

The Anatomy of a Multi-Sensory Design Course: Happy Sound Object

Yasemin Soylu^{a*}, Berrak Karaca Şalgamcıoğlu^a, Pelin Efilti^a, Oki Kasajim^a

^aIstanbul Medipol University, Department of Industrial Design

*Corresponding author e-mail: ysoylu@medipol.edu.tr

Abstract: Product experience encompasses all five sensory modalities through which information is received (Shifferstein and Desmet, 2008) therefore designing taking into account all the five senses is important. Besides, advances in technology make it easier to accomplish designing for five senses in many industries. On the other hand, particularly in the early years of undergraduate level industrial design education, sense of vision is often emphasized more compared to the other four senses. In order to underline the importance of the remaining senses, a unique studio course has been designed at Istanbul Medipol University, aiming second year industrial design students. In this particular studio course, in addition to their regular sketchbooks, students are expected to keep a dairy of sound, tactile, smell and taste. The course is designed in four modules and this paper elaborates on the details of Module I that focuses on the sense of hearing. Module I is interdisciplinary in the sense that a psychologist and a music composer/virtuoso have been invited to contribute to the classes so that designs can be treated at the visceral, behavioural and reflective levels (Norman, 2004) more profoundly. This paper aims to share the outcomes related to the 15 projects carried out during the course such that the advantages and the disadvantages of a multi-sensory design studio set up are revealed.

Keywords: design education, multi-sensory design, design studio

1. Introduction

Sensory marketing is a new phenomenon that companies are using as a tool to distinguish their marketing mix. In order to go one step further in competition, companies try to engage all five senses of the customer so that decision-making and purchasing behaviour are influenced in favour of multi-sensory products/services. Consumers prefer products with complementary and/or duplicate pieces of sensory information (Veryzer and Hutchinson, 1998). In this respect texture, smell, audition, vision and taste are the five pillars of sensory product/service design. Kim et al (2009) claim that the core value/identity of a brand can reach customers through the five senses. Advocates of experiential marketing (Pine and Gilmore, 1998) also suggest that all five senses should be taken into account while designing an experience.

Little research has been done in the domain of sensory marketing (Krishna, 2011) and even less number of design education research material is available concerning sensory design. On the other hand, “many design activities thus far have focused predominantly on the visual modality” (Shifferstein and Desmet, 2008) and in line with the facts of the professional design practice, design studio courses are mostly preoccupied by the sense of vision. Thus in many student projects the remaining four senses are not touched upon.

The objective of this paper is to fill the gap concerning the application of multi-sensory design in design education literature. Therefore, this paper elaborates on the details of Module I of a multi-sensory design studio course aiming second year industrial product design students at Istanbul Medipol University. The duration of the studio course is one semester (8 hours per week) and the studio course comprises of four modules: The first module (Happy Sound Object) focuses on audition, the second module (Comfortable for All Seating Unit) on tactile properties, the third module (Designed for Appetite) on taste & smell and the fourth module (My Virtual Portfolio) is a combination of all the four modules.

In Module I students designed an everyday object that would make us (the society, environment, friends, family, etc.) happy. Module I was completed in 5 weeks between 17th Oct.-17th Nov. 2016 and it was led by Japanese Designer Oki Kasajima. Kasajima was invited for leading Module I because his previous work focused on sound making objects (Figure 1) Another reason why Kasajima was invited as a studio leader was to let the students work with a designer from abroad so that a multi-cultural interaction could be achieved.

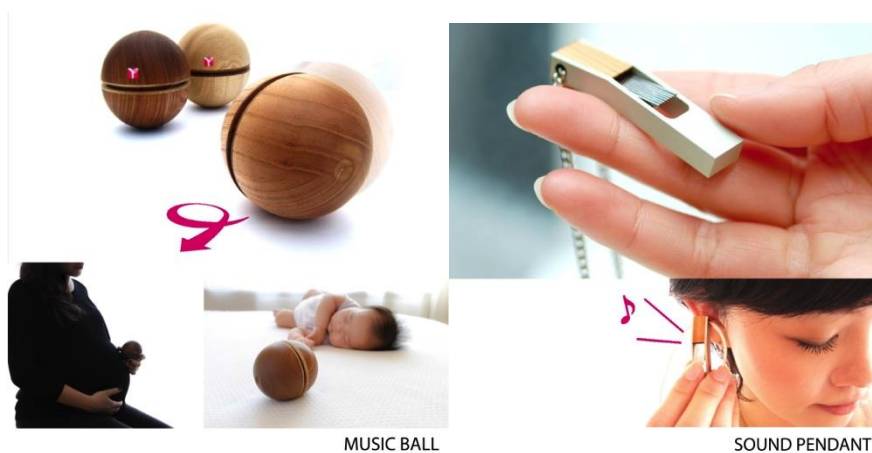


Figure 1 Oki Kasajima's previous work on sound making objects (Photo Credit: Courtesy of Oki Kasajima)

