

Embedding Cultural Design in Product Design Syllabus

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Abstract

Cultural design employs cultural features to create cultural products which are sold widely around the globe. When it comes to design schools and academies, we can notice that teaching product design concentrates on the design process, drawing skills, and recently computer-aided design (CAD). It pays less attention to design approaches such as cultural design. In this paper, we investigated how to embed cultural design in product design syllabus to let students discover new areas of product design and gain deep experience which will be useful for them in labor market afterward. A design project was prepared to be introduced to a group of product design students. It aimed to let them understand the cultural design concepts and afterward they spent six weeks working on their projects to present a final cultural product.

ملخص البحث

التصميم الثقافي يوظف العناصر الثقافية لخلق المنتجات الثقافية التي تباع على نطاق واسع حول العالم ، عندما تأتي لمدارس واكاديميات التصميم نجد أن تدريس تصميم المنتجات يركز على عمليات التصميم ومهارات الرسم ومؤخرا التصميم بمساعدة الحاسب (CAD) . لكنها تعطي أولوية أقل لتعليم مداخل التصميم المختلفة ومنها التصميم الثقافي ، في هذا البحث قمنا باستكشاف كيفية دمج التصميم الثقافي في مقررات تصميم المنتجات لحث الطلاب على استكشاف مناطق جديدة في تصميم المنتجات واكتسابهم خبرات عميقة ذات أهمية في سوق العمل ، تم اعداد مشروع تصميمي قدم لمجموعة من طلاب تصميم المنتجات ، كان الهدف من خلاله هو تقديم فهم للتصميم الثقافي لهم وعلى اساس هذا الفهم فإنهم يعملون لمدة ستة اسابيع لتقديم منتج ثقافي نهائي يمكن تقديمه في الاسواق.

Introduction

With the fast development of the global market, companies are looking for new sources to create intuitive products that can compete in the current fierce environment. Cultural design represents a wide source of inspirations for both, designers and companies. It also attracts more consumers to buy products that generate a feeling with connection with other cultures from various regions of the world. Cultural design convert buying process into a discovery mission that should be done by the consumer to discover a new life style.

In the academia where design teaching still works through the classical way in most design academies, students are pushed to concentrate on problem solving and making redesign of old fashioned products to attract consumers to spend more money buying the new products' versions. This old way creates a gap between the academic education and the job markets. Fresh graduates of designers face a difficulty in their first work experience to respond business requirements. Through embedding cultural design in product design syllabus, this paper attempted to prove that pushing design students to understand and practice different design approaches used in the design business, such as cultural design, can help them in

gaining an early experience in the product design domain. It also supplies them with a major source of inspiration for designing a global product.

Cultural design is one of the ambient approaches in modern design. This is related to the nature of global marketing and the fierce competition between companies. It aims to attract consumers by using cultural features in products and services. In this paper, we attempted to include cultural design in product design education. A short course syllabus was designed and taught for level two students. This contained a plan of 6 weeks of teaching and practicing cultural design with various products. At the end of the course, an evaluation process was proceeded to find out the advantages and disadvantages.

Cultural Design

Cultural design can be defined as a process of design that uses cultural features to add a cultural value to design (Gharib, 2016). Cultural features, such as art and artifacts (Wang, 2013), represent a specific culture (Wang, 2016). Cultural features were categorized in seven categories by Wang (Wang, 2013) to ease their understanding. It includes Art, artifacts, customs, architecture, food habits, religion, and nature. Usually, a design employs visual features such as patterns and other features work as a source of inspiration and a tool for understanding a specific culture.

Art and art activities are the main cultural features as they were used in all cultures around the globe. They work as a creative representation of a culture (Throsby, 2001) because they express the social and cultural life (Gharib, 2016). Art and art activities (Wang, 2013) include many forms such as painting (Jenks, 1995; Mirzoeff, 2002), sculpture (Barry, 1999), and handwriting (Thornton, 1998). Artifacts (Hatch, 1991) differ from art and art activities as they have a function in addition to their social reflection such as fashion (Throsby, 2001), local jewelry, and cultural products.

Even cultural features play a key role in designing contemporary products, other cultural features such as food (Mennell et al., 1992; Goodman & Redclift, 2002), religion (Beyer, 2007), nature (Rapoport & El Sayegh, 2005; Leong & Clark, 2006), and Architecture (Deal & Peterson; 1999) have a huge impact on forming cultures. They represent cultural values that can inspire designers with new and different visionary and imagination to link culture with modern design.

