Designing a multi-purpose office through Learning by Developing

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ABSTRACT
The ways of learning and teaching have changed from traditional teacher-led teaching towards student-centred learning during the last decades. In Finland, Laurea University of Applied Sciences has created a pedagogical model called Learning by Developing (LbD) to support an integrated learning, research and regional development process. The new ways of working and studying have set new needs for working environments as well. The purpose of this project was to design a multi-purpose office for personnel to support working according to the pedagogic model.

The paper presents a design process. Several data collection, analysis and development methods were utilized in designing a new office. A research strategy was a case study. The process was integrated into the education of facility management students through the pedagogical model. The process proceeded in the following steps: defining an objective, a preliminary study by students, interior design, implementation and analysing user feedback. A theoretical background consists of the concepts of the new ways of working at university facilities.

From an educational perspective, LbD model produced authentic research and learning experiences for students. As a result, a new multi-purpose office was designed and introduced as a working space for twenty staff members. The office was evaluated by the users. The quantity and the quality of positive experiences provided a solid foundation for further design processes. More students are expected to study at the campus in a few years, which most certainly leads to new facility-related projects. **Keywords**
Learning by Developing, Multi-purpose office, New ways of working, Design process

1   INTRODUCTION

A background to the project lies in the changing environment of higher education. The ways of learning and teaching have changed from traditional teacher-led teaching to student-centred learning. Teachers are more coaches than traditional information suppliers while students are active actors and learners. The new ways of learning, teaching and working have set new needs for studying and working environments as well.

According to the Finnish legislation the universities of applied sciences "shall provide higher education for professional expert jobs based on the requirements of working life and its development; support the professional growth of individuals; and carry out applied research and development that serves polytechnic education, supports the world of work and regional development, and takes the industrial structure of the region into account (Polytechnics Act 351/2003, Amendment 564/2009[12]). Due to requirements for pedagogical training, applied research, and regional development, Laurea University of Applied Sciences (later Laurea

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[12] http://www.finlex.fi/en/laki/kaannokset/2003/en20030351.pdf

UAS) created a pedagogical model called Learning by Developing (later LbD, LbD model). The model aims to produce new practices, competence and collaboration between lecturers, students and experts from industry. It is essential that the creation of new knowledge becomes explicit as skills. Graduates have competence in professional doing and scientific knowing. As an action model, LbD outlines the nature of research at the University of Applied Sciences. (Raij 2007.) According to Vyakarnam et al (2008, 19), LbD melds together the main functions of universities of applied sciences: professional education (learning) and teaching based on research (developing).

In the pedagogical strategy of Laurea[13], the LbD process is defined as the core process, which provides the core of Laurea's pedagogical philosophy. The model has been in development for over a decade, from the project-related learning towards student-oriented research, development and innovation (RDI) activities, which are increasingly integrated with learning. In the LbD process (eg. Raij 2007; Vyakarnan et al. 2008), there is always an authentic need for an LbD project. In addition to authenticity, other essential elements in the model are partnership, creativity, experiential learning and research.

This paper describes the design process of a new multi-purpose office for working at Laurea UAS Leppävaara campus in Espoo, Finland. The project was integrated in an educational process through LbD principles. Facility management students were playing an important role as researchers and developers. The methodology, results, and conclusions are discussed in the paper.

2   NEW WAYS OF WORKING AT UNIVERSITY FACILITIES

Information and communication technology (later ICT) has developed wildly during the last two decades. Technology enables multi-purpose work. Work can be done where ever and whenever, alone or together. Multi-purpose work increases the meaning of a physical working environment and sets new demands to it. Digital premises, social media tools, communication tools or video negotiation premises are significant to the success of working. (Hietanen at al, 2011, 7-8.) The general trends and trends in pedagogics particularly, as well as the Finnish education legislation, create the above-mentioned circumstances also at university facilities.

Although the work has developed, physical premises have necessarily not. The growth of an environmental consciousness also sets need for the versatility of premises. A facility is always an investment and it is expected that the utilization rate of premises is high. The offices designed for individual work are giving way for multiform solutions. In the future, the crucial question is: are the offices designed for the needs of yesterday´s or tomorrow´s. (Hietanen et al, 2011, 10-11.)

