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CREATING AN INNOVATIVE ATTITUDE AT WORK

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ABSTRACT
This paper focuses on the introduction of creative methods and approaches to the staff in a major public service institution in collaboration with design researchers and design students. The project aim was to enhance creativity and innovation with focus on the future well-being for the staff and the relevant stakeholders as well as to teach the participants how to create new products and solutions for hospital environments in general.
Several experiments are made these years to define and integrate the needs of the users or even to involve the users and stakeholders deeper in more stages in the design process. In the MIPS-project (MIPS = Employee-Driven Innovation in the Health Care sector) a multidisciplinary group of employees at Aalborg Hospital were trained in handling the design process *themselves*. This should make it possible to promote employee-driven innovation based upon the daily observations or tacit knowledge among colleagues in a complex organization. The set-up of the project was organized as a series of workshops also involving design students, and the paper outlines the difficulties and results from the initiative.
The project showed that designerly methods can be very effective in creating the participants' positive innovative approach, but also that it is a challenge to translate such methods and vocabulary, and more trained designerly assistance might need to be applied in the process.

Keywords: employee-driven innovation, user-driven innovation, systematic ideation, hospital design, design and health care, tacit knowledge.

1 INTRODUCTION

In recent years there has been a rising attention on the value of involving users and stakeholders in the design process when developing solutions to promote the well-being and efficiency of employees in different areas. Prominent design offices have specialized in this area and the demand for such approaches seems to be growing. The area has been given international attention in the research community of designers, antropologists and management, [1], [2]. Obviously better tools, services and procedures will create better quality, but it might even strengthen the innovative force of an organization or a company if the innovative approach is rooted in the organization and the attitude of the employees themselves [3], [4]. The same approach lies behind the Program on Employee Driven Innovation (EDI) offered by the Danish Business Authority in 2009, and the challenge of setting up pilot projects was a.o. taken by Aalborg Hospital (AAS) following previous initiatives to position the hospital as the most innovative hospital in Denmark. The hospital has developed a special task force "Ideklinikken" where employees can hand in ideas or concept proposals that creates value and preferably can lead to inventions and new products to be put into production. To boost the innovative culture even further the MIPS-project was set up in collaboration with researchers at the Department of Architecture & Design (A&D) at Aalborg University (AAU), who planned the course as a series of workshops in 2010-11. 35 employees at the hospital voluntarily took part in the project that would teach them to spread a more innovative attitude in the different departments ranging from the IT-department and the Kitchen section to different departments within Medicine, Surgery and Health-care
The overall objective to create a more innovative hospital through the enhancement of the employees' creativity and innovative attitude and action created some sub-objectives:

1. Demystifying the concept of 'design' and 'innovation' for non-designers
2. Creating a staff of innovation ambassadors among the AAS-staff
3. Identify a range of new ideas and design products and procedures based on the employees own observations.

2 METHODS FROM THE UNIVERSITY DESIGN PROGRAM

The course was structured around a series of 6 workshop days, where the MIPS-Project Participants (MPP's) tested designerly methods and approaches to collect and process ideas in collaboration with colleagues from other departments, whereafter they were expected to present them to their own working environment in between each workshop day.
The participants own observations were gradually developed to a higher level of concreteness and detailing, so they could experience how observations on daily obstacles and sources of irritation at work could be systematically transformed into actions and concrete product ideas.
The project hypothesis was hence that a particular design approach and design thinking based upon user-oriented methodologies as taught and practiced in the education of professional industrial designers could stimulate the problem solving and idea generation among hospital employees.
To ease this process, the researchers put specific attention into the translation of the fluffy or professional terminologies of the designers, so that they could be understood and handled by non-designers. The structure of the MIPS-project course was likewise adjusted in its form, so that processes and phases that might last for a week in a typical A&D student project would be condensed into a one-day workshop.
The following columns shows the different phases, actions and terminology used in a problem oriented student group project (10-20 ECTS) at A&D as compared to their condensed form in the MIPS-project. (Table 1):

A&D-Curriculum terminology	**Typical A&D-students' action**	**MIPS project terminology**	**MIPS participants (MPP's) action**
1.Aligning terminology and getting to know your group	Reading the curriculum Intro lecture by supervisor Discussing personal profiles and competencies Socializing on their own	1.Getting to know the others jobs, personal profiles and perception of 'The Hospital'	Lego: Build your work situation X-Ray C.V.: define yourself 'Ice-breaker' exercises Workshop facilitators show good products
2.Problem finding	Accepting problem defined by teacher or User interviews or Spotting problem otherwise on their own	2.Collecting S.P.O's	Discussing, identifying and taking photos of S.P.O.-situations at work: S: Spark P: Patch O: OBS
3.Design brief	Analyzing and defining the task concerning the limitations, aims and expectations	3.ELEVATOR, CARROUSEL & GOALS	Defining the systems level of solution with ELEVATOR-scheme Defining a range of sub-problems or related factors with the CARROUSEL-scheme Frame the problem in a relatively short, open and positive statement in the GOALS-scheme
4.Ideation & concept development	Systematic Ideation and analysis Sketching	4. Developing ideas and products	Systematic Ideation and analysis Students assist in sketching
		4a. Design students take over	Students and researchers refining the concepts in concept boards
5.Modeling and detailing	Making mock-up's of product and details for test and refinement in correspondence with drawings	5.Valuable concepts	Making simple mock-up's to illustrate and test the product concept
6.Communicating the idea	Doing reports and documentation & technical drawings Powerpoint presentation for exam	6.Presenting THE RIGHT SOLUTION	Acting out with the mock-up's and filming it to present for a panel and plenum

