Aspects of Improving the Artist’s ‘Own’ Awareness of his/her own practice and the knowledge it incorporates:

1. Aspects of insight, understanding and knowing in the work;
2. Discussion of the processes of making the work/doing/making/doing/performing;
3. Discovery/identification of values in the process of designing/making/doing/performing;
4. Evaluation of reworking the aspects considered as tasks;
5. Explanation of the tension between the understanding and continued exploration of the work of art or design;
6. Focus and focus/subtext in representing knowledge based on creative practice;
7. Investigation of the relation between the creative work and its description – interpretation – explanation;
8. Inwards and outwards communication in designing/making/doing/performing.

Conference topics

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Abstract

The conference theme, ‘knowing by doing’, specifically addresses the processes involved in gaining experiential knowledge from designer’s actions. The knowledge gained by designing can be domain-specific (regarding e.g. the characteristics of certain materials, tools and techniques) and it can be more fundamental knowledge about design methods, (group) processes, and ways to stimulate design actions.

In this paper I would like to discuss a number of educational assignments that specifically stimulate creative actions. The assignments belong to a cross-disciplinary teaching program aimed at design students within the engineering and architectural disciplines.

In this educational case the knowledge gained by designing is knowledge about design. Knowledge about how you, as a designer (or student), can set the setting in which you are more likely to get ideas that could lead to creation insights/’cues for use’.

Keywords

Creativity; associations; situatedness; experiential knowledge; design.

Ideas

A personal note

The keywords appended to this paper could be mentioned as some of the relevant keywords for my whole academic career. More specifically I am attracted to themes like: ‘learning by doing’, ‘the understanding of understanding’, ‘evocation from situations’ and ‘intentional serendipity’.

From a young age I detected learning facts in lists, such as capital cities in topography and ‘Wortschatz 2000’ (German idiom). On the other hand, I felt naturally attracted to play with blocks and to do composition experiments in e.g. photography. Even language became interesting to me if I studied it in an intuitive way with freedom to make ‘what others would call’ ‘mistakes’.

In the research group form-, media- and modelling studies at the Faculty of Architecture in Delft, and during several conferences on CAAD and Design (especially those in Bialystok (1997), Delft (1997) and Brussels (1999)), I learned e.g. that design media can be regarded as ‘conversational partners’, that there is a second order in observation, and that a contextual setting is a key influence that can be controlled.
To stimulate creativity, the trick is to expose a brain to the right strange cases.

About situatedness

Situatedness is a term from cognitive psychology. It can be understood as knowledge that is structured, based on real places or real applications. Situated learning was indicated in fundamental psychology research (in a comparison of people and mice) and showed comparable results for 'occasion setting' and 'context dependence' in learning aspects (Dibbets, 2002).

Situatedness is described as 'where you are, when you do, what you do matters' (Gero, 1997-1998).

The phenomenon of situatedness is studied in Artificial Intelligence (AI) research, in order to supply knowledge to learning systems (Chancey, 1997).

Situatedness has become a key phenomenon for my ideas about creativity. By manipulating the situation, the situatedness can provide the right cues for creative ideas.

A designer, or a teacher of design students, can actively make choices to find / make / adapt a situation in order to get inspiration. Many different concepts of situation setting can be explored:

1. The context of a design task can be simulated by means of different types of representation (this can be e.g. the real situation, an urban context, a simulated context, in virtual reality, in diagrams, figures and graphs, in sounds and quotes, etc.).
2. Disturbing aspects can be left out by choosing a specific quiet work environment.
3. A work environment can be enriched by specific objects and references.
4. A game can be played in which associations can be directed to a specific field or realm.
5. The situation can be made evocative, e.g. by juxtaposition of different phenomena.
6. A model or prototype can be made in order to reflect on previous ideas in alternative representations.
7. A game can be played in which opposites are explored.

Exposing your brain to situations outside your comfort zone brings creativity.

A remarkable example of situation setting is called 'The Oblique Strategies'. "This deck of cards by Brian Eno and his friend Peter Schmidt (a British painter) presents a set of basic working principles which guided them through the kind of moments of pressure - either working through a heavy painting session or watching the clock tick while you're running up a big brick studio wall. Both Schmidt and Eno realized that the pressures of time tended to steer them away from the ways of thinking they found most productive when the pressure was off. The Strategies were, thus, a way to remind..."
themselves of these habits of thinking - to jog the mind." (See: https://www.gradle.org/ObliqueStrategies/ObiNato.html)

Implementation

As an assistant professor I combine research and education. Often my research questions can be explored within the framework of my design studio education. It is a privilege to work with bright students from diverse designing disciplines. They demand and deserve good educational reasons behind exercises. In turn they keep on surprising with unexpected creative solutions. Together we try to grasp what is going on and we try to evaluate and pinpoint the conditions for creative design.

I try to test my assumptions regarding creativity by implementing the ideas in my lessons. In most cases the education combines a main design or analysis task with the chance to improve technical skills and some methodology to further enhance design skills with a focus on creative actions, appropriateness of choices and optimization.