A possibility to choose a working space facilitates work satisfaction. Facilities also direct operations and create experiences. The culture of the organisation has to support the flexible use of the premises. (Haapamäki, Nenonen, Vartiainen, 2011, 13.) Of course, this principle concerns university facilities, where modern working methods are used.

2.1   Multi-purpose office

The working day of experts consists of different tasks. Peaceful and quiet space is needed for the tasks, which require concentrating. Group work space is needed for the tasks, which require cooperation. Open spaces are needed for discussions and breaks. (Haapamäki et

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http://www.laurea.fi/en/information_on_Laurea/Strategy/Documents/Pedagogical_strategy_l ow_res_01092011.pdf

al.,2011, 3.) A multi-purpose office is a new, flexible space concept to fulfill the different needs. (Hongisto et al, 2012, 46.)

Ergonomics is an important design criterion for a multi-purpose office space, stemming for maximizing human resource efficiency through a high-quality environment. The ergonomics describes a design that is created specifically to fit human dimensions and respond to functional requirements. Crucial to the success of any ergonomics plan is the adjustability of furniture and equipment in the workspace. (Rondeau, Brown, Lapides, 2006, 375.)

According to the occupation rate measurement by Opetushallitus, a Finnish organization for Education Administration, workers spend about 40 per cent of their working hours at their working stations. Teamwork, interaction and mobility have increased. Due to this, offices are empty for the most of the days. Space utilization can be intensified by designing offices according to different employee profiles. The integrated use of premises requires a change in attitudes and the ways of actions of the workers. (Hietanen, 2011, 37.)

According to Nenonen (2012), A multi-purpose office is composed of different types of zones. The zones affect cooperation and concentration in different ways. A multi-purpose office gives the opportunity to choose the working station according to the different situations.

Figure 1 Multi-purpose office zones (Nenonen 2012, adopted from Ehrlich and Bitter).
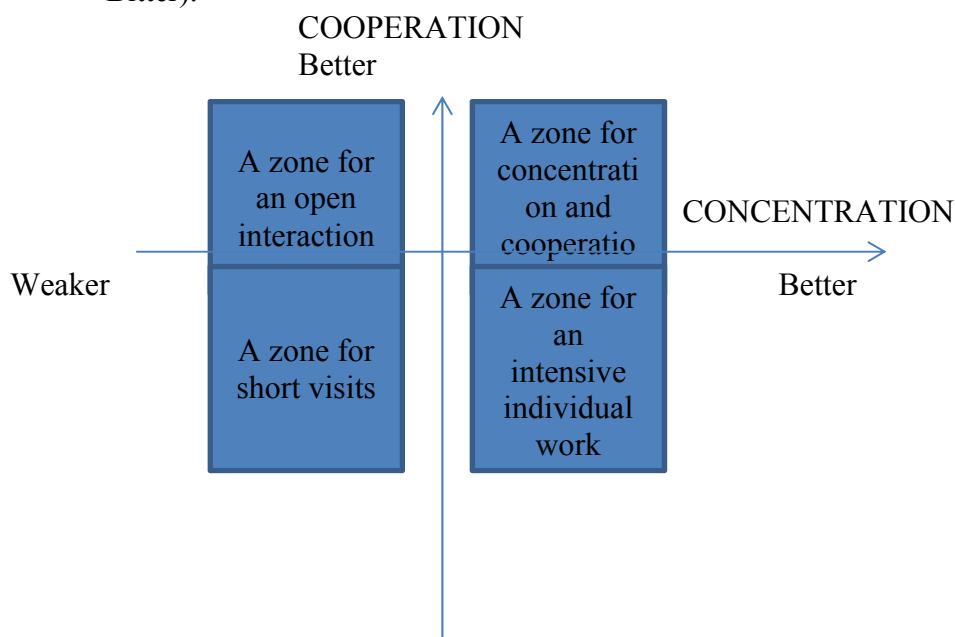
- In an open interaction area, there can be sofa groups, armchairs and tables, which make unplanned meetings possible. People can meet each other's and communicate informally. People can take a break, sit down and relax. The zone for open interaction can be for example a hall, an exhibition space, a box or a café.
- In a zone for concentration and cooperation, the conditions for brainstorming and innovating are ideal. There can be small or big meeting rooms or project rooms, as well as video conferencing areas.
- A zone for intensive and individual work can be an open work station in a quiet work area, a closed office room for quiet working or a closed but shared office room. Also a library or a social area can belong to this zone.
- A zone for short visits may include touch down desks, vendor machines, coat racks, walking routes, copying areas, archives, warehouses and post boxes. Communication is easy but concentration may be more difficult.

