

Strategic Use of Universal Design as a Business Tool for 21st Century

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Abstract

Industrial design has been a core phenomenon in our modern world, and no one can live without design. However, in many cases, industrial design has been narrowly defined as an optional effort to make things look better and work better. This is the main reason why there are many not-so-successful designs and users and the manufacturers are not benefited from design.

Universal design is a philosophy, concept, and a method to design and develop environment and products to benefit broader range of people. However there are several reasons for universal design not being successfully practiced. First, due to the lack of correct understanding of its strategic value to industry, there are not many successful universal design products available. Second, unlike to architecture, there is no legislative or social pressure for universal design in industry; there are not many universal design products.

This paper re-defines the role of industrial design and the strategic value of universal design in the industrial context. In short, how to make the universal design a strategic tool for the business to create values for the users as well as industry.

Keywords

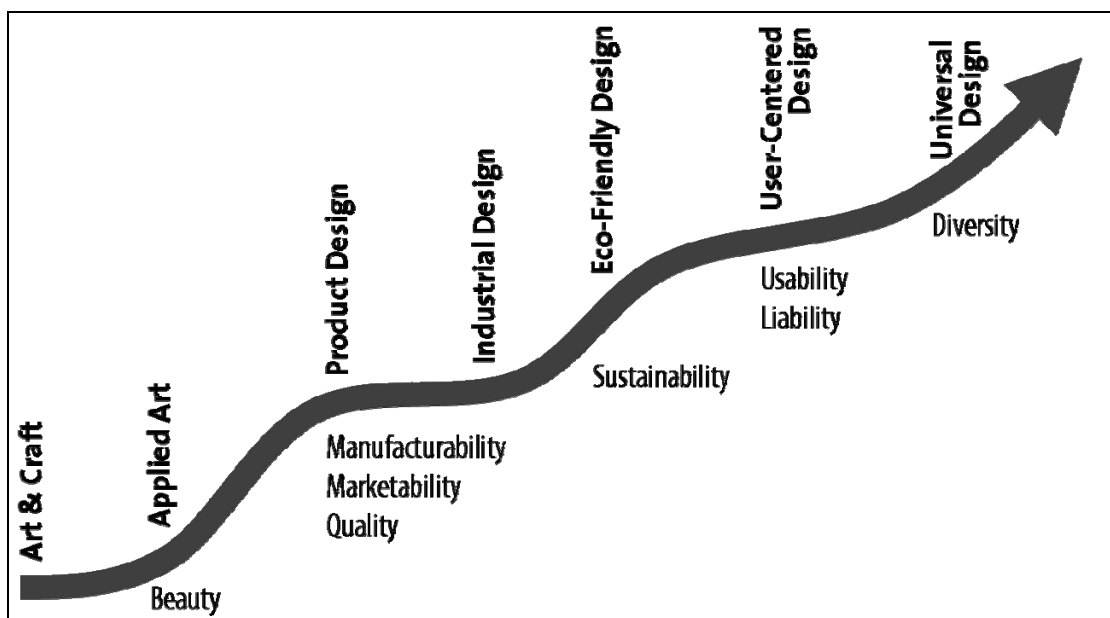
Universal Design, Industrial Design, Strategic Tool, Business

1. Conflict between Universal design and Industrial design

Universal design has been focusing on users and their benefits. It started in architecture and environment to enhance the accessibility of people with various disabilities, delivered architectures with ramps, wider doors and rest rooms, and elevators. Reasons of the success are legislations made to obligatory the accessibility and most buildings are not intended to mass produced.

Contrary, universal design in industry has not been popular, and there are a number of reasons. First, main interest of industry is at mass-productivity and mass-marketability. This leads industries to develop products towards major consumer segments only, and minor user group. Second, there is neither legislation nor regulation applied to products, especially consumer products.

