Translating user perspective into spatial design

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A rapid adoption of ICT innovations transforms the context of human activities and collaboration, the educational settings included. The context change at the same challenges the traditional spatial design paradigm calling for tools and approaches that are applicable to ICT enhanced practices. We take here an ecological approach presenting a work in progress in which we aim to develop a tool for capturing and translating user perspective in order to design innovative learning spaces for vocational education; the case is one of practical nursing. We apply a combination of quantitative and qualitative methods. By focusing on the local practices and user perspective in cultural transition, we expect the refurbishment of educational settings to be informed in a way that makes it better rooted in the local conditions, and the transition thereby less disruptive for the users. Applying the same tool in post-implementation research for the assessment of the impact of the spatial rearrangements on training and learning would yield findings helpful in the design of hybrid educational settings.

1. Introduction

Over the past few decades, an unprecedentedly rapid context change has taken place in daily life due to the vast adoption of ICT innovations: to take an example, the mobile phone usage has soared passing already 6 billion subscriptions, and one third of the world's population is already using the Internet. The rate of Internet penetration is yet considerably higher in the top ten countries (all the Nordic countries included): according to InternetWorldStats figures (2013), it ranges between 88.6-97.8%. Mobility, location independent connectivity, 24/7 accessibility, knowledge work, virtual communities, social media and handheld tools can be considered characteristic of the early 21st century.

The context chance at the same compels people and communities to adapt in a swift pace: the bigger the change, the heavier the task for both growing and withering areas. That is the case with different fields of life, taking education as an example: the traditional classrooms have been furnished with educational technologies, online courses have been set up, and e-learning has become commonplace. Accordingly, the context change is reflected in the educational strategies and pedagogic models: in order to keep in its pace, instructional methods and settings are also updated. A particular challenge for the educators in the cultural flux has been to define skills and competences required in the 21st century. Another challenge is how to best facilitate learning in the hybrid (ICT enhanced) conditions.

Before focusing on educational settings and learning landscapes, we need to reflect what is resilient in learning. Despite the fact that compulsory education is young sediment in the human history – for instance in Finland, such right and obligation dates back to no more than 1921, we take for granted going to school and pursuing additional years for a diploma or an

academic degree. Furthermore, grown-up people update their skills and competences in life-long learning. In which regard are we then different from our ancestors who managed their lives without any formal harnessing? What is essential in learning and education?

Educators have provided lists of the 21st century skills, including among them ways of thinking and working, tools for working and skills for living in the world (e.g. ATC21S, 2013). Among these skills are creativity, critical thinking, problem-solving, decision-making and learning; communication and collaboration; Information and communications technology (ICT) and information literacy; citizenship, life and career, and personal and social responsibility. We take here an ecological stance: learning takes place in the interaction with the objects and other people, within the physical and social settings; it is continuous updating of one's worldview and value system in the individual life situation. The education aims at enhancing individuals' orientation, participation and contribution skills (Rauste–von Wright, 1997, 31-41; cf. Vesisenaho & Dillon, 2013).

In this paper, we focus on methodological development through a case of vocational educational settings. The aim of a joint development project by the Jyväskylä Consortium for Education and University of Jyväskylä is to create - through the refurbishment of existing premises - innovative learning spaces to facilitate the acquisition of the 21st century skills in practical nursing. We describe in the following ways in which we sought to map local teaching culture and the teachers' and students' scenarios of the 21st century vocational education / learning in the field, applying a combination of quantitative and qualitative methods.

