MAKE SPACE, MAKE PLACE, MAKE SENSE

Bas LEURS[1], Jasper SCHELLING[1] and Ingrid MULDER[1, 2]
[1]Creating 010, Rotterdam University of Applied Sciences
[2]Faculty of Industrial Design Engineering, Delft University of Technology

ABSTRACT

The current work investigates the role of a physical space in multimedia design education. Born out of a problem due to a lack of space, a group of 50 design students had to move to another building. Having a dedicated space in an historical building turned the initial setback into an opportunity. Design students usually do not have the luxury of having their own design studio. By observing and interviewing the students over a period of 5 months, it was found that students transformed their space into a place in order to enhance their sensemaking process. A three-stage model referring to 'make space, make place, and make sense' is motivated and elaborated upon. It can be concluded that a space, or better to say a place, is an invaluable tool in facilitating meaningful design education. The physical environment seems to affect students' development as well. At the final presentations teams not only surpassed expectations of their clients and tutors, but also their own expectations. They clearly act more confident in their interaction with the external world (clients, users, participants) as a designer.

Keywords: Design education, studio pedagogy, space, projects, sensemaking

1   INTRODUCTION

Learning by doing is a prevalent pedagogy in design education [1]. Students learn to design by actively engaging with design problems, rather than studying a textbook or analyzing a case study [2]. These design problems are often formulated as a project, which should ideally take place in a studio setting, mimicking a design practice [3, 4]. In addition, Dutton [5] argues that the design studio is a powerful pedagogic vehicle of knowledge and social practice because of its hidden curriculum [6]. Fostering such a learning-by-doing pedagogy requires a physical environment that induces surprise and supports both social interaction (discussion) and creative thinking [7]. However, universities or design faculties do not always have the financial resources or space available to devote parts of their facilities to design studios.

1.1 From problem to opportunity

In September 2012, a group of 50 multimedia design students commenced a five-month specialization program on User Experience Design. Unfortunately, due to the lack of space in our faculty, this group had to relocate to another property – a Nautical College built in the early 20th century – that was not part of our faculty. The students were accommodated on the loft of this historical building and this space was dedicated only to them. Having their own space turned the initial setback into an opportunity, because students usually do not have the luxury of a dedicated space. Normally students have to change classrooms and places after a lecture, tutoring session or team meeting. Especially for collaborative work these nomadic circumstances frustrate and hamper social interaction among students. In the new location however, there was plenty of space available, allowing each student team a dedicated space for their project work.

1.2 Educational context and principles

During the first semester of the fourth year, all bachelor students at Rotterdam University of Applied Sciences take a specialization program (also referred to as a minor program). The minor complements the major program of the bachelor curriculum, and its aim is to deepen the knowledge and skills on a specific subject. Students are free to choose in which program they enrol. All students enrolled for this specialization course did have a background in multimedia design or software development. The

majority of the User Experience Design program entails one project that lasts five months, which is supported by a series of courses that equip students with the required skills and knowledge (e.g. user research, prototyping). The setting of the design brief intends to be as realistic as possible, in order to intensify the concrete experience [8], although some guidelines were used to balance the expertise level of the student with the project brief, see the 'project equalizer' [9]. Teams of four to five students work for a real client, for example a local university hospital or a national broadcast corporation. The client and student teams were accompanied by an external consultant (a practitioner from a multimedia design studio) and supervised by a tutor.

The workflow has been largely based on the principles of Scrum, an agile software development process [10], which has recently been adapted to the domain of user experience design [11, 12]. This is in keeping with our observations in multimedia design practice in creative industry over the past few years, most of the multimedia design agencies have adopted the Scrum methodology as their standard way of working.

