EVALUATION OF BASIC DESIGN EDUCATION AT METU DEPARTMENT OF INDUSTRIAL DESIGN

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

EVALUATION OF BASIC DESIGN EDUCATION AT METU DEPARTMENT OF INDUSTRIAL DESIGN

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Basic Design is a crucial course for design education. This course is offered in the first year to initiate students to the theory, practice and communication of design and to lay a basis on which more advanced and specialized knowledge will be gathered throughout the rest of their design education and careers. However, the course's results, influence in design education and methods of conduct receives many criticisms from students, educators, designers and researchers. Even though the course plays a founding role in design education and is criticized for not being successful, there are very few studies on how this course should be formulated or updated. For this reason, a study is conducted in two stages with the students and instructors of METU Department of ID in order to assess basic design education within the scope of this department. The results of the fieldwork are examined in consideration of the criticisms found in literature to determine the major problems of this course and to offer suggestions for improvement.

Keywords: basic design, design education, acquisition and application of knowledge

ÖZ

ODTÜ ENDUSTRİ ÜRÜNLERİ TASARIMI BÖLÜMÜNDE VERİLEN TEMEL TASARIM EĞİTİMİNİN DEĞERLENDİRİLMESİ

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Temel Tasarım, tasarım eğitimi adına çok önemli bir derstir. Eğitimin birinci yılında verilen bu ders öğrencilere tasarımın teori, pratik ve iletişim kavramlarını sunar ve gelecekteki eğitim hayatları ve kariyerleri doğrultusunda ileri düzey özelleşmiş bilgilerin edinilebilmesi için bir temel oluşturur. Ancak bu dersin öğrenciye kazandırdıkları, tasarım eğitimine katkısı ve uygulanış yöntemi öğrenciler, eğitimciler, tasarımcılar ve araştırmacılar tarafından çeşitli nedenlerle eleştirilmektedir. Tasarım eğitimi için temel niteliğinde olması gereken bu derse yönelik eleştirilere rağmen, dersin nasıl geliştirilebileceği üzerine çok az sayıda çalışma vardır. Bu nedenle, temel tasarım eğitimini Orta Doğu Teknik Üniversitesi Endüstri Ürünleri Tasarımı Bölümü kapsamında değerlendiren, bölüm öğrencileri ve öğretim elemanlarının katıldığı iki aşamadan oluşan bir çalışma yapılmıştır. Bu dersin başlıca sorunlarını belirlemek amacıyla, çalışmanın sonuçları literatürde belirtilen sorunlar göz önünde bulundurularak incelendi ve dersin geliştirilmesi için öneriler sunuldu.

Anahtar kelimeler: temel tasarım, tasarım eğitimi, bilginin edinimi ve aktarımı

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INTRODUCTION

1.1 Background and Motivation of the Study

In design education, Basic Design is an introductory course offered in the first year as an introduction to theory, practice and communication concepts of design (Salama and Wilkinson, 2007; Balcıoğlu, 1998). This course has a critical importance in design education to endow students with common basic design concepts, basic skills and basic design language.

Basic Design course is based on the preliminary course of Bauhaus that was founded at the beginning of the 20th century as a response to the problems in art and design education that had evolved since the 18th century beginning with the Royal Academy of Architecture in France through the Beaux-Arts System of the 19th century (Pasin, 2007; Drexler, 1984; Whitford, 1984).

Just like the Bauhaus system was an attempt to solve the observed problems of the classical design education, revisions to Basic Design are needed to fulfil the needs and to overcome problems that arise in time, as the design world and design education evolve (Findeli, 1990; Denel, 1979; Teymur, 1998). Although, many designers and educators think that current basic design education has to be updated according to today's needs, there are not many studies related with the process of formulating this course. Furthermore, the existing studies related to basic design education mainly deal with architecture and fine arts departments and there are not many studies on the basic design education of design departments. Therefore, assessing the basic design education of a design department in order to update it was considered to be useful for the literature of design foundation.

Since, the researcher of this study has been involved in the Basic Design course in the Department of Industrial Design in Middle East Technical University (METU Department of ID) for the last four semesters as a research assistant, focusing on this specific department would give in depth data for the purpose of assessing and updating the course.

1.2 Aim of the Study and Research Questions

The aim of the study is to assess basic design education within the scope of METU Department of ID and propose suggestions to improve the course. In order to make a sound analysis of the course, it is important to examine why a foundation design course exists in the first place. An investigation of how this course appeared and progressed, what are its aims and outcomes and how it relates to the rest of the undergraduate education will set the research foundation in relation to which, the course's current problems can be determined. Building on this general assessment of foundation education, the specific case of the Basic Design course in METU Department of ID will be examined to answer the main research question:

How successful is the Basic Design course of METU Department of ID in setting a foundation for design education?

The study will try to answer this research question with the following supportive questions in mind:

What is the standing of a foundation course in a design education?

a- What is the purpose of basic design education?

b- How did this course emerge, progress and what is its current situation?

c- What are the problematic aspects of this course?

What is the standing of the Basic Design course in METU Department of ID ?

a- What are the perceived aims and objectives of Basic Design in METU Department of ID ?

b- What are the problems about Basic Design in METU Department of ID ?

c- What are the reasons behind these problems?

d- How can these problems be solved and the course be improved?

1.3 Structure of the Thesis

The thesis consists of six chapters.

Chapter 1 presents the background and motivation of the study together with the aim and research questions.

Chapter 2 presents the literature review in terms of the historical background of basic design education, its current approach and the criticism about it.

Chapter 3 introduces the field study in terms of its scope, aim, methodology and data analysis.

Chapter 4 puts forward the findings of the field study.

Chapter 5 presents the analysis and discussion of the study in relation to the literature.

Finally, Chapter 6 presents the conclusions and implications for future studies.

CHAPTER 2

BASIC DESIGN EDUCATION

In this chapter, the research questions of the thesis will be examined by defining key concepts, their backgrounds and current contexts. After defining what design is, the general structure of design education will be explained and the foundation course named Basic Design will be introduced as the basis of this structure and the common ground of all design fields. The background of Basic Design, along with the reasons for its creation and development, will be explained for a better understanding of its importance. Finally, basic design education's current situation will be analysed in terms of its aims and methods; its success and relevance will be discussed through the criticism and suggestions it receives in the literature.

2.1 Common Ground of Design Education

Merriam Webster dictionary defines design as "planning and making decisions about (something that is being built or created): to create the plans, drawings, etc., that show how (something) will be made" (Design [Def. 1]. (n.d.). In Merriam Webster Online, from http://www.merriam-webster.com/dictionary/design). Also the word design can be used either as a verb or as a noun, referring to the end product or the process. According to Findeli (1990), defining the word design is a risky attempt since the word can be considered as knowledge, a process, a product, an idea or a project. As this broad definition of its meaning suggests design profession as well as its education as comprehensive and versatile fields. This comprehensiveness resulted in design profession and education to have sub fields such as graphic design, interior design, industrial design, etc.

Despite there being significant differences between the outputs of a graphic designer, an interior designer or an industrial designer, etc., the educational formations of these designers are founded on similar bases: theory and practice for the purpose of designing products, environments or services (Salama and Wilkinson, 2007). Balcıoğlu (1998) states that, besides theory and practice, communication is another base concept dealt by design education. According to Balcıoğlu, theory is the field assessment: it produces and provisions intellectual, conceptual and methodological information and the flow of information that is required for the creative processes in the context of design education. Furthermore, practice covers the actual production process that is required for the realization of a design in terms of physical, mechanical, electronic, technical, technological actions. And finally, communication, in a sense, is a dialogue between theory and practice. Communication plays a role in the realization of the conceptual and the transmission of the knowledge and experience that is derived from this realization process.

Education on all fields of design is founded on these three primary concepts. For the purpose of introducing first years to theory, practice and communication concepts of design, a basic foundation course is generally given in the first year, followed by specialized projects in the studios of following years. Besides the studio classes, other courses like drawing, history, materials, marketing, etc. are given to supplement students with necessary skills and knowledge. Even though project studios and supplementary courses are profession specific, the first year foundation course, that works as a common ground of design education, is very similar in most design and architecture schools. In this foundation education common basic design concepts, basic skills and basic design language are conveyed to students as an introduction to theory, practice and communication concepts of design. On the other hand, there are some differences between the foundation courses of both design departments and architecture. After accomplishing common ground concepts of design, there are profession specific projects to prepare the students for their further education.

Teymur (1998), states the importance of a basic design education, that is not profession specific, by comparing it to the foundation of a building: the foundation is not a building on its own but, it is the basis on which a building will be constructed. As in the matter of construction, the foundation becomes invisible as the building is constructed on it. Also, the foundation is not exactly related with the layout and the outlook of the building but, it is an essential element even if the building is constructed on a solid ground. This metaphor indicates the critical importance of a basic design education since the professional work of a designer is not exactly related with the knowledge that is acquired in such a foundation course, however, the work would not have been possible without the foundation set by the course.

This thesis focuses on this founding design education, which stands as the common ground for all design fields. Nowadays, the first year foundation course is referred by different names in different institutions, such as Design Principles in Rhode Island School of Design or Foundation Design Studio in Pratt Institute. However, in this thesis the term Basic Design will be used to refer to all these courses that teach basic theory, practice and communication concepts of design to the first years.

2.2 Historical Background of Basic Design Education

Basic Design is the common foundation course in nearly every design and architecture departments. The reasons for the creation of the course and its development processes are important to understand the importance of the course. In this chapter the historical background of the course will be examined.

The first example of design education that depends on theoretical foundations was the Royal Academy of Architecture that was founded in 1793 in France. The school had adopted a curriculum that focuses on two-dimensional composition, based on classical and neo-classical roots (Pasin, 2007). The main purpose of the education was to explore the absolute beauty of ancient architecture through examination sketches of classic architecture samples (Balamir, 1985). However, an education

system that depends on the examination of the old samples did not encourage creativity in students nor the development of new ideas and approaches.

A new educational system that does not only depend on the old, was born in 1819. It was known as the Beaux-Arts System. The workshop training in this system depended on design critics, new drawing techniques and subtleties of painting. The aim was to graduate scientific, structural and artistic architects that are capable of analysing details (Drexler, 1984). The system depended on the transfer of knowledge and experience from the master to the apprentice. According to Çekil (1989), in Beaux-Arts System students could not develop their personal styles and could not be creative since they adopted the styles, aesthetic perceptions and methods of their masters.

At the beginning of the 20th century, some designers and educators argued that the Beaux-Arts system needed to be regenerated. To remedy the limitations of this system based on master-apprentice relations, Bauhaus was founded in 1918 arguing that creativity can be teachable with a foundation course. The major difference of the Bauhaus System from the Beaux-Arts System was to have more active and freer students. The first aim of the Bauhaus was to combine different artistic branches and train the artists through projects meant to enhance their skills. The second aim was to promote the importance of the craftwork. Finally, the third aim was to integrate the leaders of the crafts and industries of the country into the school programme (Whitford, 1984).

The preliminary course, which is also known as basic course was the best-known and most innovative feature of the Bauhaus pedagogy. The course was the spine of the Bauhaus system and it was founded as a course in 1919 to handle the problems of traditional method (Wick, 2000). Along with the preliminary course, students could acquire and develop their knowledge and personal styles through discovering, creating and experimenting instead of being passive receivers of data from their masters (Boucharenc, 2008). This is important because, being the basis for design

education and profession, the knowledge and skills that are gathered in this course directly affect the quality of products that the students will design throughout their educational and professional life (Koyuncugil, 2001). Nowadays, nearly all design and art schools initiate their students with a foundation course due to the successful results of the preliminary course in the Bauhaus (Blachnitzky, 2009).

The main goal of the preliminary course was to create a shared design language and to establish a base for the forthcoming instruction on form and works (Wick, 2000). To achieve this, all students participated to the compulsory preliminary course where they started to study form together with materials. Only after completing the course with a finished independent work, they could join the three-year specialized workshop of a master of their choice (Wick, 2000). With this approach, the preliminary course was placed at the basis of the educational structure, making it the common ground on which all further specialized knowledge will be set (Figure 1).

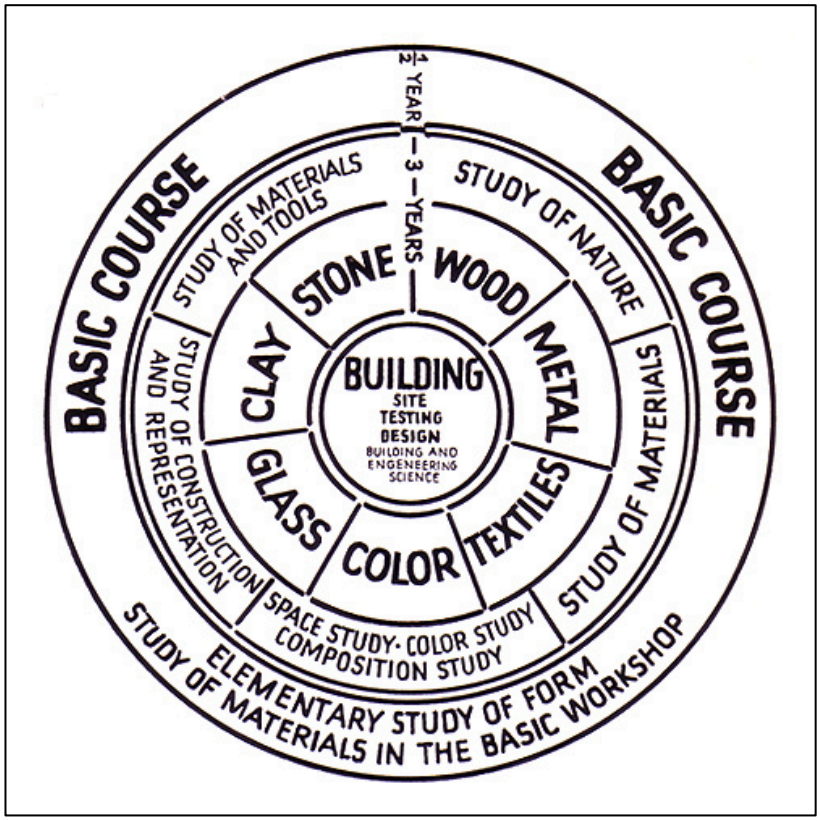

Figure 1 Diagram of the Bauhaus curriculum (Itten, 1964)

Apart from the structure of the educational program, the content of the course was also selected so that it could work as the foundation where students will acquire a shared design language. According to Findeli (1990), the content of the preliminary course can be outlined as follows:

> There are two main categories or aspects every designer or artist has to consider, one being the plastic elements (line, shape, colour, texture, structure, volume, motion, space, and so forth) and the other, the specific tools and materials used to create form (brush, pen, power tool, camera, pigment, paper, clay, wood, plastics, and so forth). The Preliminary Course set out to familiarize the students with these two categories through carefully designed assignments and to allow them to choose the workshop where their

talent and latent which the course had were to blossom in aptitudes, revealed, likely the following three years (Findeli, 1990, p.8).

For a good integration of these form and material studies, new methods of teaching were also adopted. Findeli (1990) describes a method that were used in the preliminary course of Bauhaus as,

> Two general types of problems were identified and submitted to the students. In the first type, the student was asked to explore one specific plastic element in different media. For example, the expressive potentialities of texture were tested and experienced through drawing with pencil, pen, and brush; photography and printing; and through working with hand- and power tools (in different materials);as well as haptically, visually, and musically. In the second type, the process was reversed. Here the students were invited to explore the expressive potentialities of the various plastic elements with only one medium of their choice (Findeli, 1990, p.8) (Figure 2).

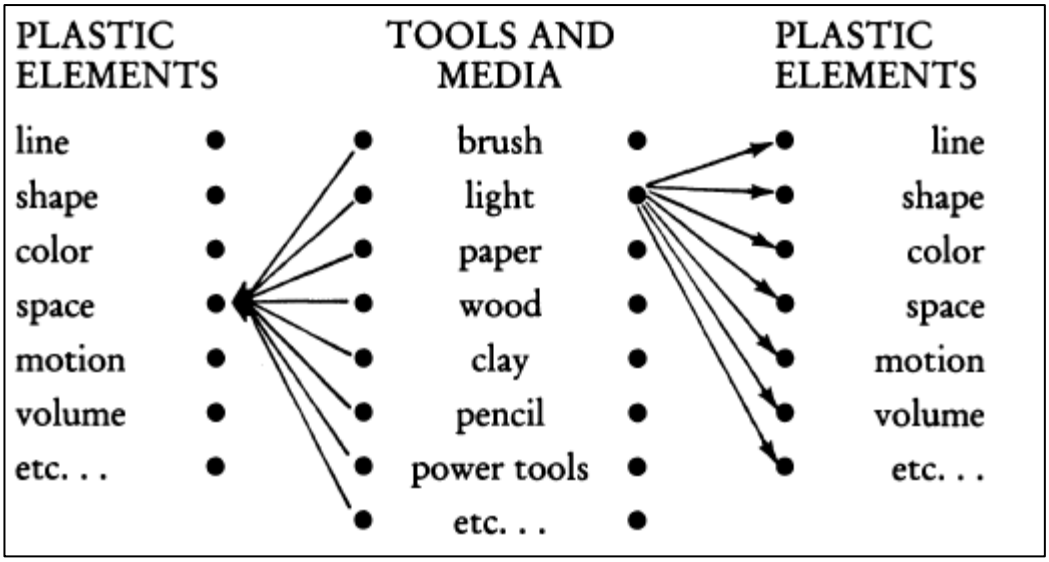

Figure 2 The methodological structure of the Preliminary Course in Chicago (Findeli, 1990)

The educational methods used were not only practical but also included theoretical lectures (Pasin, 2007). Furthermore, such new educational methods were adopted to break the conventions of old art educations by enabling students to have an independent, individual and objective perspective. As Johannes Itten, the founder of preliminary course, indicated, their main purpose was "to free the creative powers and thereby the art talents of the students. Their own experiences and perceptions were to lead to genuine work. The students were to free themselves gradually from dead conventions and to take courage for work of their own" (Itten, 1964, p.9). Findeli (1990) also states that,

> Throughout the preliminary course, each student experienced a progression leading from an unconscious state to full awareness through three successive stages: (1) observation, perception, and description; (2) systematic exploration and analysis; and (3) conscious manipulation and action, leading to the eventual mastery of design (Findeli, 1990, p.9).

2.3 Current Approach to Basic Design Education

The field of design, from its content to its materials, production techniques, target audience or consumer, depends on the growth of industrialization that is affected by the continuous innovations and developments in technology and science (Yu, 2009). Due to these changes and developments, design profession as well as design education has changed since Bauhaus. In this section the status of the current Basic Design education will be clarified.

2.3.1 The Aim of Current Basic Design Education

Lang (1998) adjusted the aims of the preliminary course of the Bauhaus to the conditions of nowadays and revealed three main aims for a modern basic design course. These aims are, to enhance students' ability, to identify and solve problems creatively, making them aware of their environment and how things work around them and to increase their ability to communicate. These three main aims can be clarified as:

1. The development of creativity and problem solving.
2. The development of perception.
3. The development of design language.

2.3.1.1 The Development of Creativity and Problem Solving

According to Kuloğlu and Asasoğlu (2010), creativity and creative thinking is the most important factor in basic design education. They state that,

> To perceive, interpret and communicate the world and facts differently is one of the important and main goals of design education, which can only be attained through creative thinking and creative expression. Therefore, one of the main goals of basic design education is to foster creative thinking of students and to abet their talent and skills in this respect (Kuloğlu and Asasoğlu, 2010, p.1).

Traditionally, creativity is thought of as a hereditary skill. However, Denel (1981) states that, creativity is to evaluate all kinds of problems and solutions from a different perspective, which is an attribute that can be learned. Therefore, creativity shouldn't be assumed to be hereditary.

Salama (1995) expresses these three characteristics of creative process:

1. Creativity process is not a one-way issue that cannot be analysed. It can be controlled empirically.
2. Creativity process includes a range of scientific processes that occur in the brain. These processes are perception, thinking, imagery, analysis and synthesis.
3. The creative characteristics of individuals are generalised. They cannot be limited to one individual. Also, this does not mean that everybody should be creative but some person could reach the highest level of creativity.

From these statements, it can be summarized that creativity is a reviewable and improvable process. It is about developing unique and original ideas and looking for a different perspective. It is teachable, learnable and analysable.

When creative abilities are developed, problems encountered in any context, or on any subject can be solved with original ideas. Denel (1981) expresses that, an individual gains creative abilities practicing these three processes:

1. Analysis
    a. Understanding and defining the problem.
    b. Disclosure of the problem by collection and analysis of data.
2. Ideas
    a. Creation of the ideas that might be solution.
    b. Organizing and developing all the ideas by combining, changing and inspiring.
3. Synthesis
    a. Evaluating temporal solutions by testing or consulting the experts.
    b. Adopting and performing the solution that is determined.

Students go through these processes in Basic Design. Working on different problems that are given throughout the year, students learn how to understand and analyse a problem by interacting with teachers and other students. Through this experience, students learn to create new ideas to new problems and implement these ideas and solutions with critics received from teachers and other students in the studio environment.

2.3.1.2 The Development of Perception

Pasin (2007) states that a good design should create the intended impression visually. Denel (1981) also emphasizes the importance of perception saying that a design object, which cannot be perceived as intended is considered as unsuccessful. Since design deals with visual elements, how these visual elements are perceived and what

impression they create is of utmost importance in design as well as in design education. Therefore, the ability to manipulate visual form in order to achieve the desired effect is treated as a basic skill and is conveyed to students at the beginning of their design education.

The preliminary course in Bauhaus, was based on the Gestalt Theory of Visual Perception. The Gestalt approach to perception argues that the human mind has self-organizing tendencies and therefore, perceives visual sensations as unified wholes (Matlin and Foley, 1992). The perceived whole is consisting of many parts but, these parts cannot represent and determine the whole on its own: the whole reflects more than the total of its parts (Eryayar, 2011). The geometrical forms that are perceived a certain way when they are on their own, become a different object with additional meaning when they are perceived together as a whole (Figure 3).

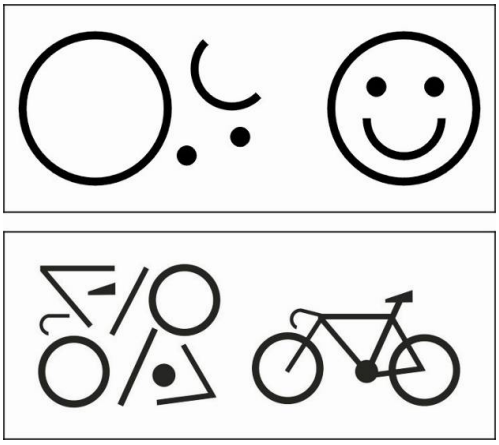

Figure 3 Unrelated geometric forms become a meaningful sign when they are perceived together as a whole (Eryayar, 2011)

A major question that the Gestalt Theory deals with is how separate visual elements are grouped together to form wholes. Gestalt theoretician Max Weitheimer determined four important principles that serve perceptual grouping: proximity, similarity, continuity and closure (Güngör, 2005). The principle of proximity make visual elements that are close to each other appear as a group (Figure 4).

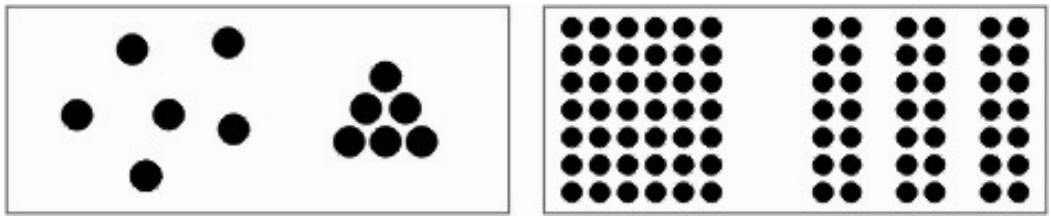

Figure 4 Elements that are closer to each other are perceived as a group (Eryayar, 2011)

With the principle of similarity, elements that are similar to each other in some sense, whether by their form, their texture or even their velocity, are perceived as a group distinguishable from all the surrounding elements (Figure 5).

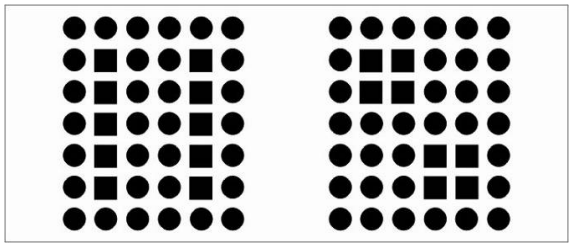

Figure 5 Elements that are similar are perceived as a group (Eryayar, 2011)

The principle of continuity state that visual elements that are aligned, that can be seen as if connected with an imaginary continuous line, are perceived as belonging together. This perceived imaginary line can also induces the viewer's eye to follow it, making possible the perception of a hierarchical sequence or narrative in the visual field (Figure 6).