This paper aims to reveal the details of Module I, why and how the studio course has been designed. Another aim of this paper is to share what the lecturers learned from Module I of this particular studio course. The paper is organised in four sections. The introduction section is followed by a theoretical background on multi-sensory product experience and design education, particularly focusing on studio classes. In section three, Module I- Happy Sound Object details are discussed. Conclusions and future implications are provided in section four.

2. Theoretical Background

2.1 Multi-sensory Product Experience

Hekkert and Shifferstein (2008) define subjective product experience as “the awareness of the psychological effects elicited by the interaction with a product, including the degree to which all our senses are stimulated, the meanings and values we attach to the product and the feelings and emotions that are elicited”. This definition implies that all our senses are involved in the experience. If this is the case, how do we equip tomorrow’s professional designers, (i.e. design students) to understand the importance of designing for five senses? How can industrial design studio courses be re-designed such that the students can get used to designing for all senses right from the very beginning?

Shifferstein and Desmet (2008) suggest various tools that can help designers to determine and obtain the desired forms of sensory stimulation. These tools are grouped under four topics: sensitizing designers, sampling objects with respect to sensory qualities, making and using sensory building blocks, communicating with others. Sensitising designers involves increasing designer’s awareness to different stimuli. Sensory sampling is building a collection of sensory qualities. Sensory building blocks are qualitative and quantitative scales, formula, to describe the structural properties of sensory information. Sensory communication, involves terminology used to describe sensory characteristic.

“The aim of multi-sensory design is to materialize ideas to concrete products that optimally communicate these ideas through all the senses” (Shifferstein and Desmet, 2008). Treating all the senses simultaneously is complicated, particularly for the novices, so building upon this idea, is it possible to design a multi-sensory studio design course, comprising of modules to include one particular sense in each module? Since senses evoke emotions, would it be possible to design focusing on one particular emotion at a time?

The three levels of product experience; aesthetic pleasure, attribution of meaning and emotional response (Desmet and Hekkert, 2007); visceral, behavioural and reflective levels (Norman, 2004); suggest that products are to be distinguished with respect to their effectiveness in communicating perceptual, functional and emotional qualities. On the other hand, examples (Norman 2004) show us that a particular product successful at one level may be unsuccessful at another. Therefore ideally while focusing on the emotion, it also important to treat aesthetics and functionality. Is it possible to define elements of aesthetics and functionality using the same sensory stimulus?

2.2 Experience-based versus Cognitive-based Learning

The debate on “how designing, thinking and learning is achieved” has been going on for decades among design scholars. The advocates of experience-based approach interpret learning as a behavioural process and emphasize the importance of repetition and trial & error; whereas scholars in favour of cognitive-based learning focus on cognitive processes in which knowledge is processed in memory using symbols and metaphors. Wood (2000) claims that the culture of design education reflects an uneasy liaison between the medieval monastic (“book”) and the crafts guilds (“design studio”) traditions. Oxman (1999) argues the need to redefine the learning task in design education, from an orientation to the production of design artefacts, to a cognitive based approach. Wood (2000) on the other hand emphasizes the need to ask designers to demonstrate both practical and theoretical aptitude in a creative combination for making design practice more ethically and ecologically responsible. The authors of this article believe that getting maximum benefit from both approaches is essential for an effective and efficient studio course.

Cennamo et al (2011) summarize studio class norms across different studios as generating and refining design solutions, communicating and collaborating. According to Cennamo et al (2011) the learning outcomes related to these norms can be summarised as follows:

- Solutions are not right or wrong but must be reasoned and defensible.
- Articulating design ideas through conventions surrounding the kinds of and uses of visuals and verbal discourse are characteristic of the discipline.
- Finding ways to incorporate the input of instructors and peers in their design work.

It is likely to achieve all the three learning outcomes by both by experience-based and cognitive-based approaches, however when it comes to reasoning and defending, the support of the latter seems to be more instrumental.