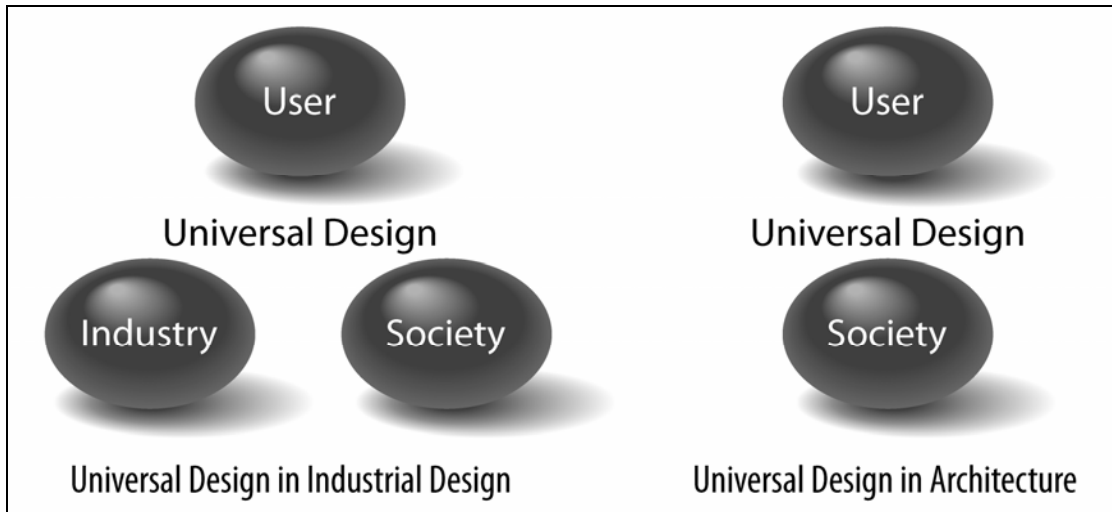
The birth of industrial design is directly related to the demand from the development of industry based on mass-production. As a result of industrial revolution, more and more products became available, and due to the automation, the competition in market got severe. This new circumstance led major industry such as General Motors and Philips hire 'artists' to make their product more attractive to the consumers. Those industrial artists involved more and more to the product development rather than just styling, and a new term – industrial design – is coined. Therefore, the industrial design cannot exist without the demand from and benefit to the industry. This is the difference between industrial design and architecture design.



History of Industrial Design and Universal Design

Universal design has been focus on the benefit to various users, not necessarily to industry, and that is why industrial designers and manufacturing industry never paid attention to universal design

seriously. To deliver products with universal design, designers should find a way to benefit users, industry, and society.



Universal Design in Industrial Design and Architecture

As shown in the diagram above, industrial design has to deal with the users, industry, and society, whereas architecture design's main concerns are the users (people) and society (environment). In other words, in industrial design context, the user, the industry, and the society are beneficiaries of universal design.

2. Design as a Strategic Tool

Design often taught as a form-giving activity (earlier period) problem-solving (recent) thus, in product development process, industrial design contributed in making things useful and beautiful. Sometimes, beautiful things may not useful and useful things may not beautiful. So the education and practice of industrial design have been emphasizing the balance of two factors.

In new era, the importance of industrial design as a strategic tool will take place in education and practice. When a product is designed, the product should be helpful to users to help the industry's strategy. A good example would be an interdisciplinary project at the University of Cincinnati sponsored by Delta Airlines. Students from industrial design and business departments worked together under a direction of Professors Dale Murray (design) and Ann Welsh (business) to find a new business opportunity for Delta and an improved experience for air travelers. Results including an innovative design of PDA-type device travelers can use from the beginning to the end of flight will support the user's needs of itinerary, entertainment, safety, and security. Delta may accumulate data

from its passengers to serve them better. The passengers will have better memory from the flight and will return to the same airliner. Altogether, a new strategic design benefits all stakeholders.

This will be a good example how industrial designers work in new context and how industrial design would play a strategic role in industry. The design activity is beyond a form-giving activity, although the device should have nice form and ergonomics. The bottom line is, the product should help user and the industry or business, and without the emphasis on strategy, it would not be possible.

3. Universal Design as a Strategic Tool - The Art of War and Universal Design

One may ask. What the art of war has to do with universal design? The Art of War is the oldest but most influential military textbook of thirteen chapters written by Sun Tzu explains military strategies to win a war. The strategies in the book do not only apply to wars, but also design and businesses. As a nation would suffer from defeat without a good strategy, design and business would suffer from failure in a same way. The Art of War is one of the best sources for the successful implementation of universal design.