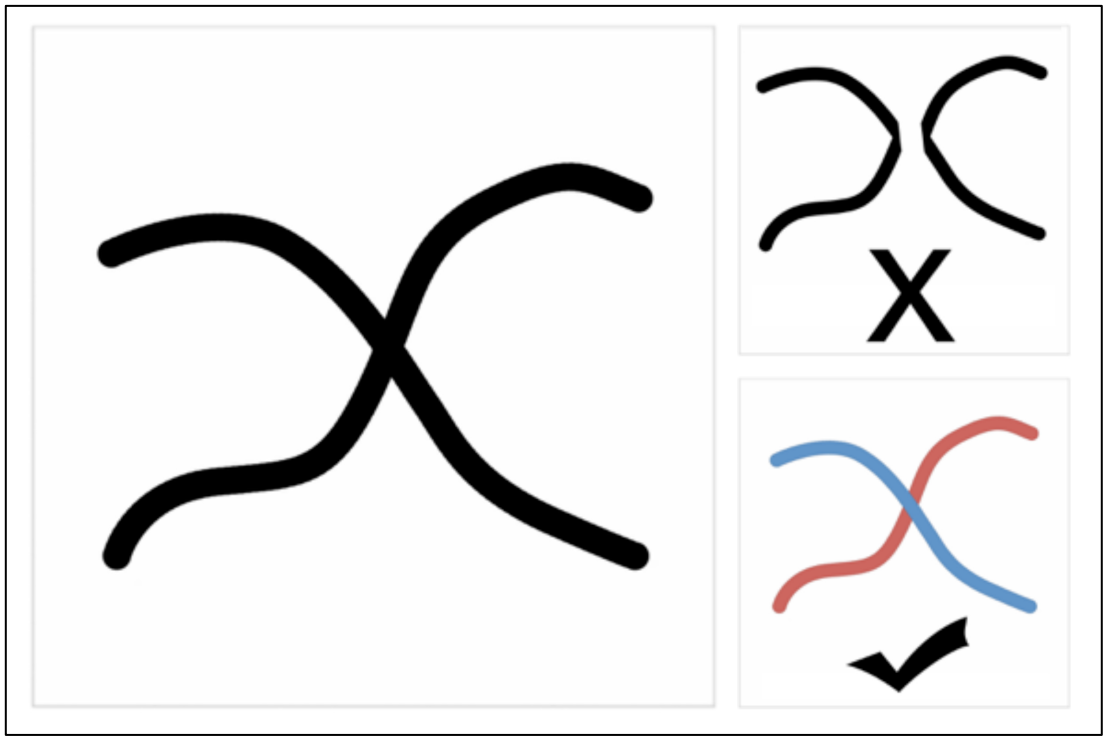

Figure 6 Human vision favors the perception of smooth, fluent paths rather than angular lines (illustrations are drawn by Ümit Bayırlı)

The principle of closure suggests that the human mind has the tendency to fill the gaps in a figure in order to perceive an entire object, instead of disconnected forms (Figure 7).

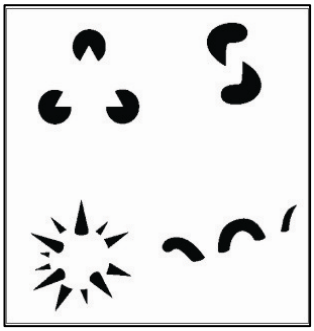

Figure 7 Whole objects are perceived out of disconnected forms (Eryayar, 2011)

Nowadays, even if the term Gestalt Theory is not pronounced in class, or its underlying principles are not explained, the works that are done in Basic Design course are based on this approach to visual perception: students practice visual organization using geometric forms in order to grasp how visual perception can be shaped through grouping.

2.3.1.3 The Development of Design Language

In all branches of design, visual ideas and solutions, that are developed to be perceived in a certain way, are expressed in a design language that is specific to that discipline. Mittler (1994) expresses that in design language, design elements and principles are equivalents to the words and the grammar of the verbal language. The design elements, which are the visual words of design language, are point, line, shape, form, space, colour and texture. The design principles, which can be considered as the visual grammar rules in design language, are balance, proportion, perspective, emphasis, movement, pattern, repetition, rhythm, variety, harmony and unity (Toktaş, 2011). These elements and principles are the subjects of basic design education (Kuloğlu, 2010). Boucharenc (2006) sees these elements and principles as complementary but usually different from common design teaching approaches since the professional design education is given in the upper studio classes by designing and examining products and systems. According to him " the pedagogy of basic design promotes a holistic, creative and experimental methodology that develops the

learning style and cognitive abilities of students with respect to the fundamental principles of design" (Boucharenc, 2006, p.1). Students are expected to use their own styles and cognitive abilities when designing products and systems with respect to these fundamental elements and principles of design.

The structure of basic design course is formed of two-dimensional and three-dimensional projects that vary according to different fields of design. Two-dimensional exercises generally deal with compositional issues about visual field organization, considering Gestalt Theory, while three-dimensional exercises generally deal with form relationships between different parts of an object and form relationships between the object and its environment (Resuloğlu, 2012). Unlike the upper design studio courses, in Basic Design, students work on a great number of short termed projects (Çetinkaya, 2011). All of the projects deal with composing design elements in accordance with design principles to achieve a good composition that will be perceived as intended. Students are expected to experiment with visual field organizations through these different projects that proceed cumulatively. In each new project, students need to make use of the knowledge and skills they gained in the previous assignment. Alongside hands-on practice, students get acquainted with design language by analysing, assessing and talking about their own and their fellow students' works, since wall critics and participation are a crucial part of Basic Design (Güngör, 2005).

The works that are done in Basic Design deal with abstract visual forms, not concrete design problems. This abstraction is an important factor that helps the formation of a design language. Instead of working on and speaking about concrete or figurative forms, students deal with abstract forms and learn to use and see them as pure visual elements and speak about them neutrally. As a result, they become more flexible to work on different subjects and express themselves objectively (Güngör, 2005)

2.3.2 The Method of Current Basic Design Education

The studios of design schools, including the Basic Design studio as well as studios of following years, are different from the traditional classroom environment. Counter to the classical teacher-centred environment, the studio is an interactive environment: students can exchange ideas, receive criticism and feedback from educators as well as other students (Güngör, 2005) (Figure 8).

Figure 8 Interactive studio environment (METU ID 101 course, 2014, photography by Ümit Bayırlı)

As a result, students learn and benefit from the experiments, trials and errors. Sausmarez (1983) states that, the studio environment is the only place where students can acquire knowledge through experience. This experiential learning method is based upon the preliminary course of the Bauhaus and aims to stimulate the creativity of the students (Cappleman and Jordan, 1993). According to Boucharenc (2008), after Bauhaus renounced the established master-apprentice relationship, students could acquire new knowledge and information by discovering, experimenting and creating, instead of being passive receivers of information from

books or teachers. As a result, students became freer and active participants in their educational process. Besides, Koyuncugil (2001) argues that experiential learning is the most effective method in design learning: students can only acquire knowledge and learn issues about design through this method of trial and error, while at the same time, dealing with the production process. This way, students develop their creativity, their own styles and their way of approaching problems without the restriction of conventional ideas (Farivarsadri, 1998). In the light of these information, according to Kocadere and Özgen (2012),

> The Basic Design course, due to its student centred, thought provoking and life relevant approach to education, as well as its acceptance of different viewpoints, the emphasis on the research process through experimentation instead of the final result and finally, the collaborative class critiques, appears to be highly compatible with the constructivist learning theory (Kocadere and Özgen, 2012, p.117).

The main idea of constructivist learning theory is based on the centrality of the learner in creating or developing new knowledge counter to the teacher-centered education. In this theory, the duty of the teachers is to design learning situations that students can learn by working as an individual or as a group (Eggen and Kauchak, 1998). Students are expected to develop their own understandings based on their experiences instead of receiving them from teachers or books. In constructivist theory, students have active roles. They experience and interact with teachers and other students. Therefore, Basic Design can be related with constructivist learning theory. For this reason, the key factors of constructivist learning theory are also viable for Basic Design (Good and Brophy, 1997). According to Eggen and Kauchak (1998) these key factors are:

> 1- Learners Constructing Understanding: The basic tenet of constructivism is the idea that learners develop their own understanding, and they develop understanding that makes sense to them; they do not receive it from teachers or written materials. This process of individual meaning making is at the core

of constructivism. Nevertheless, the teacher plays an important role in the process.

2- New Learning Dependent on Current Understanding: The importance of learners` background knowledge is both intuitively sensible and well documented by research (Bruning and Schraw, 1995). Constructivists see new learning interpreted in the context of current understanding, not first as isolated information that is later related to existing knowledge.

3- Learning Facilitated by Social Interaction: Social interaction in constructivist lessons encourages students to verbalize their thinking and refine their understanding by comparing them with those of others.

4- Authentic Task Promoting Learning: An authentic task, which is a classroom learning activity that requires understanding similar to thinking encountered in situations outside the classroom (Eggen and Kauchak, 1998, p.186).

By virtue of these key factors, the motivations indicated below are expected to be developed by the students (Eggen and Kauchak, 1998).

- Students are faced with a question that serves as a focus for the lesson.
- Students are active, both in their groups and in the whole-class discussions.
- Students are given autonomy and control to work on their own.
- Students develop understandings that make sense to them.
- Students acquire understandings that can be applied in the everyday world (Eggen and Kauchak, 1998, p.185).

Denel (1979) indicated the expected abilities of a student who complete the basic Design education as,

> Basic Design is understood to be the totality of an organizational method to prepare the designer in a rational thought process by using the visual media, to be able to make objective, defendable design decisions and arrive at a communicable proposal. Thus, he will be able to comprehend and interpret the visual world around him to the extent that he will find means to control it to suit society's needs and aspirations and communicate to others his ideas and recommendations on his proposal for implementation (Denel, 1979, p.7)

As a conclusion, Dikmen (2011) summarizes the structure of basic design course as:

- Student-centred education,
- Instead of one solution to the problem, there are unlimited solutions for every student by using different materials, tools and methods,
- Interactive relation between student with student and between student with instructors,
- Instead of strict programs, there are changeable programs related to studio dynamics.

Furthermore, he summarizes the outcomes of basic design course as:

- Ability of self-expression by using verbal, written and other techniques such as drawing, making models, graphical representation etc.,
- Gaining the ability of defining a problem, collecting data, interpretation, proposing solutions by referring examples, evaluating the knowledge and reinterpreting it in a critical approach and designing,
- Concentrating on a subject and working in discipline,
- Thinking responsively and gaining new perspectives,
- Gaining the abilities of working as individual and as a group,
- Gaining the skills of abstract thinking and perception,
- Gaining the skills of thinking in two and three-dimensions,

Besides, another outcome of Basic Design was indicated by Farivarsadri (2001) as developing attitudes related to design for their daily life. She states that, Basic Design is an indispensable course for design education since, in this course students do not only develop their basic skills and knowledge related to design, but also they start to develop a set of values and attitudes related to design which will last their entire daily life.

2.4 Critics About Current Basic Design Education

The current basic design education evolved from the educational system of the Bauhaus and aims to offer basic design concepts, basic skills as well as a common design language to students, which will form the foundation on which more advanced and specialized knowledge will be gathered. However, many criticize this nearly hundred-year-old approach to foundation education, stating that it has a problematic relationship with the rest of the undergraduate courses, is out-dated, is incapable of achieving its aims, etc. These criticisms as well as some suggestions to overcome the problems will be examined for a better understanding of basic design education's current situation.

2.4.1 Disconnection Between Studios

The main critic about current basic design education focuses on the problematic relation between this first year's studio and the studios of following years of undergraduate education. Farivarsadri (2001) expresses that Basic Design Studio stands as a separate course in the design curriculum. She states that, "many times this course is kept as a separate course from the rest of design studios in the succeeding years, while everybody accuses this studio for many of the problems in succeeding years, not many people want to be really engaged in the process of formulating this course" (Farivarsadri, 2001, p10).

Also, Farivarsadri (2001) has some concerns about the method of basic design course. She finds the course helpful for the students to develop their design ideas and thoughts by finding solutions to abstract problems but according to her, these

problems could deviate from their aims and become geometric puzzles that end in themselves. So that, this causes the problem that is mentioned above, which is the disconnection between basic design studio and the studios in the succeeding years.

From these critics, the disconnection between basic design studio and studios of the succeeding years appears to be frequent problem. Çevik (1998), points to a surprising aspect of this issue: even students who have been successful in basic design have difficulties in the second year studio, as if they have learned nothing in that foundation course. She argues that students cannot transfer their Basic Design knowledge to the succeeding classes. In addition, Gelernter (1988) claims that, the design principles that are taught in Basic Design do not help to shape significantly the projects in the succeeding studios: students are not able to study or develop visual forms in the extent that is expected of them after the intensive course of Basic Design.

According to Farivarsadri (2001), the problems of the Basic Design originate from following the long tradition of Bauhaus. She states that,

> Mostly as the effect of the long tradition of having (Bauhaus-based) basic design course in the beginning of architectural education, it is treated as a separate part of design education, which deals with the subjects that are somehow useful in architectural design but not directly related to it (Farivarsadri, 2001, p.10).

Indeed, Whitford (1984) had criticized the preliminary course of Bauhaus itself as being a kind of brainwashing course since, the knowledge that every student had in their minds was sucked out of them in order to make the students percipient to new methods and ideas.

Furthermore, the tradition of Bauhaus causes Basic Design course to become a self-sufficient art-form which stimulates the disconnection between studios:

> Basic Design is in danger of creating for itself a frighteningly consistent and entirely self-sufficient art-form, a deadly new academicism of geometric abstraction for young painters and for young designers (Sausmarez, 1983, p.7).

2.4.2 Acquisition and Application of Knowledge

As mentioned in 2.4.1., there appears to be a disconnection between the first year's studio, with the studios of the succeeding years. Çevik (1998), among others argues that the issue that lies beneath this situation is a problem in the transfer of the acquired Basic Design knowledge to the application process on the following years. Therefore, it is important to first understand how the learning and transfer processes function.

According to Tutkun (2012), humans born with mental hardware about learning and have an unlimited capacity to learn. However, their educational processes determine how much they can use these hardware and limits. Therefore, when children are provided appropriate learning conditions, they can learn almost everything within their field. For maintaining the appropriate learning conditions for students, their objectives should be clarified which is achieved through the use of a taxonomy (Krathwohl, 2002).

At the beginning of 1948, a group of educators that were coordinated by Bloom, undertook the task of classifying educational goals and objectives. Their purpose was to develop a classification system for cognitive, affective and psychomotor domains. The result of their work, which was completed in 1956, is commonly named as Bloom's Taxonomy of Cognitive Domains (Huitt, 2011). This taxonomy consists of six levels with a hierarchical structure between levels from simple to complex. The lowest level of the cognitive domain is knowledge, followed by comprehension, application, analysis, synthesis and evaluation levels respectively (Figure 9). Mastery of each level is a prerequisite for achieving mastery of the next level (Krathwohl, 2002).

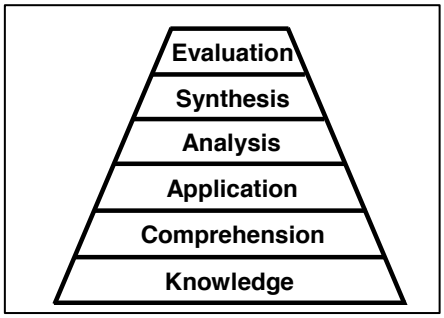

Figure 9 Bloom's Taxonomy (Adopted from Krathwohl, 2002)

When undergraduate design education is considered, the Basic Design Course appears to coincide with the base of Bloom's Taxonomy. As mentioned in 2.3.2., design education consists mainly of studio classes that succeed each other, and Basic Design is the first year's studio, where students are expected to gain the ability to comprehend and interpret the visual world around them. When students start their design education, they have limited knowledge of the field. Basic Design is where they learn the basic elements and principles of design, which coincide with the knowledge level in the taxonomy. Through the basic design projects and assignments, they fulfill the second level of comprehension in the taxonomy; they start to see how they can use these elements to achieve successful organizations. However, when students start to work on concrete design projects, related to their respective field of design starting from the second year's studio, a disconnection happens, as mentioned in 2.4.1: the knowledge acquired and comprehended in Basic Design does not appear to be effective in the application level.

According to Gelernter (1988), acquisition and application of knowledge are two sequential steps through which human mind works. At the beginning, the mind is full of general acquired knowledge for potential use, and then the mind uses this knowledge and applies them to encountered practical problems. To explain how this process happens in education, Gelernter (1988) compares the mind to a cabinet. When a student first attends a course, the cabinet is empty. Eventually, folders are formed and filled with knowledge in a correct sequence so that they can be found easily when a problem is encountered. This cabinet analogy works the same way for

design education. According to Gelernter (1988),

> A designer faced with a new problems selects a solution type (cognitive schema) from his or her existing repertoire of design ideas, imposes this idea on the problem, and then tests it to see how well it satisfies the problem's requirements. If the designer is lucky, and the problem matches exactly the solution type which is initially employed (for example, a house designer faced with the same essential requirements time and again will usually have a workable solution type easily to hand) then the designer has assimilated the problem to an existing solution type. More likely, though, the solution type first proposed will not sit comfortably on the problem in every aspect, and so the designer begins to adjust the schema to the problem through a cyclical process of modifying the schema, testing it against the problem, modifying the schema again, and so on, until the original schema has been transformed into a new one which resolves the design problem's requirements (Gelernter, 1988, p.48).

Considering the disconnection problem of Basic Design, Gelernter (1988) accuses the curriculum structure that separates the acquisition and application of knowledge. He states,

> The acquisition and application of knowledge do not occur sequentially, and therefore cannot be assigned to separate, sequential sections of the curriculum. Knowledge offered in advance of any attempt to apply it cannot find a conceptual schema in the student's mind in which to reside, for the required schema can only be developed while struggling with a particular problem. This partly explains why students can sit through several years of lectures on a particular subject and still not be able to apply new knowledge; without a conceptual schema already evolved out of application, the knowledge simply goes in one ear and out of the other. The two sides of knowledge acquisition and application must be attacked simultaneously (Gelernter, 1998, p.49).

2.4.3 Suggestions

Many argue that basic design education should be updated. Findeli (1990) states that, not only mankind is changing rapidly in terms of biology but also his surrounding environment is changing as well. Following these changes, the pedagogical methods should be updated accordingly. He also states that, “a careful distinction should be made between the content of a design program and the pedagogical principles that are fit to transmit it” (Findeli, 1990, p.18).

Denel (1979) also argues that basic design education should be updated according to the needs of today’s design students. He states that, while updating the basic design education, the issue of creativity should be the primary concern. He points out that the problem is that student products are evaluated as a final thing rather than a process.

Besides, Teymur (1998) claims that creativity of students is at its best in the first year of the education, which is the year of the basic design studio. He shows that creativity tends to decrease as the school year progress and the technical and the professional knowledge increase (Figure 10). He argues that the curriculum should be updated for the purpose of maintaining the creativity throughout the years.

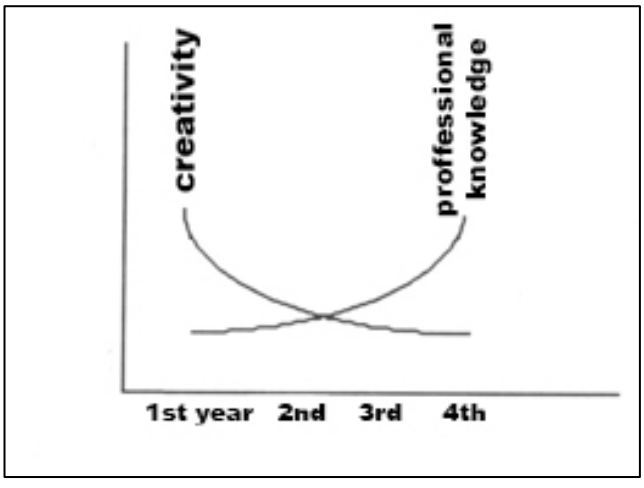

Figure 10 Creativity curves (Teymur, 1998)

Boucharenc (2006) conducted an international survey and asked both basic design instructors and the instructors of succeeding studios about the ideal duration of time for basic design courses. The results showed that 45% of the both basic design instructors and other studio instructors support the integration of basic design course throughout the undergraduate program (Figure 11-12). These results suggest that a curriculum update is needed.

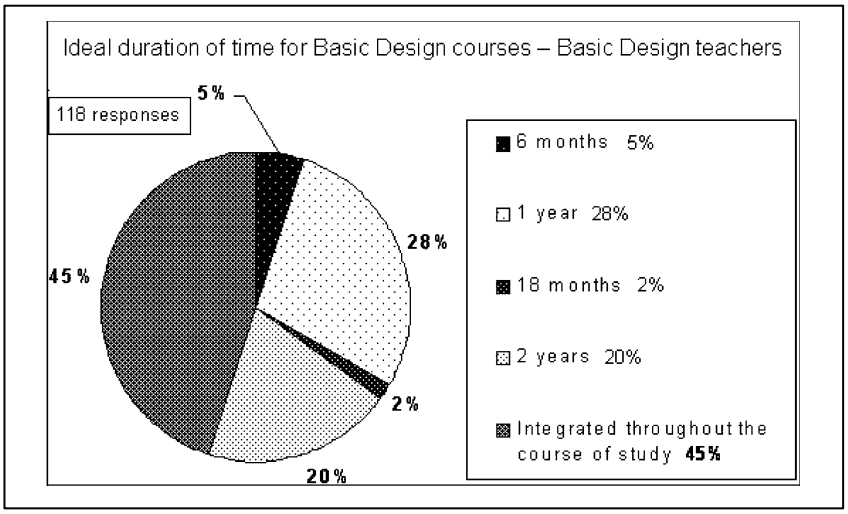

Figure 11 Responses from Basic Design teachers – ideal duration of time (Boucharenc, 2006)

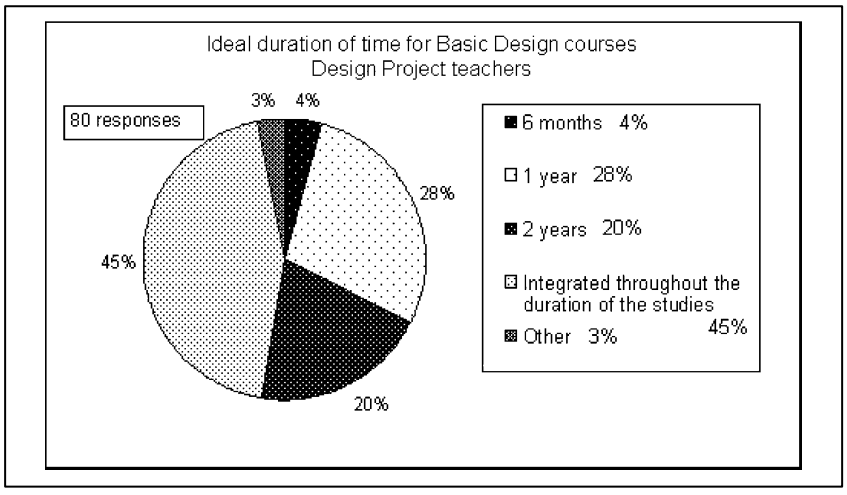

Figure 12 Responses from Design Project teachers – ideal duration of time (Boucharenc, 2006)

Furthermore, arguments of Findeli (2001) support the results of this survey. He states,

> I believe that visual intelligence, ethical sensibility, and aesthetic intuition can be developed and strengthened through some kind of basic design education. However, instead of having this basic design taught in the first year as a preliminary course, as in the Bauhaus tradition, it would be taught in parallel with studio work through the entire course of study, from the first to the last year (Findeli, 2001, p.16).

Also Farivarsadri (2001) comments about this issue saying that "subjects of beginning design studio should be handled in the succeeding classes again and again, each time with more complexity and enrichment in each step" (Farivarsadri, 2001, p.10).

There is also another suggestion by Parashar (2010) that basic design course should be an elective course at the fourth year level. Since, in the succeeding classes, the elements and the principles of design lose their importance because of the other complex parameters in design education, it would be helpful to have an elective course of basic design for the students to have a renewed insight for the subject.

Actually, the method of integrating basic design course through the whole education program was tested before in the College for Design in Ulm by Maldonado. Unfortunately, the results were not published. A more balanced proposal that integrate Basic Design into the whole education program was offered by Fritz Seitz who was a professor in the Hamburg College for Fine Arts between 1962-1992. Fritz Seitz compared his proposal for Basic Design instruction with the models from the Preliminary Course in Bauhaus, the Basic Class of the art schools of the post-war period and Maldonado's Basic Course in Ulm (Figure13) (Wick, 2000). The diagram in the first column represents the common approach to current Basic Design education through the world and the diagram in the last column represents the ideas of Farivarsadri (2001), Findeli (2001) and Boucharenc (2006) that are mentioned above.

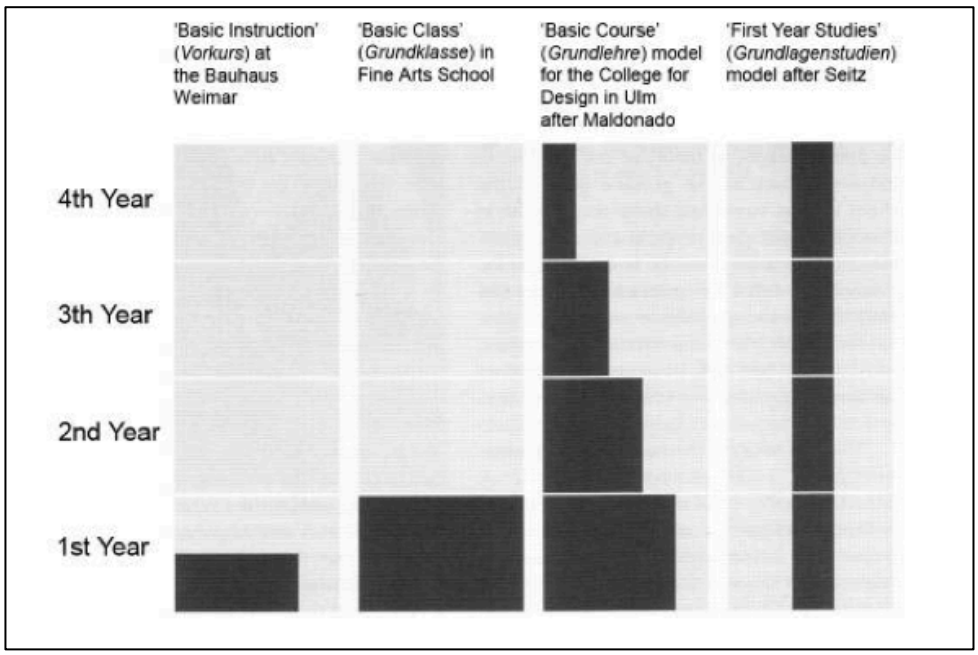

Figure 13 Schematic diagram of various models for basic instruction (Wick, 2000)

Despite the criticisms and suggestions, Basic Design has a nearly hundred-year-old history that follows the approach of the Bauhaus. Even though many criticise the current situation of Basic Design, there are not many studies on how the course can be improved. For that reason, this study aims first of all to evaluate the effectiveness of the Bauhaus tradition and the validity of the criticisms that were mentioned in the previous sections, within a specific department and to determine what kind of alteration could be made to improve Basic Design in that specific department.