Related to the learning outcomes of design studio courses, Goldschmidt (2004) claims that the ultimate design goal is to arrive at a satisfying representation of the designed entity. “Representation as a self-communication medium allows the designer to reflect on his/her creations and to make revisions to his/her own ideas” (Cikis and Ek, 2010). On the other hand, drawing is also a means of obtaining knowledge about intended artefact, of probing into the consequences of tentative decisions about it, thereby providing a basis for rejection or approval of such decisions (Galle, 1999).

3. Happy Sound Object

In line with Oxman’s (Oxman, 1999) argument concerning the need to redefine the learning task in design education from an orientation to the production of design artefacts, to a cognitive based approach, we designed the multisensory studio course dedicating half of the studio hours for cognitive learning. For this purpose we split the 8 hour studio course into two sessions, the first being the experience-based and the second cognitive-based.

3.1 Experience based studio hours

The first session being held on Mondays between 14:00-18:00 focused on experience based learning, starting with defining the design problem and sketching and progressing by the development of the concept and prototyping by means of exchanging ideas with peers and getting evaluation from the studio leader. Drawings and prototypes are generally accepted as the output of the studio courses however those visualisation techniques are also important means of thinking and communication (Cikis and Ek, 2010). For this purpose students were encouraged from the very beginning to produce as many sketches as possible. Therefore a 40 page sketchbook was distributed to each student on the first day of the design studio course and it was collected at the end of the 5th week. The students were asked to re-draw their best sketches of the day on the sketchbook having the dates on them.

Different from other studio courses, in Module I of the multisensory design course, the students were also assigned to keep a daily diary of sounds. In this respect sensory sensitizing and sensory sampling suggested by Shifferstein and Desmet, 2008 has been exercised. Students recorded the sounds using their smartphones and they submitted the material to the teaching assistant weekly together with the sketches. For the sound diary, three different templates were distributed to the students (Figure 2). On the first week, they concentrated on capturing the sound only (sensitizing). On the second week, they evaluated the sound with respect to the emotion it aroused in them

diary) and brainstorming, the second hour was spent going over the assigned material (either articles or videos) from the previous week and in the remaining 2 hours either a keynote speaker was invited to provide theoretical information or the course coordinator held a lecture on multisensory design.

HAPPINESS

Since the project title was “Happy Sound Object”, students were expected to gain deep knowledge on the notion of happiness and sound. For this purpose, during the first week psychologist Ekin Özel was invited as a keynote speaker to give a lecture on happiness. During her lecture, psychologist Ekin Özel particularly focused on what makes us happy, personal sources of happiness, Martin Seligman’s theory on positive psychology and the PERMA model. The inclusion of the PERMA model to the studio course as a theoretical element was originally suggested by the Japanese Studio Leader Oki Kasajima.

According to Seligman, the core element of psychological well being and happiness come from positive emotions (P), engagement (E), relationships (R), meaning (M) and achievement (A). According to Seligman, positive emotions mean feeling good and are mostly innate; engagement means finding flow with hobbies etc.; relationship means authentic connections with people, meaning of life is purposeful existence and achievement means being stimulated by a sense of accomplishment. Students were asked to take into account those sources of personal happiness while designing the everyday object.

SOUND

During Module I, the notion of sound was elaborated in two sessions. In the first session project leader Oki Kasajima elaborated on the power of sound by means of touching upon sound’s different uses such as perception, memory trigger, communication, crowd control and sound-scape. Cultural dependency of this power was also explained by various examples. After all, product experience is the outcome of human product interaction and different people are likely to respond differently to the same product (Desmet and Hekkert, 2007). Lerma et al.(2011) also discusses cultural differences in response to the same soundscape.

