



المؤتمر الدولي الرابع  
لمؤسسة مصر المستقبل للتراث والتنمية والابتكار  
والمركز الثقافي الإيطالي



## Basic Variables of Design Education Approaches Comparison between the Design Education Systems in Egypt and in Germany

**Ahmed Mohammed M. Abdelrazik**

Design Department, Effat College of Architecture and Design, Effat University, Jeddah, KSA  
Interior Design & Furniture Department, Faculty of Applied Arts, Helwan University, Cairo, Egypt

### Abstract:

There are many aspects and different variables shaping and affecting on any approach of design education. These differences depending on many related crossed issues such as; the cultural atmosphere (historical background, language, religion ...), economy (wealth, poverty...), the political situation (Power, stability, alliances) and mainly the understanding of the concept of design in itself which varies as well, according to the perspective of the users, designers, design researchers and design academics.

According to the researcher's experience which is more than fifteen years studying, teaching and practicing design in Egypt (Faculty of Applied Arts, Helwan University) and around six years as a PhD candidate in Germany (School of Art and Design, Kassel University Then Braunschweig University of Arts). There are huge differences between the opinions/visions of professors and design teachers in each country. These differences- and other things- lead to many major variables in framing and constructing the curriculums and design subjects which consider as a real challenge to think or to speak about one common language of design education.

The idea of this paper based on a qualitative approach which focuses on framework of the design education systems in Egypt and in Germany. The paper importance came through diagnosis the varied features and the different aspects of the problem, then discussing how to fill the gap between the variables and presenting a viable strategy so as to reduce these differences and thus tend towards a common design education discipline.

### Introduction:

Design is a structured creative process of everyday practice; it is a strategy to form or to conceive in the mind. Design is to create or to convert an idea into a product/system which can be made (Clarkson, Coleman and others, 2007, p. 6). For Cross (2011, p.3) design is something inherent within humans' cognition and their experiences; it is a key part of what makes us human.

Despite the simplicity and the clarity of design as a concept and although it is an

### Key Words:

- Design
- Museum
- The Museum of Islamic Art
- Visually impaired
- Bind people
- Tourism

activity which is practiced by everyone at anytime and everywhere, design education and its discipline is still a subject of many endless debates. There are numerous variables which influence design education and they differ from one society to another according to many inter-related and integrated issues.

Basically, design education focuses on humans and how to achieve their needs. It is influenced by many personal and individual insights of academics, designers in addition



to students and users. The ideas of those who directly or indirectly participate in design education are related to their attitudes, their mentalities and their personal characters. Most of these personal variables are in conjunction with the cultural atmosphere of their societies.

One of the ideas which is discussed throughout this paper is the association between design education and art education. Despite the obvious goals of both educational disciplines, the relationship between design education and art education is still a subject of many academic discussions. The intersection, the interrelationships and the distance between both of the educational systems are variable. In some cases, there is a clear separation between the educational institutions concerned with the teaching of design and art (such as in the case of the Faculty of Applied Arts, Cairo), in many other cases there is a kind of integration inside one institution between design education and art education (such as in the case of the School of Art and Design, Kassel).

Indeed, there are several differences between the design educational systems of both the Egyptian and the German institutions. The majority of these differences relate to the general educational system of each country, in addition to the social, economic and political issues.

This paper is an attempt to define the features and the different aspects of this matter, to discuss how to fill the gap between the variables, and to present a viable strategy so as to reduce these differences and thus tend towards a compatible design educational systems not in their languages/dialects, but in their discipline.

In other words, this paper focuses on the educational structure, curriculum, and the personal perspective and the individual attitude of professors, graduates and students who form the design education discipline in their own dialect.

The idea of this paper is based on a qualitative approach which focuses on discussing the systems of design education in

Egypt and in Germany. The Faculty of Applied Arts, Helwan University, Cairo, Egypt has been taken as an example of a design educational institution in one of the developing countries, and the School of Art and Design, Kassel University, Kassel, Germany as an example of a design educational institution in one of the developed countries.

