DEVELOPING THE ROLE OF DESIGN: COLLABORATION OF CRIME PREVENTION AND PRODUCT DESIGN IN EDUCATION

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ABSTRACT
In contemporary design education, a student needs to undergo several years of education in a design-related curriculum. However, design is no longer a simply designed work to solve a problem in the designed area, it has become a collaborative process with other disciplines to improve the quality of human life. Therefore, the research question is how to combine crime prevention with product design in education to develop the interdisciplinary role of design. The method used was a case study of a series of student design works. The results showed how product design can apply crime prevention theory to work against crime effectively and efficiently. Jian, a crime prevention theory researcher, says 'situational crime prevention theory suggests that situational factors have contributed to specific forms of crime, advocated the adoption of specific control and change the environment to reduce opportunities for crime which in turn lead to crime prevention'[1]. The results of this article are discussed in terms of how to collaborate in different disciplines in design education. The learning outcomes of this study are concerned with finding a way to educate future designers by providing them with a broader knowledge of design processes through a variety of methods. Further increasing design instructors' awareness of cross-disciplinarity might enrich the approach and develop the role of design and, more importantly, generate new horizons for collaborative practice in design.

Keywords: Collaboration, cross-disciplinarity, crime prevention, product design, design education.

1 INTRODUCTION: DESIGN EDUCATION TODAY

In design education, a student needs to undergo several years of education. Designers are expected to be highly motivated, technically competent and mentally prepared to deal with ideas at a professional level based on a university curriculum. The curriculum of contemporary design education is studied in four categories. In the first category, there are fundamental courses that develop the design formation; the knowledge in these courses is generally theoretical rather than practice based. Secondly, there are technology-based courses that provide scientific formation of design; the acquired knowledge in these courses is both theoretical and practice based. The third category consists of artistic courses that strengthen the base of design and expression; the acquired knowledge from these kinds of courses relates to presentation techniques of preparing and expressing design ideas. Finally, there are design project courses, which are a synthesis of the previous three categories [2], [3]. The design project courses are the most important part of design education. Another equally important learning experience comes from understanding elements of other disciplines, a skill central to the acquisition of all design knowledge and skills, and one that is consciously developed [4], [5].

2 BACKGROUND: COLLABORATION OF DESIGN EDUCATION

The complexity and integration of design disciplines reflect its collaborative and cross-disciplinary nature. It recognizes the integrity of linked things and the complexity of interaction, resulting in a comprehensive teaching theory and teaching method. The integration and interaction nature of this process reflects the collaborative and cross-disciplinary characteristics of design discipline. Today, design is no longer a simply design work to solve problem the designed area; it has become a collaborative process of design involving cross-disciplinary approach to improve the quality of human life. In order to meet public needs, promoting the collaboration and cross-disciplinarity of design is

required. This presents unprecedented challenges for designers, and the design education poses an additional challenge. Therefore, we are currently in an important period of design education development and innovation, which makes exploring collaboration and cross-disciplinarity particularly relevant.

2.1 The connotation of collaborative and cross-disciplinary design education

The connotation of collaborative and cross-disciplinary design education refers to the collaboration and interaction between design and other disciplines, such as design and ecology, design and psychology, design and information, design and marketing, etc. The crossing of different disciplines broadens and deepens the design profession. The collaboration of various disciplines may branch into new design disciplines. For example, design and psychology collaborated to form the design psychology discipline, and design and management contributed to the design management discipline. The essence of cross-disciplinarity design education is to break disciplinary boundaries, which reconstitutes the construction of disciplines. Cross-disciplinary design education, by integrating different professions and different disciplines to achieve system reconfiguration, provides new disciplinary perspectives and ideas, and lets design education be more comprehensive, more extensive and effective expression.

2.2 The collaboration of crime prevention and product design

According to data from the 'Design and Technology Alliance Against Crime' and the 'Design Council of UK Home Office', a ministerial department, supported by the Technology Strategy Board, crime in the UK has fallen over the last decade but, as society and technology have evolved, new crime challenges have emerged. From 2009–10, there were approximately 9.6 million crimes against adults living in England. Design influences behaviour. Variation in the design of places, products and systems gives rise to different patterns of behaviour. This is also true of criminal behaviour: different places, products and systems afford different opportunities for crime, antisocial behaviour and terrorism. Therefore, design has an important role to play in preventing crime and reducing criminal activity without compromising the enjoyment and usability of products, places and services by legitimate users. Designers must remain focused on those for whom they are designing, as well as what they are designing to thwart. The collaboration of crime prevention and product design allows for innovation in situational crime prevention by exploring and developing design solutions to dissuade potential criminals and adopt a broad approach to crime prevention.

It is essential that we develop the role of design via collaborative education in order to improve the quality of life for law-abiding users. Therefore, the research question is how to combine crime prevention with product design in education to develop the interdisciplinary role of design.

3   METHOD

A case study is an in-depth study of a specific instance within a specific real-life context and can be a useful tool for meeting requirements and evaluation [6]. I chose the case study method to explore my research question. The quality analysis of the collaboration on crime prevention and product design case studies was conducted according to situational crime prevention theory.