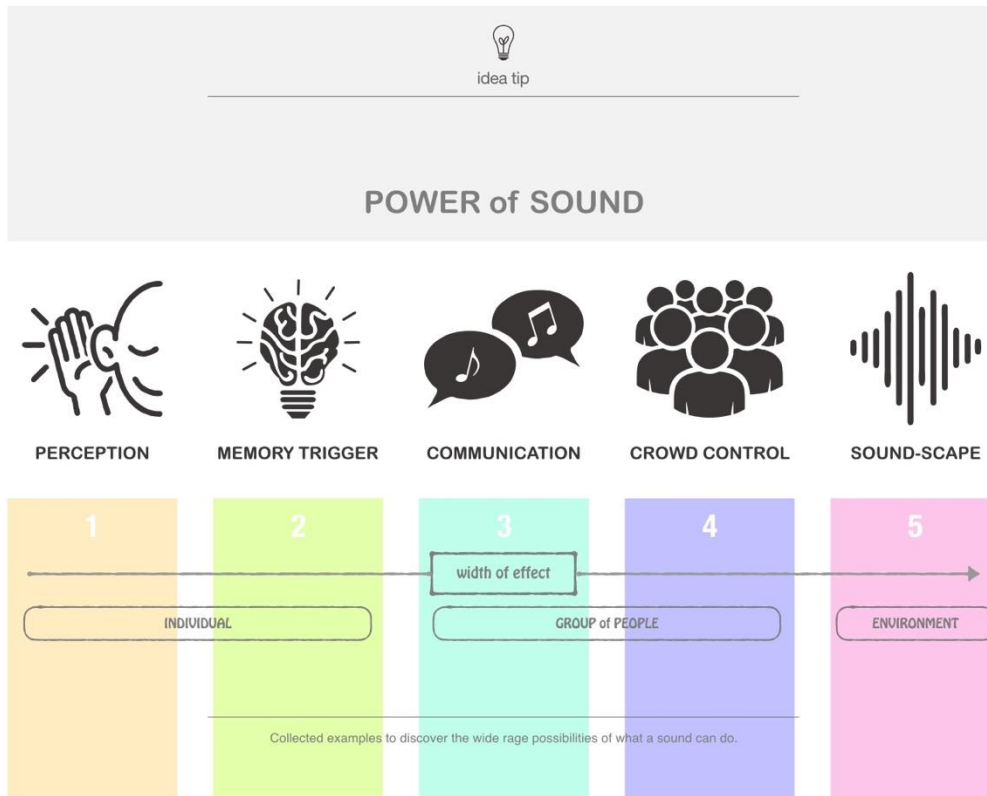


Figure 3 The Power of Sound

In the second session dedicated to sound, a mini concert was organized with the aim of developing students' capability in evaluating the emotional reaction aroused by sounds. For this purpose, the Department of Turkish Music at Istanbul Medipol University was approached. Asst. Prof. Dr. Güldeniz Ekmen kindly accepted to prepare two pieces of music* (one meant to be happy and the other sad) for the mini concert. Professor Ekmen, who is also a virtuoso of Qanun (a type of large zither with a thin trapezoidal soundboard that is famous for its unique melodramatic sound) played the two pieces of music consecutively during the studio course. Immediately after the mini-concert the students were asked to write their feelings and thoughts about the two pieces of music. A content analysis of keywords was carried out immediately afterwards and it was found that sad/sadness, happy/happiness, peace/peaceful are among the most frequently experienced emotions by the students. The fact that happy and sad was used most frequently showed us that the template distributed earlier had been influential in students' perception and categorization of sound.

Having discussed *happiness* and *power of sound* in detail in class, the students were given the ideation tree map template (Figure 4) to fill in as homework. In the ideation treemap, the students were to come up with situations in which they were also expected to combine one element of power of sound with one element of the PERMA model. The exercise turned out to be rather difficult for students to complete on their own, therefore the following week it was practiced once more as a class activity.