Sun Tzu claims five essential elements of winning strategy. They are¹:

- Moral Law,
- Heaven,
- Earth,
- The Commander, and
- Method and Discipline

1) The Moral Law

The Moral Law, in other words, a principle of harmony, is the most crucial part of winning strategy. The Moral Law causes the people to be in complete accord with their ruler, so that they will follow him regardless of their lives, undismayed by any danger.

Without a consensus, a nation will never win a war, no matter how strong the commander, the army, and the ordnance are. In that case, commanders and soldiers would not know what they are fighting for, so the result will be obvious.

Likewise, universal design products will not be possible unless designers, manufacturers, and other stakeholders share the concept why universal design is good and necessary. More importantly, all people related to the development, distribute, use of products and environments should share same

¹ The Art of War, translated by Lionel Giles, 1910

concept to create a synergy. If users assume the universal design products are neither pretty nor useful, if manufacturers believe the universal design product are not profitable, then the concept of universal design will just be a beautiful daydream. In consequence, many users with different needs would not be able to have proper products and many industries will lose new market opportunities.

2) Heaven

Heaven signifies night and day, cold and heat, times and seasons. This is to know when the right time for actions is.

Universal design would not be possible without huge sacrifices from people with different needs. It took a long time for legislations such as Americans with Difficulties Act or ADA took place to work for benefit for all people. Many buildings, especially public ones have been designed and remodeled to accommodate the regulations and accept people with different needs. It seems to be successful in architecture design.

In industry, businesses have been focusing on reducing the cost and adding mode value to win the war in the market. To increase the manufacturing volume to lower the cost, corporations had to focus where there are larger populations with common needs. As result, first, there are too many products with too similar features, and there is no real winner; second, there are too many people excluded from the main target user group to suffer from inadequately designed products.

The 21st century, the new era of globalization and diversification, is the perfect timing to start realizing universal design as a strategic tool for industry to find new market opportunities and people will benefit from it.

3) Earth

The earth comprises distances, great and small; danger and security; open ground and narrow passes; the chances of life and death.

The Earth signifies the market and its structure. As the competition in the market goes higher, industries try to design products different, costless, more attractive, and with more features. This often leads a competition of attrition. A good example is the automotive design, which is to create numerous models with slight differences, making product life very short. The result is, manufacturers have to spend huge investment to develop models, and users have to spend money to follow the trend.

Universal design may give a new perspective to businesses to create new market opportunities by enlarging user group, making products more sustainable. This will benefit the users and society, too.

4) The Commander

The Commander stands for the virtues of wisdom, sincerely, benevolence, courage and strictness.

According to Sun Tzu, the commander uses all resources and his capacity to win a war. To do this, the commander has to have the virtues above.

In the industrial design development circle, designers, design managers, project managers, and executives are the commanders who can make universal design real. There are two fundamental capacities a commander should possess: vision for need and action for fulfillment - knowing what is needed and how can it be done.

To make universal design a strategic tool, those people should understand the value and master how to implement. This should be included to the education of universal design in schools and encouraged in design business.

5) Method and discipline

By Method and discipline are to be understood the marshalling of the army in its proper subdivisions, the gradations of rank among the officers, the maintenance of roads by which supplies may reach the army, and the control of military expenditure.

This can be translated as the education and practice of universal design not only in academia but also in industry. To make this effective, a systematic curriculum and process have to be developed and tested. From this understanding, one can say the first step would understand how and why universal design is necessary not only for users but all stakeholders. If this necessity is not clearly defined, no products will be available in the market, and thus, the concept of universal design will never be realized. This is the most important factor for universal design in industrial design.

4. Examples of successful universal design product

There are already a number of successful products that are using universal design as a key factor of success. Some manufacturers even do not realize they are successful because of the universality of the product. If such companies are aware of what they have been doing, and if other companies can see the strategic value of universal design, many products will benefit business and users.

1) Oxo Good Grip product ranges

While possessing same or similar functionalities, Oxo's Good Grip products created new niche in

kitchenware market and benefit many people with or without special needs. Although it was priced higher than others, its universal design made it an initial success, which is followed by a number of products from Oxo. The design of handle is simple enough to understand how to use it, friendly to any kinds of hand – small, large, with or without arthritis, weak or not, wet or dry. It also looks pretty. All together, it makes a good example of how universal design products can benefit users as well as the industry.



