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An Improvement Engine for empowered change in healthcare

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Introduction

There is a strong focus on the need of change in healthcare from both a patient and a political viewpoint, especially since the landmark report Crossing the Quality Chasm: A New Health System for the 21st Century (Institute of Medicine, 2001). The book identifies six aims for improving healthcare: making healthcare safe, effective, patient-centered, timely, efficient and equitable. However, the healthcare services have been a tricky business to change. The implementation and diffusion of new solutions, rather than their invention, seem to be the vulnerable phase of the change (Adler et al., 2003). In addition, the need for knowledge about the context and process of change in healthcare, in order to make change programs more effective and less time consuming, is urgent (Den Hertog et al., 2005). One problem practitioners in healthcare face is initiating and managing change in a setting in which there are many forces that work to keep the status quo (Adonolfi, 2003).

Change management theory has traditionally started from the question how to manage planned change in an organization and overcome the ever-existing resistance in order to accomplish the desired outcome (Lewin, 1951, Kotter, 1996, Pardo-del-Val & Martínez-Fuentes, 2003). This theoretical viewpoint is in line with the top-down approach often used in practice. Another way of looking at change suggests that it cannot be managed. Instead change is an ongoing organic, evolutionary learning process (Alvesson & Svenningsson, 2008). This perspective has also contributed to the practice of seeing change as being everyone's responsibility (Doyle, 2002).

This article describes an action research project whose goal is to stimulate change in a university hospital environment. The project is part of an EU funded project called KASK Innovation, which aims to exploit the potential for innovation of the public health sector in Scandinavia, primarily through user-driven and employee-driven innovation. The approach is action oriented and aims at producing both knowledge and change. A well-defined process, including a self-assessment model, was developed and labelled the Improvement Engine, with the purpose of stimulating change. Questions raised in the self-assessment models, such as the Malcolm Baldrige National Quality Award (MBNQA) model, were used as catalysis at workshops involving the participants and one of the authors (KS). The purpose of this article is to describe how an Improvement Engine can be used in order to stimulate change and what experience and results it can generate. In particular, the Strengths, Weaknesses, Opportunities and Threats, (SWOT) (Johnson et al., 1989) of the methodology are analysed and mapped with the use of Pettigrew's strategic change model (Pettigrew, 1987). This model recognizes that the outcome of change initiatives depend on content, but also on context and process. Pettigrew used these perspectives to understand strategic change, hence the name of the model, but they are equally relevant for other change initiatives. Armenakis and Bedeian (1999) identified the same three themes when investigating organizational change research. Most previous research has focused on the content or the process, with the context lacking its share of attention (Herold et al., 2007).

The following parts of the article cover a short presentation of how the Improvement Engine was developed. The methodological aspects are described, and the results section consists of one part that gives the results at the healthcare unit that have used the Improvement Engine. The second part of the results presents the participants'

experiences of using the Improvement Engine. Finally, some general discussion and conclusions are given with regard to content, context and process, in developing and evaluating a change initiative with the use of an Improvement Engine.

The development of the Improvement Engine
The Improvement Engine was developed primarily on the basis of the pre-understanding of one of the authors (KS) who had been a consultant for twelve years in the area of change management. One particular experience was that change is often initiated from the top and then implemented in or forced upon the organization (Elg et al., 2011). The starting point of the Improvement Engine was to turn this upside down and find a way to produce change from the bottom up by utilizing the drive and motivation of the employees (Amabile et al., 2005). The methodology was taken forward in a continuous dialogue with healthcare professionals. Four different principles to support change were included when the Improvement Engine was developed. The principles were *everyone's involvement, incremental change, self-assessment* and *learning*. Extensive research has already been performed on the separate principles, but the combination, e.g. self-assessment combined with everyone's involvement, has not been as thoroughly investigated.