CHAPTER 3

ASSESSMENT OF THE CURRENT BASIC DESIGN COURSE IN INDUSTRIAL DESIGN EDUCATION

In the previous sections, the historical background, the aims and methods of current Basic Design course were given together with the criticisms directed at this course and suggestions for its improvement. However, this literature survey also showed that scientific research and analysis on the current situation of the course are rare therefore, it was observed that a scientific examination of the criticisms and suggestions is needed to prove their validity and a field study was designed for that purpose.

3.1 Scope of the Field Study

It was mentioned that Basic Design is the common course of most design, architecture and art departments and it constitutes a common ground for these fields. On the other hand, it was mentioned that there are also profession specific knowledge in Basic Design to prepare the students for their further education. Therefore, a field study looking to validate the criticisms and suggestions encountered in the literature would need to separate the aspects that are common to all from the aspects that are profession specific. For that reason, instead of examining the current situation of Basic Design for all fields of design and art, the field study was focused on a specific field, which is industrial design education in Turkey.

Since the existing studies on Basic Design deal mainly with architecture and fine arts education, focusing on design education, especially industrial design education was considered to be useful for the literature of basic design education. Furthermore, the researcher of this study being an industrial designer employed as a teaching assistant in an industrial design department in Turkey, to focus on the basic training of

industrial designers was an interest of both personal and career-wise nature.

Initially, the field study was planned as a larger study that would focus on the Basic Design courses of the entire Industrial Design departments in Turkey. However, after a pilot study conducted with participants from different universities, this approach was found to be too large-scaled to be conducted effectively in the time allocated to this study due to the number of Industrial Design departments in Turkey and the difficulty in their geographical accessibility. For that reason, being one of the leading universities in Turkey and in the World (World University Rankings 2014-2015 (n.d.). from http://www.timeshighereducation.co.uk/world-university-rankings/2014-15/world-ranking), also being one of the leading Industrial Design departments in the world (Red Dot Design Ranking 2014 (n.d.). from http://www.red-dot.sg/participate/design-ranking-2014-universities-americas-europe/) Middle East Technical University's Department of Industrial Design (METU Department of ID) was chosen to be the focus of the field study.

3.2 Basic Design Course at METU Department of Industrial Design

In METU Department of ID, Basic Design is given as 12 hours per week must course, throughout the first year, with the label ID 101 in the fall and ID 102 in the spring semester.

In ID 101, students are introduced to basic elements such as point, line and form, along with basic principles of design such as, direction, contrast, harmony, transparency, dominancy, hierarchy, balance, rhythm, depth etc. Students are expected to find solutions to defined design problems by using basic elements and principles of design.

ID 101 course consists of two-dimensional abstract exercises to develop visual organization and hand skills of the students by dealing with different design problems and different materials. This course has direct application to all design media and provides a foundation and direction for learning skills in other studio courses.

The objectives of the course are:

- Introducing the elements and the principles of design.
- Exploring basic concepts of design, visual thinking and nature of materials.
- Developing mental and manual skills of students
- Understanding of the basic terminology of two-dimensional design.
- Improving students' awareness of design in daily life.

After completing this course, students are expected:

- To comprehend the basic principles of design through the basic design problems formulated with the elements of design
- To adopt a creative approach to problem solving.
- To become self-critical in the editing of the work.
- To use a vocabulary of terms specific to the design activity and particularly two-dimensional design (Metu Academic Catalog. (n.d.) from https://catalog. metu.edu.tr/course.php?course_code=1250101).

In ID 102, students start to exercise on three-dimensional abstract works for the purpose of examining volumes and their interaction with their surroundings. The course expands upon the elements and the principles studied in ID 101 and apply them to design three-dimensional works.

While exercising with three-dimensional abstract works, students are also introduced to new materials such as wire, styrofoam and techniques such as papier-mâché.

Towards the end of the course profession specific projects are given to students such as packaging, lighting unit, sitting units or chess set design. However, these projects are still evaluated based on Basic Design principles of good composition without focusing on issues such as usability or manufacturing.

The objectives of the course are:

- Development and understanding of the basic terminology of three-dimensional design.
- Further development and understanding of good composition principles.
- Development and understanding of technical skills needed for well composed three-dimensional designs.
- Further development of good craftsmanship and working habits needed to achieve these objectives.

After completing this course, students are expected:

- To create properly composed, well balanced three-dimensional designs using various materials.
- Effectively incorporate the concepts learned in the previous semester to create stronger, more creative and effective design works.
- Identify and recognize a well-crafted piece of design.
- Acquire a basic knowledge of design terminology to express their ideas verbally (Metu Academic Catalog. (n.d.) from https://catalog. metu.edu.tr/course.php?course_code=1250101).

3.3 Aim and Methodology of the Field Study

The main aim of the field study was to test the validity of criticisms and suggestions that were mentioned in the literature review about current basic design education, within the scope of METU Department of ID and whether the Basic Design education in METU Department of ID fulfill the aims of Basic Design education. The objective was to obtain information from the students and instructors of METU Department of ID, to see whether their opinions are in accord with the literature and make a comparative analysis between them. Being both the receivers and participants, students that have direct knowledge in the way the course is conducted would be useful in determining the criticisms directed towards it. On the other hand, being providers of this education, the observations and suggestions of the instructors

would give valuable insight on the comments of students as well as the course itself. Therefore, both students and instructors were selected as participants of the field study.

Furthermore, the field study also aimed to see how students and instructors perceive the issue of transfer of knowledge and skills from Basic Design to the succeeding years, which was also found problematic because of the structure of Basic Design as mentioned in section2.4.1..

Two types of research methods were employed in the field study. The first one was unstructured questionnaires given to students of METU Department of ID and the second one was interviews with the instructors of METU Department of ID .

3.3.1 Aim, Design and Conduct of Selected Methodologies

The field study had two main target groups: students in the 2nd, 3rd and 4th year of their undergraduate education and the instructors of METU Department of ID. The 2nd, 3rd and 4th year students were selected and not the first years because, having gone through the basic design education, these students could assess it in regard to the industrial design studios they are currently participating in. However, the first years were also partially included in the field study to compare student opinions before, during and after receiving Basic Design and to better assess the effects of this course on students' perceptions of their profession and education. The second target group of the study was design educators of METU Department of ID. Only the instructors that did teach in a studio class were selected for this study, since they needed to comment on the design performance of students in relation to Basic Design as well as state opinions and suggestions on the strengths and weakness of this course as it reflects on their studio classes.

3.3.1.1 Questionnaires

The questionnaire method was found appropriate for this study to get information from students since, the total number of students were more than 150 in the first, second, third and fourth years of METU Department of ID: a large in enough number

to obtain significant data through questionnaire and too large a number to conduct other methods such as interviews or focus groups in the allocated time. The aim of the questionnaire was to determine the opinions and suggestions of students about basic design education in terms of the transfer of knowledge and skills. According to Kothari (2004), "qualitative approach to research is concerned with subjective assessment of attitudes, opinions and behavior" (Kothari, 2004, p5). Since the study aimed to obtain the personal opinions of each student on different aspects of Basic Design, the qualitative research method was adopted for this field study with open-ended questions. Open-ended questions allowed the students to respond with their own words, explore new ideas and offer suggestions in a freer way. The questionnaires were prepared both in Turkish and English so that both Turkish and foreign students could express their opinions easily.

The questionnaires were prepared in two different sets: a smaller one (Q1), conducted in two separate stages, was prepared for the first year students and the major one was given to the students in the 2nd, 3rd and 4th years that were registered to studio courses (Q2).

The first set of questionnaires, Q1 was conducted in two stages: an initial one (Q1a) consisting of a single open-ended question was given at the beginning of the fall semester of 2013-2014 and a second one (Q1b), repeating the question of the first one along with two additional questions was given at the beginning of the spring semester of 2013-2014.

The questions that were addressed to the first years were different than the ones addressed to the students of succeeding years. While the 2nd, 3rd and 4th year students had already experienced Basic Design and could compare it with or assess its effects on the design studios of following years at Q2, the first years were expected to answer questions before they had any experience with Basic Design at Q1a and when they have accomplished only half of the course at Q1b. Therefore, Q1's main aim was to gather information that will be compared with the responses of upper level students to see how from the start Basic Design affects students' perception of their

profession and also to see how aware students are of the purpose of this course while they are in the process of learning it.

The only question of Q1a was:

- What does an industrial designer do? (see Appendix A)

The two additional questions that were included in Q1b were:

- What is the purpose of the knowledge and skills that are taught in Basic Design?
- Where do you think you will use these knowledge and skills? (see Appendix B)

The aim of the first question was to make a comparison between the answers that are given in the fall semester and the spring semester and to see how a semester of basic design education, which constitutes the majority of a student's work load in the first year, has changed the way the Industrial Design profession is perceived.

The second and third questions aimed to reveal what students think about Basic Design's purpose is and what is its role in their education. The questionnaire aimed to see through these two questions how students expect they will transfer their basic design knowledge and skills to their future projects and compare this information with the situation declared by 2nd, 3rd and 4th year students in Q2.

In the second set of questionnaires, Q2, four questions were asked to 2nd, 3rd and 4th year students of METU Department of ID:

- Please write your general thoughts about Basic Design (your thoughts at the time you took the course and your current thoughts).
- Do you use the knowledge and skills that you acquired in Basic Design in the studio projects? If yes, in which processes do you use them?
- Please describe the process that you follow when developing forms. Comment on the contribution of Basic Design to this process.
- Please write your suggestions about the Basic Design course (see Appendix C).

In the first question the aim was to determine whether students were aware of the benefits of Basic Design while they were participating in that course and whether their awareness changed since then.

In the second question, the aim was to determine how successful the acquisition and transfer of basic design knowledge and skills to the succeeding design studios was. The objective was to categorize the answers into three groups in order to assess the effectiveness of Basic Design in teaching theory, practice and communication as mentioned Chapter 2.1.

In the third question, the aim was to determine the benefits of Basic Design to the form development process. In the pilot interviews, it was mentioned by the instructors that one of the main aims of Basic Design is to improve the form development abilities of the students. The answers to this question were meant to further elaborate the responses to the second question in terms of theory, practice and communication.

Finally, the fourth question aimed to compare METU ID student's ideas and suggestions about Basic Design with those encountered in the literature and those that will be obtained from the instructor interviews.

A total of 153 questionnaires were printed and handed directly to the participants, to be answered in a determined time in their studio classes. 124 questionnaires were returned with filled in answers: 34 from the first years, 34 from the second years, 29 from the third years and 27 from the fourth years.

3.3.1.2 Interviews

Information from instructors was collected through interviews. The aim of this method was to determine the opinions and suggestions of the instructors about the current basic design education in METU Department of ID. Interviewing was deemed suitable for this study since the targeted number of people was small and they were easily accessible. The face-to-face interview method was also chosen because it allows in-depth data to be gathered (Gillham, 2000) and since the

interviewees were experienced persons in the field of design education, it was important to receive detailed opinions from them.

In this study, interview method with open-ended questions was preferred, to allow participants more freedom to share their experiences (Gillham, 2000). Also with this method, it was possible to generate new follow-up questions with regard to the answers of the participants.

As mentioned in 3.1., the field study was initially planned to encompass the Basic Design courses of all the Industrial Design departments in Turkey and a pilot study was realized with 13 participants of the instructors of different Industrial Design departments in different institutions such as Gazi University, Atılım University and İzmir University of Economics since they were easily accessible at the first stage for the researcher. After conducting the pilot study, it was decided to narrow the target group down to METU Department of ID.

The interviewees were the full time instructors of METU Department of ID. The study aimed to interview all the instructors of METU Department of ID that teach in a studio class since all of the instructors evaluate the works and the approaches of the students in different stages of the undergraduate education in terms of the relation between Basic Design and their studio classes.

They also have the possibility to evaluate the effects of basic design education on the students in the design studio projects of the succeeding classes, in regard to their own experiences as designers, instructors and former students.

Four of the interviews were conducted in the spring semester of 2013-2014 and the rest were conducted in the fall semester of 2014-2015. The second part of the interviews was conducted after the analysis of the questionnaires. Thereby, it was possible to ask questions and make interviewees interpret about student responses. For this purpose, the answers of the students were evaluated and a total of 11 charts were prepared under three categories, to ease the interview process and generate visual material on which interviewees could indicate their personal opinions and

suggestions on these specific issues (Figures 30, 31 and 32). Also four of the interviewees that were the participants of the first part of the interviews were asked to interpret about the student responses in the fall semester of 2014-2015.

At the end a total of 10 interviews were conducted in METU Department of ID. There was not a chance to conduct one of the interviews because of the busy schedule of the interviewee. Three of the participants were the current instructors of the Basic Design course and seven of them were the instructors in the 2nd, 3rd and 4th year design studios. All of the interviews were conducted in Turkish. Before the interviews, participants read and signed an informed consent form (see Appendix D) that explains the aims of the study and gets the permission of the participants to use the data in this research. The interviews were recorded with a digital voice recorder. As a result, a total of approximately 305 minutes of recording were obtained, with individual interviews lasting between 12 to 67 minutes.

The interviews were realized in three stages. In the first stage, three questions were asked to the instructors:

- What is the importance and aim of Basic Design?
- What is the contribution of Basic Design to the projects of the studios of succeeding years?
- Do you encounter any problem in your studio related to Basic Design?

The aims of these questions were to get the general thoughts of the instructors about Basic Design and its relation with the design studios of the succeeding years. The third question of this stage was asked to the instructors of the studios of the 2nd, 3rd and 4th years and not to the instructors of Basic Design.

In the second stage, instructors were asked to interpret the answers of the students to the questionnaire. For this purpose, a total of 11 pre-prepared charts were used. Through the use of these charts, it was possible to see how instructors interpreted student opinions and also get their own opinions on the specific subjects the charts addressed.

In the last stage, instructors were asked to give their own suggestions about how Basic Design should be handled and its relation to the studio classes in the succeeding years should be.

3.4 Method for the Data Analysis

The data collected from the questionnaires were analyzed by using content analysis method. According to Gillham (2000), content analysis consists of two levels: categorization and interpretation. First, the questionnaires were divided into classes as 2^{nd}, 3^{rd} and 4^{th} years. Then, each question was evaluated separately and different categories were determined by interpreting each answer. At the end, each category was given a color code (see Appendix E) and data were transferred to computer environment for better visualizing and processing.

The content analysis method was used for analyzing the interviews as well. First, all of the recordings were transcribed into writing. Then, these transcripts were printed and the same process as in the analysis of the questionnaires was applied. Each question was evaluated separately. Categorization and interpretation levels of content analysis method were applied in order to gather similar comments under the same category.

3.5 Limitations of the Field Study

The questionnaires were conducted during the studio hours, since it was the time and place the students could be reached all at once and most easily. This may have affected the quality of the answers in a negative way since the students were also dealing with their class projects at the same time. Indeed, some students explained that they did not fill the questionnaires for that reason.

The interviews were conducted mainly in the personal offices of instructors and there were frequent interruptions caused by telephones or students. These interruptions may have distracted the interviewees and less detailed data may have been collected than an uninterrupted interview. However, the use of personal offices was also an advantage in making the interviewees agree to participate and feel comfortable

during the process.

Furthermore, the open-ended questions of questionnaires were at times also a limitation for the study. Open-ended questions were chosen in order to obtain free and unstructured opinions as explained before. However, they caused certain complications since an answer to a specific question was sometimes given under another question and this caused difficulty in the analysis of findings.

CHAPTER 4

FINDINGS OF THE FIELD STUDY

The student questionnaires and instructor interviews produced numerous findings that need to be explained separately and in detail. In this section, first the findings of questionnaires will be conveyed in three stages: the first (Q1a) and second (Q1b) steps of the questionnaire conducted with the first years followed by the findings of the questionnaire conducted with 2nd, 3rd and 4th years (Q2). The findings of Q2 will in itself be explained in four stages by conveying the responses for four questions separately by each year. Nevertheless in the analysis chapter the findings will be discussed together for a better understanding of the effects of Basic Design by comparing the opinion differences of different years. After the findings of the questionnaire, the findings of the interview will be clarified, again under three categories: general thoughts about Basic Design, interpretation of student responses to questionnaire and suggestions of the instructors.

4.1 Findings of Questionnaires

In the field study, three different types of questionnaires were conducted: Q1 that was conducted with the first year students and Q2 that was conducted with the 2nd, 3rd and 4th years. Q1, as explained in Chapter 3.1.1.1., was executed in two stages: Q1a and Q1b and aimed to reveal first year students' perception of the Industrial Design profession and whether basic design education had any affect on this perception after a semester.

4.1.1 First Questionnaire of the First Years (Q1a)

At the beginning of the fall semester of 2013-2014 a small questionnaire was given to the first years of METU Department of ID. The questionnaire was formed of one open-ended question: **What does an industrial designer do?** There were 45 participants to this initial study. 14 of them were male and 31 of them were female. It was their first lecture in basic design and industrial design education. The aim was to determine their perception of industrial design profession before experiencing anything in Basic Design course and to compare this data with the responses to further questionnaires to determine the effects of a course that works as the foundation of design education.

Considering the description of Industrial Design Profession in METU ID's web site (Industrial Design Profession (n.d.) from http://id.metu.edu.tr/en/metu-department-of-industrial-design/what-is-industrial-design), keywords were picked-up from student responses in order to categorize contents with similar meaning. Since participants wrote more than one thing, the total number of the answers in each category exceeded the number of the participants. Some of the answers and selected keywords are as follows:

> An industrial designer is a person who deals with products for making them more **usable**, **economical**, **aesthetically beautiful** and **less environmentally damaging**. While they can develop new products, they can also improve the quality of existing products.
>
> To **design and develop new products** that are **aesthetic** and **functional,** according to the needs of people. Also to develop new ideas that will **solve problems** and **make people's life easier**.
>
> An industrial designer offers new products in a way that they are more **usable**. Also enables products to be produced with **less cost** and **less harmful to the environment**.

After determining keywords in responses, the ones that were similar in meaning were grouped under the same category. For example, keywords like ‘less environmentally damaging’ and ‘less harmful to the environment’ were evaluated under the eco-friendly category.

The number of times a certain keyword fitting a certain category was mentioned has been calculated to see how first year students without any basic design experience define their profession.

At least one keyword was given by all of the participants. A total of 122 keywords were received (Figure 14).

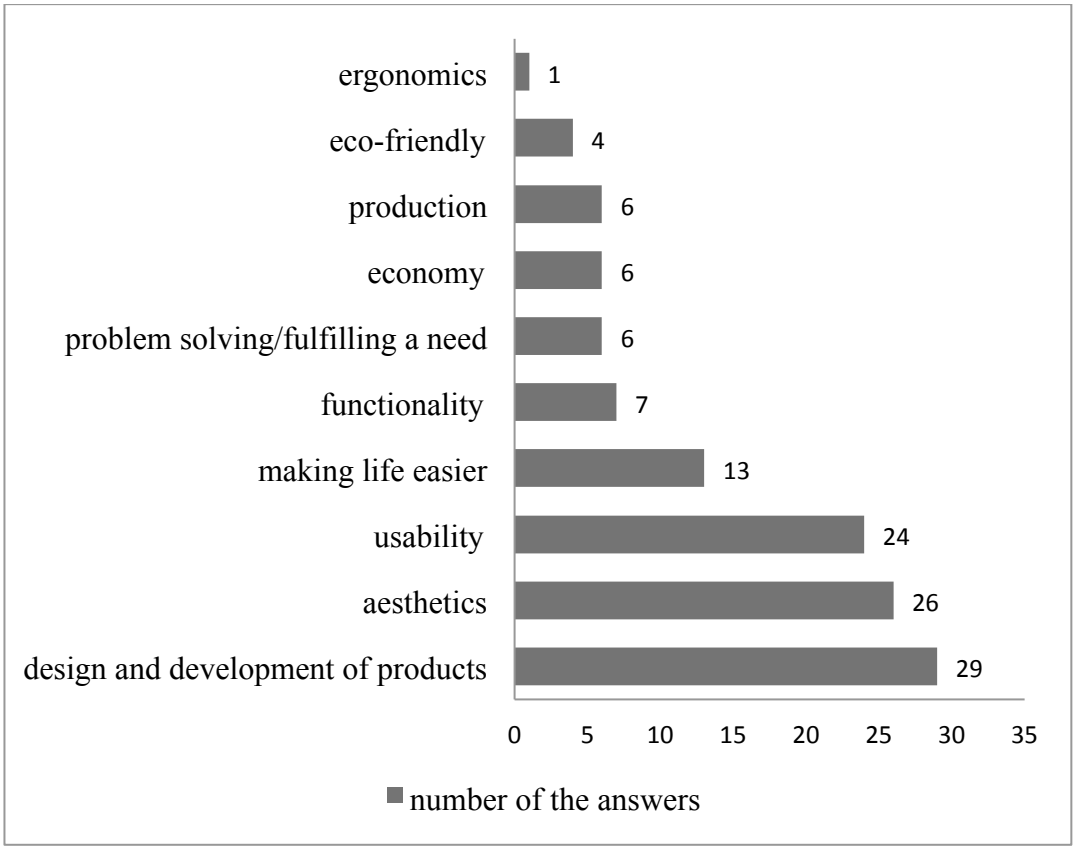

Figure 14 Results of Q1a

First year students indicated that an industrial designer's main job was to design new products and develop existing ones, concern with the aesthetics and usability of the products and try to make people's life easier.

4.1.2 Second Questionnaire of the First Years (Q1b)

The questionnaire was conducted at the beginning of the spring semester of 2013-2014 and there were 34 participants to the questionnaire. Eleven of them were male and 23 of them were female. The number of the participants that was 45 in Q1a was decreased because the students were dealing with their studio projects when the questionnaire was distributed so, some of the questionnaire were returned unanswered.

The answers to the first question that was the same as Q1a, were handled the same way: keywords were picked-up then categorized under similar in meaning and finally visualized in a graph portraying the number of time each is mentioned.

Each participant gave at least one keyword. A total of 69 keywords were received (Figure 15).

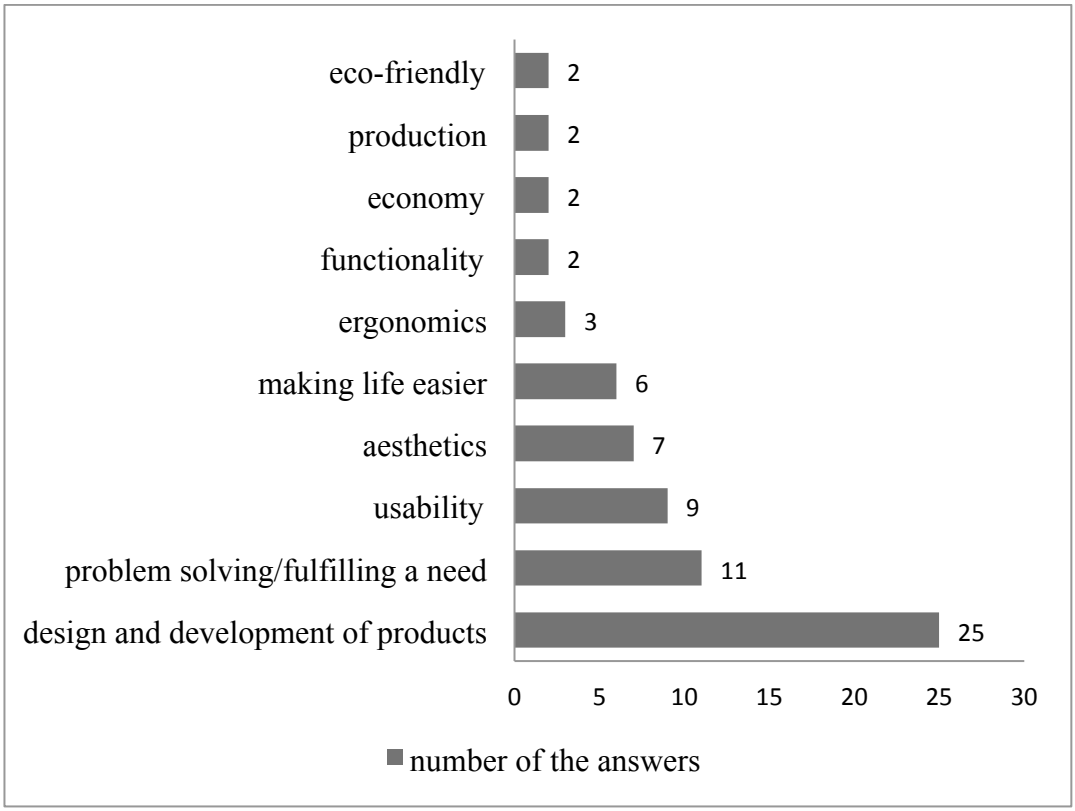

Figure 15 Results of the first question of Q1b

The results show that, design and development of products was defined as the major task of an industrial designer. Also the task of problem solving/fulfilling a need was found important for the Industrial Design profession.