7.Examination	Presenting and discussing the project with supervisors and examinators	7.Evaluation	Presenting and discussing the project with external experts Evaluating the course

Table 1. The phases, terminology and actions in a design students project at A&D compared to the content of the MIPS course for non-designers.

The MIPS project consisted of a series of stages (1-7) in a progression that should lead the participants from a collection of everyday observations into developing product models for test and presentation to investors. In this way it simulates the whole process of a problem-oriented project for design students at A&D in a condensed form, but there are specific differences, that we would like to focus on in the following description of the phases.

3 THE FLOW AND RESULTS OF THE MIPS-PHASES

1. Alignment, socializing and creating an open attitude

The more condensed form of the MIPS-project meant that it was necessary to give very specific tasks with very concrete outputs, because the MPP's only had a single day to get to know the other participants approach and get socialized, while students in an A&D project meet daily for the entire semester. In the MIPS-project they hence started up using the LEGO Serious Play kit where each participant would build symbols of their 'view on their working space' followed by group discussions to find common issues and words for previously undefined aspects (Illustration 1). The exercise was also designed to eliminate any hierarchical obstacles, of which you would not expect to find in student project groups.

A&D student groups are typically recommended to do a web based test of their individual personal profile and discuss the various profiles, while the MPP's filled out a X-ray C.V. with the diversity of the professional and personal skills and networks of each participant was exposed.

While A&D-students would have followed many courses in design quality, the MPP's were given a specific introductory lecture on the design quality in focus. At this occasion they were asked to note words or expressions that they found strange or provocative to prevent the irritation that often occurs when listening to the language of professionals from areas outside your own profession. The lecture also emphasized the importance of participating with an open positive attitude (say "Yes, and.." or "Yes, but.." instead of "No"), and the principle of building upon your partners' ideas instead of shooting them down.

Illustration 1. The participants using Lego bricks to visualize their 'world' (Photo: Kaare Eriksen)

Illustration 2. A handling problem observed by a MPP and handed in as a photo beside the red SPARK 'flame-logo' to show that it is an unsolved problem (Photo: MIPS-project)

2. Problem Finding

A&D-students receive years of training in a user-centered and problem-oriented approach, and they are trained to search for and spot problem areas *outside* their own personal universe. They might typically take up a problem outlined by the supervisor or even find topics by themselves to explore and focus upon. The MPP's were on the other hand asked to search in *their own* environment for inspiration and ideas concerning problem solving. To help the MPP's to come up with useful observations, the MIPS-coordinators defined three categories to observe.
The three categories were: SPARK, PATCH and OBS.
THE SPARK (S) was illustrated by a flame, symbolizing a small or huge problem in the category that you would ignore frequently although it causes trouble or irritation. It might even get worse if no one take action to fix the problem.(F.ex.: The bottle that always spills when you pour with it)
The PATCH (P) is an observation representing a problem that causes trouble or irritation, but someone took action and made a temporary and not fully satisfying solution by rearranging or repairing elements (F.ex: The napkin under the table leg).
The OBS (O) is an observation of situations that inspires you, awakes your curiosity or otherwise could bring valuable proinciples into play when innovating new products that will add quality to your daily work. (F.ex.: a tool constructed as a 'tumbling toy' so it can stand by itself without tumbling over). All together these three categories are called S.P.O.'s.

The MPP's were asked to find examples on SPARKs, PATCH'es or OBS'es in their own working environment and to urge their colleagues to help finding such samples to photograph and upload for the MIPS-course. Each MPP was given S.P.O.-badges with symbols for each of these terms. The S.P.O.- badges were to be put in front of the picture when taking a photo of a phenomenon worth noticing (Illustration 2).
In general there would always be a couple of exercises to do with your colleagues in between the MIPS workshop sessions. More than 160 S.P.O's were uploaded as photos taken with the MPP's own cell phones describing daily problems (Sparks), temporarily solved problems (Patches) and interesting solutions (Obs'es) on 'handling confidential data', 'transporting laundry' and 'organizing bundles of wires around hospital beds' and many more such topics. In fact this seemed to be an effective harvesting of topics to be solved or turned into permanent valuable solutions of general use if they were developed into new products or procedures through a systematic innovative process.