The study was carried out through direct and indirect discussions and interviews with many individuals related to both institutions (students, graduates, teachers and professors), in addition to the author's personal observations as a design researcher with a solid experience in the field. The study was sketched out through a comparison which led to identify and underline the differences and thus develop a strategy to find results and suggest recommendations.

The goal of this paper is not to state or evaluate which design education system is better. In contrast, the main goal here is to clarify, discuss and compare the different personal visions to create a collaboration bridge which allows to exchange and share ideas, not specifically between those two design institutions but can be generalized to create a kind of collaboration between any other design education institutions. This kind of exchanging and sharing experiences is a vital method to improve and develop the positive dialogue in a specific field such as design education.

### **Design and design education**

Design is everything, it is everywhere. For Heskett (2002, p. 2) design is one of the basic characteristics of what it is to be human, and an essential determinant of the quality of human life. It affects everyone in every detail of every aspect of what they do throughout each day.

These days, design determines not only existence, but also self; through products we communicate with other people, define ourselves in social groups, and thus mark out our individual place in society (E. Bürdek, 2005, p.11). So, it is important to understand that designs' nature evolves in relation to

changes in the mode of production and in the context of cultural and social development (Cooper & Press, 1995, p. 47).

Basically, design is an interdisciplinary profession serving multiple needs (Friedman, 2012, p.143), this interdisciplinary profession is both a field of professional practice and a research discipline. The plural dimensions of research and practice both affect curriculum needs (Friedman, 2002, p.27). For Friedman (2012, p.135) design education today takes place in the context of a post-industrial society and the industrial society that gave rise to it. It also takes place in the context of the multiple economies that weave together to shape our times.

Indeed, design education is a kind of human study which has no solid theories and conclusive principals like natural sciences, its discipline is influenced by individuals and their personal methodologies, additionally, design education is more about imagination, creation and innovation. The individual perspective and the cultural atmosphere in addition to the actual needs of people are different from one society to another specially when comparing between East and West. These differences can be emphasized through a comparison between the Faculty of Applied Arts in Cairo and the School of Art and Design in Kassel.

#### **Faculty of Applied Arts, Cairo:**

The Faculty of Applied Arts, Helwan University is the oldest academic high school in Egypt, it was established in 1839 under the name of the “School of Processes” which only concentrated on technical and industrial aspects. At the beginning, the School had only two main departments. One was for building and the other one was for design (handcrafts). In 1909 a third department of art and decoration was established. In 1932 the school’s name was changed to the “School of Art and Industry” and in 1941 the name was changed into “High School of Applied Arts”. In 1950 the name was changed again to the “Royal School of Applied Arts”, and finally in 1953

the name was changed to the actual name “Faculty of Applied Arts” (Figure 1).



**(Figure 1) Faculty of Applied Arts, Helwan University, Cairo, Egypt.**

During the long life of this school there were many added departments, many various divisions, and many different study strategies (For more details, see Wikipedia website, Faculty of Applied Arts). In the academic year 1968/1969 post-graduate study was established for the first time in the field of design. In 1971, the first master’s degree in Applied Arts disciplines was awarded, and the first PhD was awarded in Applied Arts in 1977.

In 1975 the Faculty of Applied Arts was integrated into Helwan University which was established as a technical/technological university in Cairo (See, Helwan University website).

Throughout this long deep history and up till now, the Faculty of Applied Arts may be considered as a unique institution which adopts a clear concept about design education based on; science, art and technology. Indeed, these three aspects are integrated and interact together to form the faculty vision. This distinguished vision makes the Faculty of Applied Arts considered as the mother institution of design education in Egypt\* which fulfills

\* Recently and during the last decade, many governmental and private applied arts institutions were established. Generally, most of these *new* institutes include a limited number of academic departments in comparison with the mother faculty. Education and study systems in the majority of these institutions are still based on the study system, curriculums and the professors of the Faculty of Applied Arts, Helwan University.

basically the needs of the Egyptian society and the needs of many Arab societies.