The second question asked **what the purpose of the knowledge and skills that are taught in Basic Design is**, since at the time Q1b was conducted, first years had been taking Basic Design for 5 months and they were familiar with the content of the course.

A total of 49 opinions were received from 30 participants (Figure 16).

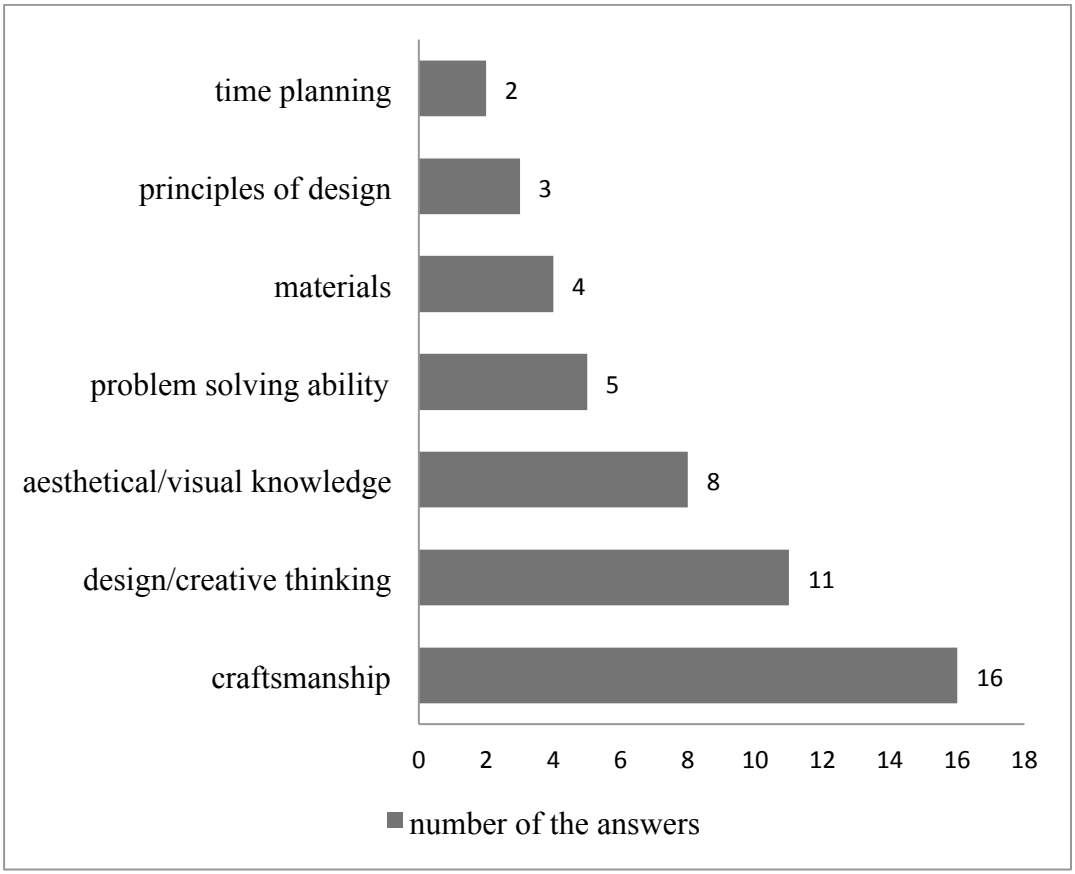

Figure 16 Results of the second question of Q1b

The results show that, nearly half of the participants think that Basic Design will develop their skills about craftsmanship and model making. Basic Design was also evaluated as helpful for developing sense of aesthetic, visual perception, design thinking and creative thinking abilities.

The results of the third question that enquired **where students think they will use the knowledge and skills they receive in Basic Design**, are shown in Figure 17.

A total of 44 opinions were received from 33 participants (Figure 17).

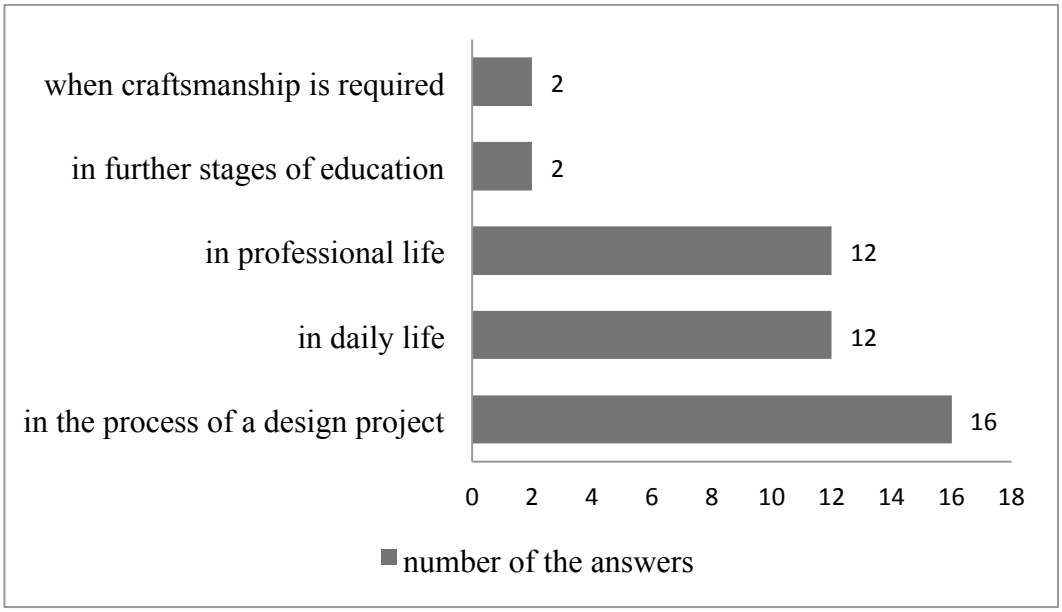

Figure 17 Results of the third question of Q1b

The results show that, students think the knowledge and skills that are taught in Basic Design will be used in daily life as well as in the process of a design project in the educational and professional life.

4.1.3 Questionnaire of the 2nd, 3rd and 4th Years (Q2)

The second set of questionnaire (Q2) was conducted in the spring semester of 2013-2014 and there were 90 participants: 34 students from second years (8 male and 26 female), 29 from third years (8 male and 21 female) and 27 from fourth years (11 male and 16 female).

First Question

In the first question students were asked to indicate their **general thoughts about Basic Design**. They were also asked to indicate if their thoughts on the course have changed in the same way since they took the course. The results for each year are shown in Figure 18, 19 and 20.

From the second years, there were 40 opinions from 28 participants (Figure18).

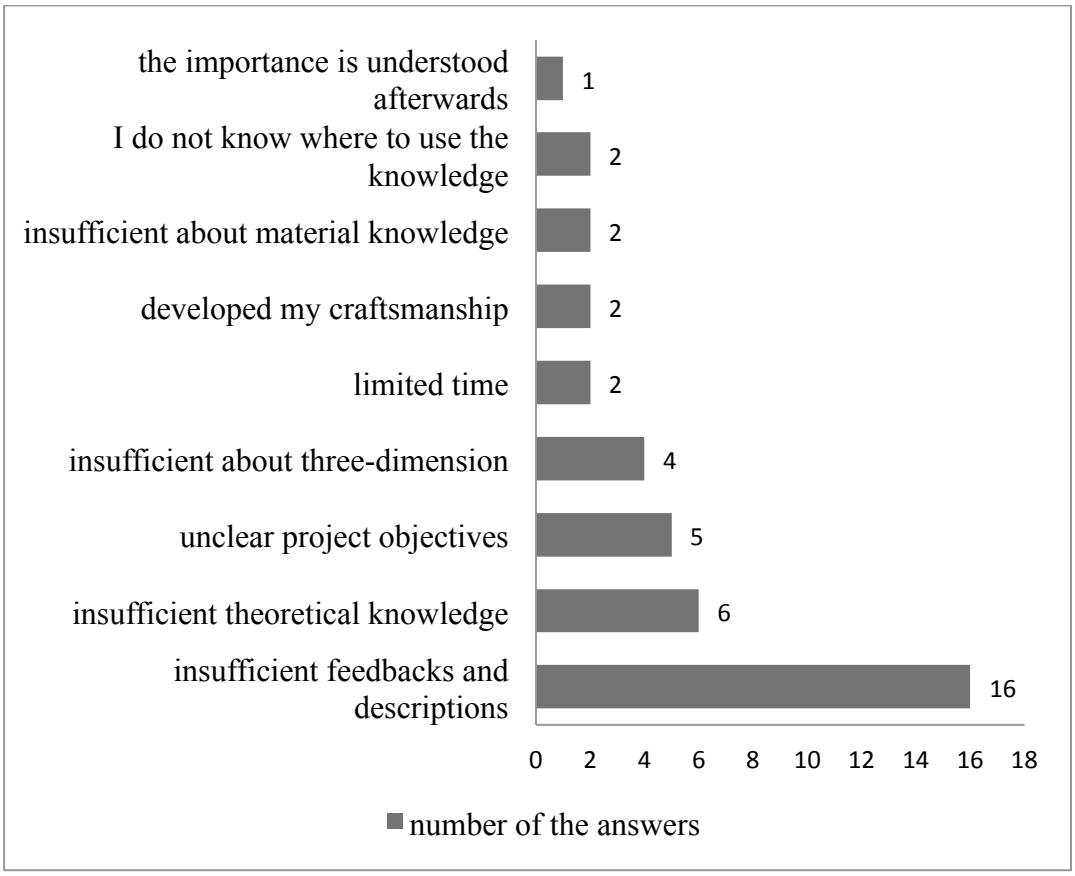

Figure 18 Results of the first question of Q2 by 2nd years

The results show that, many 2nd year students think there is insufficient knowledge about the projects in terms of descriptions and objectives so, they do not know where to use the knowledge that were taught in Basic Design. One of the answers as follows:

> Basic Design is insufficient. We did not know the objectives of the projects and did not know how to use the knowledge in succeeding years.

Also, students did not have an idea about what they were doing right or wrong about their projects because of insufficient feedbacks:

> The course was progressing without theoretical knowledge. We did not know why we got low mark and what we did wrong because of insufficient feedback.

Also, some of the students complained that the course was not efficient because of time limitations and the fast pace of the course.

From the 3rd years, there were 38 opinions from 25 participants (Figure 19).

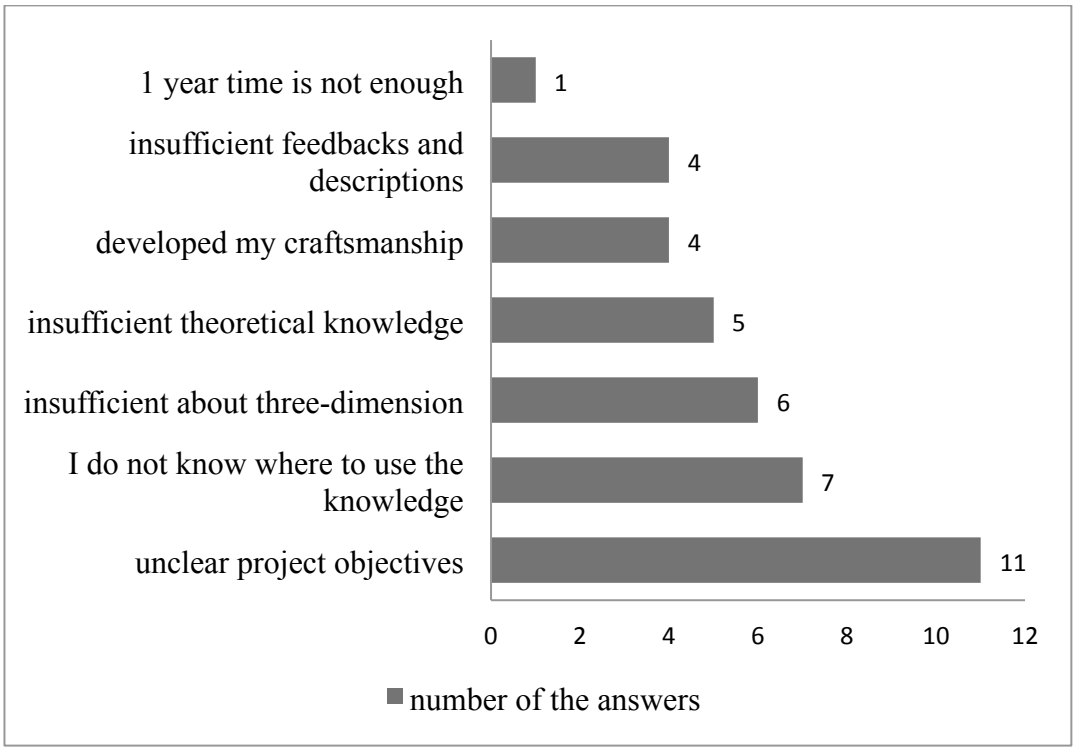

Figure 19 Results of the first question of Q2 by 3rd years

The results show that, many of the 3rd years complain about the uncertainness of the project and course aims. However, some of the students indicated that the aims were understood afterwards:

> We did exercises that had uncertain purposes and outcomes when we took the course. Even though I understood the aims afterwards, they were useless at that time.
>
> Basic Design is a useful course but it has some problems in implementation. It is problematic that students understand the idea of it by the end of the course.

Also, some of the students indicated that, they have difficulty in integrating Basic Design knowledge with product development process because of the problems of the education system and the insufficiency of three-dimensional projects in Basic Design:

> I took Basic Design in the first year and the course was over for me at the end of that year. I think there are problems in the education system. Basic Design should take part in the product development process.
>
> We did lots of two-dimensional craftworks in the first semester. We did not have much chance to exercise on three-dimension, form development, structure or colors. For that reason, we have difficulties in the 3rd and 4th years.

From the 4th years, there were 36 opinions from 24 participants (Figure 20).

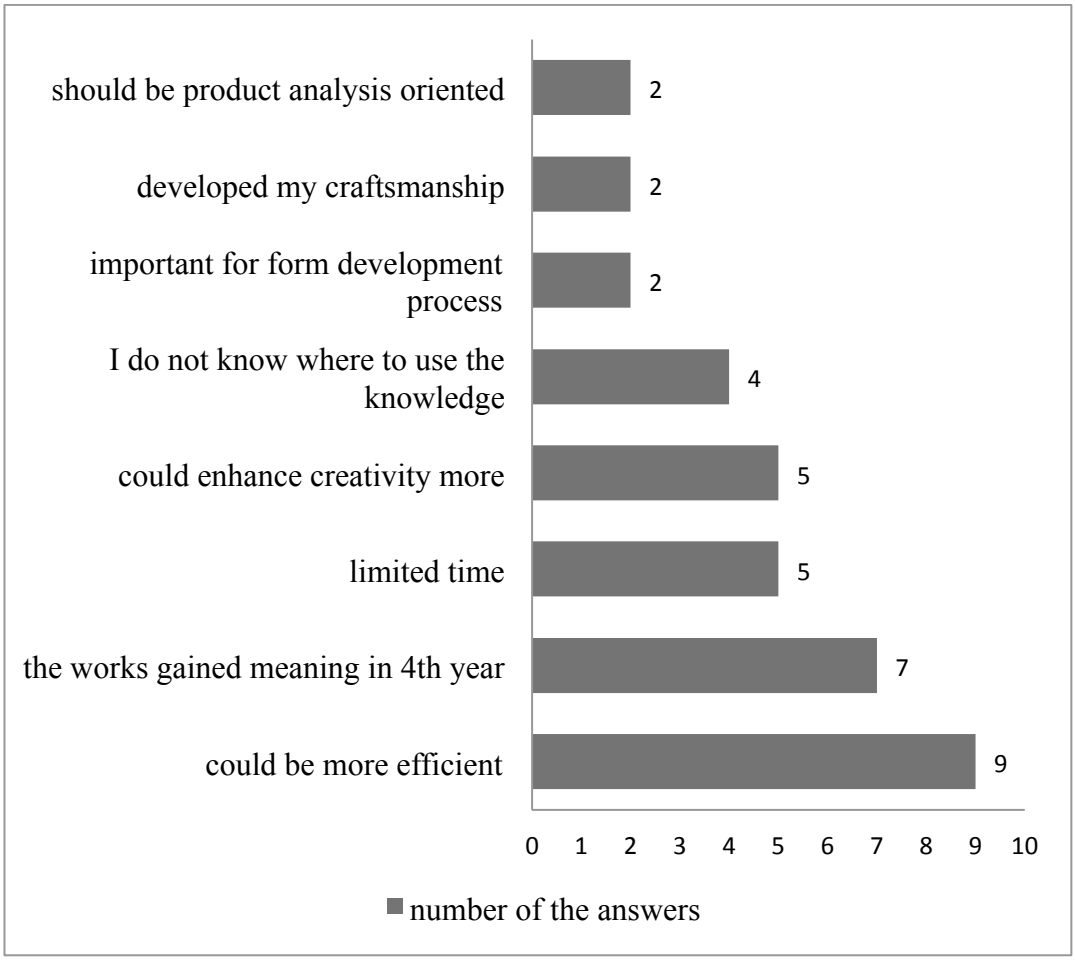

Figure 20 Results of the first question of Q2 by 4th years

The most common notion among the 4th years was that Basic Design could be more efficient by enhancing creativity more and doing exercises about product analysis. A significant part of the students indicated that the aims and the necessity of Basic Design gained meaning in the 4th year:

> I was thinking that Basic Design is unnecessary while I was taking it. But now, I understand that the factors that make a product 'beautiful' are based on Basic Design.
>
> I could not relate Basic Design with product design while I was taking the course, now I can understand the relationship between them.

Second Question

The second question aimed to determine **if students use Basic Design knowledge and skills in the studios of succeeding years** and to determine how successful is the acquisition and application of knowledge by the students. The results for each year are shown in Figure 21, 22 and 23.

From the 2nd years, there were 77 opinions from 34 participants (Figure 21).

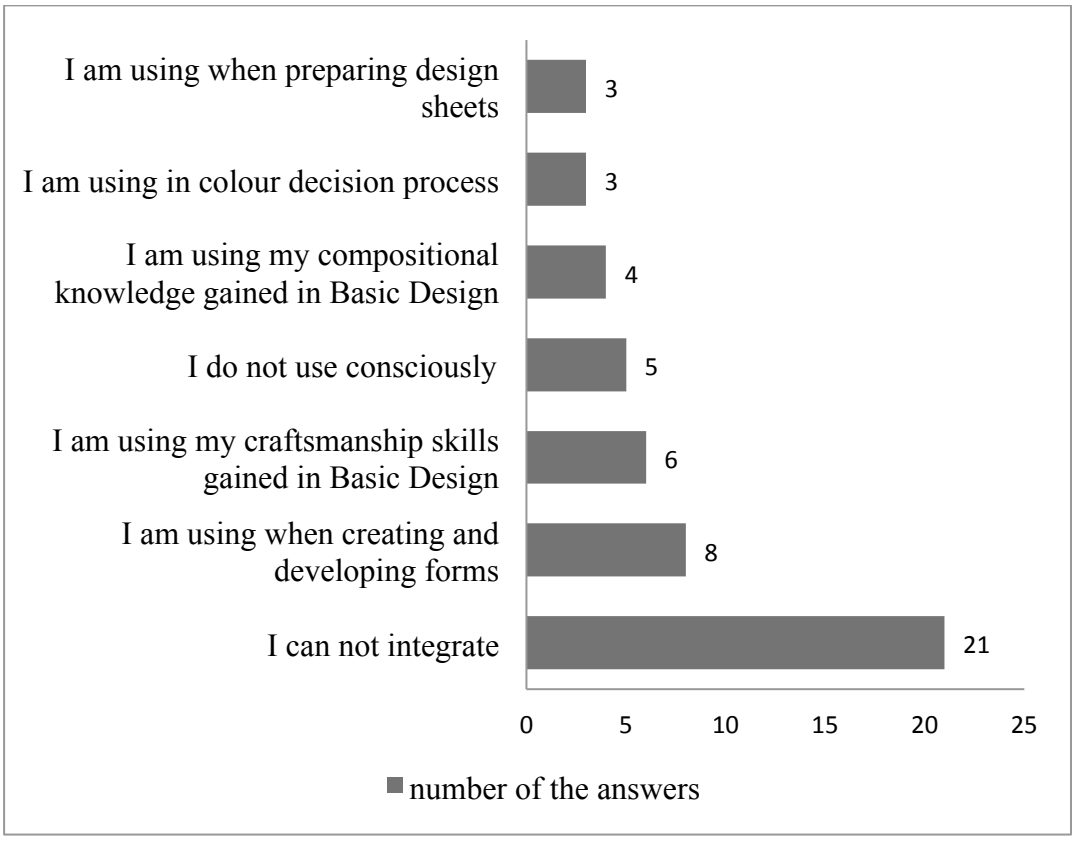

Figure 21 Results of the second question of Q2 by 2nd years

The results show that, most of the students cannot use their knowledge and skills that were acquired in Basic Design, in their projects of the 2nd year studio. They accuse Basic Design for being disconnected from the product design processes. An answer

on this matter was as follows:

> Basic Design just developed my craftsmanship and model making skills. I cannot integrate the principles of design to my projects in 2nd year. Basic Design was unsuccessful in bringing that skill to us.

On the other hand, the knowledge and skills gained in the course appear to be used when students decide on color, thinking about composition, developing forms and dealing with works that require craftsmanship.

From the 3rd years, there were 39 opinions from 28 participants (Figure 22).

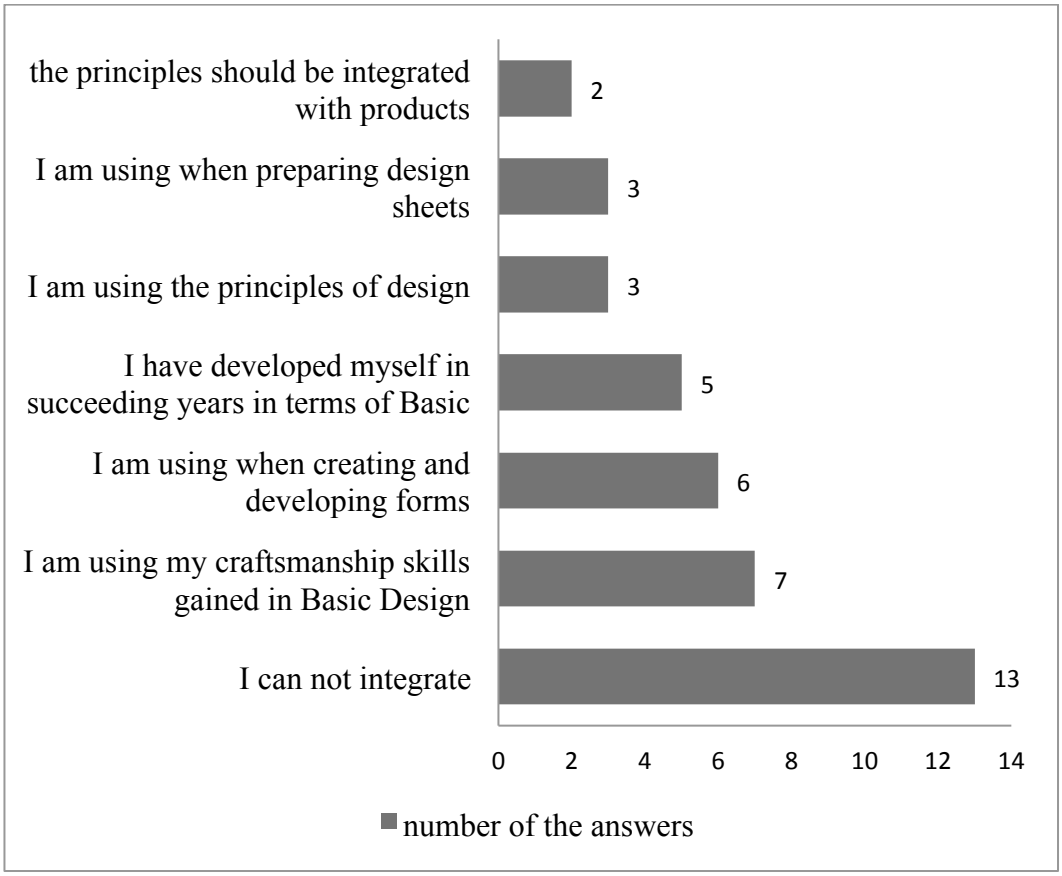

Figure 22 Results of the second question of Q2 by 3rd years

Nearly half of the 3rd years appear to have problems in integrating Basic Design with their projects in the succeeding years. Some of the students make use of their Basic Design knowledge in form development processes and compositional issues but they indicated that they acquired these knowledge and skills elsewhere:

> We are using our knowledge and skills in form development process and while making visual choices. However, I am not sure if we can link these knowledge and skill with Basic Design course since, they can be learned through trial and error in time.

> I cannot apply what I acquired in Basic Design when dealing with the projects in the succeeding years because, in the succeeding years, we are getting knowledge about what we should have learned in Basic Design.

From the 4th years, there were 34 opinions from 23 participants (Figure 23).