4   CASE STUDY

The case study, named 'design out shoplifting', which was a series of student challenges at Central Saint Martins and the Royal Society of Arts to generate anti-shoplifting designs, involved several cases concerning design against crime. 'What designers can do is 'think thief': that is, put themselves in the place of an offender, anticipate their actions, understand their tools, knowledge and skills and thereby develop design solutions that short circuit the offender's action without jeopardising the design's value to legitimate users.' said by Prof. Paul Ekblom. They needed to use all their skills, cunning and design flair to create effective and affordable anti-shoplifting objects, systems and services without jeopardising the experience of the genuine shopper. The following sections explore two cases from the student challenge, they showed that how to apply situational crime prevention theory in design process, like 'think thief'.

4.1 Case study 1: Scanning system for anti-shoplifting
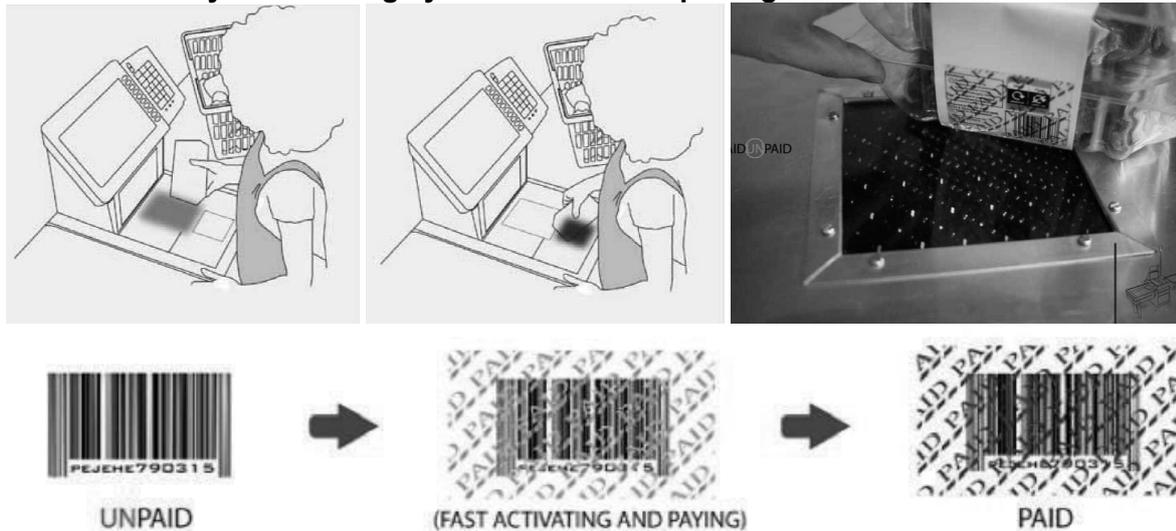

Figure 1. Scanning system for anti-shoplifting

Stores often struggle to differentiate between products that have been paid for and those that have not. 'PaidUnpaid' is a system for busy shops that quickly marks a product that has been paid for. A product's bar-code is coated with an invisible photochromatic ink that changes colour when exposed to a UV light. The UV light is located in a device that is integrated with the checkout scanner. The light affects the invisible ink and makes it appear as a blue overprinting on a standard bar-code. The mark that appears is a specific design that could include the retailer's logo. This provides store staff with a quick and easy way to determine whether a customer has paid for an item (see Figure 1). It's the smart way to protect from shoplifting and reduce the opportunities of crime.
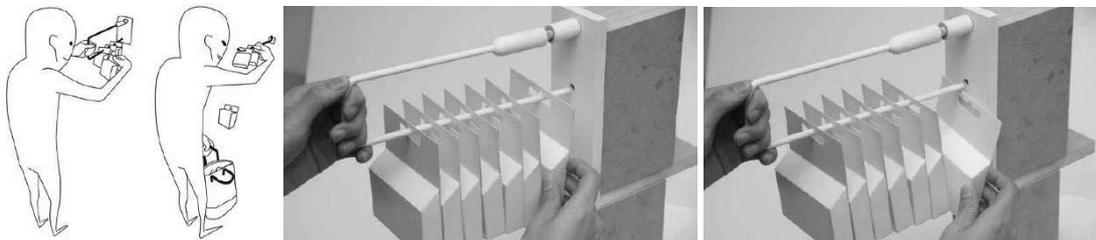
4.2 Case study 2: The hook

Figure 2. The hook

Conventional product hooks provide users the opportunity to steal products on display stands/racks. The hook only allows a single item to be removed at a time and increases the movement and length of time required to remove an item. Making the removal of items from product hooks more visible action increases risk awareness and draws attention to the would-be shoplifter (see Figure 2). The student changed the shape of hook by observing thieves' behaviours. It strongly illustrated that it's a good way to create new ideas for design product in order to improve the life quality of human beings.

5 DISCUSSION

5.1 Situational crime prevention theory

Situational crime prevention theory suggests that situational factors have contributed to specific forms of crime, advocated the adoption of specific control and changing the environment to reduce opportunities for crime. This in turn leads to crime prevention [1]. Situational crime prevention theory attempts to eliminate the offender's criminal tendencies not through social and institutional change but through making criminal acts as unappealing as possible.

