

2007



Proceedings of the 2007 International Conference of Industrial Design Education

主办单位 教育部高等学校工业设计专业教学指导分委员会
中国机械工业教育协会工业设计学科教学委员会
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Sponsors National Instructive Committee of Industrial Design Education (China)
Industrial Design Institute of Chinese Mechanical Engineering Society
Education Commission of Chinese Industrial Design Society

承办单位 浙江工业大学
Organizer Zhejiang University of Technology

国际工业设计教育研讨会 论文集

何人可 周旭 主编
Chief-editors: He Renke Zhou Xu

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何人可 周 旭 主编

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迎接中国工业设计的春天

2007年2月13日，温家宝总理作出重要指示：“要高度重视工业设计”，为中国工业设计的发展吹来了一阵春风，令人振奋。

近年来，工业设计在国内发展迅速，在许多领域都开始普遍应用，产生了巨大的经济效益和社会效益。而且国家有关部门也逐渐认识到工业设计在国民经济中的重要地位和作用，对其重视程度不断提高。其中，《国家中长期科学和技术发展规划纲要（2006—2020年）》中就提出要增强工业设计与制造业的能力和水平，必须提高我国工业设计的整体实力，促进工业设计作为现代服务产业的发展，从而推动企业创新能力的提升。科技部在“十一五”国家科技支撑计划中也专门设立了“工业设计共性技术开发与应用”，以及制造业信息化领域的“面向数控机床行业的产品造型设计应用软件”等重点项目，突显对工业设计的重视和支持力度。

许多地方政府也开始重视工业设计在制造业发展中的作用，将其作为工业化的战略手段进行鼓励和提升，通过设立相应的管理、推广和研究机构以及建立工业设计产业园、成立创新设计企业孵化器等措施，创造了许多以工业设计产学研平台振兴经济的成功范例，成为推广工业设计技术、扶植企业自主创新、提高产品竞争力、促进科技成果转化的重要平台。

中国的工业设计教育近年来也得到了长足的发展，中国设立本科工业设计专业的高等学校已达260余所，教育质量也得到很大的提升。在美国《商业周刊》2006年10月公布的全球60所最佳设计学院名单中，中国就有4所。中国设计教育与国际设计界的交流也越来越广泛和深入，已有6所学校加入了国际设计艺术院校联盟，这表明中国的设计教育正在得到世界的认可。在国际各类工业设计竞赛活动中，中国工业设计专业学生的成绩也令人刮目相看，无论是小泉照明设计竞赛、光宝设计竞赛、伊莱克斯设计竞赛、红点创新奖、名古屋设计竞赛，还是德国经典的博朗设计竞赛，中国学生都取得了优异的成绩，向世人展示了中国工业设计教育的成就。

与此同时，我们必须清醒地认识到，为满足国家经济和文化发展对工业设计的需求，必须结合教育体制与教学内容的改革，开展活跃的设计创新教育，加快工业设计及相关学科建设和改革的步伐，尽快研究制定完整的工业设计教育发展的具体计划和改革方案，采取各种有效措施，不断提高工业设计人才的教育质量。鼓励高校工业设计专业从优秀设计人才中选拔教师；鼓励工业设计专业在校学生注重参与设计实践，增强设计创新和市场实践能力，加速工业设计后备人才的培育；鼓励企业与高校联合举办工业设计竞赛，创造学校教育与企业、市场结合的环境。这些需求对工业设计教育的人才培养指出了发展方向，提出了新的、更高的要求，也为工业设计教育的发展创造了巨大的发展机遇。让我们共同努力，迎接中国工业设计春天的来临！

何人可
2007年9月

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T 设计教学理论体系研究

heory of Design Education

Studies of Pattern of the Form Design Teaching

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Abstract: The article analyzes the problem of the course of the form design teaching. Some studies are discussed for its appearance reason and solutions. There are emphasizes to form design for its key role of the development which from the basic classes to the specialized classes. The form design should also pay attention to the diverse of the product's form, artistic esthetic sense and the every factor of the industrial design.

Keywords: Form design, Display, Style, Factors of Industrial Design

1 Problems Encountered in the Form Design Teaching

The author assumes the teaching work of form design course for undergraduates majoring in industrial design. In the teaching process, the author has encountered the following problems.

Firstly, the poor hand drawing capability will lead to improper form expression. Some students are not able to correctly and clearly draw the product form composed by them. If the product title is not informed in advance, seen from the picture effect, the type of product drawn by the student can be seen roughly. However, the product details, such as control keys, support frame, even the principal part of the product are all not clearly drawn, lacking the relative clarity and accuracy. For instance, a majority of keys are lack of third dimension, but replaced by the "plane line group" composed by simple lines. After all, the construction of three-dimension product form is the most basic and clear expression way. If only a few lines are used to portray the product form, the lacked rational factors will be too few.