Currently, the Bachelor course of the Faculty of Applied Arts lasts five academic years (minimum nine semesters), with a junior “foundation/preliminary” year followed by four specialized years in one of its 14 academic departments. Recently, departments’ names are in a process of change, but in core the departments are:

- Photography, Cinema and Television
- Printing, Publishing and Packaging
- Advertising
- Interior Design and Furniture
- Industrial Design
- Metal Construction and Furniture
- Metal Products and Jewellery
- Ceramics
- Glass
- Decoration
- Sculpture, Configuration architecture and Restoration
- Textile Spinning, weaving and Knitting
- Textile printing, Dyeing and Finishing
- Fashion

Three years ago, a specific program for Furniture Design Sciences was established and there are current procedures to create three more specialized programs. The educational system of the Faculty of Applied Arts is an applied practical system; it does not only concentrates in the theoretical sides, but also in all the fourteen departments the study focus more to teach students how to think, how to deal and solve problems and how to create and innovate. The curriculum vary between artistic, engineering and technological subjects (For more details, see the Prospectus of the Faculty of Applied Arts, 2010).

### **School of Art and Design, Kassel**

The School of Art and Design in Kassel (Kunsthochschule Kassel) was founded as early as in 1777. Throughout the course of its 230 year history, the School of Art and Design Kassel has continually responded to the changing times by updating its teaching practices and curriculum. Through its innovative approach to education, the School

has also had a significant influence on the curricula of other art schools in Germany.

Starting from 1832 the responsibility for the school lay in governmental hands; as a result, all teaching staff was officially employed as servants of the state and after six years, a new regulation shifted the Academy’s emphasis in favor of an education in the fine arts which sought to promote artistic aspirations and to impart a sense of aesthetics. In 1869, there was a shift in the direction of the school (School of Arts and Crafts) was happened, a significant part of training of art teachers was added. This shift grew after few years when the Art Academy introduced a clear-cut distinction between academic lessons and training in commercially-oriented art in its curriculum. In practice, this led to the inauguration of the (School of Applied Arts) around 1900. A significant move at that time was the establishment of workshops. The increasing importance of industrial production and technological improvements rendered the workshops indispensable to school if it is to remain a forward-looking educational institution.

As a result of many economical and political issues (from 1931 to 1942) the school was closed, but a rudimentary form of education continued due to the personal dedication of members of staff. In 1931, the Academy was officially closed. In 1943, the Academy building was completely destroyed. After World War II in 1946 the Academy was re-opened as the (School for Crafts and Art).

Pursuant to the resolutions passed on September 1947 the Art Academy was responded as a (Craft Academy). The renaming of the Art Academy into the Craft Academy signified a symbolic attempt to actively introduce the Bauhaus philosophy into the teaching methodology by combining purely artistic expression with the more practical application of creative ideas. Nevertheless, the Academy’s main teaching focus still remains the practice of art. Three years later the name of the Academy was changed to (The School of Art and Design).

This change emphasized the aim of training students in all forms of artistic expression as well as preparing candidates for studying at more advanced academies in order to become arts teachers.

During the 60<sup>th</sup> the ideas of research and teaching in the applied arts were developed and put into practice. In 1971, the School of Art and Design Kassel (Figure 2) was integrated into the University of Kassel. As a result, the disciplines Art, Product Design, Architecture and Visual Communication functioned as semi-autonomous departments within the University (For more details, see School of Art And Design Kassel website). Recently, the Hessen Ministry for Art and Science and the University of Kassel decided to restructure the School of Art and Design into its current form by combining the departments of Art (Fine Art, History of Art, Art Education), Product Design and Visual Communication.



(Figure 2) School of Art and Design Kassel, Germany

### Discussion:

From the previous summarized clarification of the history and the development of both academic institutions it is clear that there is a strong influence from social and cultural events (in addition to the economic and political aspects) on the study strategy and its disciplines. The fact is that the influence was mutual between each institution and its society. Both of them had a reputable vision and they played and are still playing a vital role which improves and develops not only design education but also many other related issues.

Indeed, the comparison between the Faculty of Applied Arts, Cairo and the

School of Art and Design, Kassel is not only a comparison between two institutions of design education, but also it is a comparison between two different cultures. It is a comparison between the Egyptian and the German societies. For Boradkar (2010, p.1) design and culture have always been closely interrelated. Designers create things; the study of these things is also a study of culture.