The existing design related literature on settings provides a myriad of papers focusing on various experimental ICT settings on one hand, and on the other hand, more general views and guidelines (e.g. Mäkitalo-Siegl et al., 2010; Oblinger & Oblinger, 2005; Oblinger, 2006; UBC, 2012; JISC, 2006; Brown, 2003; Bennet, 2011; Francis & Raftery, 2005; Harrison & Cairns, 2008; Jamieson et al, 2000; Johnson & Lomas, 2005; Savolainen, A, 2011). A few papers focus particularly on the impact of the settings on teaching behaviours and learning (e.g. Brooks, 2010; Beery et al, 2012); yet, more systematic research is needed in order to provide research-based guidelines for user-friendly settings for education. Though anecdotal evidence gives, at best, some ideas, it may be at times difficult to discern it from promotional discourse. Without employing the same tools for pre- and post-implementation situations, it would be hard to assess the impacts of the settings on the practices and their outcomes in a reliable way. Our aim is to work towards a set of tools for assessing the impact of spatial rearrangements on instruction and learning.

2. Mapping the user perspective in cultural flux

The case described in this paper is located on a campus with a long tradition in hosting vocational education; the number of students in the premises to be refurbished is currently about 700; it is going to increase up to 800 in the years to come. The buildings to be renovated date back to the 1960's…1980's.

We take a user-centric approach asking what is prevalent in the rearrangement of educational settings. We focus on key actors operating in the settings: in order to get an understanding of the local use of space and educational culture in the field, their perspectives, goals and interactions have to be mapped. At the same time, attention has to be paid to changes looming ahead such as prospects in the field (Hakala et al. 2010), anticipated changes in the curricula and in a wider societal context (Figure 1), local and global trends in the diffusion of ICTs included.

The joint development project includes three phases of which this paper focuses on phases 1 and (partly) 2.

1. User-centric design process / user perspective
2. Translation of the user perspective towards spatial design
3. Taking in use the spatial rearrangements > user support; research

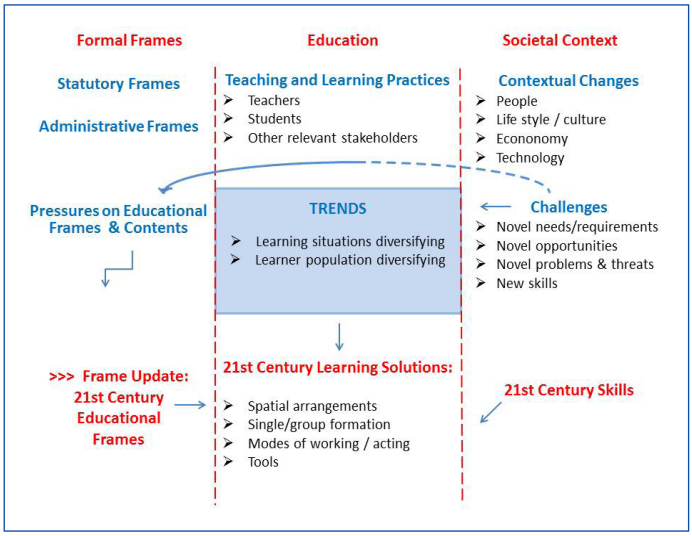

Figure 1: Frames, Goals and Changing Practices

We employed a mixed method approach (Creswell, 2007), including e.g. observations, surveys and workshops. The methodological approach was agreed with the representatives of the institution, and the approach was agreed with the local informants. The data collection timeline is presented below in Table 1, and data collection techniques are presented in more detail in sections 2.1.-2.3. Apart from empirical data collection, we sought information concerning wider cultural trends and contextual pressures from statistical sources (e.g. InternetWorldStats, ITU), and familiarized with the curricula in the field.

Table 1: Data collection timeline

	9/2012	10/2012	11/2012	12/2012	1/2013	2/2013	3/2013	4/2013
Short workshops (1-2 hours)								
Observations								
Teacher survey								
Workshop (whole day)								
Student survey, reflective interviews								
Wrap-up with teachers								

2.1. Observation

A set of instructional sessions (19) were attended and ethnographically observed (Rosenberg, 2001; van Lier, 1997) with the aim to gain a rich picture of different learning situations through an external observer's perspective (Figure 2).