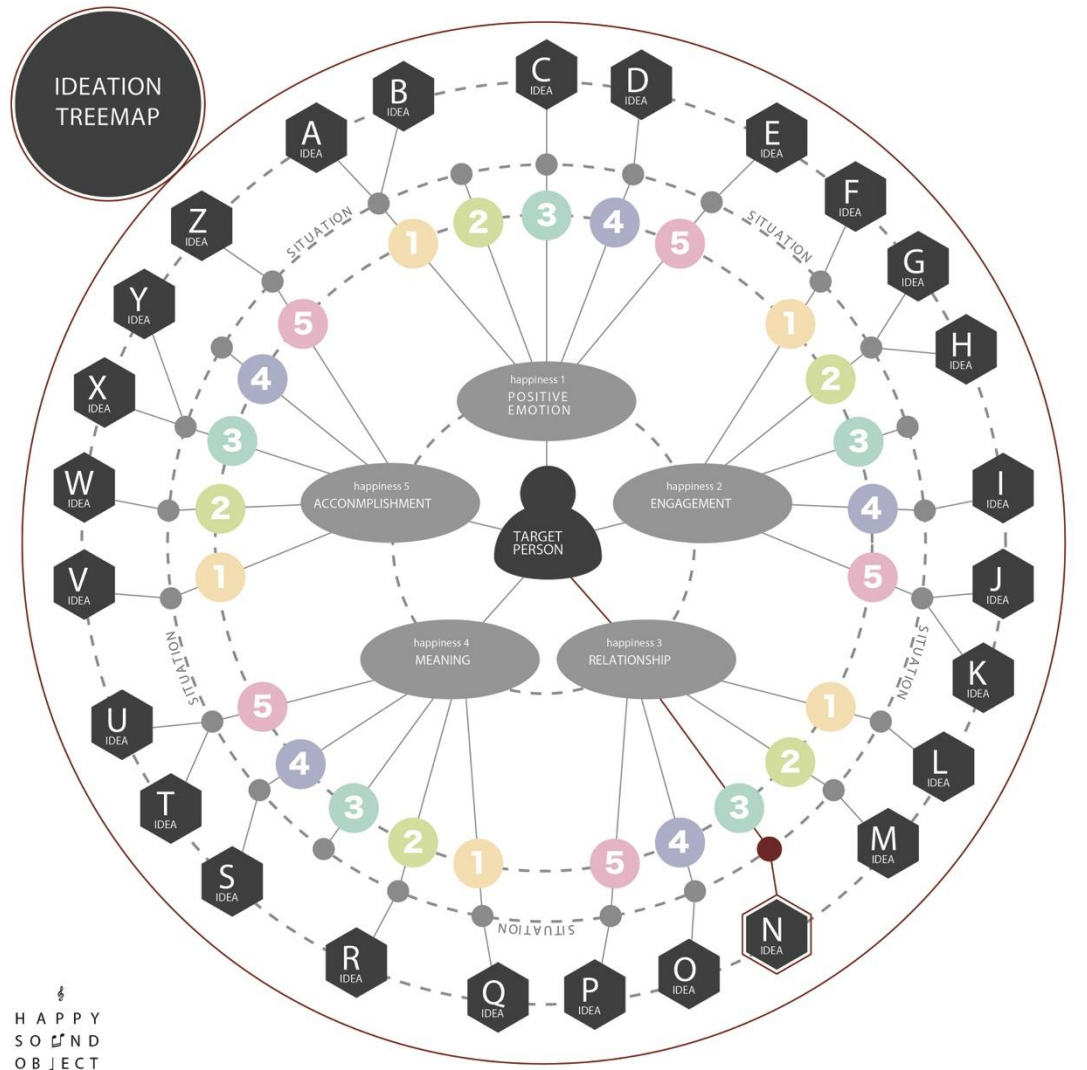


Figure 4 Ideation Treemap template developed by project leader Oki Kasajima

3.3 The Student Projects

In 5 weeks, a total of 15 projects have been completed by 15 students. Some of the students worked on more than one project and developed several concepts, however they were told by the lecturers to select one of the concepts for detailed design. The visuals related to projects are presented in Figure 5.

As it is seen in Figure 5, students worked on a variety of subjects. Three of the projects were related to game design (*sound-riddle; melodise object, seize the sound*) focusing on memory triggering and communication aspects of sound; another three students designed table-top objects focusing on perception and communication power of sound (*sound of the city, post board, oscillating magnet*); two students worked for bathrooms focusing on soundscape and communication. There was one furniture design; a drawer chest-*musical drawer* and one lighting design; a lampshade *rainy night* focusing on perception and memory triggering aspects of sound. Two students developed portable accessories –*the fun pen* and *the happy fingers* focusing on perception and communication. One student worked on tea glass –*refresh*, another on nut eating habits of pre-school children –*the nut*

board both featuring communication. One student developed an object that would systemise the local horning jargon elaborating on the communication and crowd control power of sound.

On the final day of Module I students presented their projects at Atölye İstanbul, which is a workshop and an office platform where member freelance designers from various disciplines work, exchange ideas and collaborate. During the presentation there were 19 jury members (local and international designers) who gave feedback on the projects. The jury also determined the winning project. Having the jury at Atölye İstanbul was meaningful because Module I was started by a presentation and a brainstorming session at the same place on 17th October 2016, as part of the Open Monday activities organized by the institution. Five weeks after the project kick-off, the same freelance designers were invited as the jury.