The first noticeable point is a historical one, which relates to the origins of each academic institution. In the case of the Faculty of Applied Arts, it begins as a “School of Processes” which means, it was only focused on the technical and the industrial issues. The interest in arts came later. This Egyptian beginning is in contrast with the German one. The School of Art and Design Kassel started as a school of art and it lasted like that for a long time, the concept of design education being added later as a result of the development of the craft movement and the appearance of the Bauhaus movement.

These historical contrasts did not happen by chance, but as a result of mixed related variables (social, economical, political, etc.) which are directly related to the general cultural trends of each country (Egypt and Germany) many years ago. Even today, these historical beginnings - of the two institutions - still have many clear and hidden impacts which are noticed easily or discovered through discussions on the strategy of education, in addition to the professors’ perspectives and students behavior.

In this context, it is clear that the educational system of the Faculty of Applied Arts focuses on learning design which is divided into very specific fields. This may appear old-fashioned, but it is the case that the faculty includes 14 departments, all of them are for teaching and learning how to design. Although there are many art subjects/courses which all students have to join, but the idea is that most of these subjects are basics to improve and develop students’ abilities to be good creative

designers. That means the students who join the Faculty of Applied Arts study art in addition to many technological subjects to be designers. Individually many of them are very good artists in addition to their main job as designers.

In fact, the separation between the study of art and the study of design is very clear in the Egyptian case. In Egypt, there are faculties of applied arts (where the educational system focuses on design which means art for application and art for industry), faculties of fine arts (where the educational system focuses on arts study which means arts for arts or arts for pleasure) and there are also many faculties for art education (where the educational system focuses on the strategies of pedagogy and art teaching).

In contrast with the School of Art and Design Kassel and consequently with many German schools of art, the study of design was added and integrated as departments of Product Design or in other cases as departments of Industrial Design to the main structure of the school which began as an Academy of Art, not only that but usually there are also departments of Design Education added.

Through the face to face communication and the direct discussions with many Egyptian and German students/graduates who are studying /studied in both institutions, it is noticed that in the case of Egyptians the majority of them have the feeling that they are more advanced (more useful for their society) than their colleagues who are studying at any faculty of fine arts. They maintain that the conditions and the requirements to join any faculty of applied arts are difficult and a little bit higher than the conditions and the requirements which are required to join any faculty of fine arts (it is another story related to the Pre-University Egyptian educational system, but it is fact) and during their study they have to attend many art courses. So, if anyone of them is talented, he/she can easily practice art. They also justify their feelings because they realize their direct role in improving and

developing the industries which are important for a country such as Egypt. This point of view is not fit 100% with the reality where the faculty of fine arts' alumni are talented and they have a great role in improving and developing the country.

The situation with the students/graduates of the School of Art and Design Kassel was not clear like in the case of Egyptians. During discussions they pointed to the fact that they study design, but there is no separation or scission between them and their colleagues who are studying art. They claimed - and it was clear - that they study in the same school - in many other German schools in the same building - and usually they participate in many combined projects (this point will be discussed later), so there is no problem. This noticed point supported by the opinion of Prof. Dr. Wolfgang Jonas\*, he mentioned that many design students aspire to be like art students (art students have more freedom and as already mentioned, most of the German schools of Art and Design began as Art Academies, the departments of design being added later).

One of the important differences between the Egyptian and the German cases is a social cultural difference. In the Egyptian case - and because of the condition of the society itself - many design students feel and know their important role in developing their society and its industry. During their study they learn to feel responsibility towards their people and their country. In the German case, design students do not have these sensitive national motivations; usually the individual values and the personal future is the main goal of the majority of German students. It was also noticed that many German design students - inside themselves - wish to be free and maybe famous like artists or they already have no specified limits between design and art.

---

\* (2005-2010) Prof. Dr. Ing. habil. Wolfgang Jonas was the professor of Design Theories and System Design at the School of Art and Design Kassel. (2010- now) Prof. Jonas is a full Professor of Design Theory at the Braunschweig University of Art, Germany.