Observations focused on the use of space: attention was paid in particular to the roles and 'choreography' of a session, transitions in the spatial distribution, tools employed, and instructional methods applied. Notes and snapshots were taken as well as short passages of videos were shot for later analysis.

2.2. Survey

The two key perspectives to be researched were those of the student and of the teacher . The teachers' views were firstly investigated through a survey (n=26). The aim was to map their attitudes and preferences relevant to the development of educational settings and instructional methods. A set of questions focused on the goals of education and another one probed factors that have impact on the staff's wellbeing.

Figure 2: Observation of instructional sessions

The student's perspective was illuminated through a net survey. Some of the students were also interviewed after filling in the questionnaire. The data from the survey (n=94) provides an overview of the students' individual learning patterns in terms of site, type of task, work mode / pattern and timing (over a 24 h period). In addition, it illustrates the students' use and preferences of ICT tools as well as suggestions how to develop educational settings and methods in the subject field.

The student and teacher surveys and the related conversations illuminated an internal perspective on the practices. At the same, they gave an opportunity for all participants to influence.

2.3. Workshops

In Autumn 2012, two short orientation workshops were arranged with the teachers, preparing for a survey and a whole day workshop in December. The topics of the December workshop were the following:

1. Spatial settings
2. Educational technology
3. Pedagogy
4. Well-being

The participants first worked for ca 20 minutes' periods in small groups participating to topic sessions in rota. For the spatial settings session, a template was particularly designed with the aim to capture individual teacher's current work patterns and respective scenarios in the pictorial form (Figure 3), interlinking them at the same with four different sets of menu: the space(s) used, modes of delivery, tools employed and underlying pedagogic goals/rationale.

In the pedagogic session, different modes of instruction were furnished with specifications of spatial settings and relevant tools (>educational technology). In the educational technology session, a selection of applications were presented by the moderator and discussed within the group in terms of relevance and fit to instruction in the field. In the wellbeing session, the participants worked towards providing a concept 'empowering hub'.

The rest of the workshop was spent jointly elaborating alternative options and shared views, communicating and summarizing them to the attending Head of Facilities Management, architect due to work the renovation project, and representatives of the institution.

To wrap-up the mapping of the user perspectives, a feedback session was organized in April 2013 to make sure that the views