Design education and course layout

Each year, now for the fourth time, we educate a mixed group of 40 students from different design related technical studies, such as Industrial Design Engineering, Aerospace Engineering and Architecture. These third year BSc students choose a 'minor' program, which means they have a half-year full-time curriculum to explore other studies; in this case they chose the minor on 'Advanced Prototyping'. My colleagues and I developed the 'Advanced Prototyping' minor with the famous MIT course 'How to Make (almost) Anything' in mind. Our courses introduce students to a wide range of new computer aided and traditional production techniques.

In the first quarter, we refer to Thomas Edison and we educate a laboratory-methodological way of prototyping. We also refer to Edison's Menlo Park Laboratories in which people from different backgrounds were mingled together (similar to our students with different backgrounds). One of the main exercises in the first quarter is called 'LightStyle' in which the students have to design and develop an industrial prototype for a lamp. Other group exercises make links to academic researchers and let the students develop instruments or test prototypes, such as 3D-interaction devices, sail simulators, augmented reality exhibitions etc.

The second quarter of the Advanced Prototyping course focuses on the students' personal needs with a key reference to 'The Factory', the atelier by Andy Warhol. In this second quarter we have a large exercise in which the students develop a personal object, e.g. a bracelet. They do this in an iterative design loop with three chances to 3D-print their intermediate designs. The other exercise consists of a weekly turning 'carousel' that consists of eight different exercises for eight groups of five students. One of the carousel exercises, called 'Objects Trouve', was presented in the Communicating (by) Design conference in 2009.

Lectures on design methodology and design creativity

Each of the above-mentioned exercises would not have enough educational impact if the educational goals and our observations were not explained to and discussed with the students. During the half-year course we hold reflective sessions with the students in order to find out how the exercises work and we explain the theories they are based on. In the first quarter we provide lectures about design methodology (covering subjects like: types of models and prototypes, stage gate decision processes, prototypes that can be regarded as technical hypotheses, cyclic/iterative nature of design, empirical knowledge, and ways to test prototypes), in the second quarter we lecture and study views on experiential knowledge, creativity and the conditions to allow creative insights during a design process.

The lecture on creative processes is introduced by looking at a YouTube film from a lecture on 'how to be creative' by John Cleese. After the film, the students are asked to re-mention the aspects of creativity and in small groups they implement the knowledge in small exercises.

Below is a list of some of the important aspects 'to be creative', mentioned by John Cleese:

- creativity is not a talent it is a way of operating
- there is an open and closed mode of functioning
- closed: has to be done; works; impulsive; mission; purposeful; manic stressed...
- open: relaxed contemplative loose playful curiosity for its own sake
- sleeping on a problem: the idea of working, sleeping, finding the solution
- next experience: write script first it; set down to rewrite it from memory; find original:... compared: the copy was much better assumptions must have continued working on it
- why else would it be better: part of mind was helping being more creative...
- create an oasis in the middle of your crowded life
- boundaries of space
- boundaries of time
- mental interferences
- give yourself a starting and finish time: only then you can play
- confidence: what if what if what if
- fear of making a mistake
- true play is experiencing what happens if openness to anything that might happen nothing is wrong
- you are either playful or not
- while you are being creative nothing is wrong and anything can be useful
- laughter relaxes and makes playful and creative laugh all you want
Assignments that focus on creativity

The one-week exercises in the carousel are specifically developed to provide many chances to explore aspects of creativity in different ways. The theme of 'objet trouvè' is introduced in a lecture and comes back in several ways. In one of the first weeks, the students are asked to bring objects with fascinating form and texture and they are asked to reimagine their objects and make them into totally different new objects. Association within other contexts and transformation of scale and form are explored.

During another week we tempt the students to develop metaphors and comparisons in order to make ungraspable phenomena more understandable, imaginable and concrete. In a third exercise we introduce the theme 'bionomorphism' (a design element of a product that imitates design elements that were functionally necessary in the original product design, but which become ornamental in the new design [source: wikipedia]) and let them re-design interfaces and objects regarding their added bionomorphistic outlook. In each of these exercises one or more of the previous mentioned 'instigation setting' strategies are applied. Also the strategies, mentioned by Clouze are actively used during the course. In one occasion, in order to create a separation with boundaries of space and time, we move with a little brainstorm group to the abandoned attic right above the main entrance of our faculty building.

We, as teachers, participate in many ways and show (sometimes hilarious) examples of association to lower the filtering of what is a good and what is a bad idea during creative discussions. Constantly we remind our students about the strategies and implementations of theories that were previously presented in the lectures.

In creative group sessions we have two simple rules: do not filter your own ideas or negatively react on ideas brought by others, and separate the creative idea sessions from sessions in which the ideas are evaluated and implemented.

Conclusions

This is a work in progress. At the moment we have almost 200 alumni students from our Advanced Prototyping course. We keep in contact with these students. They give us mostly positive feedback, mainly regarding the nice time they had because they finally did things, they created things and found out that there was almost nothing they could not make. These students also keep on making things. Prototyping becomes a key aspect of their design efforts. The time they spend on CAD modelling is much more focused on physical fabrication and part of the prototyping process. Regarding creative processes we did not yet look for or find differences, but several of them won prices in a concrete design competition and some of the LightStyle designs from our course were turned into little series for a design shop.

Creation, creativity, prototyping, fabrication and the knowledge of mechanisms and strategies for enlarging creativity are essential to students in art, design and engineering schools. We keep curious for new cues and cues.

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