Another important point is that there are different study strategies. In the case of the Faculty of Applied Arts there is an obvious division between the departments. There are many general subjects which are compulsory, especially during the first basic year, but the main strategy of every department is to focus on one specific field of design. For example, graduates of the Interior Design and Furniture Department are well qualified/prepared to be good interior and furniture designers. They get a vast amount of information about interiors and furniture. During four years of study they learn a great deal about interiors and furniture history, methods, techniques and strategies, but for example they have very little amount of knowledge about textile, glass or ceramic design (there are variations between students, but the idea here is basically about study strategy and its curriculum). The evaluation of this educational strategy/methodology has two faces. First, it looks good because students are well prepared and they graduate as specialists, all in a specific field which allows them to be ready to work (in addition to training, many students start working during studying), but the negative side is about the severe lack of knowledge about many other design patterns and fields, in addition to the shortcomings in cooperation between different design disciplines and departments.

In Germany, through many discussions with professors, graduates and students it is clear that there is no such categorical separation between design fields. Students can participate and cooperate in many inter-departmental projects. During a specific discussion with a group of students (Fourth semester, Product Design Department, School of Art and Design Kassel), they said that they participated in a project in cooperation with students of the Art department. Others stated that they cooperated with a group of students of the School of Architecture in another project. This flexibility is something vital and

important which improves students' abilities and increases their creativity, but the disadvantage is that the students move from one project to another, from one experience to another, from using one material to another and sometimes from one department to another without focusing on a specific field. The individual has the responsibility to manage and develop a personal future (this idea is not a specific behavior of design students, but it is a general trend in German society and many other European countries).

Through length discussions (especially with graduates) many of them described their study as a good discipline, but they discovered - after graduation- that they are not qualified enough in a specific field. During their courses they learn from each other and deal with many materials without focusing on one of them. One of these graduates said " ... yes, I enjoyed my study. I learnt a lot, I participated in plenty of projects; every project gave me a new experience. Now, I have graduated, I know many things about textile design, I have learned a lot about wood design and little about graphic design ... I would like to work as a graphic designer, but I discovered that I still have to learn a lot specifically about this field ...". This confusion is not a general case, but the important point is that the strategy of diversity of projects disciplines the variation in cooperation between departments. In addition, the students' freedom to select which subjects or which projects to attend is not the perfect one solution. It may be enjoyable during study but students should be conscious and aware of what they want for themselves in the future.

The previous point concerned curriculum and how professors and students deal with this. For Friedman (2002, p.32) "... curriculum is the mechanism through which the university meets its obligations to students". He explains that a curriculum involves course planning, course content, pedagogical delivery, and learning objectives for the individual teacher. For the student, it

involves learning styles, personal development, mastery of content, and mastery of skills. The educational system of the Faculty of Applied Arts, Cairo is a clear fixed system. Students move together from one semester to another with a limited chance to select subjects or professors\*. This traditional system, though not perfect, allows all students to know exactly what will they study in every semester. Indeed, this educational system is not only valid in the Faculty of Applied Arts, but is considered as the general system of education in Egypt. Despite the tradition, the difficulty and the lack of flexibility of this educational system, the relative neglect of the students' wishes and the pressures on them, it should be highlighted that there is a strong positive side specifically in the field of design education, namely the stability of study curriculum in case of change of teachers or professors. In the Egyptian case, and according to the actual educational system of the Faculty of Applied Arts, it is predetermined which subjects will be studied each semester regardless of the professor who will teach. Every scientific department's committee identifies and chooses these subjects; determines their goals and sets their content depending on the profession requirements and in harmony with the actual needs of the society. Department committees and the high scientific faculty committee check all the faculty's curriculums periodically every four years to determine the variables which require some modification.