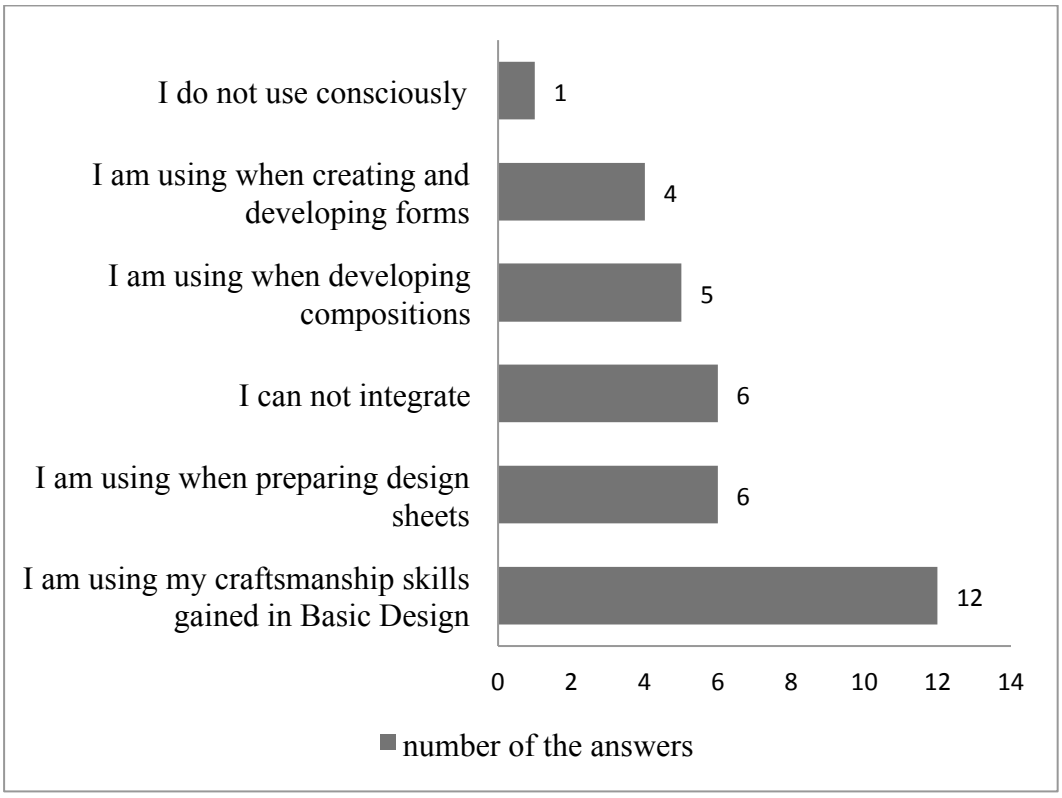

Figure 23 Results of the second question of Q2 by 4th years

Nearly half of the students acknowledged reaping the benefit of craftsmanship and model making skills they acquired in Basic Design. Also, a great number of them stated using Basic Design knowledge and skills when developing forms and dealing with compositional issues such as preparing a design sheet, deciding on proportions, or on color. On the other hand, some students indicated that they could not integrate their Basic Design experiences with the projects of succeeding years:

> I cannot apply what I have acquired in Basic Design course in the projects of succeeding years. Basic Design is full of irrelevant information about product design.

Third Question

The third question was sort of a sub question of the second question. In this question the transfer of knowledge and skills were examined under the specific concept of form development process. Students were asked to **describe their process when developing forms and comment on the contribution of Basic Design to this process.** As mentioned in 3.2.1.1., one of the main aims of Basic Design was stated in the pilot interviews as to improve the form development abilities of the students. Therefore, it is important to understand the process of the students when developing forms together with the comments about the contribution of Basic Design to this process. The processes mentioned by students in different years of undergraduate education are shown in Figure 24, 25 and 26, followed by the contributions of Basic Design to these processes.

From the 2nd years, there were 39 opinions from 29 participants (Figure 24).

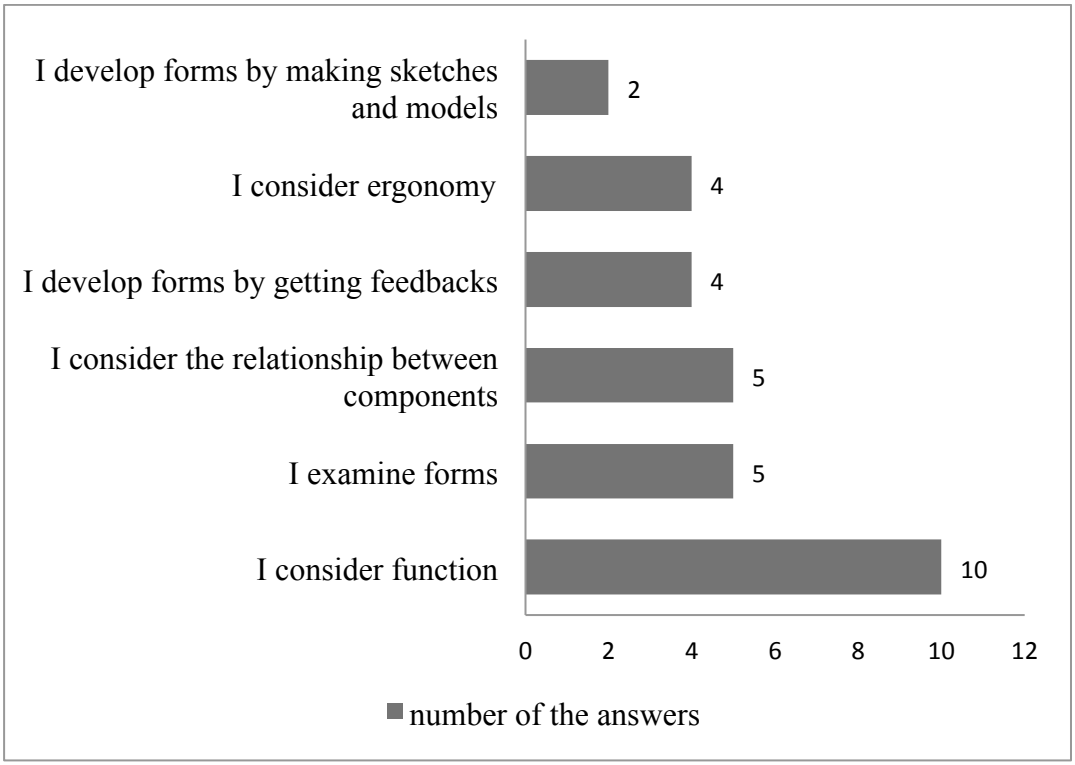

Figure 24 Results of the third question of Q2 by 2nd years

The results show that, significant part of the students consider function when developing forms.

Commenting on the contribution of Basic Design to their form development process, eight students indicated that they have difficulty because of the insufficiency of the course in that issue, while six students evaluated it as helpful thanks to the three-dimensional abstract projects that allowed them to examine forms, their relationship with each other and their surroundings.

From the 3rd years, there were 27 opinions from 27 participants (Figure 25).

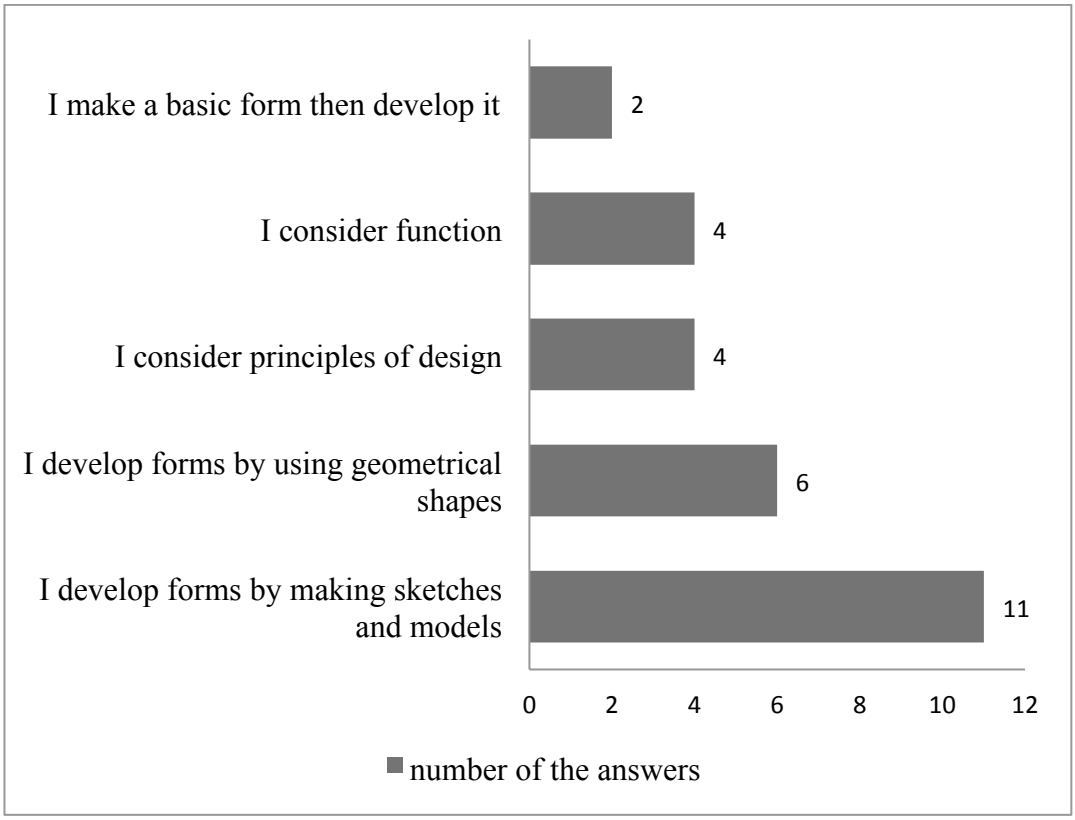

Figure 25 Results of the third question of Q2 by 3rd years

Many of the students develop forms by making sketches and models. Four of the students indicated that craftsmanship and model making skills that were acquired in Basic Design are useful in that process:

> I develop forms by starting with simple geometrical shapes. I use different materials and techniques that I acquired in Basic Design like wire, papier-mâché or styrofoam while actualizing these forms.

13 of the students indicated that Basic Design has no influence on their form development process because of the insufficiency of form and three-dimensional exercises in this course:

Understanding and analyzing a form is a new concept for us. We did not acquire that skill in Basic Design because of the insufficiency of three-dimensional exercises.

From the 4th years, there were 37 opinions from 25 participants (Figure 26).

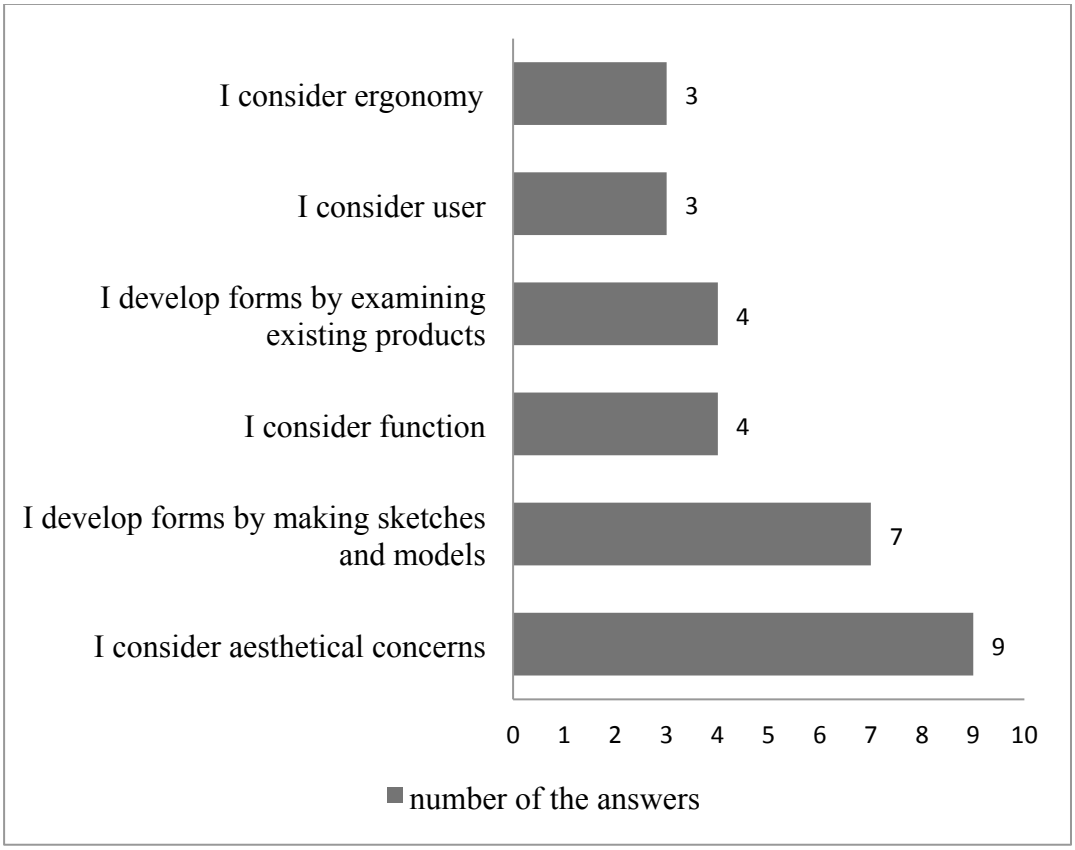

Figure 26 Results of the third question of Q2 by 4th years

Many of the 4th year students indicated that, they consider aesthetical concerns that were adopted in Basic Design when developing forms. Besides, making sketches and models, consideration of function and examination and analysis of existing products were also another processes that were mentioned by students when developing forms. On the other hand, four students think that Basic Design has no effect on their form development processes, while three students indicated that they have learned form development in the succeeding years.

Fourth Question

In this question students were asked to give suggestions on how the existing situation of Basic Design can be improved. The results for each year are shown in Figure 27, 28 and 29.

From the 2nd years, there were 51 opinions from 34 participants (Figure 27).

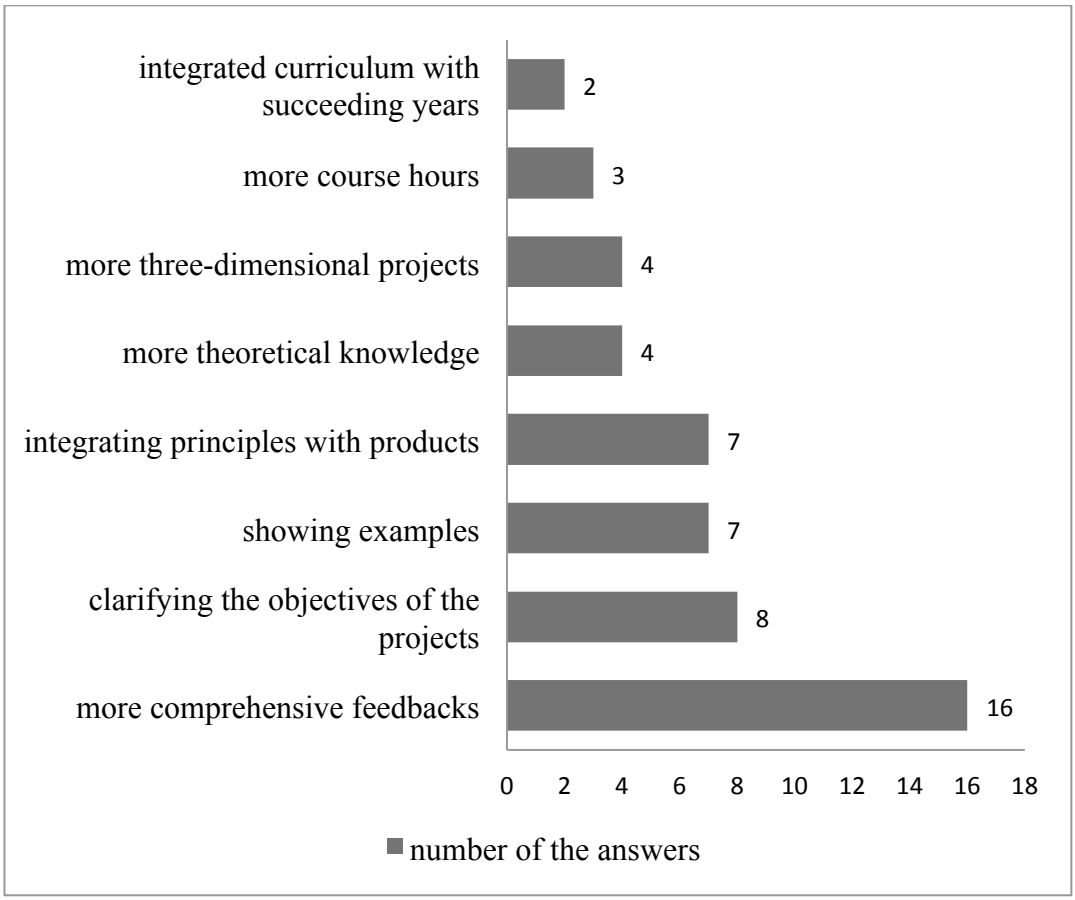

Figure 27 Results of the fourth question of Q2 by 2nd years

The results show that, nearly half of the students complain about the feedbacks and think that they should be more comprehensive and explanatory. Also, many of the students suggested that the objectives of the projects and the principles of design should be clarified by showing exemplary products so that they can integrate their

Basic Design knowledge with the product design processes of succeeding years:

> The expectations can be clearer. Also, the principles of design should be clarified with examples related to products.
>
> Basic Design should convey more theoretical knowledge related to functional products and their design languages.

From the 3rd years, there were 35 opinions from 27 participants (Figure 28).

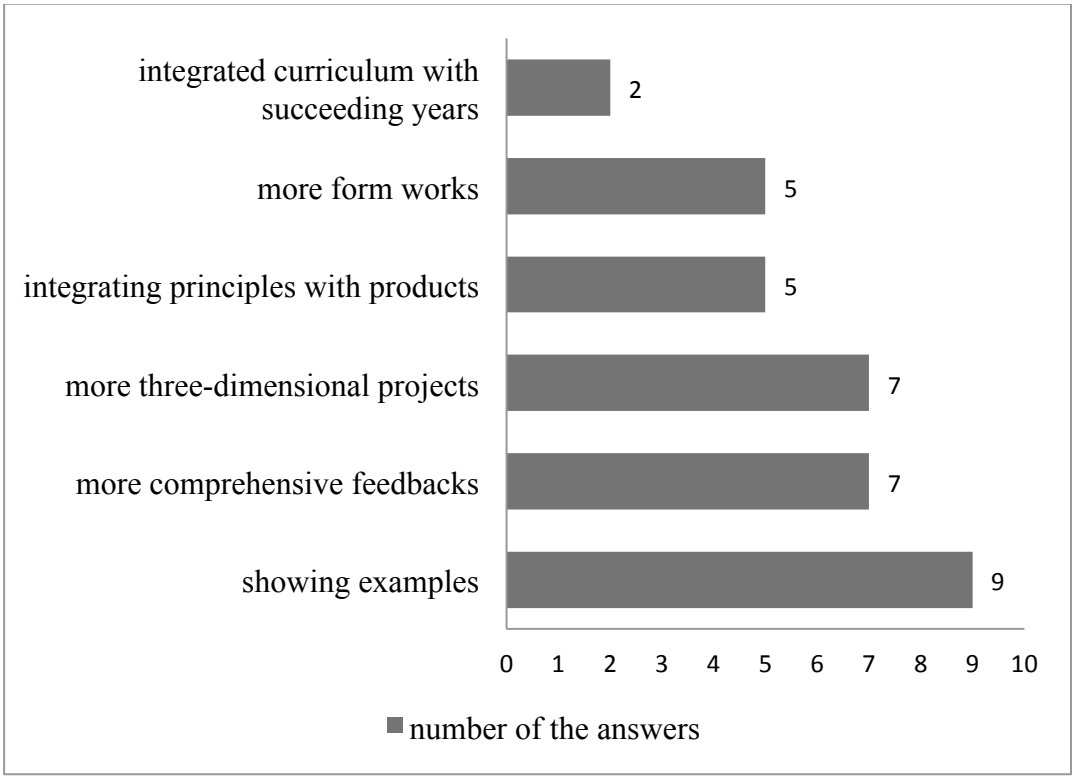

Figure 28 Results of the fourth question of Q2 by 3rd years

Many of the students suggested that, showing examples of previous works could be helpful since they did not have any prior knowledge about the principles of design. Receiving more comprehensive feedbacks and practicing more on three-dimensional projects were the other important suggestions of the students, followed by the integration of principles of design with products. Also, some of the students suggested that Basic Design could be given throughout the undergraduate education:

> I think Basic Design should be given as a supporting course in every semester where a product design course is conducted.

Besides, there are some students that wish to take Basic Design course again:

> Even though we acquired useful knowledge and skills in Basic Design, I do not think we were aware of the importance of the course while we were taking it. We realize what we have learned in the succeeding semesters. Many of my friends and I wish to take Basic Design course again and now.

From the 4th years, there were 39 opinions from 26 participants (Figure 29).

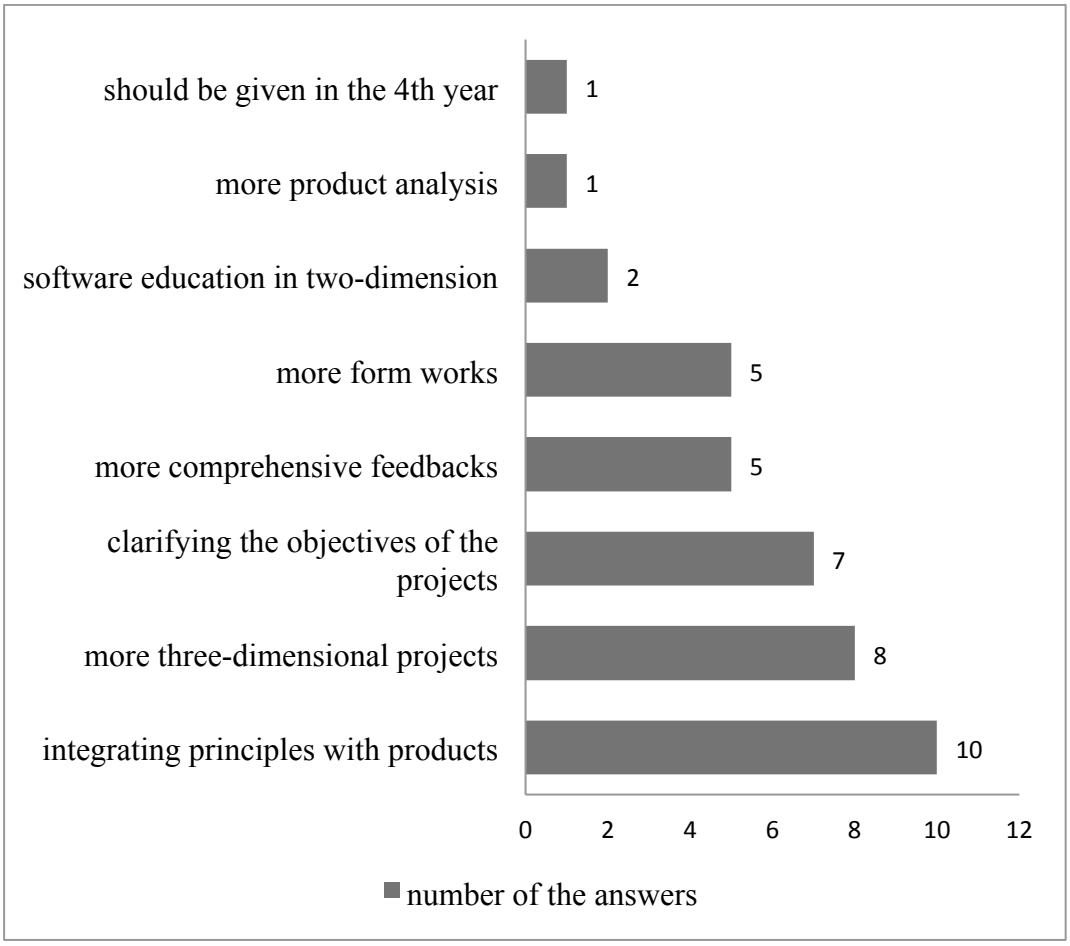

Figure 29 Results of the fourth question of Q2 by 4th years

Many of the students suggested that the principles of design should be integrated with products:

> Abstract exercises that teach principles of design could be supported with functional products that we will be dealing with in our professional life. For example making a composition by using colored cardboards and supporting this exercise by analyzing a page of a magazine. In this way the question of 'what am I doing' would have been answered.

Just like students of other years, fourth year students also suggested that there is a

need for more three-dimensional projects as well as better clarification of project objectives.

4.1.4 Discussion of the Results of the Questionnaires

In the previous section, the findings were presented on a question-wise basis. To make a comparison between the answers given by students of different years, the answers were reevaluated as a whole and different themes were determined under three headings: General Thoughts of Students about Basic Design, Student Thoughts about the Transfer of Basic Design Knowledge and Skills to Succeeding Years and Student Suggestions. Eleven charts were prepared by considering the percentages of answers that were given by students of each year, in order to visualize how opinions changed throughout the years. The percentages were calculated by dividing the answers of the students to the number of the students of each year. These charts were later used during interviews, since these representations of student opinions were easier to understand and compare and therefore, facilitated retrieving comments from the instructors.

General Thoughts of the Students about Basic Design

When the general thoughts of the students about Basic Design were analyzed, the insufficiency of Basic Design on a number of topics was revealed to be the main theme. Basic Design was deemed insufficient in conveying theoretical knowledge, giving feedbacks, clarifying objectives of projects, exercising in the number of three-dimensional projects s and providing enough time were determined as the main themes (Figure 30).