2.2   The New ways of working in LbD model

As a result of the LbD model, lecturers´ roles have been strategically redeveloped. The abilities, roles and activities of the staff are developed in the context of the LbD model in a way that best facilitates students' learning. The staff's attitude to students is equality and collegiality. Laurea's lecturers act as educators, professional growth coaches, researchers and developers, network experts, regional developers and experts in their fields. The activities are characterised by stronger links to the professional world and a network-based way of working within Laurea and with stakeholders. (Learning by Developing (LbD) Strategy.)
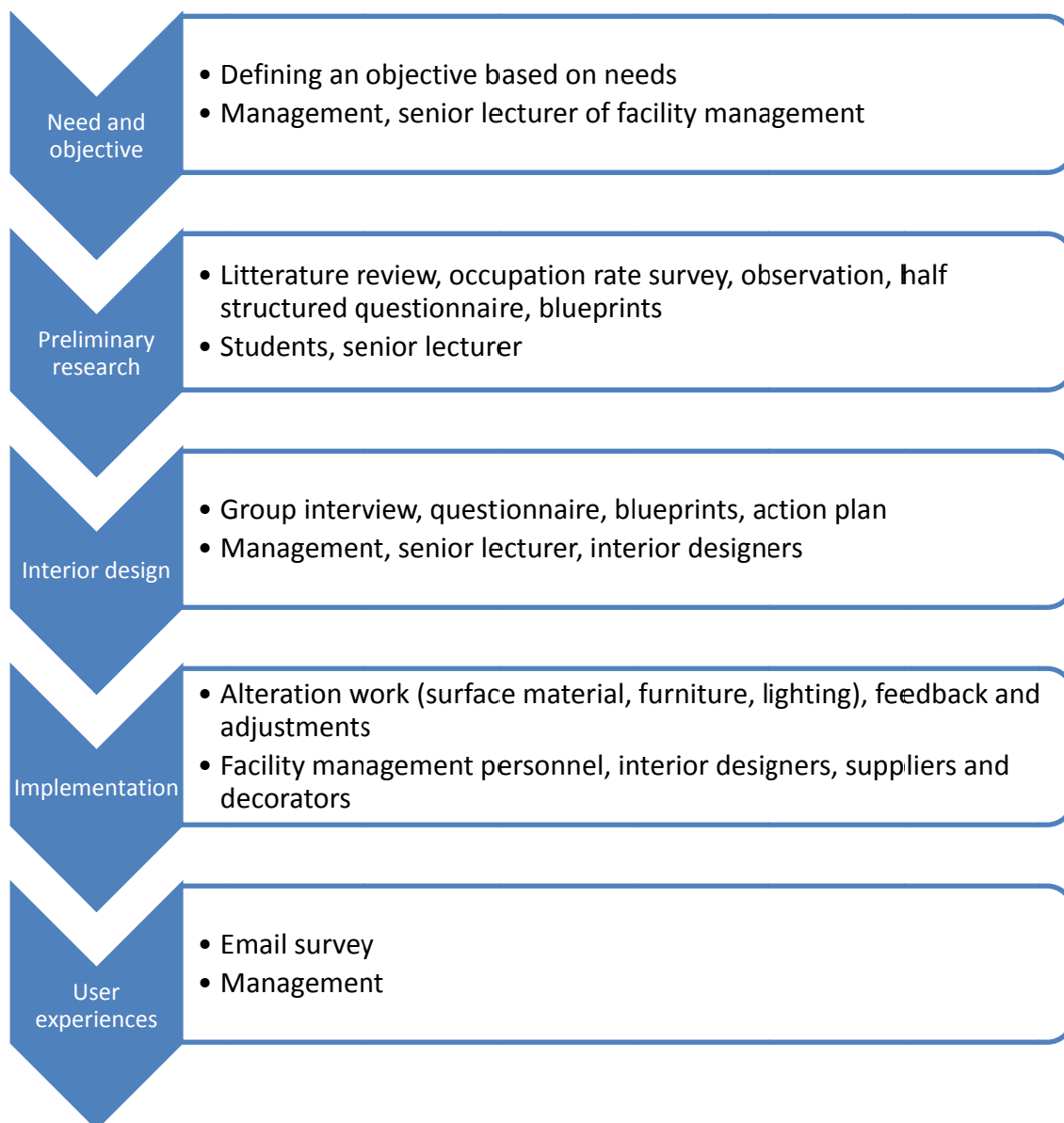
To work properly from the personnel´s point of view, LbD model requires flexible, multi-purpose workspace. During the LbD process there is a need for interaction between students and teachers, as well as industry representatives. There is a need for open interaction with colleagues and management, for cooperation with colleagues, students and other partners, the short visits of students, and for individual intensive work. The facilities have to support all the forms of interaction. From the management point of view, open communication channels are essential. The students need to reach the personnel easily and informally.