Observations at faculties, where interactive or digital design is being taught, show that little attention is paid to the physical aspects of the students' project and study environments, likely due to the intangible nature of multimedia and user experience design. Hence, artifacts that are produced by these courses largely exist in the realm of bits and bytes and are rarely tangible or visible when 'the power is off'. These 'deliverables' [13] created by students, reside on desktop computers, laptops, mobile phones, and tablets, or are stored on servers (i.e. 'the cloud'). Interestingly, a visit to a faculty of industrial design, graphic design, or architecture immediately shows which kind of design is being taught; despite the fact that much of that design work is also done on computers.

These preliminary observations inspired us investigating the role of a physical space in multimedia design education. The remainder of this work elaborates upon the following two questions: What is the role of physical space when the studio pedagogy is the leading principle in a digital design program? And how does the configuration of physical space support the students in their (educational and professional) development?

2   METHOD

From start, students were given a 'carte blanche' to configure the loft space to their needs and desires. The teams were provided with tables, chairs, pinboards, whiteboards, stationeries (e.g. markers, paper, sticky notes), books and an A2 printer.

Throughout the program, for five months, we observed how the student teams used their dedicated spaces and how the students interacted with each other and their tutors. Notable observations were photographed if possible.

After four months, six out of ten teams were interviewed in their dedicated team space, which gave them the ability to refer to their work during the interviews. Open questions were asked: "What is the project you are working on about?", "I see a lot of stuff on the walls, could you explain what I am looking at?", "How did you organize your space? Did you use different sections for different types of information?", "How did this space help you in group discussions and decision making?", "What is the difference between the old way of working and the new way of working?". Furthermore, the project tutors were interviewed and asked to report their observations.

3   RESULTS

3.1 Observations: utilization of space

Soon, after the projects started, we already noticed that each student team had 'claimed' their own dedicated space, through personalizing it with attributes like team pictures, plants, (even) fishes and other personal belongings. While the project work progressed the students started covering their walls, whiteboards or corkboards with deliverables that resulted from research, brainstorm sessions, team meetings and discussions. In the team space (figure 1) we found: photos from field studies, quotes from interviews, diagrams to summarize research findings, personas, design visions, hand drawn sketches of interfaces, notes with ideas and research questions, customer journey maps, but also team photos and planning boards. A pinboard 'we are...' with Polaroid pictures of each student and tutor; the board indicated who was present or absent.

Figure 1. (a) Studio spaces with personas, design visions and summaries of research findings. (b, c) Students immersed themselves in sketches and sticky notes with ideas

3.2 Observations: behaviour and social interactions

From day one, each team actively involved the client in their process. All the projects were started with an interactive session or workshop to define a shared goal for as well the team as the client. Throughout the process the students demonstrated dedication: even at the moment when there were no tutoring sessions or lessons, they decided to continue working in their studio. The tutors noticed when they gave a useful tip to one team, e.g. "put your design vision in a prominent position on the wall", this was quickly imitated by other teams. Every Thursday afternoon, at the end of the day, there was a social gathering, wrapping up the week.

3.3 Interviews

The quotes from the interviews are paraphrased to explicate their meaning (see table 1).

Table 1. Quotes from the interviews and paraphrases

Quotes	Paraphrase
"It is easy to present our ideas to our tutors and to refer to earlier stages of the project."; "Our tutors can directly see the whole process as well."	*The overview of deliverables on the wall provided an overview for the tutor and facilitated the discussion.*
"Usually you have a directory on your laptop that holds all the project documentation."; "Each team member usually worked individually on one part of a document, at the end we compiled all the parts together, but hardly had a look at it as a whole."	*Working with computers does not necessarily facilitate collaboration. It hinders teams to oversee the big picture.*
"It helps us to create an overview, we can oversee the whole process."	*The overview of deliverables on the wall helped the teams to oversee the whole process.*
"The research we did is much better, we spend a lot more time on studying our target group. When we presented our solution, they [the client] were even impressed how profound our insights were."; "You have a better explanation for the decisions you've made."	*The students were able to formulate a better rationale because they did better research.*
"It was nice to have your own place, that is always the same. You would find your stuff in the same position as you left it the day before."; "You stay immersed in the project.", "We felt more engaged with our research data."	*A dedicated space helps students to stay immersed in the project*
"We could instantly visualize our stories and discuss them, because we had the tools and materials available."; "What we basically did was a lot of 'thinking on paper', we made a lot of our ideas visual, like these diagrams."; "Diagrams help you to organize your ideas, it is better than having ten pages of text. To explain the connections it was easier to use [Venn] diagrams rather than text"	*Readily available tools and materials encourage the students to use them and to facilitate their discussions with visual thinking*
"While we had our discussions we had our papers with old ideas ready at hand."; "When I look back at these [sketches], then I think to myself... oh yes! I remember."; "It helps us to look back to all the ideas we came up with. Some of these ideas turned out to be more valuable than expected."	*Access to old material facilitates discussions, brings back memories and helps to reflect on and review old ideas.*