Everyone's involvement
An important issue when making improvements is to facilitate the opportunities for all employees to be committed and participate actively in the decision-making and the improvement work (Bergman & Klefsjö, 2010). Continuous improvement cannot be successful in any organization without the active involvement of the people (Bhiuyan et al., 2006, Herold et al., 2007). It has been shown that employee involvement and commitment are crucial for organizational performance. For example, Lockwood (2007) showed that employees that are highly committed perform 20% better and are also 87% less likely to leave the organization. The principle of everyone's involvement is emphasized in the process of the Improvement Engine, as everyone at the department is invited to participate. When the work group is put together, some of the participants are picked randomly from the group of volunteers, and some are specifically asked to participate, in order to assure a good balance of professions, gender, age and so on. Using this method, everyone has a chance to participate. Another demonstration of everyone's involvement is that the management team should from the start be committed to executing one or more of the resulting action plans. In this way, they partly give up their right to make decisions. This can be seen as a small leap of faith, showing trust in colleagues. Since only a small part of the department is involved in the actual self-assessment, and one overall goal is to affect the climate, it was considered that visibility and dialogue were crucial. Hence, the project plan and the results should be presented to everyone, and the participants should be encouraged to discuss with their colleagues continuously, and specifically when preparing their individual assessment.

Self-assessment
One way to trigger a reflective approach and identify improvement areas is to use self-assessment (Finn & Porter, 1994; van der Wiele et al., 1996). The findings from Conti (2002) suggest that several approaches to self-assessment may be successful as long as they fit the organization, are used continuously and foster participation. Moreover, it has been argued that the appropriate follow-up of the self-assessment, the establishment of action plans and their implementation, is highly dependent on the commitment of top

and line management (Porter & Tanner, 1996). Many different models have been developed to support self-assessment. The self-assessment that was made during the workshops followed a structure of the MBNQA but was consciously and massively simplified in order to cohere with the purpose, and deliberately kept very open to interpretation. It was considered more crucial to find and use the urge to change than to make sure that the assessment was absolutely correct. Another key issue for choosing the self-assessment approach was that it might make it easier to implement the suggested changes (Prybutok & Stafford, 1997).

Incremental change
One goal of the project was to identify improvements that the employees found important and possible to make quickly, i.e. incremental change rather than radical change (Pardo-del-Val & Martínez-Fuentes, 2003). One intention here was to support a climate in which employee-driven change is seen as possible, rather than putting too much emphasis on what is actually changed in the beginning or accomplishing radical changes. Ekvall (1996) claims that a climate for creativity and change can be described with ten dimensions (freedom, risk taking, idea time, lack of conflicts, debate, trust/openness, dynamism/liveliness, playfulness/humour, challenge and idea support). During the intervention, via incremental changes, we tried to support these dimensions and hence such a climate.

Learning
There has to be continuous learning and adapting to be a learning organization (Senge, 1990). Nonaka (1994) performed important work in this field by discussing how knowledge is created and managed, and exploring tacit and explicit knowledge. One idea in introducing the Improvement Engine was to make it available to all the departments and units at the university hospital. The structure of the self-assessment and the terminology used were therefore kept general, in order to make learning from each other possible. Since all the units and departments that run the Improvement Engine will use the same framework, the participating departments can look at each other's results and learn from each other. This works for the actual assessment and for the action plans. Over time, the knowledge base will increase as more and more data are added. The Improvement Engine should be run at each department once or twice a year in order to facilitate continuous learning. Many of the participants should be replaced each time, but some will remain in the group for more than one run in order to be able to relate back to previous discussions.

Process
Based on the principles mentioned above, a total of four phases were considered necessary and were developed and put in a process, i.e. plan project, identify improvements, define actions and prioritize actions (see figure 1).

[Insert Figure 1]

Figure 1 - The Improvement Engine process. The four phases with activities and deliverables.

Methodological aspects
Participatory action research was used in this study with the intention to stimulate a collaborative context with a partnership between the actors involved (Rönnerman et al., 2008). Characteristic for action research projects in general and the aims of this project

in particular is the longitudinal spiral of steps with interrelated circles of planning, acting, observing, reflecting and re-planning (Kemmis & McTaggart, 2005). The Improvement Engine process was run at the Department of Physiotherapy and Occupational Therapy at Sahlgrenska University Hospital in Sweden. The department was chosen because of accessibility aspects and that the head of the department had shown an interest in improving the department. The department consists of units at four different sites, and one workshop was held at each site. At each workshop up to eight volunteering employees participated and on each occasion both physiotherapists and occupational therapists were present and active in the discussion. Intentionally, no managers at any level participated in the workshops.

The purpose of this article is to describe how an Improvement Engine can be used to stimulate change and what experience and results it can generate. Hence, besides presenting the Improvement Engine and the results of using it, we also have the ambition to capture a deeper understanding of the participants' experiences of using the methodology.