3   DESIGN PROCESS AND METHODOLOGY

The purpose of the process was to design a new multi-purpose office for teachers, managers and other staff members to support working according to the LbD model. The design process and methods used in each of the process phases are described in this chapter. The phases, methods and roles of the actors are illustrated in a figure 2. The research strategy is a qualitative case study (Robson 1995, 40).

The authors are working in the organization and, later during the project, also in the new office. Another author is in a management position; another one is working as a senior lecturer. The authors documented the process in order to evaluate it and get data for future processes. Pedagogical model involved students in the design process as researchers. Both authors moved to the new office room during the process, which made them genuine users with their own opinions as well.

Figure 2 The design process of a new multi-purpose office.

Need and objective
- Defining an objective based on needs
- Management, senior lecturer of facility management

Preliminary research
- Litterature review, occupation rate survey, observation, half structured questionnaire, blueprints
- Students, senior lecturer

Interior design
- Group interview, questionnaire, blueprints, action plan
- Management, senior lecturer, interior designers

Implementation
- Alteration work (surface material, furniture, lighting), feedback and adjustments
- Facility management personnel, interior designers, suppliers and decorators

User experiences
- Email survey
- Management

3.1   Defining an objective

A project was originated from a need to get more space for students at the university premises. The number of the students at the campus had increased during the past few years and the way of studying through authentic working life projects had set need for group working classes and meeting rooms for students. At the same time the new ways of working had been adopted among the personnel of Laurea UAS. The work of university personnel consisted of different tasks. There was usually no need for an individual office table during the most of a working day. Furthermore, a need for a new type of an office space was recognized.

The management estimated that four old offices needed to be refurbished to the workspace for students. Staff members from these were to be placed in one old office room originally planned for twelve occupants. These twelve ones were to stay in the room. The number of personnel needing a place in a new room was about twenty. The existing office room was furnished with big, individual tables and numerous cabinets. There was no space to guide students in the office. The area was 185 m2. A multi-purpose office with various zones was

seen as an obvious possibility to develop. The management decided it to be done as an LbD project, which meant that students took an active role in a preliminary research.

When students are involved in a design process, the objective has to be clear and justified. Students tend to question the objectives set by teachers. With a clear one, it is easier to motivate the students to work hard for the result. Furthermore, management has to be committed and available for the questions of students or teachers.

3.2   Preliminary study by facility management students

A group of 2nd year facility management students started the project with literature review in the themes new ways of working, effective work environment, workplace design and ergonomics. Based on the findings, the students redefined the objective: what was the current space need of the staff of the higher education institution? The goal was also to offer new solutions for designing a workplace. (Bui et al, 2012.) Defining the goal by the student researchers themselves was essential for motivation.

Next, the students surveyed the occupation rates of the offices by systematic observations at certain times of the days to collect data on a staff presence in the offices. Through this method, the students also got an insight of the conditions and the challenges of the current work spaces.

Further on, the students continued the research with a questionnaire about the usage of the work stations and attitudes towards the new ways of working. 34 of 75 lecturers at the campus filled in the questionnaire form. Based on the answers, an average staff member spent 4.8 hours of their daily work time (eight hours) in the office rooms. Around 58 % of the respondents used their working stations every day and 41 % three to four days per week. Generally the staff's opinion of their current work environment was satisfactory. 79% replied positively on a question "Do you feel comfortable in your office?" The major reasons for dissatisfaction were related to the old-fashioned design of the current workplaces, which did not stimulate or anyhow inspire for efficient, productive work. Other concerns were related to the issues with HVAC (heating, ventilation and air conditioning). (Bui et al, 2012.)