According to the importance of cultural design in the modern design market, scholars and designers cared about investigating new methods to ease the design process with cultural features. Three studies were surveyed in this section to show how they meet in some points and differ in others. Lin (Lin, 2007) concentrated on understanding of cultural features before practice designing. A kind of cultural scenario should be created first as a guide for the designer through the design process. This model can be summarized in three stages: identification, translation (scenario), and implementation (design). This model is similar to the method developed by Teng and Chuang (Teng & Chuang, 2011) afterward. Teng and Chuang method (Teng & Chuang, 2011) It includes three steps: preparation, transition, and design development.

Nijkamp and Garde (Nijkamp & Garde, 2010) extended Lim's method (Lim, 2007) into four steps with a concentration on creating new styles from old ones. It also attempted to

investigate the interaction between the product and the user. In conclusion, cultural design has a Significant impact in the modern design and there is a need to include it in product design syllabus to give students the required knowledge and practice tools which may strengthen their competitive capabilities.

Teaching methods

Teaching product design in most design schools for undergraduate students works in a traditional way that concentrates on problem solving and users' needs' fulfilment. In contrast, design market work in a different way that attempts on creating the need and impact the user through using different design approaches. Cultural design is one of these approaches that uses cultural features to create a link between a customer and a product.

The objective of this research is to stimulate students to take charge a greater role in the learning process through self-regulated learning. The process of self-regulated learning includes three steps: forethought, performance and self-reflection (Schunk, 1989; Zimmerman et al., 2000). According to this, the author made a selection to select the best teaching methods that can be used in the available educational environment. These methods are oral presentation, individual brainstorming, data collection, sketching, and prototyping.

Oral Presentation

In the modern education systems, oral presentation is considered as an important method (kerby & Romine, 2009). It is used by both lecturers and students through lectures and tutorials to communicate about the curriculum (De Grez et al., 2009). Lecturers use oral presentations to provide students with specific information or instructions. Students use it to present a report or project. It is a kind of assessment that a lecturer asks students to do and he/she evaluates it.

At the present, most of oral presentations use the modern technology in parallel with the given speech such as slide show, video clips, or audio portion (Ohler, 2006). The presenter should learn some skills to give a powerful presentation. These skills are: honing public speaking skills, using clear voice, using good body language and eye contact, and having a good knowledge of the recent technology to be able to prepare attractive presentations.

A presenter should take in consideration the aim of the presentation he does. For the lecturer, presentation aims to teach students a specific knowledge. In the case of a student doing a presentation, the target is to present a project or a knowledge that he gained by himself. Evaluation of a presentation depends on some points such as: the quality of the material presented, clear speaking, body language, creativity, the use of multimedia components, and time management.

Individual Brainstorming

Brainstorming is an old method which used for decades in the product design domain. It aims to stimulate students and designers to generate ideas and solve problems (Gharib, 2016). As its target is to generate the greater number of ideas, evaluation of ideas is forbidden till the

end of the brainstorming session (Herring et al., 2009). There are two kinds of brainstorming: group brainstorming and individual brainstorming.

Group brainstorming is based on sharing ideas vocally from group members without attempting to criticize ideas through the brainstorming session (Osborn, 1957). This kind of brainstorming requires an instructor who can control the sequence of the group performance and assure that all member participate effectively. For a long time, group brainstorming was considered better than individual brainstorming which depends on one individual to develop ideas. This was because the belief that the sum of group's ideas should be better than one individual's ideas. But recent literature showed that group brainstorming has a productivity loss. This is according to some factors such as social constraints and losing interest in creating ideas. On the other hand, individuals tend to be more productive through individual brainstorming as they feel free of social constraints such as fear from criticize. Also, they don't depend on others to develop ideas instead of them.

Data Collection

Many data collection methods were developed (Creswell & Clark, 2007; Cooper et al., 2006) to help designers collecting data from users for a better understanding for their needs such as interviews (Kvale, 2008; Rabiee, 2004), questionnaires (Sudman & Bradburn, 1983; Oppenheim, 2000), and focus groups (Morgan, 1997; Greenbaum, 1998). Each method may have a variety of options included. These options make the method more flexible to adapt different users and different situations. Many of these methods are taught through various design curriculums with different context. In this paper, the author concentrates on methods that can be used in the educational environment such as interview, questionnaire, and focus group. These methods were used to collect data about users' needs and their view of point of culture and cultural features.