"What I liked is that you could see the work of the other teams."	*Students learned from each other, because they could see the work of other teams.*
"These are living documents, with every new insight, the [customer journey] map changes as well."; "We noticed that we had to maintain our working environment, and regularly clear some obsolete notes."	*The space and project deliverables are dynamic artifacts, teams needed to take care of their environment..*
"We used to share all our findings, insights and ideas. Suddenly, at a certain moment, you'll find a pattern. [...] For me it was the first time I was able to map these patterns, at a sudden I spotted the problem."; "When you're staring at the material, and suddenly you think 'Oh yes, it can be that simple'."	*Individual students and teams identify patterns and forge connections between artifacts. They are surprised by their findings.*
"I never liked doing research, but I liked it the way we did it now. The way we shared information. It's like Pokemon cards, you have this, I have that.", "Usually, I hate doing research, because you're not making stuff.", "We felt more engaged with our research data."	*Students started to like doing research and felt more engaged with their research data.*
"We have become the owners of this space, it feels it is ours, this is where I feel comfortable."; "You go there to your studio, to work there all day."	*The teams feel that they are the owner of they studio space, it encourages them to spend more time in their studio.*
"Having your own room, helps to share the same vision and ideas. A laptop is too much of your own world. A laptop does not encourage other people to do a brainstorm, whereas a wall with sticky notes does."; "The space is shared and provides insights to everyone."	*Having a shared physical space encourages teams to share visions and ideas, whereas computers are considered as inadequate for this job.*

4 DISCUSSION

These findings illustrate an emerging process. At start of the course students transformed their dedicated 'space' into their own 'place', and continued with configuring their space to their needs and desires, by moving furniture, bringing in personal belongings, and most importantly by adding their project deliverables to their surroundings. These deliverables were the result of a team effort, whereby the teams immersed themselves in their own deliverables. This immersion facilitated students to forge connections between their research data, insights, and ideas, to ultimately make sense of it. In brief, this process can be perceived as a three-stage process: make space, make place, make sense (figure 2).

Make space
Facilitating students with space, supplies and tools, and arranging elements

Make place
Fostering a sense of belonging and ownership by attributing meaning to a space

Make sense
Overseeing the whole process, identifying patterns and forge connections between research data, insights, sketches, ideas

Figure 2. Three stages of transforming a space to a place in order to make sense

4.1 Make space

This stage is about facilitating and arranging elements: the space itself, the tools and supplies should be readily available, which encourages students to use it [14]. For example, normally the students adhere to their computer, but with other tools ready at hand they start 'to think on paper', which subsequently encourages group discussion and helps teams to share ideas and visions. The facilities should be 'transparent' in use, which means that the use of the facilities goes largely unnoticed by the user [15]. This transparency in conjunction with a dedicated team space is important, especially to 'stay immersed' in the process.