The lecturers were also asked of the extra need for meeting rooms to guide the students. Most of the lecturers were in need of this type of a space. To find out an interest in the new trends of working, the lecturers were asked opinions about a hot-desk as a workstation. Apparently, a big percentage had a negative feeling about implementing this trend into their working life and only 20 % of the respondents considered this as a positive idea and a good change in a routine work. The students also found out that there was no need to the private offices. Lecturers felt comfortable to work together in the same room with their colleagues. The last survey question covered the issue of an own workstation need. According to the result, the lecturers did not seem enthusiastic about implementing rational changes in the work environment and 76% of the respondents emphasised the importance of having a private workstation. (Bui et al, 2012.)

The method was found to be effective for collecting information on the different characteristics, attitudes, opinions and motives of the people. Based on the research, the students concluded that the staff should be working in a comfortable and productive environment with ergonomic and adjustable furniture. The students draw various blueprints to illustrate the possible layouts of a new multi-purpose office. They also suggested furniture acquisitions and calculated a cost for the suggested furniture.

The senior lecturer was guiding the students during the whole process. She communicated the phases of the process with the management. The management followed the presentations of the students and received the final reports in order to decide the continuum of the project. Though the personnel was quite satisfied with the current working conditions and the attitude towards a new multi-purpose office with hot-desks was expected to be a challenge, the need

to use the office space more efficiently was still existing. Furthermore, the decision was made to continue the process towards implementation.

The design process could have stopped at an early stage without the research help of the students. There was one part-time facility manager at the campus, whose limited time resources could have been an obstacle to the realisation of the preliminary study. However, the study was relevant to get the personnel involved in the process from the beginning. Even though there were several methods used, they were quite traditional ones. Interviews and questionnaires could have been replaced with more user-oriented methods like personas, customer journeys or other design methods. Nevertheless, the students achieved results, which could be utilized in further steps.

3.3   Interior design

An outsourced interior design was a natural continuum to finalize the project, since neither the staff nor students had the competence to finalize the design. Two interior designers conducted a group interview with the staff to be fitted in a new multi-purpose office. People could tell their wishes and fears towards new working conditions. After the discussion, the personnel could also fill in the questionnaire anonymously about their expectations, needs and facts concerning the way of working. Based on the analysis of the results, there were enough people willing to settle down in a new type of an office. Four teachers did not want to move to this multi-purpose office, because of which they were offered a desk in a more traditional office. On the other hand, some teachers wanted to move in a new room even though they had a desk in remaining offices.

The designers suggested a room layout with an action plan of furniture acquisitions, surface materials and alterations. Essential elements were: adjustable and various furniture to allow working in various positions (several different hot desks, chairs and sofas), a room for silent working, small meeting rooms, kitchen facilities and a big dining table, a new floor material to prevent noise, a joint library area and personal cabinets. Four zones could be demonstrated. The incredulous attitudes seemed to develop towards positive expectations when the opinions were genuinely asked and respected. One could see enthusiasm among the personnel towards the change. The process was decided to be finalized with furniture acquisitions and alteration work during the summer break of the university.

The outsourced design service was worth the cost. The process was fast and the designers were professionals in aesthetics, ergonomics and the functional aspects of space design. The most valuable insight to be considered also in later processes is to let the staff express their hopes and fears and thus get more involved in designing their working surroundings.

3.4   Implementation

The alterations were carried as planned. The facility manager of the campus supervised the work. The project was supposed to be ready when the staff came back from the summer break in the middle of August, but several furniture acquisitions were late. It took an extra month more until the room was ready, which set challenges to organise the work at the beginning of the academic year.

Finally, twenty teachers and other staff members could settle down in the new office, where nobody had their own tables or chairs but the atmosphere and functionality had risen even to a higher level than expected. The delays in the delivery of the furniture were the biggest failures of the entire process. Delivery schedules have to be estimated carefully in future projects.

3.5   Analysing user experiences

The user experiences were gathered four months after the move through an email survey. The management sent an email to all the inhabitants of the new space. The personnel were asked to give open feedback (1-3 sentences each) about the experiences, success factors and challenges. Some example themes were presented.

The evaluation resulted in terms of atmosphere and well-being, communication and functionality. The authentic user survey replies (originally in English) outline the experiences in a Figure 3.

Figure 3 The user experiences of a multi-purpose office.