Insufficiencies of Basic Design, identified by students:

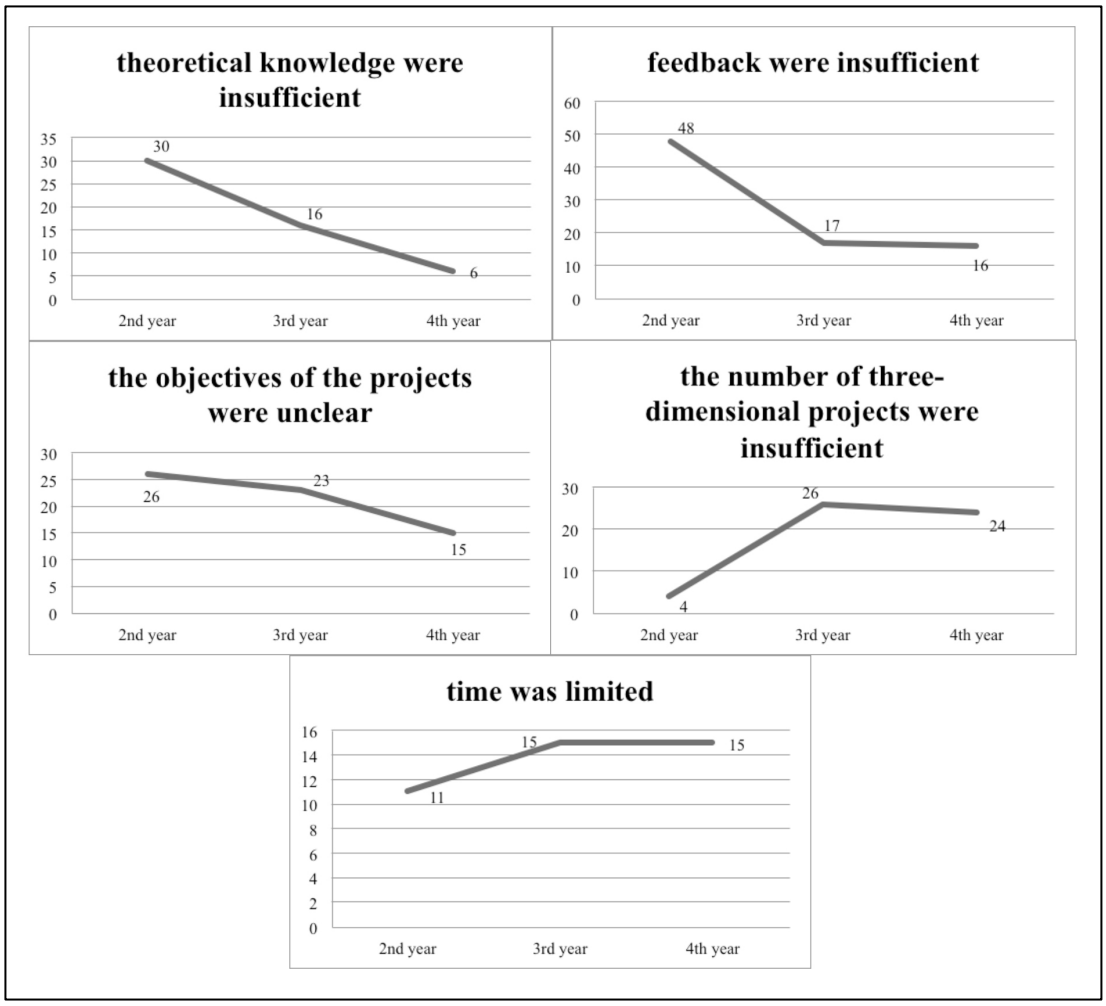

Figure 30 The percentages of the answers related to general thoughts about Basic Design by each year

30% of the 2nd year students think that theoretical knowledge was insufficient in Basic Design and this percentage decreases in the following years to 6%. It can be deduced that, as the years progress students discover that design education is given by practicing and experimenting rather than giving theoretical knowledge.

48% of the 2nd year students think that feedbacks about the works were insufficient in Basic Design. Also, the percentage of this opinion decreases to 17% in the 3rd years and stays nearly at the same level in the 4th years. The results show that, the

demand of the students for feedback decreases as years progress, therefore, it can be deduced that students are evaluating themselves as they gain more experience in design education.

The percentage of the students that think Basic Design projects' objectives were unclear, are close to each other throughout the years. However, a slight decrease is observed, especially in the 4th year. The results show that, students demand more guidance in terms of the objectives, outcomes and solutions to the problems. Besides, since this demand decreases as years progress, it can be deduced that students get used to the method of design education which is learning by experimenting.

Furthermore, there is a serious increase between the percentage of the 2nd and 3rd year students that think there should be more three-dimensional exercises that especially deals with functional products in Basic Design. It can be deduced that, students need more practice about three-dimensional exercises since they express a problem on this situation even in 3rd and 4th years, when they are more experienced about designing three-dimensional products.

Finally, students think that more time should be given to finish projects in Basic Design. The percentage of this opinion throughout the years doesn't appear to change much. The number of students who make this demand is low; therefore, the time limitation doesn't appear to be a very significant problem, or could be seen as an issue relating to specific students.

Student Thoughts about the Transfer of Basic Design Knowledge and Skills to Succeeding Years

When student comments on the transfer of Basic Design knowledge and skills to succeeding years were examined, three main themes that were gathered under the issue of integration were revealed: Basic Design's integration problems to the projects of succeeding years, Basic Design's integration to visual composition and its integration to form development process (Figure 31).

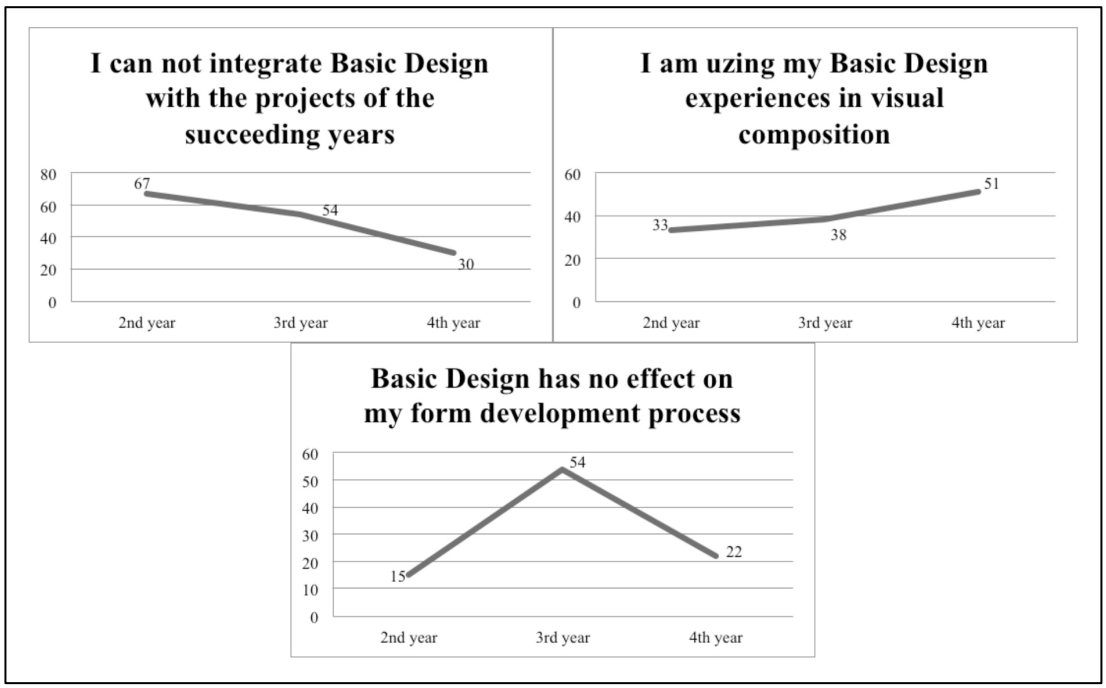

Figure 31 The percentages of the answers related to the integration of Basic Design knowledge and skills with succeeding years by each year

Students appear to find there is a serious problem in transferring Basic Design knowledge and skills to the projects of the succeeding years. Especially 2nd year students have the greatest difficulty in this issue. However, there is a significant decrease in this opinion as years progress. From this decrease, it can be deduced that, since students gain experience about the design process, the problem is eliminated gradually. However, the number of the students who have difficulty with this issue is too great to be overlooked.

On the other hand, students appear to use their Basic Design experiences in visual compositions. In this chart, developing compositions, preparing design sheets and design decisions related to aesthetics are evaluated as visual composition. Also, there is an increase in how much Basic Design experiences are used in visual composition as time passes. It can be deduced that, Basic Design course is successful in conveying visual composition knowledge and students gradually become aware of the experiences they gained in this course.

Nearly half of the 3rd year students think that Basic Design has no effect on their form development process. However this percentage is lower in 2nd and 4th years compared to 3rd years. The high amount of the 3rd year students that think Basic Design has no effect on their form development process could be the result of a special case. When the questionnaire was conducted, 3rd year students had a course called 'Sense of Form' from a visiting lecturer. Having experienced a more advanced form development course, they might be expecting the same level from Basic Design course.

Student Suggestions

The suggestions of the students appeared to be condensed under three major themes: curriculum integrating Basic Design with succeeding years, relating Basic Design principles with products and making more three-dimensional form exercises (Figure 32).

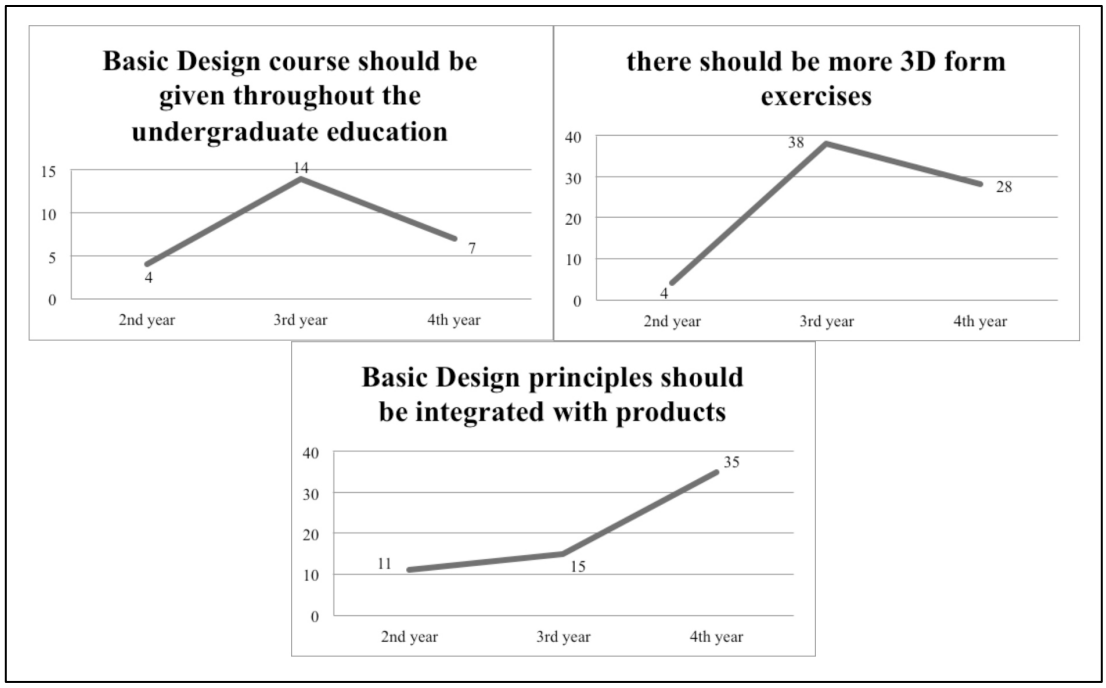

Figure 32 The percentages of the answers related to suggestions by each year

Even though the amounts are not very significant, a few students suggest that, Basic Design should be taught in the succeeding years. Students think that, such update in the curriculum will help them to integrate Basic Design knowledge and skills with the projects of succeeding years. The increased amount of this suggestion in the 3rd year is significant compared with the preceding and following years, which again, might be the result of the "Sense of Form" course. It can be deduced from that result that, an advanced form development course that will be given after students have completed Basic Design course, would be helpful for the students to build on the form development experiences that they acquired in Basic Design.

Furthermore, students demand more three-dimensional form exercises in Basic Design, especially 3rd and 4th years. The percentage of the 2nd years is quite low compared to 3rd and 4th years. It can be deduced from the results that, especially 3rd and 4th year students have difficulty in developing forms therefore, they demand more three-dimensional form exercises in Basic Design, while the second years who have just began working on product design, are not able to asses the importance of three dimensional exercises nor their ability on that issue.

Also, there appears to be an increasing demand for integrating Basic Design principles with actual products as years succeed. The percentage reaches 35% in 4th years. It appears like students think this method will also help them to integrate Basic Design knowledge and skills with the projects of succeeding years.

4.2 Findings of the Interviews

Up to this stage, the field study aimed to validate within the scope of METU Department of ID, the problems and the suggestions that were determined in the literature, through student responses to conducted questionnaires. In the final stage of the field study, the instructors of METU Department of ID were asked to comment on the opinions of the students as well as add their own opinions and suggestions, through interviews. The interviews were realized in three stages. First, instructors were asked to state their general thoughts about Basic Design. The instructors of 2nd, 3rd and 4th year design studios were also asked to comment on to the relation between

Basic Design and their own studios. Then, instructors were asked to interpret the opinions and suggestions of the students by analyzing the charts that were pre-prepared based on the answers of the students to the questionnaires. Finally in the third stage, instructors were asked to give their own suggestions on how to improve the current situation of Basic Design. There were 10 participants to the interviews and they will be referred as P1, P2, P3 etc. in the following chapters.

4.2.1 General Thoughts About Basic Design

At the initial stage of the interviews, participants were asked to talk about **the importance and aim of Basic Design.** All of the participants indicated the importance of Basic Design as being a foundation for all design departments. P1 stated that, "Basic Design stands as a foundation course not just for industrial design department but also for all departments that deal with design". Besides, four of the participants defined Basic Design as an introductory course for the discipline, in regard to the educational system of Turkey. P5 stated, "in high schools, students can specialize in fields such as mathematics or literature but do not have an opportunity to build an infrastructure in the field of design. Considering all of these, Basic Design is an introductory course to the visual culture and discipline". In this perspective, P6 found Basic Design similar to learning alphabet and four operations. It was stated that,

> Basic Design tries to teach a new language to the students. Rather than being based on verbal or quantitative educational basis, Basic Design aims to initiate thinking visually and making visual assessments. For this purpose, it teaches basic principles of design. As the alphabet is the introduction of writing or four operations is the introduction of mathematics so, Basic Design is the introduction of visual thinking and visual education.

It was mentioned that Basic Design is a foundation for all design departments but two of the participants indicated that there are some differences between basic design educations of different design. P3 stated that,

> There are some differences between Basic Design courses of different departments in terms of profession specific projects. While architects deal with large volumes, interior architects deal with the surfaces inside volumes. While graphic designers deal with two-dimensional surfaces, industrial designers deal with three-dimensional products. Due to this reason, the progression of the course as well as its approach to the material differs.

Later, the participants were asked to comment on **the contribution of Basic Design to the projects of the studios of succeeding years.** All of the participants agreed on importance of Basic Design in terms of acquired knowledge and skills for the studios of succeeding years. Six of them mentioned the visual contribution of Basic Design especially on compositional issues such as the harmony of the separate elements of an object or the layout of design sheets. P1 stated, "acquired knowledge such as the consistency and position of the elements and the harmony of colours are very useful for product development processes in the succeeding years". Also P3 stated that,

> Basic Design creates a basis for the succeeding years. It develop skills such as sense of aesthetics, development of forms, generating alternatives, thinking in three-dimensions, creating a composition etc. Even though the studios of the succeeding years deal with different concepts about the products such as function, ergonomics etc., Basic Design determines the visual characteristics of that product.

Furthermore, getting familiar with the materials and making models were found as useful skills conveyed by Basic Design for the projects of succeeding years by three of the participants. P1 thought that, through these skills students gain the ability to make prototypes in a rapid way.

On the other hand, applying Basic Design knowledge and skills to the projects of the studios of the succeeding years was found to be a difficult task by four of the participants. P5 stated,

> The studios of the succeeding years have different parameters such as, designing for a customer or user, considering the dynamics of the market, determining a target market, production techniques, thinking about production cost and blending all of these with a product that is aesthetical, functional and user friendly. That is a very difficult task. However, the visual strategies that students will need to use are the knowledge and skills that they have acquired in Basic Design. Applying these knowledge and skills to the projects under these various factors is a very difficult and time-consuming process.

Also, P7 indicated the importance of internalizing Basic Design in this respect: "When important parameters become part of design process in the succeeding years, Basic Design is forgotten. If students could have internalized their Basic Design knowledge and skills till then, they would be successful. Otherwise, Basic Design would be forgotten".

Then, participants were asked if they had **encountered any problem in their studio related to Basic Design.** This question was asked specifically to the instructors of the studios of the 2nd, 3rd and 4th years. Various problems were mentioned by the participants such as the relationship between the parts of a product, colour decisions, layout of a design sheet and the development of forms.

The major problem that was indicated by the participants was the deficiencies related to visual composition. This problem was mentioned by five of the participants. P9 stated,

> There may be problems about the relationship between parts of a product or their hierarchy. Even though students need to develop everything correctly about the product such as usage scenario or problem analysis, the visual sensibility, which students should have gained in Basic Design, is still expected as well. This visual sensibility is one of the most important factors that enhance the quality of the products. We might not mention features like hierarchy, balance or coherence between the parts of a product when we get

the product in our hands but these features are ones that directly enhances the quality of a product.

The participants explained these problems by various reasons. P1 indicated that these problems are derived from the disconnection between studios:

> In the juries of 2nd, 3rd and 4th years, the products of the students do not bear the trace of Basic Design. This is because, the education of the studios of the 2nd and 3rd years do not support Basic Design. There are not many projects on which students can apply what they have acquired in Basic Design. Especially in the 2nd year studio, there are projects that direct students in the use of ergonomics or function in an innovative way so, students do not know where to use their Basic Design knowledge and skills.

P9 also commented on this issue:

> In Basic Design there are not many projects that deal with functional products. On the contrary, students suddenly start to develop products in the 2nd year studio. In addition, the 2nd year studio focuses on the subject of function so a differentiation occurs between form and function. There is not a smooth transition between Basic Design and 2nd year studio.

P2 related these problems to the awareness issue in Basic Design:

> Students have an awareness problem in Basic Design. They do not possess any awareness of what they have learned in Basic Design. Beside, the problem is not just related to Basic Design. 2nd year is the year of introduction to industrial design, whereas Basic Design does not much concern itself with industrial design. Consequently, it is very natural that students have difficulty in 2nd year but these difficulties that are related to Basic Design originate from the lack of awareness in Basic Design by the students.

Apart from these, P5 related the problems to different reasons such as the use of computers and different infrastructures of the students:

> The main problem arises from the transition from handcraft to computer environment. They are producing with their hands till the 3rd year and then they start to deal with the computer programs. In this stage, students do not know how to use computer programs effectively and they have difficulty in reflecting their thoughts digitally. Also, the infrastructure of the students is very important. A student, who has a visual culture infrastructure, can get more efficiency from Basic Design. The knowledge and skills that are acquired in Basic Design are also built on whatever basis already exists. Therefore the experiences of the students till the university education have a greater impact on the works that are realized in university.

4.2.2 Interpretation of Student Responses to Questionnaire

In this stage, instructors were asked to make interpretations about the opinions and suggestions of the students and the way the opinions changed throughout the years by analyzing the charts that were prepared from the results of the questionnaires.

Instructor Interpretations of Students General Thoughts on Basic Design

Evaluating the decrease in percentage of students who find Basic Design lacking in theoretical knowledge (Figure 33), seven of the participants stated that, design education should be given by practicing rather that giving theoretical knowledge. As the years progress students discover that design is a progressive process and is learned by doing and experimenting rather than getting theoretical knowledge therefore, there is a decrease in this opinion as years progress. Also, P6 and P8 said that, discussing and getting feedbacks about the works are more important and constructive that theoretical knowledge.

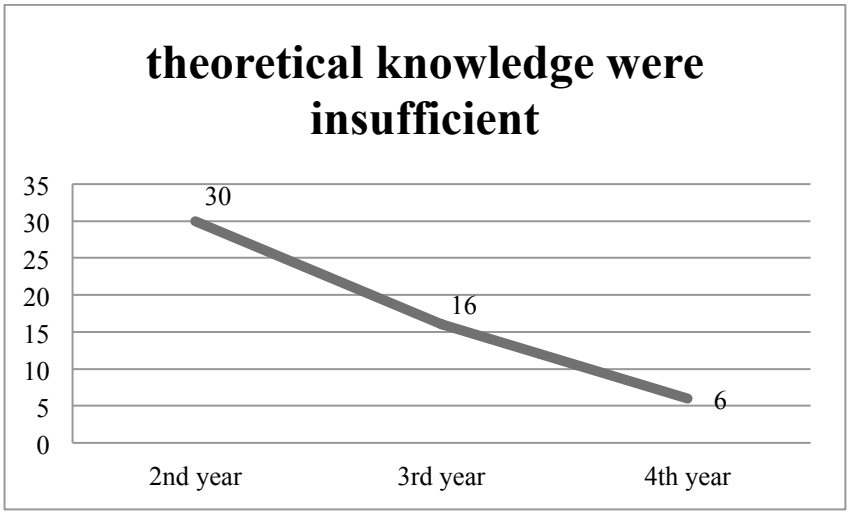

Figure 33 The percentages of the answers about theoretical knowledge by each year

Evaluating the answers of the students who find Basic Design lacking in feedback (Figure 34), all of the participants indicated the importance of feedbacks in design education and three of them argued that more feedbacks should be given in Basic Design by considering the graphic. However, because of the large population of students, giving more feedback was also evaluated as a difficult task. On the other hand, P4 stated that, the exercises in Basic Design do not have a clear outcome or solution. They are exercised to accustom students to the design process. Therefore, feedbacks assist students only up to some extend thus, students have to analyze and evaluate themselves and give their own feedbacks.

According to P4, since 2nd year students do not have enough experience about design process, it is an expected result to see that they ask for more feedbacks and descriptions. The participant also stated "There is a serious decrease between 2nd and 3rd years. Through dealing with projects in the 2nd year, students get used to the process of evaluating themselves.

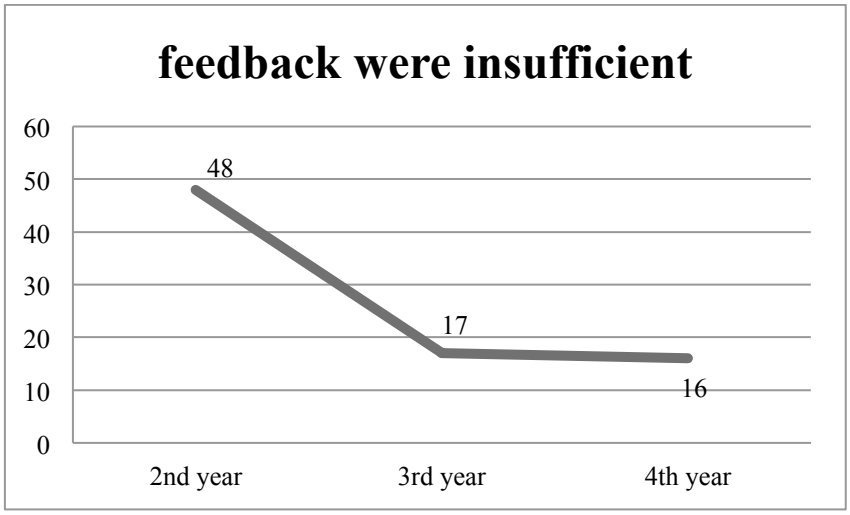

Figure 34 The percentages of the answers about feedbacks and descriptions by each year

Evaluating the answers of the students who find the objectives of the projects unclear (Figure 35), P5 stated that, "In adult education, adults want to know the purpose of their actions. They want to understand why their works are successful or not therefore, the high percentages are natural. On the other hand, the percentage of this opinion is decreasing as years progress thanks to the increased awareness of the students to design education process". Beside, it was said,

> In design education, it is important to identify and solve a problem by experimenting on it. Therefore, rather than indicating problems, stages, solutions, outcomes, it is more beneficial for the student to experiment all these stages. The purpose of the project can only be explained through feedbacks.