Data collection of experiences
The study draws data and analysis from five semi-structured interviews. The interviewees were not picked at random, but one participant from each workshop and the local project manager at the department were selected based on their interest in the methodology in general and the study in specific. The interview questions were based on the components of the strategic change model (Pettigrew, 1987) and intended to illuminate the interviewees' experiences of the strengths, weaknesses, opportunities and threats of using the Improvement Engine. All interviewees were considered key representatives and had been active in the project from its start. They were given oral and written information about the study. All participants who were asked to participate in the interviews accepted the invitation. The interviewees had varied professional backgrounds, being both occupational therapists and physiotherapists. It might be experienced as unpleasant to express negative opinions either to the department or to the interviewer or both. To reduce the effects of this, all participants were reassured that no data could be connected to a single person and that they had the full possibility to withdraw from the study at any time, without explanation. At the interview, the interviewer asked specifically about weaknesses to encourage the interviewee to express criticism. The interviews took place at the unit about a month after the workshops in a room chosen by the interviewee and lasted about one hour each. The audio-taped interviews were conducted by one of the authors (KS), and transcribed verbatim afterwards.

Data analysis of experiences
The data were analyzed using a content analysis approach. The text was read several times by one of the authors (KS) in order to explore the contents and the explicit meaning of the interviewees' experiences. Text relevant to the purpose of the study was marked and extracted as meaning units (Graneheim & Lundman, 2004). The meaning units were identified and condensed by one of the authors (KS), and then coded using a scheme combining SWOT analysis and Pettigrew's classification, which includes the context, content and process dimensions (Pettigrew, 1987). To finalize the analysis, all condensed units with the same coding were grouped into categories (Graneheim & Lundman, 2004). The analysis was carried out by the three authors to reduce any interviewer bias and to interpret the results as objectively as possible. In order to confirm the analysis further, the categories were presented to staff at the department of

operations development who also had experience of the Improvement Engine, and some minor changes were made to the labeling of the categories.

Results

Results of using the Improvement Engine
One outcome of this action research project was the results of the four workshops that pointed out the strengths and areas needing improvement. The resulting self-assessment matrices had similarities, e.g. there was a common positive opinion about leadership, but there were also obvious differences. This is only natural, partly because the assessments were made at different sites, and partly because the methodology consciously allows subjectivity. The matrix does not claim to represent an objective truth about the workplace but rather the subjective opinion of the participants as a group. For pedagogical reasons the result from one of the assessments is included (see figure 2).

[Insert Figure 2]

Figure 2 - Results of a self-assessment workshop. Black areas show potential for improvement and white areas show strengths.

In this case, potential for improvement was identified within the customer perspective, working with customer needs and customer complaints in another way. Other suggested areas to focus on were using information from benchmarking and including external requirement in strategic planning. On the positive side, this assessment also identified eight strengths, where the current way of working might be an inspiration to others.

Another result was the action plans derived from the four workshops. The results of the workshops were merged into action plans during a meeting between representatives from the four workshops, the management team and one of the authors (KS). The action plans concerned 1) patient focus, 2) benchmarking and 3) creativity and innovation, and included e.g. new ways of working with patient surveys, patient information translated to more languages, an updated performance measurement system, increased time for auscultation, seminars with politicians and inspiration meetings.

Experiences of using the Improvement Engine
Findings from the analysis of the interviews resulted in 228 meaning units. In addition, it was possible to detect the areas of Pettigrew's classification in which the interviewees believed one could find the meaning units (see table 1).

Table 1 - Number of meaning units, using SWOT and Pettigrew's dimensions.

	Context	Content	Process	Output	Total
Strength	12	6	33	11	**62**
Weakness	11	29	21	11	**72**
Opportunity	9	19	17	5	**50**
Threat	13	6	13	12	**44**
Total	**45**	**60**	**84**	**39**	**228**

Furthermore, the grouped and categorized meaning units show 36 categories (see table 2).

Table 2 - Categories concerning the interviewees' opinions of the intervention.

	Context	**Content**	**Process**	**Output**
Strength	Leadership. Open discussion.	The self-assessment model. The excel tool.	Individual preparation. The workshop. Employee-driven.	Mutual understanding. Inspired participants.
Weakness	Poor motivation. Too much diversity among employees.	Project information. The form used in the individual preparation.	Not evidence-based assessment. Unclear process. Time-consuming.	Biased assessment. Communication of the project.
Opportunity	Climate for involvement. Assigned resources for change.	Clarify the objective of the project. Evaluating specific issues.	Management dialogue. Project publicity. Enhanced teamwork.	The initiatives for change. Climate for change.
Threat	Economic distress. Forced change.	Too subjective assessment. Too narrow focus.	Management interference. Too much compromise. Representation in the workgroup.	Problem orientation. Inexact assessment.