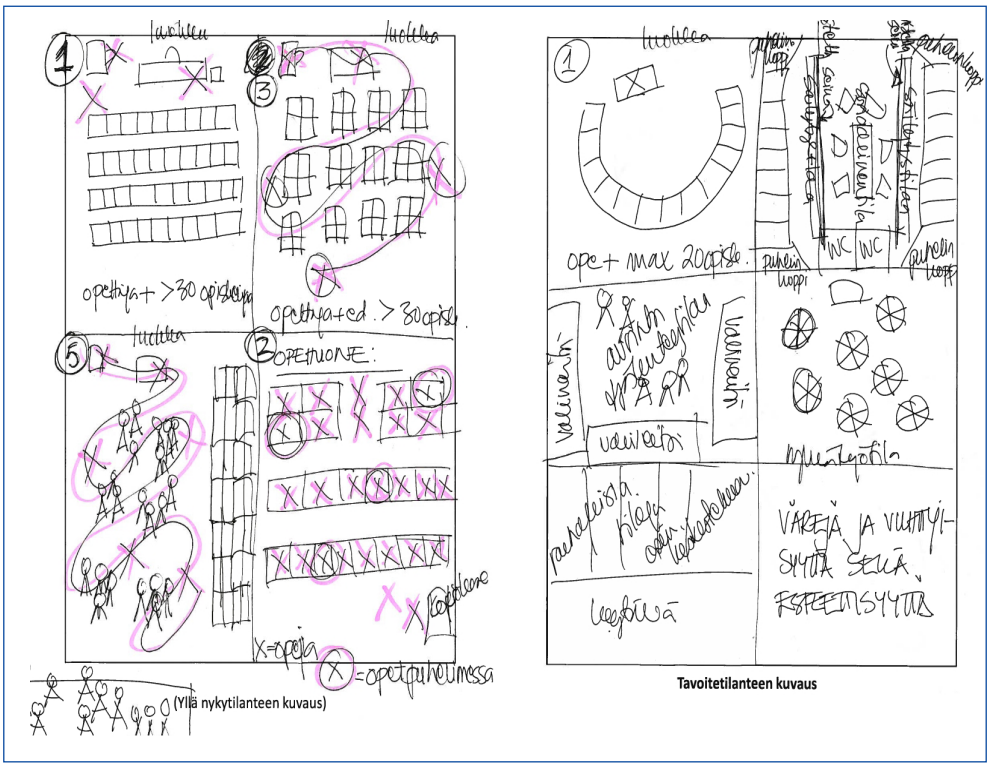

Figure 3: A sample of teachers' illustrations of their own teaching patterns (left) and respective scenarios (right)

expressed had been interpreted in an adequate way and to include possible refinements and additional suggestions by the teachers to guide the modifications of the settings.

3. Outcome

The outcome of our case is yet a rudimentary tool for capturing the user perspective to be translated in the course of architectural design into innovative settings that are at the same

- firmly grounded in the local educational culture,
- aware of the potential of educational technology, and
- profiting from the practical experience, professional expertise, and creativity of the users (here: staff and students).

We hope to be able to refine the tool in the further cases.

The outcome was presented to the stakeholders in the form of a report: it provided a rich picture of the user perspective through the two key roles (teacher / student), and from two different angles (by external observation / by user descriptions/ illustrations). It provided statistical profiles of key user perspectives; it laid out illustrations of individual patterns and respective future scenarios; furthermore, it provided outcomes of group reflections. Similarly, it illustrated a normal school day's studies, as informed by the students, and their use of technology giving thereby hints of future trends, too. Furthermore, it provided a number of 'design guidelines' based on the users' experiences and individual preferences.

The rich description provides the architect with a sturdy knowledge base to build on when giving shape to the settings and anchoring them to the local culture and to the users' perspectives. The architect was initially attending the December workshop as a 'learner', familiarizing with the users' views. In the spring again, the whole material was gone through between the researcher and the architect in a dialogue. It seems that there is potential for constructive communication between the designer and the users in the further steps of the project.

4. Concluding remarks

The diversity of instructional situations, methods and tools is characteristics of practical nursing education. For us researchers, it provided an optimal scope of situations to observe and figure out where to focus on in the surveys and workshops.

The first reflection concerns the approaches: in order to gain sufficient understading of such a complex phenomenon as a culture of teaching and learning is, it is necessary to approach it through complementary perspectives. For us, it was important to bring together the internal and external views on learning situations. Similarly, it was important to bring together experiential, pedagogical, instrumental and spatial approaches. Furthermore, it was important to focus not only on a local culture but also look around in terms of human interaction and communication: we have hardly any clue what the world might look like in 20-30 years' time – what we have been going through since the emergence of mobile technologies and www is comparable to the invention of the wheel and the emergence of writing, and yet, all this change has happened within a couple of decades.

The second reflection concerns the design of the surveys and workshop templates. The challenge was how to capture design relevant data? What kind of questions to pose? And how to best represent data in order to make it easy for different stakeholders to grasp?

Our view was to keep human interaction in the focus: though fashions come and go, the basics of human life are resilient even in a turbulent cultural flux; therefore, we wish to avoid any novelty for novelty's sake: we base our rationale on human coping mechanism; no one can take in too much on one go. In our understaning, sound innovation takes carefully into account human constraints. Therefore, for instance the templates for the workshop were designed in the way that they would relate individual patterns (=habitual>familiar) to the users' anticipated future patterns. That would help to alleviate through design some of the stress people go through when their settings are renovated and habitual ways of working disrupted.

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