4. Conclusion

The multi-sensory design studio course at Istanbul Medipol University has been a medium where the authors tested the questions suggested in Part 2.1 of this article. The aim was to equip tomorrow's professional designers, (i.e. design students) to understand the importance of designing for five senses. It was seen that it is possible to design the course to comprise of modules to focus on one particular sense in each module. Our second concern was about emotion evoked by senses. Student projects revealed that isolating one particular emotion at a time was rather difficult. In many cases positive emotions were accompanied negative ones in varying scales. On the other hand, using the elements in "Power of Sound" (Figure 3), it was possible to treat aesthetics and functionality using the same sensory stimulus. We observed that most of the students treated more than one level of product experience in their projects.

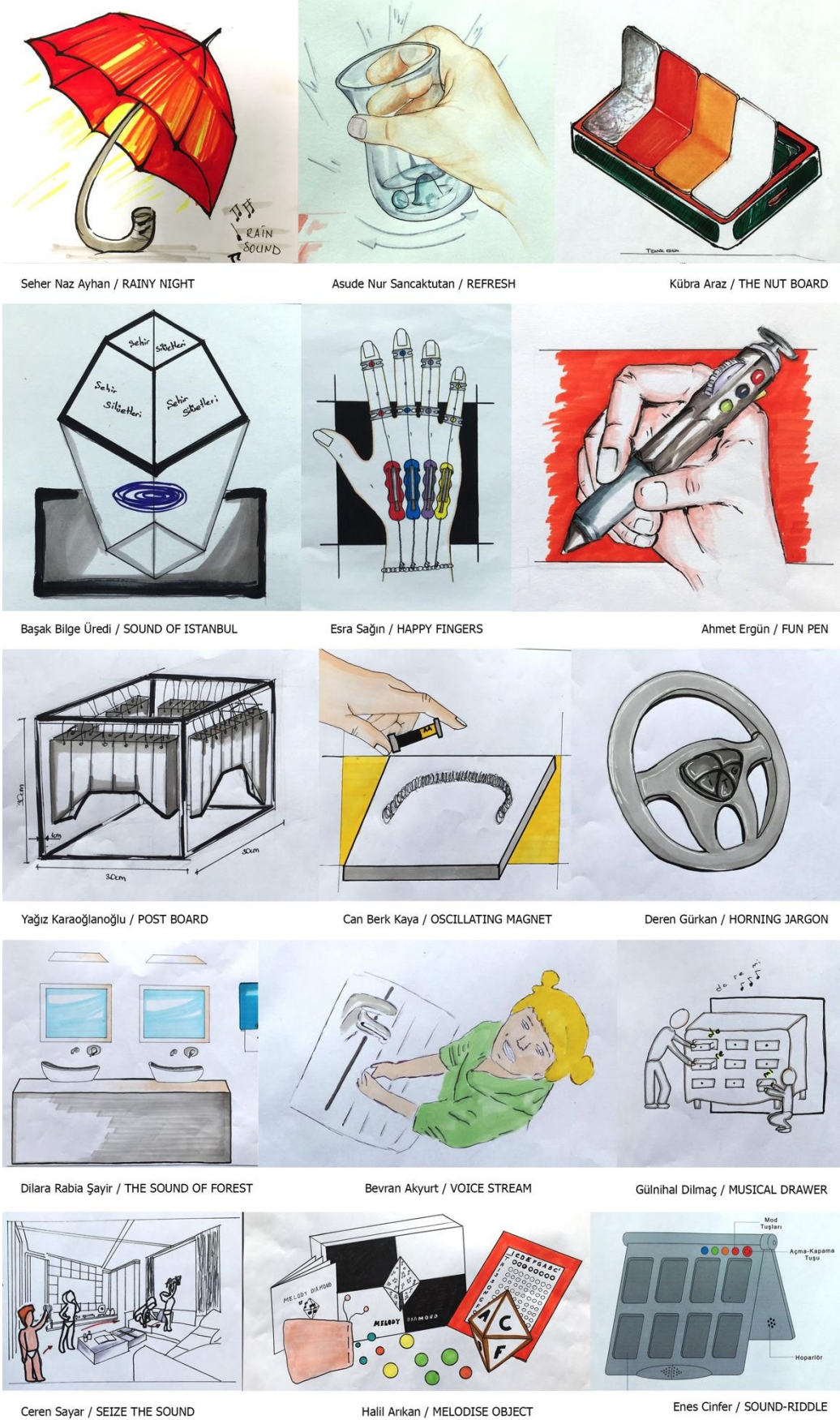


Figure 5 Happy Sound Objects designed by 15 students

4.1 The outcomes of the multi-sensory studio course Module I:

Five main outcomes emerged from the Module I of the multi-sensory studio course:

Firstly, the challenge of making a working model may force students to simplify their initial ideas. Using video-presentation instead of a working model, may guarantee that all the elements of the initial concept are intact. In Module I, a total of 15 projects were developed by the students. At the beginning the students tried to solve the sound issue by means of working on mechanical solutions. However, in most projects, mechanical solutions were inadequate to reflect the real utility of the product. Upon Kasajima's suggestion, 9 of the projects were presented using a video. Videos were particularly helpful in integrating the auditory element of the design. For example, three different games were designed by the students. Since the students lacked sound-making technology that would be integrated in the product, using the video together with the product helped substantially in understanding how the product actually worked. Some students also used video films as a tool in demonstrating the importance of their design problem.

Secondly, poor drawings may lead the lecturers to misevaluate an initial idea. In order not to fall in the trap of misevaluation, students may be asked to produce a working model of the design. One of the students sketched a glove and said that she was thinking of designing a hand accessory with super powers. The sketch was not promising and her mentioning of "super power" made the lecturer sceptic about the feasibility of the project. Therefore the student was requested to produce a model of the design as early as the second week after the start of the project. Three days later, to the lecturer's surprise, the student came up with a very good working model. The model produced very good sound upon tapping the fingers on the table. In the harmony of motion and sound, a surprise element was hidden which made the spectators laugh. Thus the lecturer was convinced about the idea.

Thirdly, working on abstract themes like happiness, turned out to be a challenging task for 2nd year industrial design students at Istanbul Medipol University. During their first year same students mostly worked on short term design projects that focused on concrete everyday objects like stools, sport shoes etc. The only abstract project theme they had worked on during the first year was "time" and the outcome was not as satisfactory as the concrete projects. Building upon this experience the multi-sensory design studio course was designed to integrate formally cognitive based learning with the assumption to facilitate dealing with an abstract notion as happiness. However, it has been observed that although practice based sessions were supported by cognitive based sessions during the course, the students still had difficulty in integrating the notion of happiness in their designs.

Fourthly, integrating audition in their designs is a challenging task for 2nd year industrial design students at Istanbul Medipol University. Designing for five senses was the focus of this particular studio course. Students had already some working knowledge on designing for vision from their first year projects. On the other hand, taking into account audition has been a completely new phenomenon. The lecturer observed that students who played a musical instrument and/or students who did extensive user-research turned out to be more comfortable in integrating the sound at the ideation phase. Others treated the sound issue as an "add-in" to the object.

Finally, presentation skills are important for the acceptance of a design proposal by the client and they are scarcely developed in 2nd year industrial design students. At the end of five weeks, students presented their design projects to professional designers. Professional designers who acted as the jury evaluated student projects based on their power-point presentations, drawings and models. The

points distributed by the jury also determined the winning project. One striking fact about the winning student was although his project was far from being a completed one in terms of drawing and the model, the student managed to persuade the jury with his idea and his advanced presentation skills as an orator. Other students, having more complete projects in terms of aesthetic and functional details, were shy during the power-point presentation and could not defend/sell their ideas properly. This led the lecturer to think about organising a presentation techniques seminar for second year students. Presentation skills are important for the acceptance of a design proposal by the client and they are scarcely developed in 2nd year industrial design students.

4.2 Future Implications

Teaching is a design problem (Cennamo, 2011), because there are many variables and many possible solution paths. When designing the curriculum of a studio course the proportion of experience-based learning with respect to cognitive-based learning is among the most important variables. Second year design studio course was originally designed to have a 50%-50% balance between cognitive based and experienced based learning. In execution however, the balance changed in favour of experience-based learning. Additional experience-based learning time seems to be a must for the coming years.

The multisensory design course was a new experience for the students and the lecturers. Further implementation of the course would be beneficial for the department, in order to better educate future designers and to understand the insufficiencies related to 1st year design education at the department.

Integrating other disciplines to the studio course helped both the lecturer and the students to understand different aspects of the subject. Dealing with some technical problems concerning sound design, on the other hand, was challenging. Therefore as a future implication, the inclusion of a sound engineer as an advisor may be an option.