Oxo Good Grip Peeler

2) Apple Computer

Apple Computer has been a great example of how design can create a strong value. Among many computer manufacturers, Apple Computer has most loyal users to their product – hardware and software. The reason behind the success can be found in many places including universal design. Since Macintosh computers and Mac OS were introduced, users did not have to learn computer languages and needed no specific computer knowledge. Users with or without the knowledge and experience on computer, Apple's computer provide most needed functionalities, and this makes a perfect universal design. For example, an iMac computer can be used by old or young, intelligent or illiterate, a professional or a novice, male or female.

Interestingly enough, Apple Computer never claimed that they are producing the most universal hardware and software. Apple Computer set a standard of universality in personal computer, and many others follow the standard. Some company “copied” Apple computers' colors and forms, but they were only the skin. The real value is the universality of Apple's product, which people appreciate even without knowing about the universal design.



Apple iMac, Mac OS, and Apple Mouse

5. Strategic opportunities for industry

All products for public use should be universally designed. No question about it, although there are great number of products lack of this. One can feel segregated when he/she is not being able to use products, understand information, and follow procedures. It is often very dangerous to have such non-universal product in the public. Examples include fire extinguishers, door handles, showers, elevators, and so on.

There is a huge value of universal design in consumer product market. Not to mention baby-boomers, people live longer; move more; exposed to more information; and does more things by themselves. Manufacturers seek global but local markets. Society becomes more diverse and moves towards equal rights. However, there are still not enough universal design products available. Many product designs are targeting at young, able-bodied, and educated consumers. As result, there are still many users excluded, and industries are not discovering market opportunities. There is no cellular phone, MP3 players, PDAs, automobiles designed for people with many different needs as well as their original target users.

Industrial designers and educators as well as managements of industry should look at universal design from a strategic point of view.

6. Teaching Universal Design as a Strategic Tool

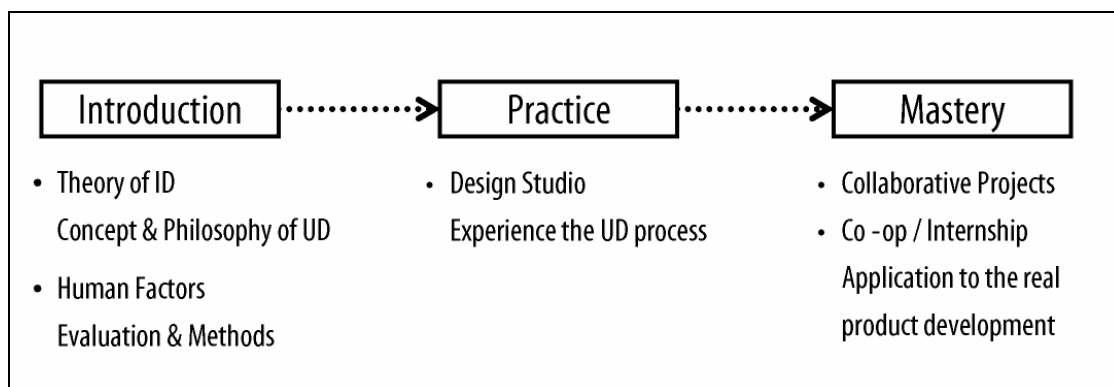
Seven principles of universal design have been setting rules in universal design. They are:

- Equitable Use - The design is useful and marketable to people with diverse abilities.
- Flexibility in Use - The design accommodates a wide range of individual preferences & abilities.

- Simple & Intuitive - Use of the design is easy to understand.
- Perceptible Information - The design communicates info effectively, despite conditions or the sensory abilities.
- Tolerance for Error - The design minimizes hazards & the consequences of accidental actions.
- Low Physical Effort - The design is efficient & comfortable and requires minimum fatigue.
- Size and Space for Approach and Use - Appropriate size and space.