Briefly, students of the Faculty of Applied Arts, Cairo have not enough freedom to select subjects, professors do not have an absolute right to change the content of the subjects/courses which they teach and of course, no one can change the date of the

\* During the last few years the faculty updated a credit-hours system which allows students to select and build their choices. This *new* educational system offers an acceptable amount of flexibility and give students the right to choose between groups of subjects which are *not basics or essential (elective courses)*.

final exam for each subject (whether it is oral or written) since this is set out in advance in the general plan of the semester ... and so on. This educational strategy is completely in contrast with the educational strategy of the School of Art and Design, Kassel. Additionally it is in contrast with the majority of the German schools of design. It is certain that there is a general planned strategy and there are subjects/courses which have been identified according to careful study, but the point which was clear during the discussions is that students have a huge amount of freedom (in comparison with the Egyptian students) and this freedom works in parallel with the flexibility of professors.

There are a lot of examples of freedom and study flexibility in design education. In general, their values are clear reflection attitudes in German society. This kind of freedom gives students the ability to think and work without stress and allows them to create without borders. The students' behavior is supported by professors.

The last noticed point – apparently negative - is that there are usually many differences between students who graduate in the same design field, in the same institution and logically between students who graduate in different ones. This point is about the individuality and the personality of each professor. In contrast with the Egyptian case, teachers and professors have limited rights to change the content of their subjects which have already been discussed and approved. The positive point here is that all the students who attend a subject will get the same basic information regardless of the professor in charge. This achieves the desirable objectives of each subject/course. In the German case, professors have more rights and they are flexible to discuss and present many ideas to their students. That means when the professor changes (retires or moves to another school) the subject changes with him/her and logically the new professor offers another vision. Somehow, this individualization is not the perfect strategy in all cases, especially when we compare between graduates from the same institution



who studied the same subject/course with a different content, which was formulated according to the vision and the perspective of the professor.

Finally, there is a link to the educational system as a whole (in Egypt and Germany), but it is relevant to the design education system in both cases. This point is about the age and the background experience of students. In the case of the Faculty of Applied Arts, the majority of students are of the same age and they basically have the same educational experience (this relative similarity happens because of the Egyptian pre-university education system. The majority of students graduates from secondary schools and enters universities immediately, which means that most of them are of the same age and have no idea about what they will study at the university, except a small percentage of the students who enter the Technical Schools). This relative equality and similarity are in line with a fixed educational approach where all students move together from one semester to another. The situation is unlike that in the German case (not only the School of Art and Design Kassel, but generally). Students are not all of the same age; the variation is around five years. Students' experiences are different according to their previous schools. This inequality in student age and experience creates a kind of cooperation between them, sometimes it is positive and sometimes not. For example, during the discussions the students said "... if they have a problem related to wood they usually ask ... who was in a technical school which focused on wood working, somebody else knows more about metal ... etc". It is positive that students share their experiences, but it depends on the students themselves and their various experience which is sometimes a lot and sometimes not.

Debates and discussions have no limits especially when comparing between two academic design institutions from different countries, but it is important to know how the other institution works, how its

professors think and what the students actually learn. This basic knowledge leads to self-assessment which in turn leads to development, sophistication and to interaction with others.

### **Results and recommendations**

There are many clear results comes from the smooth comparison between the Egyptian and the German selected institutions which reflect a generalized view of the design educational systems in both countries. As mentioned before the main goal of this study not to determine which system is better than other, but the real goal is to discover the strong and the weak points, then highlight the appeared strong points which allow to reach a common compatible design educational system... In short the main results and recommendations could pointed as the following:

- Design is one of the basic characteristic of what is to be human, and an essential determinant of the quality of human life. So, design education focuses on humans and how to achieve their needs.
- Design education is a kind of human study which has no solid theories and conclusive principals like natural sciences. It is not a fixed approach which is influenced by many related and integrated issues; these issues are forming and changing according to the trends and the needs of each society, in addition to individuals' personal visions, their mentalities, methodologies and motivations.
- The intersection, the interaction and the distance between the educational systems of art and design are variable. In some cases, there is a clear separation between the educational institutions concerned with the teaching of design and art (such as in the case of the Faculty of Applied Arts, Cairo), in many other cases there is a kind of integration inside one institution between design education and art education (such as in the case of the School of Art and Design, Kassel).