Sketching

Sketching is an important method that designers widely used and still in generating ideas within conceptual design stage (Schon, 1986). It seems to be the favorite method for designers (Römer et al., 2001). Sketching can be defined as a representation of an idea existing in the mind of the designer. It is different from the drawing process where artists draw something existing in real. It works as a link between the design problem and the design or the solution. It is useful to visualize ideas and explore its properties such as scale and proportion (Tovey, 1989; Cross, 1999). Importance of sketching process for conceptual design stage can be summarized in the following: speed and spontaneity (Lipson and Shpitalni, 2000), flexibility and availability (Tovey, 1989; Lim et al., 2004), analysis of imagined ideas (Goldschmidt, 1991), and creativity (van Dijk, 1992; kavakli and Gero, 2001, Tovey et al., 2003; Goel, 1995).

Sketches can be classified into four types according to their purposes: ideation sketches, explorative sketches, explanatory sketches, and persuasive sketches:

- 1) Ideation sketches: are to transfer ideas from mind into papers. It works as a tool to record idea and an attempt to understand the concept which a designer thinks about

(Dorta et al., 2011; Stones & Cassidy, 2010). It doesn't concern the shape or the form of the product but how this product will be constructed.

2) Explorative sketches: are to explore the design space (Khunyakari et al., 2007) and here concepts begin to be generated. It concerns the shape and the form of the product, so many ideas are generated and evaluated to reach to the best form that can serve the function (Prats & Earl, 2006).

3) Explanatory sketches: should be understood from people who see it. It explains product's form and functions. It also can be used as a communication method between design team members or between designers and clients.

4) Persuasive sketches: are used to influence people to buy the product. People may be a producer, a client, or a consumer (Wagner, 2000). Persuasive sketches should be colorful, realistic, and attractive. Computer graphic software are often used to create it or to add some features to it to be more attractive.

Prototyping

Prototyping is a key stage in developing products to be ready for presentation to clients (Buchenau & Suri, 2000). Prototypes can vary from being made from cheap materials and by simple techniques to those which use the latest CAD software and modern CNC machines (Zorriassatine et al., 2003; Choi & Chan, 2004). Prototypes also can be simple to just express the idea or realistic and detailed to be tested. There are many types of prototypes which can be classified into four categories: visual, proof of concept, presentation, and pre-production prototypes:

- 1) Visual prototype: this type of prototypes represents the shape and size of the product (Hall, 2001) but doesn't express the function, materials, or production techniques.
- 2) Proof of concept prototype: this type of prototypes represents the function of an idea (Horton & Radcliffe, 1995). It usually looks like the final product.
- 3) Presentation prototype: this type of prototypes represents both the function and appearance (Tseng et al., 1998).
- 4) Pre-production prototype: this is a final prototype which is made from the same material of the final product and by the same production techniques used in the mass production (Wheelwright & Clark, 1994).

Methodology

A group of 23 product design students (level 2) was selected to be taught cultural design as an approach to design kitchenware and home accessories. Selection was proceeded according to students' previous design experience and knowledge. They should have practiced product design for one year at least.

Teaching plan was divided into 6 weeks to create a product from scratch according to the cultural design approach. In week 1, oral presentation was presented by the lecturer to

introduce the concepts of cultural design to students. It contains culture definition, cultural theories, cultural design and cultural features. In week 2, students should collect data about the product they intend to design and begin the conceptual design stage. They use sketching as a basic method to express their ideas and explore design space. Detailed design process was carried out by students in the week 3.

In week 4, students worked on creating the 3D models of their products and finishing the rendering process using Rhino (Rhino, 2017) and Keyshot (Keyshot, 2017) softwares. In week 5, most work concentrate on finalizing Design, prototyping, and portfolios' preparation. Various materials such as metals, wood, and clay were used in creating prototypes. At the last week, students introduced an oral presentation and showing their portfolios. After students' presentations, an open discussion was held to discuss students work with the department professors and lecturers.

Table (1) shows the 6 weeks plan.

Week 1	Oral Presentation by the lecturer.
Week 2	Idea generation through sketching, brainstorming, and data collection.
Week 3	Detailed design process.
Week 4	3D modeling and rendering.
Week 5	Prototyping and portfolios' preparation.
Week 6	Oral presentation and portfolios' show.