Context

Over the years, the prevalent reason for change within healthcare has been economic distress – or at least there is a strong opinion among the employees that this is the case. This has had the effect that you might be met by scepticism when speaking about change. It is hard to find the motivation to take part in change projects. As expressed by one of the interviewees

> "*if creativity is born out of the need to save money,*
> *that is a barrier rather than an opportunity*".

Another aspect of the context is that the participants in the assessment workshop had different backgrounds, roles and so on. This diversity can present a barrier when trying to reach consensus. However, it can also be viewed as a strength of the context to be able to look at the organization from different angles. Other strengths of the context are trust in the leadership and an open climate for discussion. One comment was that

> "*our manager really encourages improvement work and new ideas,*
> *and allows us to try things, learning by doing*".

Content

The self-assessment model used in the Improvement Engine was viewed by the interviewees as a comprehensive model, but it was difficult to understand without a thorough explanation. It was not until the group discussion in the workshop that the participants fully understood the model. Even though the model puts the spotlight on many important aspects, there is still a risk that the work group will focus too much on what is at the top of their minds. On the other hand, it could be seen as an opportunity to use the model when assessing a specific issue. The excel tool used at the workshop

to put together the information was considered very visual and helpful. The project information could be improved to make it easier to understand the purpose of the project and the assessment model. Another important piece of information that should be spread is how much time and effort it takes for each participant. One comment was that

> *"there is a risk that if you're not clear on how much effort it takes, people will eventually not dare to volunteer for these kinds of projects"*

and that is contradictory to the objective of the project. At some of the sites the invitation to participate in the project was presented at a meeting, and at other sites the invitation came only in emails and on notice boards. A meeting is preferable, which was expressed as

> *"I think the information was received well at the sites where they had a meeting, in addition to email and website".*

Process
One of the cornerstones of the Improvement Engine is that it is employee-driven, and this is also perceived as one of its major strengths by the interviewees. The starting point that the majority of the workgroup should be from the group of volunteers is supported by the interviewees, even though this does not guarantee a balanced representation in the work group. The interviewees express an ambition to increase their engagement in the project but, on the other hand, there is a feeling that it is too time consuming for the participants. One interviewee expressed that

> *"maybe it's time consuming just because it's new".*

Even though making an individual assessment caused a great deal of frustration, the interviewees felt in retrospect that it was a necessary step to prepare for the workshop; however, the participants were not ready for the effort it took. Clarity about what is expected of the participants and more readily available support during the individual preparation would have reduced the frustration experienced. On the other hand, the workshop was viewed as a positive experience, expressed as

> *"I personally think it is a way of working that works".*

The assessment is intentionally subjective and open to interpretation, but if the result is too far from facts it might cause a feeling of arbitrariness,

> *"it was like 'let's find some areas', and we found some, but maybe we could as well have ended up with some other".*

The fruitful discussion with the management team was one of the most rewarding effects, expressed as

> *"they not only listened, they even found it interesting".*

There is a risk, however, that they interfere too much and suppress the participants' inspiration, partly owing to their access to information. The result risks becoming too much of a compromise so that the really brilliant ideas might get lost along the way. One of the interviewees said that

> *"they [the management team] altered the issues to something I maybe didn't recognize".*

One major opportunity that should be exploited is to improve the publicity about the project. Since one overall goal of the project is to affect the climate for change, communication is crucial before, during and after the project.

Output
The actual hands-on results of the project are three action plans. It is too early to draw any conclusions as to the effectiveness of the actions, and neither is that the purpose of this study. There is also a common feeling among the interviewees that the assessment is probably biased and does not show a true picture of the department. However, that there are action plans is a goal in itself. A strength of the output of the project is the perceived increase in understanding between different work groups, different professions, and between management and the participants.

Since only a fraction of the employees are actively involved in the project, in order to use resources efficiently, the influence on the climate relies heavily on the diffusion of the effects and experiences of the project. In the interviews this is seen as a weakness that has to be improved, cautiously expressed in one interview as

> *"I think maybe then, it has affected us who participated,*
> *but not that much the whole group, maybe"*.