- The history of any academic institution reflects many clear and hidden values on its actual and futuristic approach especially in a unique specific field such as design education.
- When establishing any design educational system, it is important to create a sensitive balance between involving students in the real challenges of their society and providing virtual projects which are far from reality. This balance gives students a sense of real responsibility towards their society as well as to equipping them with the ability of creative and innovative thinking.
- In any design educational system, the categorical separate between design fields should be avoided. Students should not be given wide opportunities to move from one project (or design branch) to another without focusing on one specialized field.
- It is essential to balance the control of students' wishes and giving them unlimited freedom.
- Stability of curriculum and courses' contents (regardless of who is the professor in charge) is important for improving students' consciousness and giving access to the basic important information, that means reducing and controlling (partly) teachers' and professors' individualism.
- Discussion and comparison between the different design education approaches is the best method to create a kind of collaboration between design educational institutions. This kind of exchanging and sharing experiences is important to improve and to develop a positive dialogue in a specific field such as design education.
- It is important to increase the opportunities of design educational institutions to cooperate with each other through the exchange of students and professors, as well as strengthening the links between these institutions through

joint educational projects, workshops and international conferences.

#### References:

- 1- Boradkar, Prasad. (2010). Designing things: A Critical Introduction of the Culture of Objects. Oxford & New York: Berg.
- 2- Clarkson, J., Coleman, R. and others (Eds.). (2007). Inclusive design toolkit. Cambridge: the Engineering Design Center, University of Cambridge.
- 3- Cooper, Rachel & Press, Mike. (1995). The Design Agenda: A Guide to Successful Design Management. England: John Wiley & Sons Ltd.
- 4- Cross, Nigel. (2011). Design Thinking: understanding how designers think and work. Oxford & New York: Berg.
- 5- E. Bürdek, Bernhard. (2005). Design history, Theory and practices of product design. Basel: Publishers for Architecture.
- 6- Faculty of Applied Arts. (Online). Available at: <http://applied-arts.helwan.edu.eg/> (accessed: Feb. 10, 2019).
- 7- Friedman, Ken. (2012). Models of Design: Envisioning a Future Design Education. (pp.132-154), Part 3: Differentiation and Research in Graduate Design, Visible Language, 46.1/2.
- 8- Friedman, Ken. (2002). Design curriculum challenges for today's university. (pp. 27-63). Enhancing the Curricula: Exploring Effective Curricula Practices in Art, Design and Communication in Higher Education. Center for Learning and Teaching in Art and Design, the London Institute.
- 9- Helwan University. (Online). Available at: [http://www.helwan.edu.eg/English/?page\\_id=307](http://www.helwan.edu.eg/English/?page_id=307) (accessed: Feb.10, 2019).
- 10- Heskett, John. (2002). Design: A Very Short Introduction. New York & Oxford University Press.
- 11- Prospectus of the Faculty of Applied Arts. (2010). (unpublished official document).

- 12- School of Art And Design Kassel.  
(Online). Available at:  
<http://www.kunsthochschule-kassel.de/willkommen/?&sub=1>  
(accessed: Feb.17, 2019).
- 13- Wikipedia, Faculty of Applied Arts.  
(Online). Available at:  
[https://ar.wikipedia.org/wiki/%D9%83%D9%84%D9%8A%D8%A9\\_%D8%A7%D9%84%D9%81%D9%86%D9%88%D9%86\\_%D8%A7%D9%84%D8%AA%D8%B7%D8%A8%D9%8A%D9%82%D9%8A%D8%A9\\_%D8%A8%D8%AC%D8%A7%D9%85%D8%B9%D8%A9\\_%D8%AD%D9%84%D9%88%D8%A7%D9%86](https://ar.wikipedia.org/wiki/%D9%83%D9%84%D9%8A%D8%A9_%D8%A7%D9%84%D9%81%D9%86%D9%88%D9%86_%D8%A7%D9%84%D8%AA%D8%B7%D8%A8%D9%8A%D9%82%D9%8A%D8%A9_%D8%A8%D8%AC%D8%A7%D9%85%D8%B9%D8%A9_%D8%AD%D9%84%D9%88%D8%A7%D9%86) (accessed: Feb. 12, 2019).