If the draft or effect figure has been added with color effect, such as marker or color power, and the color expression is not correct, then the improper color, shadow and layer contrast will pose difficulty for the audience to advance their cognizance to the product figure.

Secondly, the conceivableness to a certain product form is

relatively thin and poor. The imago included in the form is fairly changeable. People have different opinions and the psychological feelings brought by the external forms and finery is all inclusive. There is some symbolizing the masculine form, and some concealing the femininity; some are simple, elegant and graceful needing complex decorations. If a certain divergent thinking is lacked, only a style will prevail to any kind of product form. As a result, as for the product design with different purposes, the flexible change and object targeted at a certain case will be short.

Thirdly, most students regard the training cognizance of form design equal to a simple draft drawing or effect drawing. It is required to know that in most circumstances, product is not for people's appreciation as the isolated arts work. To a great extent, it needs to reveal its design essence through the use process and the achieved effect. As a result, when doing product form design homework, accordingly although the shaping of form and variable form development are the key points, the rational factors to the product form should not be neglected as well. Based on this, we are required to establish all aspects and multi-layer penetration about the product design factors. Hence, adding simple expression, such as use process, products parts disassembly, product size proportion in the process of shaping form, is quite in favor of foreshadowing for official product major course study in future. Anyway, the product form is not only the pursuit of sensible sculpting excellence degree, and the consideration of rational factors to the product de-

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sign should be added step by step at the same time.

Therefore, the author defines the advance degree of the form design course pattern as follows: the influence waived on form by sculpting of variable product styles, establishing of product excellent form, pondering of product form and sizes relations, and product use flow, the influence exerted by the simple product inner basic system on the form, etc.

2 Analysis on the Cause of Formation in Form Design Teaching Problems

Firstly, due to different reasons, some students fail to lay a solid hand drawing foundation in the basic course teaching. The hand drawing capability of the engineering students is congenital with a good foundation, so it will not spend the students' much time to study. Meanwhile, the teachers are supposed to prepare the course and conduct teaching to the expression skill course. It seems that the engineering students do not need to focus on drawing draft or the effect drawing to study the key points of the expression skill course and they are only expected to correctly express the perspective of the products, draw clear the product form and properly illustrate the color collocation and light and shade layer. When many students conduct copying, their work effects are all quite good. When it is their turn to compose their own products, however, there will be vastly different as between heaven and earth for the expressed effect and the copying effect. Copying will give a rise to the dependence effect. Maybe when the contrast is not available, the students will be relatively easy to feel awful and confused, and fail to apply the "start feeling" and expression way cultivated during the copying process in the product form composed by them.

Secondly, students of science are comparatively better at rationally logic thinking, which possibly leads to the fact that they are apt to recognize the same kind of form mode in terms of the thinking of product form and then apply them to the form designs of products of different kinds. However, we should get to know that human beings are complex living beings and different people have different hobbies and natures. And therefore they will show a comparatively high acceptance and appreciation to the product form of certain style temporarily, and the homogenization in terms of product design hereby caused will limit the possibility of product' form development and creation and further the absence of divergent thinking in terms of design.

Thirdly, the author's opinion on the phenomenon that students only provide separate product thinking diagrams when they think about the product forms is that the study of any course should be step - by - step, in other words, it is impos-

sible to learn all factors about product design in the earlier stage of learning. We cannot become a fat person by only one biting of food. It is a certain fact that the course of form design should attach its emphasis on the creation of form concinnity and different kinds of styles. However, if teachers can combine the necessary form factors (such as product dimension, part, structure, use flow) into the fundamental trainings properly, it will help the students to establish a concept that "Form is not a kind of molding merely for molding itself" from the right beginning, which is a matter in which benefits surpass the shortcomings.

3 Solution for Problems Arising from Form Design Teaching

To solve the first problem, what we need to do in teaching is to indoctrinate students a concept that "draft is the most crucial point". The easiest manner to express the image of any complex product form and style is hand painting. After undergoing a facsimile stage with certain time, students should be brave enough to express their own conceptions as much as possible. More attention should be paid on observation and thinking in facsimile to find the way to express the form and to outline the form contour line of straight line combination smoothly. Students may analyze, accumulate and remember these perceptual image effects with rational steps during the facsimile. Students should cultivate their own painting starting feeling and personal style of correct outlining of forms in the form painting of products. The students paint based on only facsimile rather than thinking over the facsimile objective is only an armchair strategists. It's the best method for students to save some time to exorcize hand painting per day. It is known that "truth comes from practice".

Secondly, students should broaden their thinking as much as possible, trying to think of various different form possibilities for a single product. Whether it is inornate, graceful, natural, mechanical, rational, or nastic? There are different kinds of product forms, including that showing the rigid and tough properties of males that showing the soft and weak properties of females, that showing elegance and sobriety that showing sententiousness and popularity, that showing abstract and gionics, that showing rich meaning for people's imagination based on a high abstraction. Students should give thinking manners and forms as much as possible for the form design of a single product, and try to think about what kinds of characteristics of each form owns and what kind of feeling and sensibility each form will give people, which will benefit the divergence and comprehensive property of students when they think about problems and

lay a thinking foundation for the design of products of a certain style in the future.