Atmosphere and well-being

- "Relaxed atmosphere where I feel like at home. However it might be a problem as I sometimes feel that I spend too long time at work due to the cosy and homely office room"
- "Bright, open space, gathers people together also from other rooms"
- "The design of the room is esthetic and its inspires me in my work"
- "Harmony in colors and light creates a peaceful working atmosphere and acoustically the room is very pleasant."

Communication

- "It's great to finally have a working community. Not just sit alone in a small room."
- "I love the fact that there is always someone with whom I can talk if I need help or opinion"
- "I get new ideas how to do effective way my work"
- "I feel like I am aware what is happening as communication is very open in our office room"
- "I belong to a team which was formed about at the same time when we moved to this space, being together in one space has enhanced the interaction within the team very much, it is crucially important"
- "enables easy approach to a boss"
- "as a new staff member I hear more and learn faster"
- "help is close"
- "reduces email management"
- "being in the same space with staff members who do not belong to our team is positive"

Functionality

- "ergonomics is taken care of, if only I remembered to take care of it"
- "Good to have a lot of different furniture to accommodate different needs and situations"
- "Very different approaches by people to how they use the room (some people have all meetings and conversations there, others take even phone calls into a meeting room), I am not sure what would work best, I think we are still getting used to this and looking for good ways to use the room."
- "Different types of working stations"
- "no extra papers when there are not own tables where to collect them"
- "the office room suits also for small meetings and the small meeting rooms are ok"
- "because of interruptions several times during a day, concentrating is sometimes difficult"
- "separate phone box could be needed"
- "I think there has been some confusion, at least in the beginning, about the purpose of these arrangements."

Based on the replies, the reality seems to be similar to the theories of the new ways of working and a multi-purpose office. In the new office people choose their working stations according to their current needs and they seem to be more satisfied with their work. The perceived problems concerned mainly the interruptions in concentration. Nevertheless, the quantity and the quality of the positive experiences provide a solid foundation for further facility development projects. In these projects, special attention has to be paid to the behavioural aspects, like finding ways to prevent problems in concentration or prepare the code of conduct.

4   RESULTS

Initially, the new ways of working were to be promoted at the campus within this design process. As a result, a new multi-purpose office was designed and introduced as a workspace for twenty staff members. Part of the process was carried out by facility management students as an LbD project. Four zones (Figure 4) could be recognised in the new office: a zone for open interaction (sofas, armchairs, and a dining table), a zone for concentration and cooperation (meeting rooms, a sofa group), a zone for short visits (printers, coat racks, a kitchen) and a zone for intensive individual work (a silent room).

Figure 4 Different zones in a multi-purpose office.

The personnel are satisfied with the atmosphere, the communication practices and the functionality of the new office. The office is used for what it was planned: multi-purpose functions. Students and working life partners visit the room for guidance and meetings. The new office contributes to the new ways of working and, thereby, also the organisation culture of Laurea UAS.

5   CONCLUSIONS

Designing a multi-purpose office through Learning by Developing was a comprehensive case to implement the LbD model. The process offered authentic research and learning experiences to facility management students in their own field of study. All the elements of the model, authenticity, creativity, experiential learning, partnership and research, were present to some extent. Originally, there was a customer, Laurea UAS, who was interested in the result of the project. The framework enabled freedom and creativity. The students learnt from each other´s and personnel´s experiences throughout the process. The students cooperated with several stakeholders but instead of designing for the personnel, co-creation approach could be adopted in the future projects. Users should be even more in the centre of the process. A research report was drawn up according to the principles of scientific research. In addition, several research tasks were conducted during the process but the methods were quite traditional. Some of these could be replaced with versatile service design methods. In the future, the process could be designed to last longer for a student – one or a few students could continue in the later phases of the process as facility management internees.

As a result for the whole organization, a new culture was created at the campus in terms of ways of working. The personnel from old offices seem to be interested in the new office model. Quite many of them visit the office regularly; after all, it is easy to pop up in the office and have a chat or a cup of coffee with a colleague. However, some seem to be afraid of the possibility that all the offices would be designed the same way. The value of the user experiences collected may be essential in motivating the suspicious ones. Yet, more students are expected to study at the campus in a few years, which most certainly leads to new space-related development projects: both offices and classrooms.

The design process can be repeated through Learning by Developing. A research approach should be planned more carefully to help to identify and demonstrate the effectiveness of the project.

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