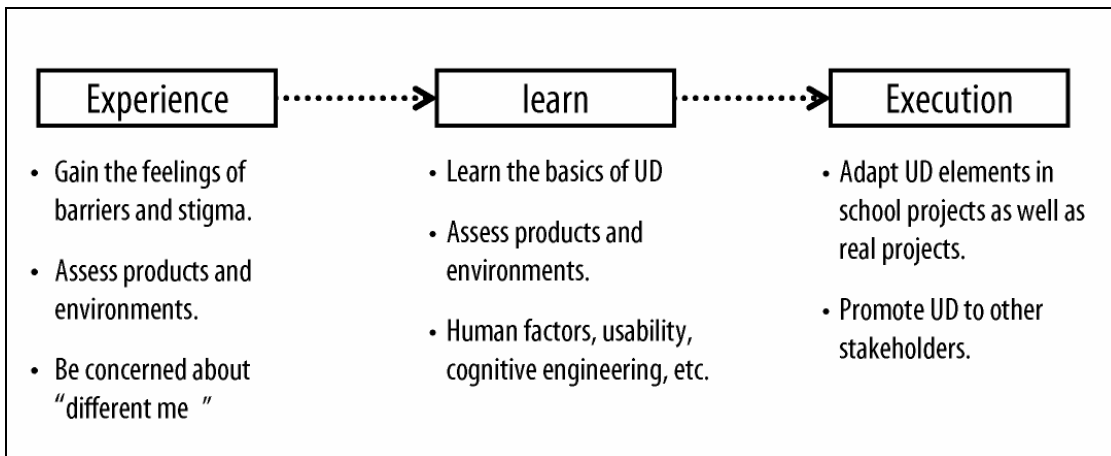
These principles can apply to products and architectures in a wide scope. If a product or a building meets all or some of these, it is considered to be universal. To make the principles applicable to industrial design, there will be another principle necessary to be added; Mutual Benefit – The design should benefit both users and the manufacturers. The education of universal design should include this last principle.

At University of Cincinnati, industrial design is taught in three levels – introduction, practice, and mastery. The concept and benefits are introduced in the Theory of Industrial Design course. Methods and evaluations are taught in Human Factors course. Then, in the design studio, students design products keeping universal design in mind. They can master it in collaborative projects and/or co-ops. Besides making designs universal to various users, they need to find a business plan, because without it, the product will never be launched.

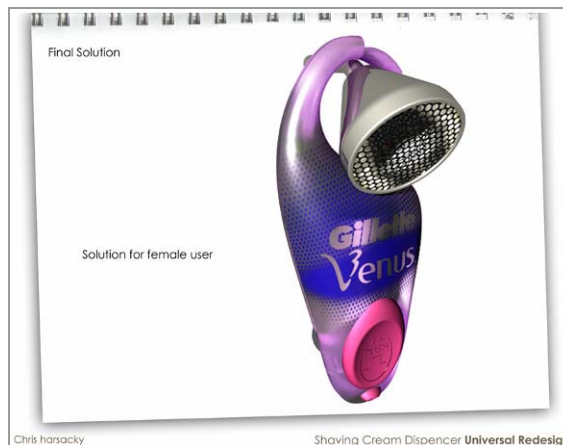
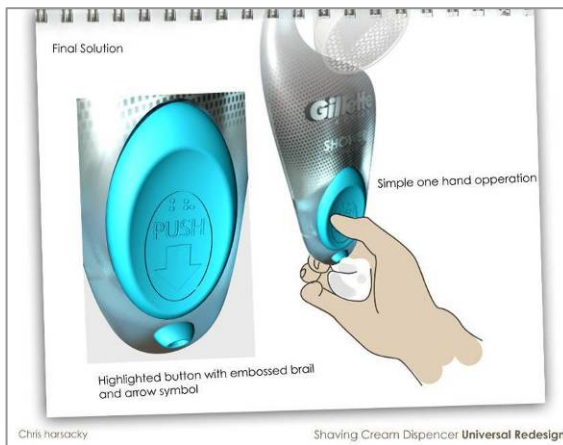


Teaching Universal Design

Students are also encouraged to learn more about universal design through three stages – to experience, to learn, and to execute.



Learning Universal Design



Examples of Student works

Universal Laundry Machine, Roger Davis, 2004 (top left),
 Universal Shaving Cream Dispenser, Chris Harsacky, 2005