References

- Cennamo, K, Brandt, C., Scott, B. Douglas, S., McGrath, M., Reimer, Y. and Vernon, M. (2011) Managing the Complexity of Design Problems Through Studio-based Learning. *Interdisciplinary Journal of Problem Based Learning*, (5)2.
- Cikis, S. and Ek, F. İ. (2010) Conceptualisation by Visual and Verbal Representations: An Experience in an Architectural Design Studio. *The Design Journal*, 13:3, 329-254.
- Dannels, D. P. (2005) Performing tribal rituals: A genre analysis of “crits” in design studios. *Communication Education*, 54(2), 136-160.
- Desmet, P. M. A., & Hekkert, P. (2007). Framework of product experience. *International Journal of Design*, 1(1), 57-66.
- Galle, P. (1999) Designing as intentional action: A conceptual analysis, *Design Studies*, 20(1), 63-64.
- Goldschmidt, G. and Tassa, D. (2004) How good are good ideas? Correlates of design creativity. *Design Studies*, 26, 593-611.
- Hekkert, H.N.J. and Shifferstein, P. (2008) *Product Experience*, USA: Elsevier.
- Kim, J.B., Koo, Y. and Chang, D.R. (2009). ‘Integrated Brand Experience Through Sensory Branding and IMC’. *Design Management Review*. Vol.20, No.3, pp.73-81.
- Krishna, A. (2011) An integrative review of sensory marketing: Engaging Senses to affect perception, judgement and behaviour, *Journal of Consumer Psychology*, 22 (2012) 332-351.

- Lerma, B. (2013) Chapter: 1 *Sensory Evaluation In Design and Perception* Lerma, B De Giorgi, C Allione, C, *Design and materials. Sensory perception_sustainability_project: Sensory perception_sustainability_project*, Franco Agnelli Edizioni.
- Seligman M. (2011) <https://www.authentic happiness.sas.upenn.edu/learn/wellbeing>
- Shifferstein, H.N.J. and Desmet .P.M.A. (2008) Tools Facilitating Multi Sensory Product Design. *The Design Journal*, V.11 Iss. 2, pp.137-158.
- Norman, D. (2004) *Emotional Design: Why We Love (or Hate) Everyday Things*. New-York: Basic Books.
- Norman, D. A. (2002). *The Design of Everyday Things*. New York: Basic Books.
- Oxman, R. (1999) Educating the designerly thinker, *Design Studies*, 20, 105-122.
- Pine, J.B. and Gilmore, J.H. (1998). 'Welcome to the Experience Economy'. *Harvard Business Review*, July-August, pp.97-105.
- Veryzer, R. W., & Hutchinson, J. W. (1998). *The influence of unity and prototypicality on aesthetic responses to new product designs. Journal of consumer research*, 24(4), 374-394.
- Wood, J. (2000) The Culture of Academic Rigour: Does Design Research Really Need It? *The Design Journal*, 3:1, 44-57.
- Soylu, Y. and Er, Ö. (2014). Corporate Design Germination Model. "Design Management in an Era of Disruption", 19th DMI: Academic Design Management Conference. 2-4 September, 2014, London.

About the Authors:

Yasemin Soylu received her BSc in Engineering and PhD in Industrial Design from Istanbul Technical University (ITU) and MBA from Koc University. She worked for international companies for 15 years in marketing and NPD. In 2013, Soylu acted as the founding director of Design Foundation Istanbul. She is currently an assistant professor at Istanbul Medipol University. Her research interest focuses on design and innovation management.

Berrak Karaca Şalgamcıoğlu holds Mechanical Engineering and Industrial Product Design BSc degrees and MSc degree in the field of Mechanical Engineering from Istanbul Technical University (ITU). She received her PhD degree in Industrial Product Design from ITU. She is currently an assistant professor at Istanbul Medipol University. Her research interests include inclusive design, human-centred design, ageing and ethnography.

Pelin Efilti received her BSc in Industrial Product Design from Istanbul Technical University (ITU). Currently, Efilti is a MSc student in Industrial Product Design at ITU and a Research & Teaching Assistant at Istanbul Medipol University. Her research interest focuses on packaging design.

Oki Kasajima received his National Diploma in Design from Brighton College and his BA in 3D Design from Manchester Metropolitan University. Kasajima is a Freelance Designer specializing in Product Design, Graphic Design as well as Space Design. He is also an experienced photographer and a camera director in video production.