Table (1) shows the 6 weeks plan

Students projects included various products such as kitchenware and home accessories. They inspired designs from diverse cultures and societies such as Egyptian, Islamic, and Indian cultures. Figure (1) shows some of these projects. Students were asked to evaluate the course contents and the teaching process. An evaluation questionnaire was designed and distributed to students to evaluate the syllabus. The questionnaire design was inspired from the syllabus evaluation questionnaire issued by the National Authority of Quality Assurance and Accreditation of Education in Egypt (NAQAAE). The questionnaire included questions about syllabus aims, contents, and learning methods. The first part of the questionnaire asked questions about how the oral presentation in the beginning of the course explained the aims and terms of cultural design clearly. After that some questions were asked about the learning environment and interaction learning. The next set of questions attempts to evaluate the design process, how students proceeded the design project, and how cultural design was useful in improving their design abilities. The last set questions concentrate on evaluating the satisfaction of students about the course.

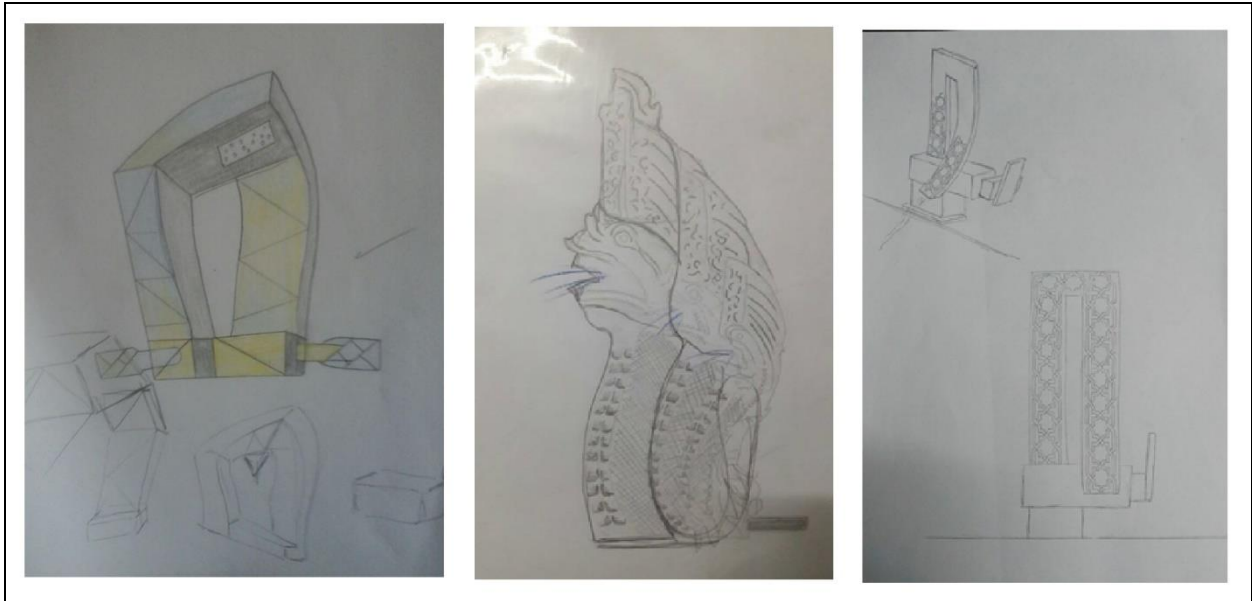


Figure (1) shows samples of students' projects

Results

The questionnaire was distributed online, and invitations were sent to 23 students. 20 of 23 students responded to the questionnaire. Answers shared by students showed some meaningful results. For the first set of questions, nearly 80% of students were satisfied about information presented in the beginning of the course. The other 20% of students suggested that there is a need for more information and explanations about cultural design to not be conflicted.

For questions about the learning process, most students found it interactive and effective. They also reported that cultural design approach helped them in improving their imagination and creativity. The design projects pushed them to use different thinking and data collection methods. Most of students used various idea generation methods such as sketching and prototyping.

60% of students expressed their satisfaction about the course while others expressed about different degrees of un-satisfaction. 20% of them showed that time limitation was one of their un-satisfaction as they found it short for the project to be finished. Chart (1) shows these results.