4.2 Make place

Making place is about fostering a sense of belonging and ownership by attributing meaning to a space. Although the words space and place are often interchanged in colloquial use, they have distinct meaning. A space is the three-dimensional organization of our surroundings. A place on the other hand is a value-laden space, with social meaning, norms, established routines, roles and functions [16]. Bringing in personal belongings, and configuring the space with the whole team transforms the space into a place, furthermore, these activities also foster commitment, team spirit, a sense of ownership

and belonging [14]. It is important though to keep facilities open-ended, so that the teams can determine themselves how they are going to use the space [17], this empowers them to gain ownership of their projects and that the environment facilitates discussions, group learning and sensemaking.

4.3 Make sense

Sensemaking concerns overseeing the whole process, grasping the bigger picture, identifying patterns, and forging connections between research data, insights, sketches, and ideas to establish conjectures that direct the process. The role of sensemaking in design has, however, not received much attention in design theory literature. In keeping with Kolko [18] we consider sensemaking as a crucial driver of design. Sensemaking is about people understanding what happens around them [18]. It is a continuous effort to understand connections between people, places, events and phenomena. Though, it is more than just simply connecting these elements, because it encompasses the question which elements to connect [19]. Sensemaking is incited by surprise [20] and characterized by its retrospective and social nature [21]. This is in keeping with our observations and interviews, which illustrate how the teams regularly look back at previous stages of their process and discuss the coherency between different stages and deliverables to identify gaps and patterns. Especially visual thinking and diagrams make the connections visible.

To understand what happens around a team and to forge connections between deliverables and process stages it is vital that the majority of the process and deliverables is visible, preferably in war-room style [18]. The notes, sketches, diagrams that surround the team are working media that can also be regarded as the group's external memory. The immediate availability of these working media supports interaction and communication among group members [22].

4.4 Transparency of facilities and tools

It might be obvious that the availability of facilities, supplies, and tools in all three stages is crucial. Moreover, deliverables need to be visible and accessible, for the team as well as for the tutors. All artifacts, both students and tutors interact with, should be transparent in use [15]. Project documentation that resides on laptops or servers often lacks this transparency and interrupts a group discussion when a document needs to be retrieved. Retrieving a document from a computer system always requires a series of actions (e.g. open laptop, locate the document, open the document, find the right page), whereas the content of a diagram is directly accessible and available. If necessary it can easily be manipulated by more than one person. Our observations showed how students and tutors pointed at particular deliverables on the wall to indicate what they were talking about; this is not possible when a document is not active on a computer screen. When students can actively engage with their research material and see how it is related with other stages and deliverables in the process, they might start to love doing research. In similar vein, it is likely that when their research improves, their argumentation to support their design decisions also gets better.

5 CONCLUSION

What is the role of physical space in a digital design program? A space, or better to say a place, is an invaluable tool that can help in facilitating meaningful collaborations and peer learning in education, work, and life [14]. In particular, for student teams of a multimedia design course, the physical surrounding seems to be a crucial instrument to make sense of their research, discussions, ideas, and deliverables. However, the physical space is often considered as an accommodation, and rarely as a (designerly) tool. The physical space is in fact a knowledge management system, a brainstorm tool and a sensemaking instrument. It stimulates students to immerse themselves in a project and to challenge themselves. We, therefore, emphasize that the physical surrounding of a design team is equivalent to any other designerly tool, such as a computer with its specialized software, a pencil, a sheet of paper [23]. This seems to be particularly true when a design course promotes a studio-pedagogy. These insights are therefore also relevant for other design courses that concern the design of large complex systems (e.g. service design, social design), which currently gaining more attention in traditional design faculties [24].

How does the physical environment affect students' development? When students are provided with an open-ended facility and sense ownership and belonging; it can result in a committed and enthusiastic group of students. The right facilities as well as a dedicated team space give students proper tools to cope with the five-month design project as whole, rather than perceiving it as a

collection of unrelated documents on a hard drive or server. The gained overview helps them to make sense of their process and deliverables. During the program they learn to organize their design work in a different way and value the quality of tangible deliverables. At the final presentations each team surpassed the expectations of the clients, tutors, and even themselves; they feel and act more confident in their interaction with the external world (clients, users, participants) as a designer.