3. The Design Brief

In this phase the A&D students would typically broaden the view on the topic and specify limitations and visions on different levels to align with a specific client. To simplify this view, the MPP's were asked to analyze the possible systems level of the solution to the problem by 'asking *why* 5 times' [5], hence getting a picture of the complexity of each problem and looking at it from above. To isolate this point of view the MPP's would describe it on the ELEVATOR-scheme, illustrating that whenever you meet a design problem, you can solve it on different levels.
Afterwards the MPP's were given a CARROUSEL-scheme, where they could note a range of sub problems and related factors to the observed problem. Here the group could register factors around the product like storing, preparation, adjustment, cleaning, waste handling etc. and finally the MPP's were given a simple sheet to sum up the demands and wishes to the solution, based upon the considerations from the ELEVATOR and CARROUSEL-schemes.
At the end of this phase most of the S.P.O.observations had been analyzed so that the MPP's could cluster and prioritize the topics and make a vote, narrowing the 168 S.P.O.'s down to only 6 topics to bring further in the process in 6 different working groups.

4. Ideation and Concept development/Developing Ideas and Products

A&D-students would typically use different professional ideation techniques to create ideas for details or problem clusters and outlining the overall concept. Many such tasks involve analysis, word plays and sketching with different tools. The MPP's were given a short introduction to a selected range of methods; afterwards each group outfolded the possibilities within each of the 6 chosen topics. As you cannot expect doctors or nurses to be able (or willing) to sketch properly, each of the 6 MIPS workshop groups got support from an A&D-student, who was supposed to act as a facilitator or hands-on 'printer' in the sketching process.

The result of this phase was supposed to be a concept-poster on each idea, but the 'student-as-printer' principle did not seem to boost the conceptualization sufficiently. The results from this specific initiative were so poor, that it was necessary to organize a 'phase 4.a', where the design students and the workshop managers collaboratively redesigned the concept presentations on a separate session before starting the next workshop session with the MPP's.

5. Modeling and detailing/Valuable Concepts

At this stage the 'redesigned' concept presentations were handed back to the MPP's again, and they were instructed in simple mock-up modeling techniques with glue guns and card board boxes. They were given a pile of knots, wires, sticks and boxes and within a few hours the MPP's constructed mock-up's for 'smart pillows', 'wireless heart monitors', 'intelligent wrist-bands for patients' and more (Illustration 3)

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Illustration 3. Nurses testing simple mock-up's on each other (photo: Kaare Eriksen)

6. Communicating the Idea/Presenting THE RIGHT SOLUTION

Normally an A&D-student would thoroughly report the process, the methods used and the final solution in 100+ pages text and renderings, models and technical drawings. The MPP's in contrast simply adjusted and refined the models, took their cell phone cameras and filmed a simulated user interaction with the mock-up's. These films were finally edited into small 'sales videos' to show at the final evaluation of the MIPS project.

7. Examination/Evaluation

At a normal project examination, the A&D students would give a powerpoint presentation to support the previously handed in project and report material. Such a presentation would typically be followed by several hours long examination and discussion between examinators/supervisors and the student group members. In the MIPS project, each project proposal was presented via the 5 minute mobile phone video showing a simulated use of the product mock-up and listing up the advantages of the proposed solution. This presentation was made in front of an invited panel with experts in innovation, technology and investment, who discussed the potential and possible adjustments in each project.

4 CONCLUSION

There are several conclusions to draw when evaluating the results from the MIPS-project, although it is difficult to clearly estimate the long and short-term effects of such an initiative.
We briefly sum up 2 of the most obvious and documented results from the process as they can be divided into conclusions on the set up of the project and the intended effects for the participants and the organization.

Running a designerly innovation project for employees

It is possible to simulate a problem-oriented design process for non-designers with the use of controlled processes with manageable sub-tasks and the use of simplified models, tools and terminology. However it is necessary to include professional design assistance in phases, where visualization is necessary. Such assistance will presumably also be needed if the product development should lead to aesthetically refined product suggestions.

Dissemination of design thinking and innovative attitude

A specific MIPS manual [6] on the methods and approaches presented was handed out to the MPP's at the end of the course to help them diffuse a more open and designerly thinking in their own department afterwards. Several MPP's have reported their use of this manual, and some of them even developed methodological variations to fit their colleagues.

However it has not yet been proven that employees actually did become more innovative, and an increased number in ideas flowing to the Ideklinikken is not yet registered at this point. The present effect is on the attitude and perception of the employees role and possibilities.

The final evaluation documents that most MPP's claim that they achieved better ability to identify problems and opportunities for improvements in their daily work. They also assess that the initiative has increased the capacity for innovation in the AAS organization, hence effecting the possibility to improve workflows and employee satisfaction. [7]

For several MPP's the process has apparently been a strong learning process as illustrated in MPP-evaluation statements like: 'The course has completely changed my way of thinking'. The evaluation report also notes that the MIPS-project established a perception among the MPP's that everyone can innovate – it's not an expert's task. The MPP's also clearly expressed their increased desire to further innovate across departments barriers. In addition, 5 of the 168 S.P.O's were taken up by the Ideklinikken for further development after finishing the MIPS project. [7]

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