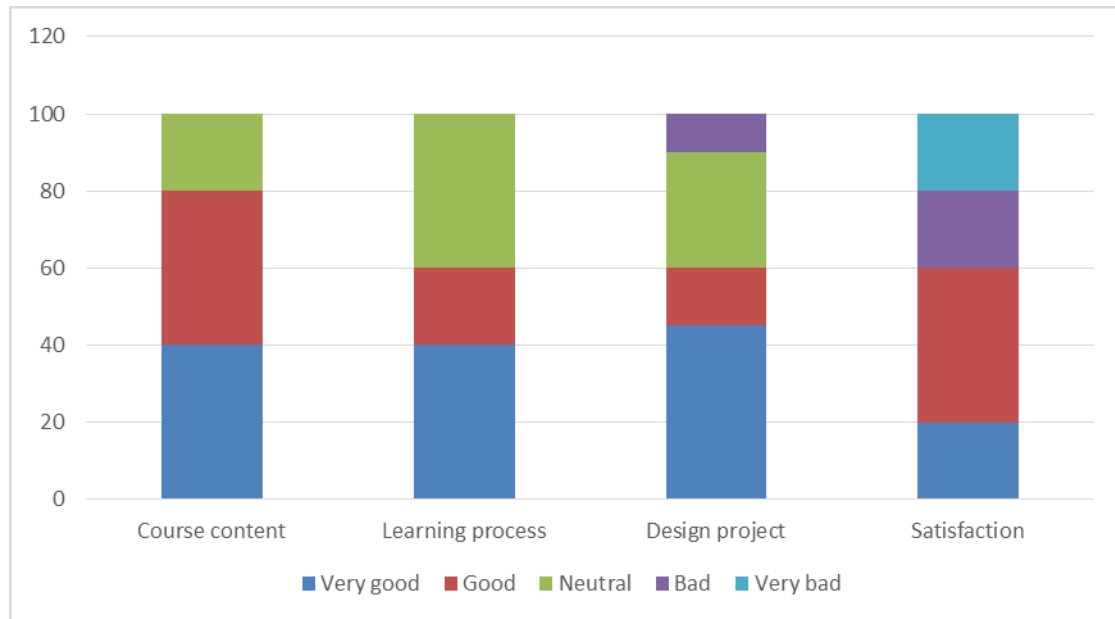


Chart (1) shows results representation.

References

- Barry, J. (1999). *Art, culture, and the semiotics of meaning: culture's changing signs of life in poetry, drama, painting, and sculpture* (p. 173). St. Martin's Press.
- Beyer, P., & Beaman, L. (Eds.). (2007). *Religion, globalization, and culture*. Brill.
- Buchenau, M., & Suri, J. F. (2000, August). Experience prototyping. In *Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques* (pp. 424-433). ACM.
- Choi, S. H., & Chan, A. M. M. (2004). A virtual prototyping system for rapid product development. *Computer-Aided Design*, 36(5), 401-412.
- Cooper, D. R., Schindler, P. S., & Sun, J. (2006). *Business research methods* (Vol. 9). New York: McGraw-Hill Irwin.
- Creswell, J. W., & Clark, V. L. P. (2007). *Designing and conducting mixed methods research*. Sage.
- Cross, N. (1999). Natural intelligence in design. *Design studies*, 20(1), 25-39.
- De Grez, L., Valcke, M., & Roozen, I. (2009). The impact of an innovative instructional intervention on the acquisition of oral presentation skills in higher education. *Computers & Education*, 53(1), 112-120.
- Deal, T. E., & Peterson, K. D. (1999). *Shaping school culture: The heart of leadership*. Jossey-Bass Inc., Publishers, 350 Sansome Street, San Francisco, CA 94104.
- Dorta, T., Kalay, Y., Pérez, E., & Lesage, A. M. (2011, January). Comparing immersion in remote and local collaborative ideation through sketches: a case study. In *CAAD Futures*.
- Goel, V. (1995). *Sketches of thought*. MIT Press.
- Goldschmidt, G. (1991). The dialectics of sketching. *Creativity research journal*, 4(2), 123-143.