5.2 Design against crime

There are five categories in situational crime prevention strategy, including improving the difficulty of committing the crime, increasing the risks related to committing a crime, decreasing the reward of the crime, reducing the stimulation of crime and eliminating the pretext of crime [7]. The first element is Difficulty which mainly protects the object itself and makes sure the object is in a safe environment leads to offenders giving up on their criminal intent. The next is Risk, which changes the environment, and contributes to catching the offender more easily. Since offenders measure the reward before committing the crime, Reward, the third one, aims to decrease the attraction for offenders. The rest of two elements, Stimulation and Pretext, are the latest results.
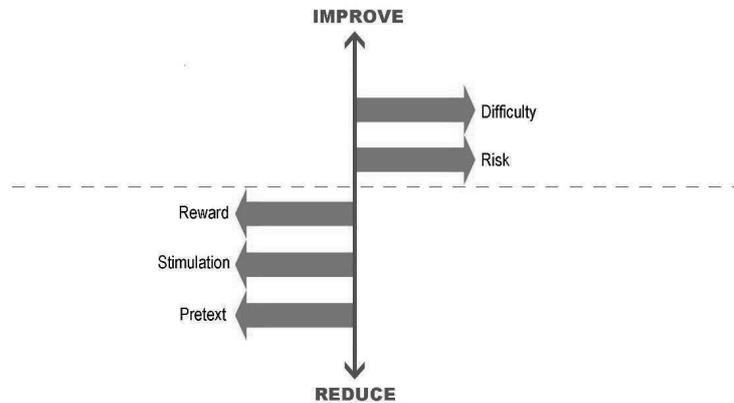

Figure 3. Five keywords

It can be summed up into five categories by five keywords: difficulty, risk, reward, stimulation and pretext, and these are represented as a holistic tendency graph in Figure 3.
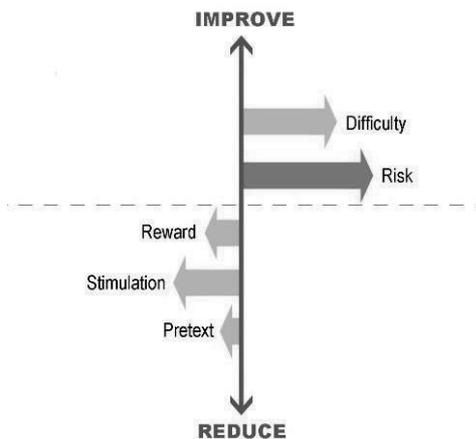

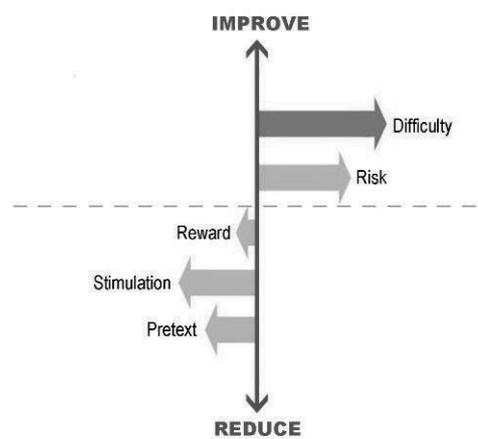*Figure 4. Five keywords in case study 1*   *Figure 5. Five keywords in case study 2*

It is possible to analyse the cases via the five keywords in a direct and clear way. In case study 1, the solution is an invisible photochromatic ink that changes colour when exposed to a UV light (see Figure 4). It's pretty easy to be caught as long as the thief stolen goods, so it increased the risks of crime to a large extent. Also it increased the range of observation by others in some extent and made the shopping environment more safety. Increasing the difficulty of committing the crime was applied in case study 2 by changing the construction of the hook (see Figure 5). To be specific, the increasing difficulty means that set up some physical hindrances around the target goods, such as add lock, barrier, iron tube and so forth. In the case study 2, the student changed the shape of the hook of the goods, it protects goods from thief strongly effectively and economically.

5.3 The importance of collaboration

It is possible to seek an innovative and creative way from another discipline's theory to solve problems and contribute to broadening and deepening the role of design in practice, guaranteeing effectiveness and efficiency and improving the quality of human life.

6   CONCLUSION

The five keywords, including Difficulty, Risk, Reward, Stimulation and Pretext, can be regarded as an analyzed tool to evaluate the final products or as a guide to designing products, it is an optimal way to educate future designers, providing them a broader knowledge of design processes and a variety of methods. In other words, it offers more comprehensive expertise [8]. Furthermore, it is possible to motivate students majoring different professions to bring their creative and problem solving ideas to a design project. These students are the most creative people in the design project, and other design students can learn from them directly. In brief, students can be grouped into design teams made up of members from different disciplines working on design products based on the five keywords. Increasing design instructors' awareness of cross-disciplinarity might enrich the design approach and develop the role of design. More importantly, it may offer new horizons for collaborative practice in design.

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