REFERENCES
[1] Dorst, K. (2006) Understanding Design: 175 Reflections on Being a Designer, BIS Publishers, Amsterdam.
[2] Lawson, B. (2006) How Designers Think: The design process demystified, Architectural Press, Oxford.
[3] Lawson, B., & Dorst, K. (2009) Design Expertise, Architectural Press, Oxford.
[4] Goldschmidt, G., Hochman, H., & Dafni, I. (2010). The design studio "crit": Teacher–student communication. Artificial Intelligence for Engineering Design, Analysis and Manufacturing, 24(03), 285–302.
[5] Dutton, T. A. (1987) Design and studio pedagogy. Journal of Architectural Education, 16–25.
[6] Snyder, B. (1973) The Hidden Curriculum, MIT Press, Cambridge, Massachusetts.
[7] Jankowska, M. (2007) Use of Creative Space in Enhancing Students' Engagement Innovations in Educations and Teaching International, Vol 45, 3, p 271-279.
[8] Kolb, D.A. (1984) Experiential learning: Experience as the source of learning and development. Prentice-Hall, New Jersey.
[9] Leurs, B., Mulder, I., & Van Waart, P. (2011). Developing A Human-Centered Attitude Through Experiential Learning. In Diversity and Unity: Proceedings of IASDR2011, the 4th World Conference on Design Research. Delft. The Netherlands
[10] Cohn, M., & Ford, D. (2003). Introducing an agile process to an organization. Computer, 36(6), 74–78.
[11] Ratcliffe, L., McNeill, M. (2011) Agile Experience Design: A Digital Designer's Guide to Agile, Lean, and Continuous. New Riders, Berkeley, CA
[12] Jongerius, P., Offermans, A., Vanhoucke, A., Sanwikarja, P., Van Geel, J. (2012) Get Agile! Scrum for UX, Design & Development, BIS Publishers, Amsterdam.
[13] Goodman, E. (2012). How I learned to stop worrying and love the deliverable. Interactions, 19(5), 8.
[14] Doorley, S., Witthoft, S. (2012) Make Space: How to Set the Stage for Creative Collaboration, Wiley, Hoboken, New Jersey
[15] Van Den Eede, Y. (2010). In Between Us: On the Transparency and Opacity of Technological Mediation. Foundations of Science, 16(2-3), 139–159.
[16] Harrison, S., & Dourish, P. (1996). Re-place-ing space: the roles of place and space in collaborative systems (pp. 67–76). Presented at the Proceedings of the 1996 ACM conference on Computer supported cooperative work, ACM.
[17] Redström, J. (2008). RE: Definitions of use. Design Studies, 29(4), 410–423.
[18] Kolko, J. (2010). Abductive thinking and sensemaking: The drivers of design synthesis. Design Issues, 26(1), 15–28.
[19] Klein, G., Moon, B., & Hoffman, R. R. (2006). Making Sense of Sensemaking 1: Alternative Perspectives. Intelligent Systems, IEEE, 21(4), 70–73.
[20] Louis, M. R. (1980). Surprise and sense making: what newcomers experience in entering unfamiliar organizational settings. Administrative Science Quarterly, 25(2), 226–251.
[21] Weick, K. (1995) Sensemaking in Organisations. Sage, London.
[22] Van der Lugt, R. (2005). How sketching can affect the idea generation process in design group meetings. Design Studies, 26(2), 101–122.
[23] Stolterman, E., McAtee, J., Royer, D., & Thandapani, S. (2008). Designerly Tools. in Proceedings of the Design Research Society Conference 2008, Sheffield, UK.
[24] Sleeswijk Visser, F., & Stappers, P. J. (2012). The Impact of "Service Design" on the Industrial Design Engineering Curriculum. in Proceedings of International Conference on Engineering and Product Design Education 2012. 813–818. Antwerp. Belgium.