the healthcare professionals, they simply had no way of rejecting the new system while still being able to carry out their work. While there might have been some degree of rejection if the system had been an option, but currently there is no alternative even when the system does not work as intended, as the example with the nurses that now must print and scan results to get them from one of their department specific systems into Sundhedsplatformen. Even if it requires extra work on their part, they have no choice but to embrace the system. It might have been prudent to try and integrate the system, so that data could be transferred instead of forcing the healthcare professionals to constantly go back to a dead system. A higher level of initial integration with the previous systems could also have helped alleviate some of the issues, like the nurses having to print out sheets from one system and scan them into another.

It seems that most of the problems, sans the system not being completely ready at the time of go live, or the education for that matter, could have been solved by two simple initiatives. The first being a higher level of information, the interviewed nurses, at least the ones unaffiliated with the educational process, where told almost nothing about the system, the purpose of the education and the reasoning behind both. Something as simple as feeding information to the involved parties could have alleviated much of the fear and confusion surrounding the system and by doing so, lessen the tension and resistance to the system. The other initiative would be to involve the people who were going to be the primary users of the system, instead of just their managers. They would have to be involved in not only determine the capabilities of the system, but also identifying the trendsetters, and giving them a sense of ownership with the system making them a part of the educational process, either as super users or as educators would have shaped the narratives told about the system into something more positive. These two relative simple suggestions would have made for a completely different implementation, both in the educational phases, but would also help shape the system into something more useful to the communities.

The next segment will try to answer the questions of the problems statements, using all that has been previously learned.

Conclusion

Here the questions from the problem statement will be answered using the data gathered and analysed throughout the project, with a focus on what was gleaned in the analysis and discussion.

The overall question was;

How is the user education and implementation carried out in relation to the different communities of practice of the involved hospitals and sub-departments?

The state of things taken into consideration, the easy answer is, it was not. The more complex answer is, that the communities needs and wants where equated to the management level, this seems like a gross lapse in judgment, as the fact, that there is a difference between management and the more general staff, seems common knowledge. The reasons behind this might be attributed to a cultural misconception, from an American company believing that a direct translation of the implementation process used in the states, would work equally well in a Danish context. This seems highly unlikely as similar systems have been implemented, in Holland, England and France.

As such almost all the sub questions in the problem statement have the simple answer, they did not accommodate the different communities of practice in the education, they did not use communities of practice to help mediate the user education, they did not use the communities of practice to mediate the implementation during go live. This even though the chosen type of education could not lend itself more to the concept.

How does the user education accommodate the different communities of practice?

The education was supposed to be only an introduction, the idea was, that afterwards the participants were supposed, in the comfort of their own communities, to learn how to navigate the new system. However this was neither well understood nor well communicated, meaning that instead of activating the communities as a place for learning, they were frustrated and uncertain about what was to happen, resulting in the system being badly received. Though it seems management where well informed about the system in general, they just forgot to pass the information down their chain of employees.

How are the communities of practice used to mediate the implementation?

As simple as it seems the implementation was not handled in a way that could be described as good practices as is seen using Kotters eight steps. This viewpoint appears if the focus is on the general implementation, however if the management sphere isolated, the picture changes. They were well informed through their readiness meetings, they were the ones recruited to help map the requirements to the system, which means it would be shaped after their needs. The problem is that

management cannot be an island isolated from the more general staff. A better metaphor is that management is the top of a pyramid, and if the foundation crumbles the top comes tumbling down.

The findings of this paper would look completely different, had the management staff been the focus instead of the nurses, it would paint the picture of a well-planned and well executed implementation process. This would in no way have changed the massive problems that are evident throughout the implementation, but could provide a falsely positive picture of the implementation. Therefore, the primary way of changing this implementation from the problem riddled mess it seems, into something efficient, would only require a shift in focus, from the smallest user group, the management, to the more general user.

What can be done to better incorporate the different communities of practice in the user education, and the implementation in general?

Misinformation, or lack of information seems to have crippled the entire process, if the different communities had been more involved, or even just informed about the process.

The education was even so out of synchronisation with reality that the educators had to rearrange it, this was initially being done without the consent, however as it became common practice, the educational coordinator greenlit the changes. These changes were made by individual educators, because of the consensus, that the current form was inefficient or sometimes downright counterproductive. Allowing the educators more freedom of expression seemed to have eased some of the concerns, and as the educators gathered more knowledge about the system, through their newfound community as educators, they are able to share, collaborate and align until the process is back to being a more homogenous one. That the educators had to improve the training process independently seems to be the indicative of the more general problems of this implementation process. There seems to have been a lack of overall vision. The implementation was stated to be a success because it had to, there was no other choice.

Instead of taking the interests of different communities of practice into consideration, it seems that a general idea of what was needed was formed without taking differentiated interests into consideration. It is too late to change the processes for the two hospitals in question, the processes seems to have become better already, since the educators have changed the scope of the education and the system is less flawed now than it was during the first iterations of education. There are still problems with the education, even though changed by the educators, it is still not targeted at what

the nurses do, but in what branch in the hospital they reside. There is a myriad of different functions in each respective branch, and even the education tailored to the different branches seemed lacking, in regards to covering the different functions performed by the healthcare personal.

An improvement to this has been suggested by multiple respondents; why not ask the healthcare professional to design an average patient progression, and then translating that into the system so that not only a general introduction to the system is given, but this general introduction would be relevant for the respective groups of healthcare professionals. This proposal could be done easily, as plotting a general patient progression should be a simple task for a group of individuals that follows patients through such progressions daily. Then translating these into the system, should again not be a problem, as it should be able to handle the most routine patient progressions, which would be the case here. This would allow the different communities to see the usefulness of the system, and could help create value and through seeing the value a sense of urgency. Doing this could be a first step towards actual user participation and a smoother transition from the old to the new.

The timeframe, as mentioned earlier, also posed a problem, at least in the sense that the general healthcare practitioner was not presented with much information before the actual system was taken into use, and therefore did not have time to mentally prepare for the transition. A more constant steam of updates from the time the system was ordered until go live, could have alleviated this, something as simple as progress reports or something similarly unimportant to the general healthcare practitioner, could have kept the interested informed, and the not interested more aware that change was coming.

That the members of each separate community was not educated by members of their own communities also could have been alleviated easily, as one of the educators say, if doctors had taught doctors, and by extension nurses had taught nurses, the implementation would have gone smoother. The reason behind this was a mixture of not wanting to pay the doctors who have a significantly higher paygrade than the nurses, and not being able to spare them, the question is whether these sacrifices would not have been paid back in full with a swifter and more accurate implementation and educational process, as it is much easier to align the education with something that is acceptable to a community when the educator is part of said community.

It seems that the entire implementation was crippled by the very management centred process. That though the management was well informed and active participants in many aspects of the implementation, they failed to pass the relevant information down the organisational chain, and involve their subordinates. This caused frustration and fear among the respective communities

involved and though this thesis only focused on the nurses, the gathered data suggest that this was universally the case outside of management.

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