Finally, in terms of the exercise of form design, the author would like to discuss about its related elements which may be available though the descriptions of following items.

Let's take the electronic product MP3 as the design objective. Students may arrange the exercise items in terms of form design as follows: paint product forms of different styles, such as those with characteristics of males and females, bionics form, geometrical form, or irregularly abstract form (bionics may be further divided into form bionics, functional bionics, and bionics in terms of color, and decorative veins), hard and soft forms, simply rational form and decoratively nastic form.

Meanwhile, the form of each style needs comparatively detailed effect drawing which should show the factors as follows: the expressions of part names and simple use method of product (through pictures with written explanations, such as the operation graphical analysis with hand-shape or direction indication with arrowheads), the mark about general dimension of product (marked through three-dimensional diagrams), simple literal instruction about product's material, and so on. It may also be a method to express the parts of product on both horizontal and vertical axis through an explosive manner.

Therefore, a drawing program about shape design includes not only image, but also all kinds of numbers, brief introduction, aided arrows and detail pictures, which state every part of this product systematically. After all, to a great extent, it is reasonable to fix the shape. Perhaps the foundations make it so; perhaps the people's taste effects it; or perhaps the given structures decide it. If-you consider more, for example, the convenience of operating and the awareness of interface, the shape of product is not only a process of moulding the shape, but also

a thinking process of producing the shape—Why the keystrokes are arranged like this? How the shape embody female's gentle mood? Whether you consider the environment when you match colors...More or less, on the producing the shape, there is not only sketch at random because of perceptual aesthetic factors, but also consider the several rational factors of fixing the shape earlier.

When the products are painted with Marker pen or colored crayon, more attention should be paid to the psychological function of the colors. When the name of parts is labeled, more attention should be paid to the rationality of the parts' collocation. When labeling the dimension, more attention should be paid to the aesthetic property of the proportion and rational degree of the dimension. When tracing the details, more attention should be paid to the shape's relationship between the detailed parts of the product (injection button and display screen). When manifesting the using process, more attention should be paid to the product's shape whether it can produce a positive or negative influence on the product's use. If the negative influence exists, it can be avoided through the adjustment of the shape or not. In the end, with regard to the product shape molded by the students by themselves, not only the final effect comes into forth, but also this effect implicates the relatively deeper thoughts made by the students by themselves.

The shape's description is not only restricted to its selfness, and these relevant factors enable the shape to exceed itself in terms of connotation and extension. It is necessary to observe more and conceive and manifest different styles of the product and each factor related to the shape should be thought properly, which is also the goal for the study and training of the shape design course.

工业设计技术基础课程教学改革及实践

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摘 要: 在工业设计技术基础课程教学中, 一般传统的理工科的教学方式难以使学生理解。因此, 需要探索一种能将理论教学与感性的实践性教学相结合的新的教学模式。在理论上, 我们力求以新的教育理念对设计教学在教学实践中的事实、行动和经验进行系统梳理, 探索工业设计技术课程教学的规律; 在实践上, 建立一个新的教学实践环节, 即所谓“综合示教室”来加强学生对这些课程特别是技术基础课程的认识, 同时加强这些课程之间的联系, 从而达到提高教学质量的目的。经过近一年的教学实践, 证明教学改革的效果良好。

关键词: 设计教育, 工业设计, 课程改革

Innovation and Practice of Basal Technical Courses in Industrial Design Teaching

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Abstract: The traditional teaching mode for engineer have been understanding difficult for students during the teaching of basal technical courses in industrial design. Then it needs us search for a new teaching mode which can combine the theory teaching and sensible practice teaching. So on the theory hand we strive to use the new education idea to coordinate the facts, action and experience during the design teaching. On the other practice hand, we built a new practice teaching tache as the name “integrative classroom” for the students to enhance their understanding of the basal technical courses. On the same time we also intensify the relation of the courses to improve the quality of the teaching. After almost one year’s practice teaching it prove the teaching innovation is success.

Keywords: Design Education, Industrial Design, Course Innovation

1 引言

根据学生的特点, 对传统的工业设计专业的技术基础课教学方法进行系统的改革, 探索一条适应艺术类生源特点的、符合培养应用型工业设计专业人才的教学和实践模式之路, 是摆在我们面前的一项重要任务。

我校工业设计专业是艺术类招生, 学生的文

化基础相对偏低, 因此在工业设计技术类课程教学中, 一般传统的理工科的教学方式难以使学生理解。而且, 各门课程安排在不同的学期里进行, 使得这些课程之间缺乏有效的联系, 包括与专业课程的联系。因此有必要探索一种能将理论教学与感性的实践性教学相结合的新的教学模式, 以提高学生对技术类课程学习的效率和积极性。

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