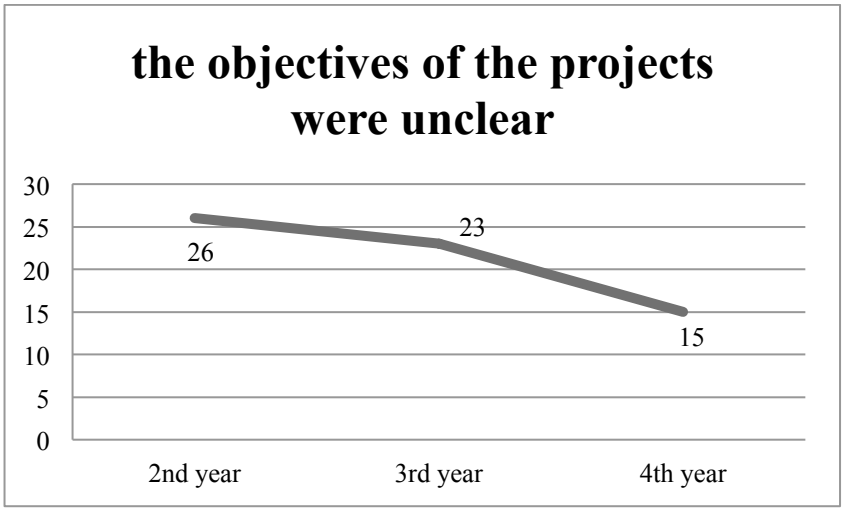

Figure 35 The percentages of the answers about the objectives of the projects by each year

Evaluating the answers of students who find Basic Design lacking in terms of the number of three-dimensional projects (Figure 36), there were different opinions from the participants. While six of the participants agreed with this suggestion, four of them disagreed. P5 stated, "Education has to proceed from simple to complex. Many students are educated simultaneously so, basic issues such as two-dimensional exercises have to be emphasized in detail to make sure every student understand and can make progress". On the other hand, P6 argued the opposite of this opinion: "The realization of three-dimensional projects take more time so there is not a chance to exercise them for as long as two-dimensional ones. Therefore, it would be better to begin three-dimensional exercises earlier". Apart from these opinions, P4 thinks that it can be better to exercise more on three-dimensional exercises in an abstract way rather than concerned with functional products:

> First year is the year of Basic Design, not the year of industrial design. If concepts of industrial design such as function or ergonomics are integrated to Basic Design, the outcome of Basic Design will be different. On the other hand, since industrial design students deal with products more than graphics, it would be better to work on three-dimensional projects more but in an abstract way through Basic Design.

Furthermore, the low percentage in the 2nd years was interpreted as the result of not having dealt with many three-dimensional industrial design projects yet. Since 2nd year students did not deal with many three-dimensional projects, they are not capable of evaluating the effect of three-dimensional projects that were exercised in Basic Design to their current projects.

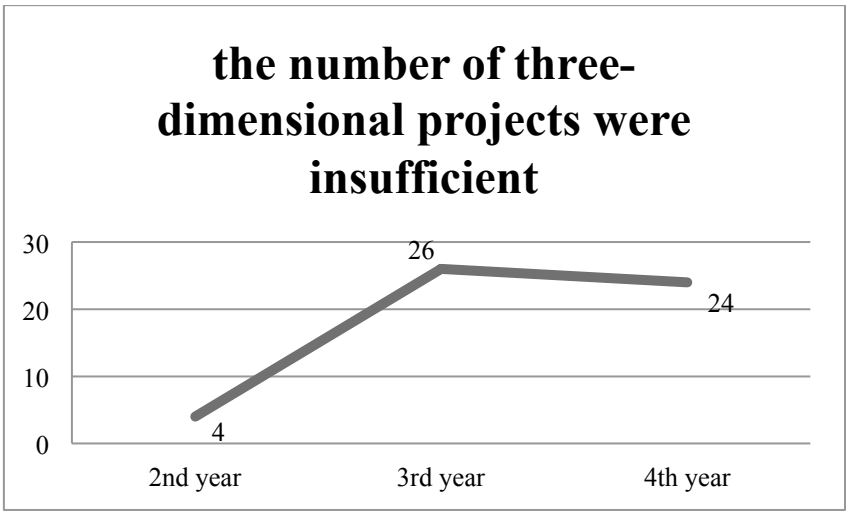

Figure 36 The percentages of the number of three-dimensional projects by each year

Evaluating the answers of the students who find time limited for actualizing projects in Basic Design (Figure 37), P1 stated, "Students work on long termed projects in the studios of 2nd, 3rd and 4th years so, it is understandable that they expect the same situation from Basic Design. On the other hand, these courses have different structures. Throughout Basic Design, there are short termed exercises that are done frequently. Also, short termed exercises help students gain speed while realizing projects".

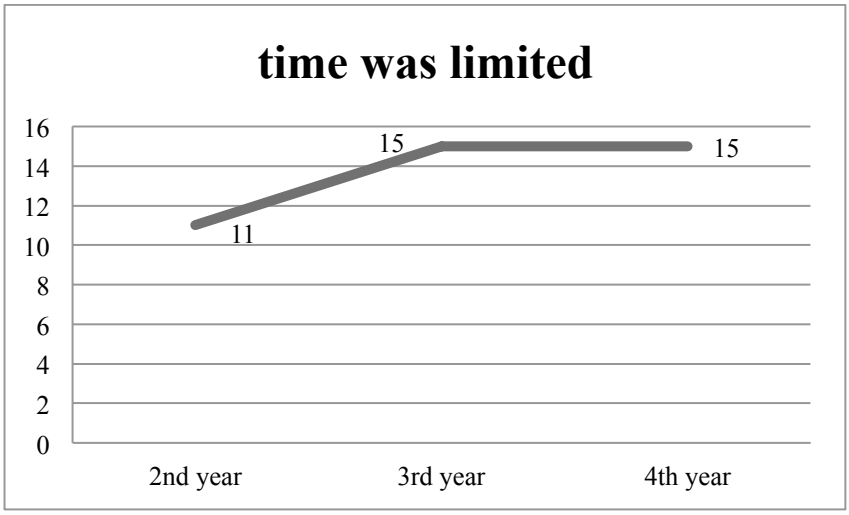

Figure 37 The percentages of the answers about limited time by each year

Instructor Interpretations of Students Thoughts about the Transfer of Basic Design Knowledge and Skills to the Succeeding Years

Evaluating the answers of the students who have problem integrating Basic Design with the projects of the succeeding years (Figure 38), all of the participants commented that the high percentage in the 2nd years probably results from the uneasiness of students that began a new studio, where they deal with completely new issues such as functionality, ergonomics, production etc. and functional products rather that abstract compositions. The consensus was that, as their education progress students gain a better notion on how to handle Basic Design and Industrial Design concepts together.

Furthermore, P6 stated that students might not be able to assess themselves in that issue:

> Applying Basic Design knowledge and skills to the projects in the succeeding years is actualized by internalizing Basic Design. Actually, there is not a describable knowledge, there is a sensibility in the matter of Basic Design therefore, students may not be able to assess themselves about integrating this sensibility to their projects in the succeeding years.

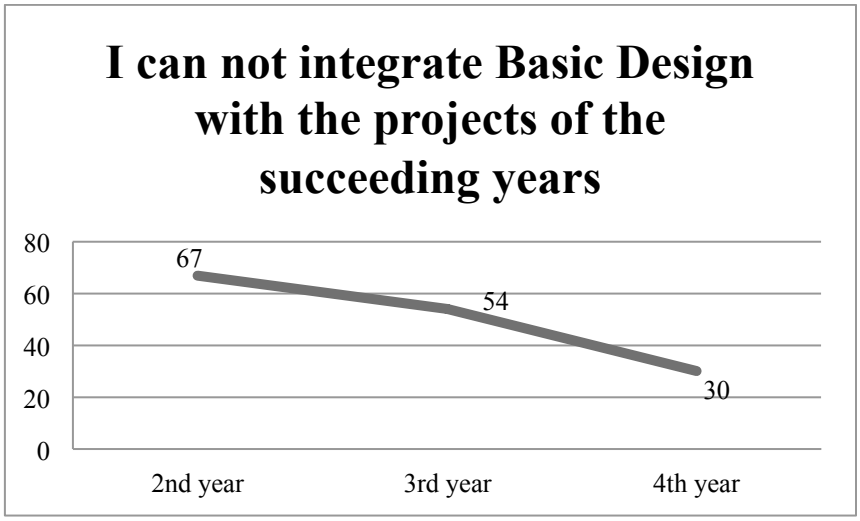

Figure 38 The percentages of the answers about integrating Basic Design with the projects in the succeeding years by each year

Evaluating the answers of the students who can utilize Basic Design experiences in visual compositions in the succeeding years (Figure 39), all of the participants interpreted this situation as the result of students realizing the importance of Basic Design and correlating it with product design process as they gain more experience.

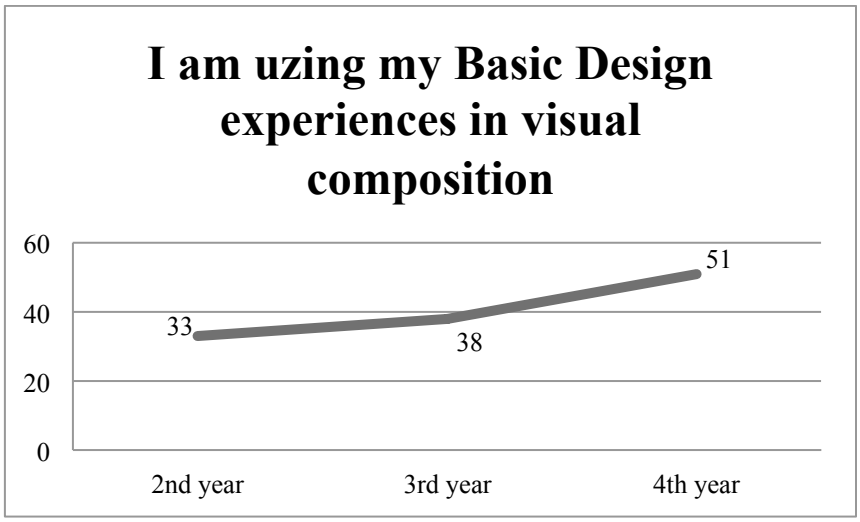

Figure 39 The percentages of the answers about utilizing Basic Design experiences in visual composition by each year

Examining the graphical representation of how many students think Basic Design has no effect on form development process, one instructor commented that Figure 40 might the result of a special case. When the questionnaire was conducted, 3rd years had a condensed five weeks course called ‘Sense of Form’ from a visiting lecturer Prof. Martin Skalski from Industrial Design Department of Pratt Institute. P4 stated that, this course might have caused the sudden increase of students in the 3rd year that find Basic Design inefficient in their from development process, especially when compared with Skalsi's more advanced form development course.

Six of the participants stated that form development skills are improved through experience and Basic Design should not be expected to bring this experience to students by itself. P6 stated,

> This process is also related with the designed products: consisting of multiple or limited pieces, small or large scaled, made of wood or metal etc., various form development sensibility need to be enhanced in different product development processes. This sensibility can only be gained through experimenting and Basic Design is not sufficient for experiencing these various form development sensibility.

Furthermore, P10 mentioned a disconnection between 2nd and 3rd years in terms of form development process. It was stated that, form development becomes more of an issue in the 3rd year. Since, the studio of the 2nd year deals with functionality, form development skills of the students become blunt in this year.

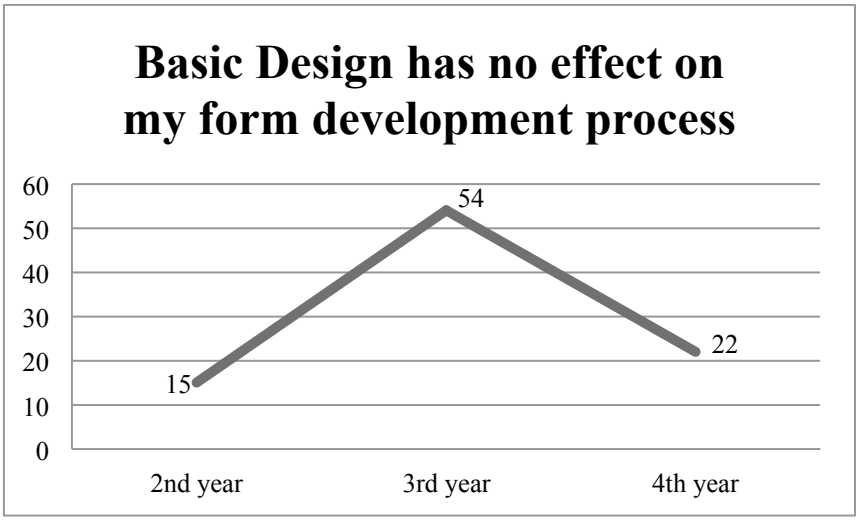

Figure 40 The percentages of the answers about the effect of Basic Design on form development process by each year

Instructor Comments on Student Suggestions

Evaluating the suggestion of the students who think Basic Design course should be given throughout the undergraduate education(Figure 41), was found reasonable by two of the participants. Other participants mentioned that, Basic Design should be taught only in the first year as a separate course.

P6 stated that, the increase in the suggestion by 3rd years might be resulted from the Sense of Form course conducted by Prof. Martin Skalski. Since the 3rd years experienced such a course which dealt with topics they faced in Basic Design through more advanced exercises and saw how the course contributed to their form development processes, they demand for such a supporting course more than 2nd and 4th years.

On the other hand, P6 stated that, due to the density of the curriculum, the insertion of such supporting courses to the educational program would be difficult.

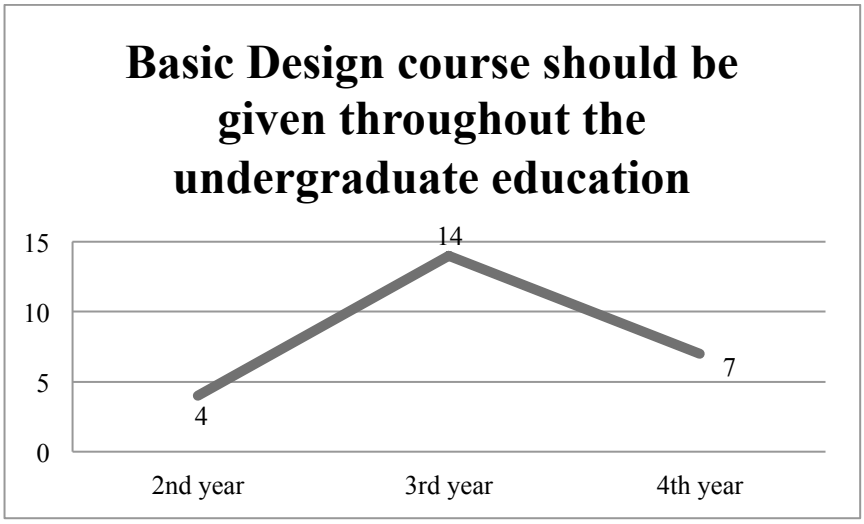

Figure 41 The percentages of the answers about the suggestion of an integrated curriculum with succeeding years by each year

All participants agreed with the suggestion of the students that there should be more three-dimensional form exercises in Basic Design (Figure 42). P7 stated that Basic Design might include different form exercises where new materials and new form development principles are experienced in three-dimension as in the course of Martin Skalski. On the other hand, P4 argued that the Sense of Form course contained advanced form development techniques that would be difficult for the 1st years. Since, Basic Design teaches to use visual elements rationally and Sense of Form course is based on trials and free experimentation, 1st year students wouldn't have developed their visual composition capabilities enough to self-assess the success or failure of their works nor understand the logic behind it. However, even though the result of the 3rd years might be a result of Sense of Form, the increase is still significant from the 4th years, which shows that with or without this additional course, students require more three-dimensional exercises from Basic Design. Furthermore, the low percentage in the 2nd years was interpreted as the same way with the Figure 36 as the result of not having dealt with many three-dimensional projects to make them evaluate the three-dimensional form exercises of Basic Design.

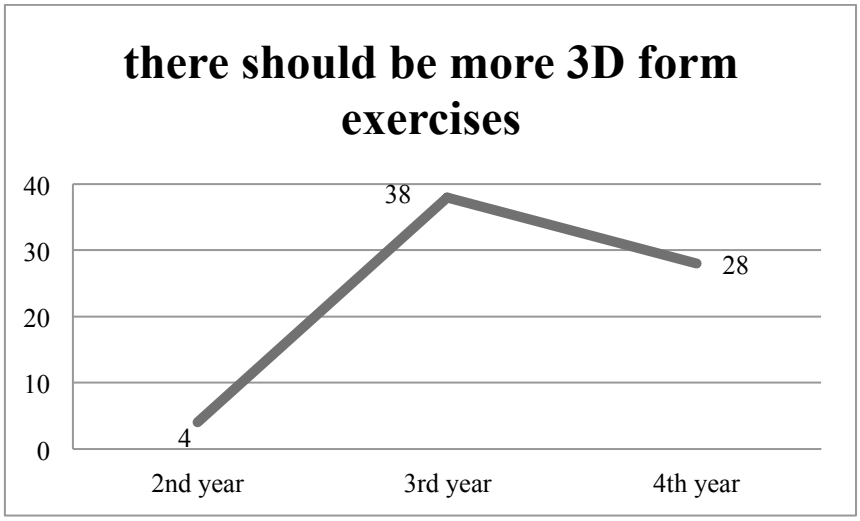

Figure 42 The percentages of the answers about the suggestion of having more form exercises by each year

The suggestion of the students who think Basic Design principles should be integrated with products (Figure 43) was interpreted as a beneficial suggestion by all of the participants. P3 argued that, this kind of exercises could be made towards the end of the spring semester when students advanced to three-dimensional exercises.

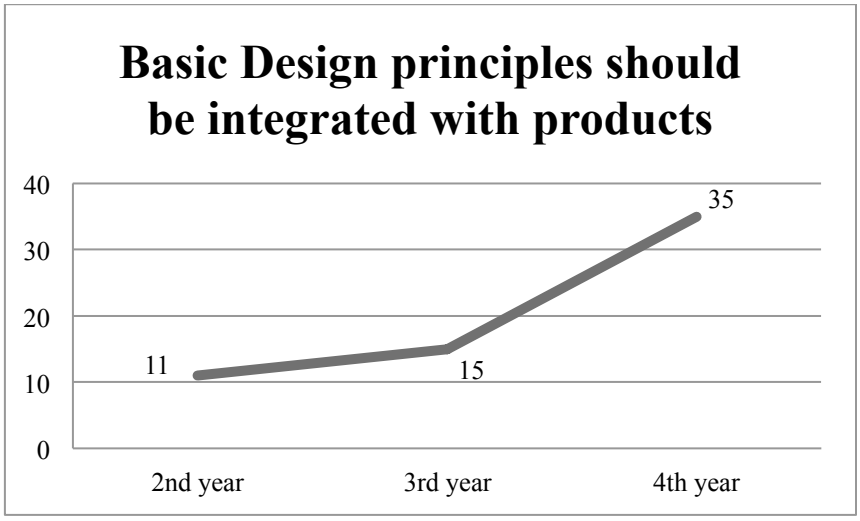

Figure 43 The percentages of the answers about the suggestion of integrating principles with products by each year

4.2.3 Suggestions

After commenting on students' suggestions, participants were asked to give their own suggestions. There were various suggestions: some of them were similar to the suggestions of the students and some of them proposed radical changes. Rather than course related issues of Basic Design such as, insufficiency of feedback, theoretical knowledge, clarity of the projects etc., the suggestions of the instructors were mainly related to the relation of Basic Design with other studios and product design process.

When the suggestions related to Basic Design course considered, all of the participants indicated the importance of integrating Basic Design principles with products when commenting on students' suggestions. Furthermore, two of the participants emphasized the significance of that issue in their own suggestions. P8 stated that, "Basic Design could be more product oriented to overcome the problems in transfer of knowledge and skills. After making abstract exercises concerning the principles of Basic Design, new exercises about the application of these principles to products can be made". P3 stated that, Basic Design could be discussed in terms of product design. For example, after making exercises about harmony, this principle can be associated to existing products by showing examples.

Furthermore, P6 and P4 proposed to start using computer in the earlier stages of design education. P6 argued that teaching design software beginning from the first year would facilitate the transition of students from handcraft to computer. Also, P4 suggested opening a course in the first year where students will work on digital form exercises so that they may produce more alternatives via computer in succeeding years.

Besides P1 proposed to explain the education process to students in the first year so that, students would understand the reason for the lack of theoretical knowledge, effects of Basic Design education on product development process and the nature of Basic Design that will be internalized in the succeeding years thus, the problem of students finding Basic Design as pointless can be solved.

Instructors also gave suggestions related to the studios of the succeeding years. Two of the participants suggested to criticize the projects of the students in the 2nd, 3rd and 4th years in terms of Basic Design. While P9 proposed having Basic Design instructors in some stages of product design processes in the studios of the 2nd, 3rd and 4th years, P3 proposed having at least one Basic Design instructor in design juries of the 2nd, 3rd and 4th years to criticize projects from a Basic Design point of view and P6 proposed to reserve a day to evaluate the projects in terms of Basic Design in the studios of 2nd, 3rd and 4th years.

P7 and P9 indicated the importance of form development process in product design. They proposed having workshops concerned with form development of the products. Besides, P10 proposed having idea development exercises in the studios of the 2nd and 3rd years where students would represent their ideas in terms of form and function. P10 also gave the example of the biomimicry exercise that was performed in the 3rd year studio, which was quite successful for combining form and function. It was stated that, by exercising such exercises, students would remember to analyze and develop forms as they exercised in Basic Design and would learn to make use of these forms for functional values.

In addition to all these suggestions, P1 offered a radical change for the educational system that would help with the problematic transfer of knowledge and skill from Basic Design to the studios of succeeding years: “The structure of the department need to be reconstituted. The objectives of the education should be determined in a way that so acquired knowledge in every year can be utilized in the projects of forthcoming years respectively”.

CHAPTER 5

ANALYSIS AND DISCUSSION OF THE STUDY

The field study that aimed to assess the current situation of the Basic Design course in METU Department of ID is analysed in three stages. The first stage aims to test whether the course achieves the aims and outcomes stated by the literature as well as by the instructors for a first year design foundation course. The second stage seeks to see whether the criticisms found in that same literature on the problems of foundation courses is relevant for METU ID's Basic Design as well and whether it has other problems not encountered in literature. The second stage also tries to establish the reasons behind these criticized problems through instructor comments. Finally, the third stage intends to offer possible solutions or suggestions to overcome these problems

5.1 Perceived Aims and Outcomes of Basic Design

In the literature, the main aim of Basic Design is stated as preparing students for their further education within the frame of theory, practice and communication of design. Through this framework, the course aims to develop creativity, problem solving ability, visual perception and design language of students by laying a foundation for design education without focusing on profession specific concepts.

The outcomes of Basic Design education was determined in the literature as, gaining the ability of defining and solving a problem, of abstract thinking, of thinking in two and three-dimensions, of visual self-expression by using different techniques such as drawing, making models, graphical representation and gaining the awareness of design in daily life.

Since some of the literatures that examine the aims and outcomes of Basic Design course were quite old, it was important to ask the instructors about the aims and outcomes of the course. In addition to the outcomes that were mentioned in the litrature, additional ones were defined by the instructors during interviews: getting familiar with new materials, developing forms, generating alternatives, and creating good composition and developing a sense of aesthetics.

The results of the second question of Q1b show that, the Basic Design education in METU Department of ID fulfils the aims and outcomes of the course in terms of development of creativity and problem solving ability, visual perception, craftsmanship, abstract thinking and material knowledge since first year students indicated the purpose of the knowledge and skills that are taught in Basic Design in this way.

Also, the results of the second question of Q2 show that, Basic Design help students about thinking in two-dimensions when preparing design sheets and making decisions about colour in the projects in the succeeding years.

Furthermore, when the results of Q1a and the first question of Q1b are compared, it can be deduced that, one of the main aims of Basic Design, which is laying a foundation for design education without focusing on profession specific concepts, is fulfilled since, answers containing profession related keywords decreased after one semester of taking Basic Design, while the keyword "problem solving/fulfilling a need", which is a common property of all fields of design, is increased by nearly threefold (Figure 44).

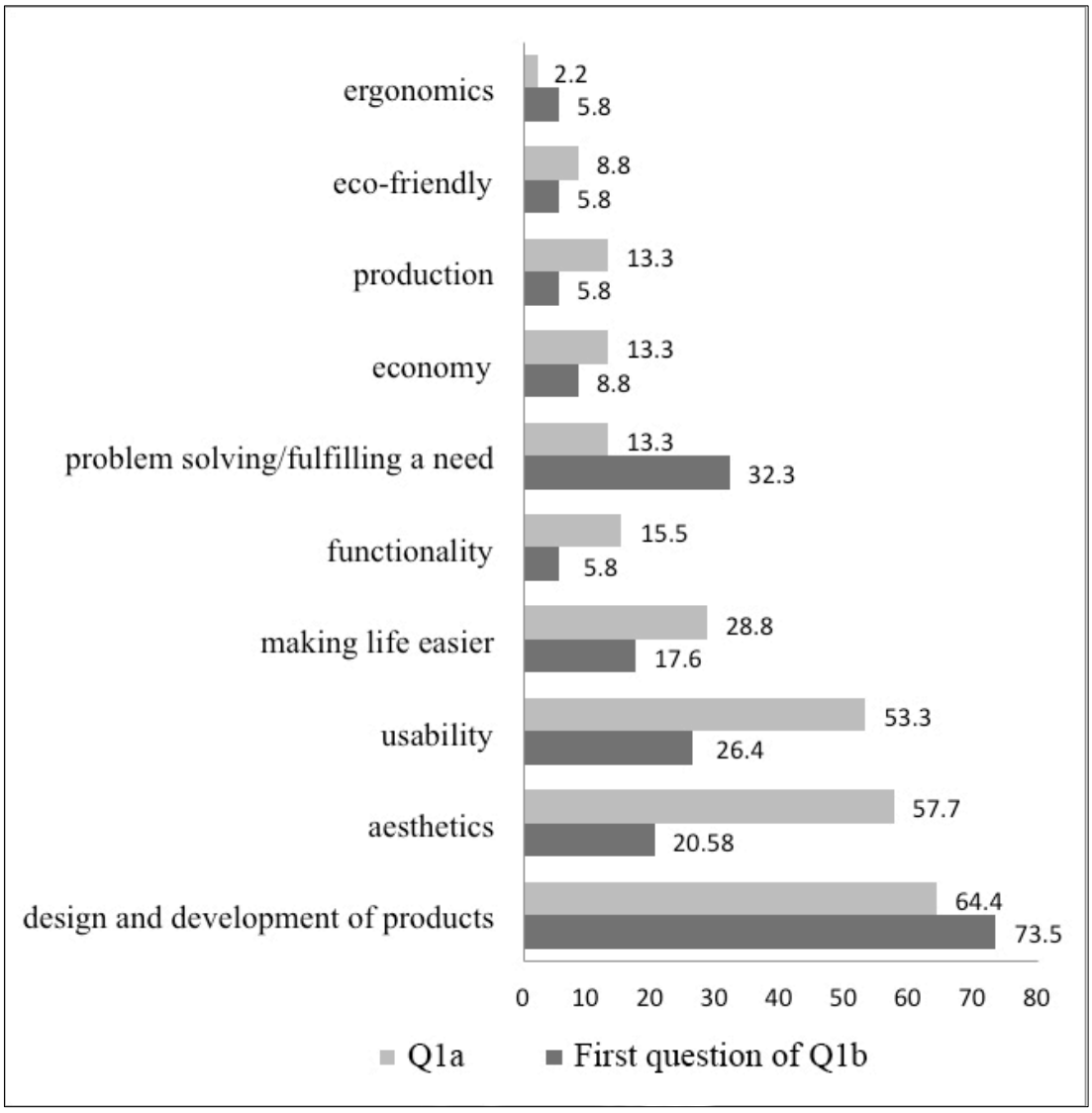

Figure 44 Comparison of the percentage of a keyword appears in the responses of Q1a and Q1b's first questions

Besides, the results of the third question of Q1b show that, students evaluated Basic Design as helpful for their daily life, not limiting it to only the area of education. One of the answers were as follows:

> I will use them in my professional and daily life since these knowledge and skills will become an experience.