- Goodman, D., & Redclift, M. (2002). *Refashioning nature: food, ecology and culture*. Routledge.
- Greenbaum, T. L. (1998). *The handbook for focus group research*. Sage.
- Hall, R. R. (2001). Prototyping for usability of new technology. *International Journal of Human-Computer Studies*, 55(4), 485-501.
- Herring, S. R., Jones, B. R., & Bailey, B. P. (2009, January). Idea generation techniques among creative professionals. In *System Sciences, 2009. HICSS'09. 42nd Hawaii International Conference on* (pp. 1-10). IEEE.
- Horton, Glen I., and David F. Radcliffe. "Nature of rapid proof-of-concept prototyping." *Journal of Engineering Design* 6, no. 1 (1995): 3-16.
- Jenks, C. (Ed.). (1995). *Visual culture*. Psychology Press.
- Kavakli, M., & Gero, J. S. (2001). Sketching as mental imagery processing. *Design Studies*, 22(4), 347-364.
- Kerby, D., & Romine, J. (2009). Develop oral presentation skills through accounting curriculum design and course-embedded assessment. *Journal of Education for Business*, 85(3), 172-179.
- Keyshot, <https://www.keyshot.com/>, 2017.
- Khunyakari, R., Mehrotra, S., Chunawala, S., & Natarajan, C. (2007). Design and technology productions among middle school students: an Indian experience. *International Journal of Technology and Design Education*, 17(1), 5-22.
- Kvale, S. (2008). *Doing interviews*. Sage.
- Leong, B. D., & Clark, H. (2006). Culture-based knowledge towards new design thinking and practice—A dialogue. *Culture*, 19(3).
- Lipson, H., & Shpitalni, M. (2000). Conceptual design and analysis by sketching. *AI EDAM*, 14(5), 391-401.
- Mennell, S., Murcott, A., & Van Otterloo, A. H. (1992). *The sociology of food: eating, diet, and culture* (Vol. 40, No. 2). Sage Pubns.
- Mirzoeff, N. (Ed.). (2002). *The visual culture reader*. Psychology Press.
- Morgan, D. L. (1997). *The focus group guidebook* (Vol. 1). Sage publications.
- Ohler, J. (2006). The world of digital storytelling. *Educational leadership*, 63(4), 44-47.
- Oppenheim, A. N. (2000). *Questionnaire design, interviewing and attitude measurement*. Bloomsbury Publishing.
- Osborn, A. F. (1953). *Applied imagination*. New York, Scribner.
- Prats, M., & Earl, C. F. (2006). Exploration through drawings in the conceptual stage of product design. In *Design Computing and Cognition'06*(pp. 83-102). Springer, Dordrecht.
- Rabiee, F. (2004). Focus-group interview and data analysis. *Proceedings of the nutrition society*, 63(4), 655-660.
- Rapoport, A., & El Sayegh, S. (2005). *Culture, architecture, and design* (p. 92). Locke science publishing Company.
- Rhino, <http://www.rhino3d.com/>, 2017.

- Römer, A., Pache, M., Weißhahn, G., Lindemann, U., & Hacker, W. (2001). Effort-saving product representations in design—results of a questionnaire survey. *Design Studies*, 22(6), 473-491.
- Schön, D. A., & DeSanctis, V. (1986). The reflective practitioner: How professionals think in action. *The Journal of Continuing Higher Education*, 34(3), 29-30.
- Schunk, D. H. (1989). Social cognitive theory and self-regulated learning. *Self-regulated learning and academic achievement: Theory, research, and practice*, 83-110.
- Stones, C., & Cassidy, T. (2010). Seeing and discovering: how do student designers reinterpret sketches and digital marks during graphic design ideation?. *Design studies*, 31(5), 439-460.
- Sudman, S., & Bradburn, N. M. (1983). *Asking questions: a practical guide to questionnaire design*.
- Thornton, T. P. (1998). *Handwriting in America: A cultural history*. Yale University Press.
- Tovey, M. (1989). Drawing and CAD in industrial design. *Design Studies*, 10(1), 24-39.
- Tovey, M., Porter, S., & Newman, R. (2003). Sketching, concept development and automotive design. *Design Studies*, 24(2), 135-153.
- Tseng, M. M., Jiao, J., & Su, C. J. (1998). Virtual prototyping for customized product development. *Integrated Manufacturing Systems*, 9(6), 334-343.
- van Dijk, C. G. (1992, November). Fast surface design based on sketched networks. In *Applications in Optical Science and Engineering* (pp. 140-150). International Society for Optics and Photonics.
- Wagner, Ina. "Persuasive artefacts in architectural design and planning." *Proceedings of CoDesigning 2000* (2000): 379-390.
- Wheelwright, S. C., & Clark, K. B. (1994). Accelerating the design-build-test cycle for effective product development. *International Marketing Review*, 11(1), 32-46.
- Zimmerman, B. J., Boekarts, M., Pintrich, P., & Zeidner, M. (2000). A social cognitive perspective. *Handbook of self-regulation*, 13(1), 695-716.
- Zorriassatine, F., Wykes, C., Parkin, R., & Gindy, N. (2003). A survey of virtual prototyping techniques for mechanical product development. *Proceedings of the institution of mechanical engineers, Part B: Journal of engineering manufacture*, 217(4), 513-530.