The participants agree however that it has been inspiring for them and that it is too early to say whether it will have a positive effect on the department as a whole, in creating a climate for change.

Discussion

Practical and research implications
After this study, the department has repeated the project with the Improvement Engine, which is a sign that it had practical relevance for them. They have furthermore indicated that they want to integrate the Improvement Engine with the balanced scorecard process. The hospital has also shown an interest in using the Improvement Engine as an auditing tool. This implies that the Improvement Engine could be integrated in both auditing and balanced scorecard processes in healthcare in order to strengthen the empowerment. Another possibility that has been discussed is to apply the Improvement Engine methodology to a specific process instead of at a department. It is also possible that action plans derived from this initiative will be turned into packaged services, available to other hospital departments that also run Improvement Engine projects and identify similar issues. In this way, the competence and the climate for change at the university hospital can in the long run be stimulated and improved. There are many sub-cultures in a large organization such as Sahlgrenska University Hospital and the possibility to perform employee-driven change varies. In terms of context, it seems that, at the department at which the Improvement Engine was tested, the management team allowed and encouraged employee-driven change, and the results of the project, perhaps as an effect of the leadership, were rather satisfactory. Most likely, a management team that does not support employee-driven change will generate a different outcome. Following the arguments above, one implication is that a prerequisite is that the top management is supportive. This fact could possibly be especially relevant in healthcare since the approach to change is often top-down and employees are not as willing to take actions if the management team is not committed. Another implication is that it is a misuse of resources to work with people that do not want to work for change. The Improvement Engine methodology puts a great deal of emphasis on the opportunity for

employees to take the initiative to change. We suggest that it is better to choose other change initiatives if these prerequisites, top management commitment and employee willingness to work for change, are not present.

Methodological considerations
The objective to stimulate collaboration and partnership between the actors involved in this case was partly fulfilled by using participatory action research. Due to the short time frame, however, the ambition to conduct repeated spiral of steps could not be fulfilled (Kemmis & McTaggart, 2005). The semi-structured interviews were found to be a good strategy for capturing the variation in the participants' experience of using the methodology. No one declined to participate, indicating that both this form of data collection and the opportunity to reflect on using the Improvement Engine were appreciated. An alternative would have been to conduct focus group interviews including all the participants or to use a questionnaire. Neither of these strategies was considered needed in this case since the semi-structured interviews generated a rich amount of qualitative data. To give the research trustworthiness, the data collected and the persons invited to participate seemed to be relevant regarding the aim of the study, and represented a similar context and similar circumstances. The data collected were comprehensive and very well suited for subsequent content analysis (Kvale, 2009). By combining SWOT with Pettigrew's classification in the analysis, this study also tries to make a contribution to the methodology in the area. This way to visualize the analysis could be recommended in other research.

Conclusion

It is our intention to shed light on what kind of issues managers must deal with when they try to stimulate change in a healthcare setting. Specifically, the purpose of this article is to describe how an Improvement Engine can be used to stimulate change and what experience and results it can generate. One result of the project is the three action plans, concerning patient focus, benchmarking, and creativity and innovation, that were developed and implemented. The results of the evaluation will also contribute to a new and improved Improvement Engine methodology that can be used by practitioners in the future. This article also highlights the need to address not only the content but also the process and context when initiating change. In contrast to many other change initiatives in healthcare, which are often initiated at the management level or at a political level and implemented in the organization, we have tried a bottom-up approach with empowered employees. The conclusion is that this empowerment approach is a promising avenue for change in healthcare. The analysis implies that an open dialogue with managers that unconditionally trust their employees is needed, since the subjective perceptions are getting preferential treatment over objective facts. The Improvement Engine is developed to find the truth which is true for the employees, and this focus on subjectivity might result in biased or inexact evaluations. Another conclusion is that the communication about the project is of great importance. The project and its objectives have to be described in a clear and interesting way in order to attract volunteering participants, and the results have to be communicated to affect the climate for change. If those conditions are met, this methodology results in inspired employees that can perform changes and, by doing that, also make the climate more tolerant to change. However, one important issue for managers in healthcare is to motivate employees to want to work with change. People who have been subject to too many unwanted and forced changes may have lost their passion to develop and improve. Our wish is that the Improvement Engine will be a useful methodology for making change enjoyable.

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