Therefore, Basic Design appears to have accomplished its aim of being influential in daily life that was stated by Farivarsadri (2001) in chapter 2.3.2. as well as by the instructors of METU ID.

On the other hand, the results of the first question of Q2 and Figures 36 and 38 show that, because of the insufficiency of three-dimensional projects in Basic Design, students have difficulty in integrating Basic Design principles to their products. Therefore, Basic Design course in METU Department of ID appear unsatisfactory in fulfilling the outcome of thinking in three-dimensions.

Another problem deduced from the results of the questionnaires was that, students have difficulty in the form development process. Figure 40 as well as the third question of Q2 show that, especially 3rd years have difficulty with that issue.

Furthermore, the students also evaluated another outcome of the Basic Design, which is developing the sense of aesthetics, as problematic. When the results of Q1 and the first question of Q1b compared, the answers related to aesthetics decreased nearly threefold.

Also, basic principles of design, which is one of the main aims of Basic Design as mentioned in 2.3.1.3 and a clearly stated aim of the course even in its syllabus (Metu Academic Catalog. (n.d.) from https://catalog.metu.edu.tr/course.php?course_code =1250101) were mentioned by very few participants in the second question of Q1b and the second question of Q2.

Eventually, it can be said that, Basic Design at METU Department of ID fulfils the aims and outcomes of the course in terms of development of creativity and problem solving ability, visual perception, craftsmanship, abstract thinking, material knowledge, thinking in two-dimensions, laying a foundation for design education and bringing the awareness of design in daily life. On the other hand, Basic Design course in METU Department of ID is unsatisfactory in fulfilling the outcomes of thinking in three-dimensions, developing forms, teaching basic principles of design and developing the sense of aesthetics.

5.2 Perceived Problems of Basic Design and Their Reasons

The main criticism in the literature about Basic Design was its disconnection with the studios of succeeding years. This issue was argued by Farivarsadri (2001), Sausmarez (1983), Gelernter (1988) and Çevik (1998) who stated that Basic Design has turned into a separate part of design education, becoming an end in itself. The second issue indicated in the literature by Gelernter (1988) was the problematic acquisition and application of Basic Design knowledge to the projects of the succeeding studios.

Disconnection Between Studios

The instructors of METU Department of ID confirmed the validity of the disconnection between studios problem for their department. Although, the instructors indicated that "Basic Design education is indispensable for succeeding years of design education", they agreed with the criticism in the literature by stating that, "the products of the students do not bear the trace of Basic Design and students evaluate this course as an obstacle that must be overcame for their product design studios". Beside the disconnection between Basic Design and the succeeding studios, seven of the instructors indicated there are also disconnections between the studios of 2^{nd}, 3^{rd} and 4^{th} years and this situation worsens the problem of disconnection between Basic Design and other studios. It was stated that there are different specific focuses in each studio. While 2^{nd} year studio deals with functionality, 3^{rd} year studio deals with system design and form development and 4^{th} year studio deals with user-centered design, solving design problems and building scenarios therefore, students have problems in transferring their knowledge and skills to succeeding years.

This problem can be seen clearly from the outcomes of the answers related to form development process of the students. Figure 40 as well as the third question of Q2 shows that, especially 3^{rd} years have difficulty in developing forms. Since, the 2^{nd} year studio places emphasis on functionality, which is obvious from the results of the third question of Q2 by 2^{nd} years (Figure 24), and not on form development, students don't get the chance to develop and even forget the form development abilities they

acquired in Basic Design and therefore, have difficulty in developing forms in the 3rd year studio where the emphasis is once again on this issue. This specialization of studios on specific topics appears to be the main cause of the disconnection.

Furthermore, instructors commented on three other issues that may cause a disconnection between Basic Design and the succeeding studios. First, starting from the second year studio, different parameters become part of design education such as designing for a user, thinking about production techniques, economy, ergonomics, functionality, usability etc. As a result of dealing with all these new parameters, the knowledge acquired in Basic Design is ignored. Second, the instant transition from abstract compositions to functional products and from handcraft to computer environment creates a divide between studios, leaving Basic Design further disconnected and making it appear as a separate part of the education. Finally, the secondary education system of Turkey was evaluated as an additional reason for students perceiving Basic Design as disconnected from the rest of the education. As Onur (1998) aslo states, in secondary education system of the country, courses usually end in themselves and are not related content wise with other courses. Students, who are educated in such a system, gain the habit of approaching each course independently, without considering it as part of unified educational program. This habit is involuntarily reflected to the university education so that, courses and topics that are complementary to each other cannot be integrated by students.

Acquisition and Application of Knowledge

The transfer problem of the acquired knowledge and skills in Basic Design to succeeding years was validated for METU Department of ID for certain issues. While students can transfer their visual organization skills onto the layouts of their design sheets and use their practical skills in creating models with good craftsmanship for the projects of succeeding studios, they cannot transfer their form development skills nor relate basic principles of design with functional products. Therefore, students found Basic Design insufficient in terms of three-dimensional form exercises and establishing a relation with functional products.

The problematic acquisition and application of form development knowledge appears to be connected with the disconnection between studios problem that was explained before. Since studios deal specifically with certain topics and may give less importance to visual aesthetics and form, students have problem applying their acquired knowledge.

On the other hand, six of the participants stated that form development skills are improved through experience all through the undergraduate education. Therefore, Basic Design is not the sole responsible for developing this skill, but should be seen only as the initiator to the concept.

According to four of the instructors, the problem of relating basic design principles with products is the result of students not having fully internalized Basic Design yet. Figures 33, 34, 35, 38 and 39 show that the problem gradually lessens in time as the awareness and experience of students about Basic Design and design education increase, in other words, as the knowledge acquired in Basic Design is internalized. Nevertheless, Basic Design course was still found lacking by all of the participants for not discussing and analyzing functional products in terms of basic design principles which may help student understanding of the course's purpose and may increase their awareness and therefore, solve the problems on the acquisition and application of knowledge.

Other Problems

Apart from the problems found in literature and validated through the field study, other problems of Basic Design that were indicated by students in the questionnaires can be listed as the insufficiency of theoretical knowledge, of feedback, of clear objectives and of time allocated to assignments. The insufficiency of theoretical knowledge, insufficiency of project objectives were not interpreted as real problems by the instructors. Seven of the instructors stated that, design education should be given by practicing rather that giving theoretical knowledge and rather than the educators explaining, indicating and elaborating more about a project, it is more beneficial for the student to experiment themselves and retrieve their own

conclusions. Indeed, the amount of students that complain about insufficiency of theory and objectives deceases significantly in time as seen in Figures 33, 34 and 35, which in turn was explained by instructors as the result of students becoming more aware of how design processes and design education function. The instructors did not find the insufficiency of time a valid criticism either. It was stated that, short-term exercises help students gain speed while realizing projects, which is an important skill that designers need.

On the other hand, instructors found the insufficiency of feedbacks a valid criticism though they argued that it might be due to the large population of students in the Basic Design class.

5.3 Possible Solutions for the Improvement of Basic Design

There are various proposed solutions for the problems of Basic Design in the literature and in student responses to questionnaires. The instructors evaluated these suggestions and indicated their own suggestions for the improvement of Basic Design. The suggestions of the students and instructors focused on the themes of strengthening the relation of Basic Design with other studios and making the transfer of knowledge and skills more successful.

It was observed that, all the stated problems affect each other and progress in tandem with each other. The disconnection between studios makes it difficult to transfer the Basic Design knowledge and skills to succeeding studios. On the other hand, when the transfer is unsuccessful, the studios seem disconnected. When feedback is insufficient, the objectives of Basic Design are not understood and the awareness does not develop. Furthermore, when the awareness does not reach a certain level, it is difficult to acquire and transfer the knowledge.

The suggestions proposed for these problems fall under two categories: changes regarding the curriculum of the department and changes related to Basic Design course itself.

To solve the disconnection problem of the studios, Boucharenc (2006), Findeli (2001), and Farivarsadri (2001) proposed teaching Basic Design in parallel with studios throughout the entire course of the undergraduate education. The arguments of Gelernter (1998), about the acquisition and application of knowledge, supported this proposal. He claimed that, acquisition and application of knowledge is a process that cannot be accomplished with a curriculum organized in sequential sections; the separate sections needs to progress simultaneously. This same suggestion was also offered by some of the students. However, due to the density of the curriculum, having a basic design education course that will progress simultaneously with other studios for the entire undergraduate education was evaluated as inconvenient by the instructors. However, instead of a full course, three of the participants proposed having workshops in the succeeding years, that will focus on form development of products for the purpose of helping students to combine form and function.

Corresponding to this suggestion, six of the instructors offered a new one: having Basic Design instructors in some stages of product design processes in the studios of the 2nd, 3rd and 4th years to help students apply what they have acquired in Basic Design. The instructors also commented that this approach might also be beneficial in accelerating the awareness of students about the process of design and design education. On the other hand, instead of adjusting this suggestion to fit with the current curriculum of the department, an instructor suggested restructuring the whole curriculum to solve the divide between the years. Furthermore, for the purpose of eliminating the transition problem from handcraft to computer environment, two instructors proposed to start using computer in the earlier stages of design education.

The second set of suggestions that focused on the Basic Design course itself targeted the course content as well as teaching methods. Students suggested to have more three-dimensional form exercises in Basic Design and to include analysis of functional products in terms of design principles. Through these extended form exercises and product analysis, students hoped they would get more time to familiarize themselves with the third dimension, receive more feedback in that context and reach better understanding of Basic Design so that they can better relate

what they learned to their future projects. All the instructors evaluated these suggestions as beneficial.

Furthermore, one of the instructors indicated that, the problem related to insufficiency of feedbacks can be overcame by increasing the number of the Basic Design instructors and assigning students to them. In that way, students would get more feedback and increase their awareness about Basic Design.

CHAPTER 6

CONCLUSIONS

This study aimed to assess Basic Design education within the scope of METU Department of ID to see how successful it is in setting a foundation for design education and then, to propose suggestions to overcome the issues revealed in the process. For a sound assessment of the Basic Design course, this study first needed to establish the general standing of foundation courses in design education by answering these questions:

What is the purpose of basic design education?

Through literature review, it was determined that the education of designer, whether they are to become architects, industrial designer, interior designer, graphic designer, etc. begins by laying a foundation on the theory, practice and communication of design. For the purpose of introducing first year students to these basic design concepts, a foundation course is generally given in design departments, without focussing on profession specific issues. Although named differently in different institutions around the world, in METU Department of ID this foundation course is called Basic Design.

How did this course emerge, progress and what is its current situation?

The current basic design education originates from the preliminary course of Bauhaus that was founded at the beginning of the 20th century, which in turn was developed as a response to the problematic approach to art and design education that had evolved since the 18th century beginning with the Royal Academy of Architecture in France through the Beaux-Arts System of the 19th century.

Developing from its roots in Bauhaus, the main aims of current basic design education are to

- develop creativity
- problem solving ability
- perception
- design language of the students.

For achieving these aims, Basic Design education is given in an interactive studio environment where students acquire new knowledge and information by discovering, experimenting and creating rather than receiving information directly from books or teachers.

After completing this course, students are expected to have the ability to

- express their ideas by different techniques such as drawing, graphical representations model making, etc.
- define and solve problems
- think in two and three-dimensions
- gain an awareness of design in their daily life.

What are the problematic aspects of this course?

The literature review revealed that many criticize basic design education for not achieving the aims mentioned above. Furthermore, it is also criticized for creating problems for the undergraduate educational process because it has a problematic relationship with the rest of the studios and the knowledge and skills that are acquired in the course cannot be transferred to other areas of design education.

After establishing the standing of foundation courses in design education, the study focused on the specific case of Basic Design in METU Department of ID to examine how it stands in comparison to the information gathered from the literature review. A field study was conducted with the participation of students and instructors from the department in order to answer these questions:

What are the perceived aims and objectives of Basic Design in METU Department of ID?

The instructors revealed additional target outcomes for the Basic Design course in METU Department of ID:

- getting familiar with new materials
- developing forms
- generating alternatives
- creating good composition
- developing a sense of aesthetics.

The questionnaire that was conducted to first year students revealed that Basic Design in METU Department of ID lays a foundation for design education without focussing on profession related issues by fulfilling the aims and outcomes in terms of development of creativity and problem solving ability, visual perception, craftsmanship, thinking in two-dimensions, abstract thinking, material knowledge and being influential in daily life.

Furthermore, the questionnaire that was conducted to 2nd, 3rd and 4th year students revealed that, the skills mentioned in the expected outcomes of the course are used by the students, proving that Basic Design accomplishes most of the objectives listed in the literature and by the instructors.

What are the problems about Basic Design in METU Department of ID?

When instructors examined and interpreted the questionnaire results, they validated the existence of problems listed in the literature for METU Department of ID: both the disconnection between studios and the problematic transfer of acquired knowledge was stated as the root of the negative criticisms from students.

Furthermore, the results of the questionnaires that were conducted to first years revealed that, Basic Design in METU Department of ID appears insufficient in developing a sense of aesthetics in students and teaching basic design principles,

while the results of the questionnaires that were conducted to 2nd, 3rd and 4th year students revealed the course's insufficiency in conveying form development skills and developing three-dimensional thinking.

What are the reasons behind these problems?

The disconnection problem between studios of different years appears to be related to three main reasons:

- Specific focuses of different studios
- New parameters in design studios
- The instant transition from abstract compositions to functional products and from handcraft to computer environment

It was revealed that, each studio has different specific focuses, therefore students have problems transferring and applying their knowledge and skills to projects of very different nature and requirements. Also, as a result of dealing with new parameters of design education such as, designing for a user, thinking about production techniques, economy, ergonomics, functionality, usability etc., the knowledge acquired in Basic Design is easily ignored. Furthermore, students face difficulties in transitioning to new techniques and methods in the design process.

The transfer of knowledge problem, which reveals itself especially when student claim to have difficulty in thinking in three-dimensions or in developing forms, appears related to the inability of the students in internalizing Basic Design knowledge when it comes to three-dimensional issues. Students claims that Basic Design is insufficient in developing a sense of aesthetics and teaching basic design principles also appears to be related with this issue of internalizing knowledge. However, different than the situation with three-dimensional thinking, in this case students appear to have gained both a sense of aesthetics and grasped basic design principles and are using them without being aware, as proven by questionnaire results and instructor comments. While the internalizing process is accomplished for two-dimensional visual thinking, it appears to need more time and more experience

when it comes to three-dimensions. Indeed, the different responses from students of different years prove that, in term of internalizing three-dimensional skills, time is of the essence and a major reason behind the transfer of knowledge problem.

How can these problems be solved and the course be improved?

In order to eliminate the disconnection problem, the literature as well as students suggested teaching Basic Design in a parallel fashion with the design studios classes, through the entire undergraduate education. However, the inclusion of such a course to the 2nd, 3rd and 4th years of the undergraduate program is not conceivable, due to the density of the curriculum. Instead, one solution could be the involvement of Basic Design instructors in some stages of product design processes in the studios of 2^{nd}, 3^{rd} and 4^{th} years. Furthermore, focussing on important issues related to Basic Design in each design studio can also be a solution in terms of remembering and retaining basic design knowledge. The inclusion of computer and digital design tools in the earlier stages of design education could solve for the transition problem from handcraft to computer environment, therefore lessening to some degree the divide between studios.

The transfer of knowledge problem caused by the inability of students in internalizing Basic Design in terms of three-dimensional issues could be helped by having more three-dimensional form exercises in Basic Design as well as analysing functional three-dimensional products through a Basic Design perspective therefore, relating abstract basic design principles to functioning real products. Furthermore, workshops for 2^{nd}, 3^{rd} or 4^{th} year students, dedicated to form development of products would also help establish the significance of Basic Design for Industrial Design.

Apart from these suggestions, giving examples and analysing functional objects in terms of basic design issues in order to determine how the principles of basic design is perceived and is implied in manufactured objects would be helpful for the students to understand the application processes of Basic Design knowledge to product design process by establishing a relation with real products rather than abstract works.

Furthermore, an elective course which is given in the 2nd, 3rd and 4th years that examine the reflections of Basic Design issues on products in terms of their forms would be helpful for the students. Having experienced both Basic Design and the product development process, they would be better able to relate basic design knowledge to product form development and make their own conclusions.

This study proposes following suggestions for the improvement of the course:

- Having Basic Design instructors in some stages of product design processes in the studios of 2nd, 3rd and 4th years.
- Focussing on important issues related to Basic Design in each design studio.
- Including computer and digital design tools in the earlier stages of design education.
- Having more three-dimensional form exercises in Basic Design.
- Analysing functional three-dimensional products through a Basic Design perspective.
- Having workshops for 2nd, 3rd or 4th year students, dedicated to form development of products.

Suggestions for Future Studies

This study served to assess the current situation of Basic Design course in METU Department of ID by comparing how it is perceived by students and instructors to the information gathered from the literature and to offer possible solutions to the problems encountered in the process. Since Basic Design is a crucial part of design education, as this study established, it is important to update this course to fulfil the needs of the education and to overcome the existing problems. As this is an initial study, more comprehensive researches examining the ways for improvement in compliance with the curriculum and the objectives of the department is needed for the purpose of updating Basic Design.

The focus of this study was on METU Department of ID as mentioned in Chapter 3.1., therefore, the findings and discussions that ensues from it is specific to that

particular department. The results could differ if the study was to be conducted with the students and instructors of other Industrial Design departments in Turkey as well as departments from other countries. Although other studies need to be conducted to establish the current situation of other departments, or to determine more universal suggestions for improvement, the process and results of this study can be considered as a founding example that could be repeated or interpreted for other institutions as well.

Since the study was conducted in a specific time period, with students enrolled to METU ID's undergraduate program in 2013 and 2014, it may appear to only reflect responses to a specific interval of basic design education in METU Department of ID. However, the course has followed the same approach to foundation education for many years with new teachers initiated in tutelage of experienced ones therefore, the study can be accepted to reflect the general approach to Basic Design and the response to it in METU Department of ID. On the other hand a more comprehensive long-termed study that is repeated throughout several years would represents the results in a more consistent way since the differences between student performances and studio projects from year to year or other factors such as the course of Martin Skalski can change how students evaluate the effectiveness of Basic Design or its relation with other studios.

Furthermore, to obtain more in depth data, analysis of questionnaires with open-ended questions could be followed-up with questionnaires containing close-ended questions.

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APPENDIX A

QUESTIONS OF THE FIRST QUESTİONNAIRES OF THE FIRST YEARS (Q1A)

This survey aims to designate the role and practice of Basic Design education in Industrial Design education and form suggestions. Your true and sincere answers to questions will greatly contribute to the research. The survey consists of four questions and will take about five minutes. Information will be used only for research and will remain confidential. Thank you for your participation.

Res. Asst. Ümit BAYIRLI

What does an industrial designer do?

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……

APPENDIX B

QUESTIONS OF THE SECOND QUESTİONNAIRES OF THE SECOND YEARS (Q1B)

This survey aims to designate the role and practice of Basic Design education in Industrial Design education and form suggestions. Your true and sincere answers to questions will greatly contribute to the research. The survey consists of four questions and will take about five minutes. Information will be used only for research and will remain confidential. Thank you for your participation.

Res. Asst. Ümit BAYIRLI

What does an industrial designer do?

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What is the purpose of the knowledge and skills that are thaught in Basic Design?

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Where do you think you will use these knowledge and skills?

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APPENDIX C

QUESTIONS OF THE QUESTIONNAIRES OF THE 2ND, 3RD AND 4TH YEARS (Q2)

This survey aims to designate the role and practice of Basic Design education in Industrial Design education and form suggestions. Your true and sincere answers to questions will greatly contribute to the research. The survey consists of four questions and will take about five minutes. Information will be used only for research and will remain confidential. Thank you for your participation.

Res. Asst. Ümit BAYIRLI

Please write your general thoughts about Basic Design course (when you took the course and present).

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Do you use the knowledge and skills that you acquired in Basic Design course in the projects of upper classes? If yes, in which processes are you using them?

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Please describe the process that you follow when developing forms. Interpret about the contribution of Basic Design course to this process.

……
……
……
……

Please write your suggestions about Basic Design course.

……
……
……
……

APPENDIX D

CONSENT FORM

Bu çalışma, Arş. Gör. Ümit Bayırlı tarafından yapılan yüksek lisans tez çalışmasıdır. Çalışmanın amacı, Temel Tasarım eğitiminin Endüstri Ürünleri Tasarımı eğitimindeki yeri ve uygulamalarını saptamak, bilginin aktarımı çerçevesinde temel tasarım eğitimini ve ürün tasarım sürecini değerlendirmek ve öneriler geliştirmektir. Çalışmaya katılım tamimiyle gönüllülük temelinde olmalıdır.

Röportaj, genel olarak Temel Tasarım eğitimi ve Endüstri Ürünleri Tasarımı eğitimi hakkında sorular içermektedir. Katılım sırasında daha sonra konuşmaları veriye dökmek amacıyla ses kaydı yapılacaktır ve bu ses kaydı sadece benim ve tez danışmanım tarafından dinlenecektir. Katılımcılar tarafından verilen bilgiler, çalışmada anonim olarak kullanılacaktır. Katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çıkmakta serbestsiniz. Görüşme sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için ODTÜ Endüstri Ürünleri Tasarımı Bölümü Arş. Gör. Ümit Bayırlı (Oda: 424; Tel: (312) 210 6223; E-posta: umitbayirli@hotmail.com) ile iletişim kurabilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum. (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

Adı Soyadı	Tarih	İmza
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APPENDIX E

DATA ANALYSIS METHOD

Yapılan bu anket ile Temel Tasarım (Basic Design) dersinin Endüstri Ürünleri Tasarımı eğitimindeki yeri ve uygulamaları saptanmaya çalışılacak ve önerile geliştirilecektir. Bu ankete vereceğiniz doğru ve içten cevaplar araştırmaya büyük katkı sağlayacaktır. Anket dört sorudan oluşmaktadır ve yaklaşık beş dakikanızı alacaktır. Bilgiler sadece araştırma için kullanılacaktır ve gizli kalacaktır. Katılımınız için teşekkür ederim.

Araş. Gör. Ümit BAYIRLI

Temel Tasarım (Basic Design) dersi hakkındaki genel düşüncelerinizi yazınız (dersi aldığınız zamanki ve şimdiki).

Dersi alirken çoğu şeyi neden yaptığımızı anlamadım. Proje sonunda bize bir açıklama ya da kritik vermedi. Basic Designımın bu yüzden zayıf olduğunu düşünüyorum. Sadece kendi adıma değil arkadaşlarım adına da böyle olduğunu düşünüyorum.

Temel Tasarım dersinde edindiğiniz bilgi ve becerileri üst sınıflardaki projelerinizde kullanıyor musunuz? Kullanıyorsanız hangi aşamalarda kullanıyorsunuz?

Birinci sınıf sadece maket yapma becerimi işçiliğimi geliştirdi. Tasarım ilkelerini yaptığım projeye sonsuz yorum. O beceriyi kazandırmakta, ilkeleri bize anlatmakta başarılı olamadılar.

Form geliştirirken takip ettiğiniz süreci açıklayınız. Bu sürece Temel Tasarım eğitiminin katkısını yorumlayınız.

Form geliştirme sürecinde eskiz yaparım, derlerim. Kartonla kartla çalışırım. Beğendiğim birkaç tanesini bir araya getiririm. Basic dersinde de aynı şeyleri yapıyordum. Bu benim çalışma stilimle alakalı Basic Designla alakalı olduğunu düşünmüyorum.

Temel Tasarım dersi hakkındaki önerilerinizi yazınız.

Projeler yapıldıktan sonra, hocalar birer birer kritik vermeli neden öyle puanladıklarını, nerelerini beğenip beğenmediklerini anlatmalılar. Bizde böyle yapmadılar. Sadece bir şeyler yapıp yetiştirip veriyorduk. Neden yaptığımızın farkına varamadık.