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Creative Design Study of Rectangular Electric Mosquito Swatter

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***Abstract*—Traditional mosquito swatters often could not kill mosquitoes in high places or corners. The extended retractable rectangular mosquito swatter can solve these existing problems. It is easy and convenient to use or store. At night, it can be used as a mosquito lamp while charging due to its built-in rechargeable battery. It illuminates and kills mosquitoes at the same time. It is multi-purpose, energy saving, and eco-friendly.**

Keywords—mosquito swatter, energy saving, eco-friendly, creative design.

I. INTRODUCTION

There are many mosquitoes during summertime. Even though homes are equipped with window and door screens, mosquitoes could still fly in and bite people, causing a lot of discomfort. Sometimes, swelling also occurs. Some people use anti-mosquito sprays, mosquito repellent stickers, electric mosquito repellents, mosquito coils, and other methods to ward off mosquitoes. However, these products are limited by time, and some even produce air pollutants or carcinogens that make users uneasy.

Taking these health factors into consideration, an electric mosquito swatter can be used to ward off mosquitoes. However, existing mosquito swatters are mostly battery-powered with very limited function. At times, it is not easy to instantly kill mosquitoes with them. In addition, using a plug-in mosquito lamp at night is also a common method.

II. LITERATURE REVIEW

Mosquitoes are responsible for the transmission of diseases with a serious impact on global human health, such as malaria and dengue. Experimenters discussed topics on immune medium of mosquitoes [4]. Whether ecological restoration of polluted urban rivers would provide suitable breeding habitats for some mosquitoes was not clear yet. It was therefore important to determine how altered river conditions influence mosquito ecology. Scholars explored river ecological restoration in hopes of reducing mosquito breeding and harm to the environment [3] [2] [1].

Mosquitoes are vectors for numerous human and animal diseases, including malaria that is caused by protozoan Plasmodium parasites and is responsible for over half a million deaths annually. Since many studies conducted experiments on mosquito-related topics, attempts on using physical or chemical components were made to reduce harm on humans brought forth by diseases, as well as improve the ecological environment and so on [7] [5] [6].

III. CREATIVE DESIGN

The teacher used previous award-winning creations as examples during classes and encouraged students to identify problems from daily life and propose solutions through discussions. In the process of stimulating creative thinking and incessant modification, student creativity was refined, and they were able to demonstrate innovative features more adequately.

The teacher found that teaching by example can help students follow a pattern so as to be able to express and apply their innovative concepts and creative methods, as well as propose simple but distinctively creative ideas. Secondly, through group teaching and discussions, social interaction of students was increased. The development and training of their communication and coordination abilities are worthy of the teacher's consideration.

IV. DESIGN RESULTS

The creative invention in this article is a retractable mosquito swatter, an improvement of existing swatters with limited length. Its square shape can instantly trap mosquitoes and kill them. During day time, its battery can be recharged, and during nighttime, it can illuminate and charge at the same time, as well as be used as a mosquito lamp (figure 1-2). This creation was entered for intramural selection in international innovations competition, and its poster was submitted to an international poster exhibition (figure 3-4).

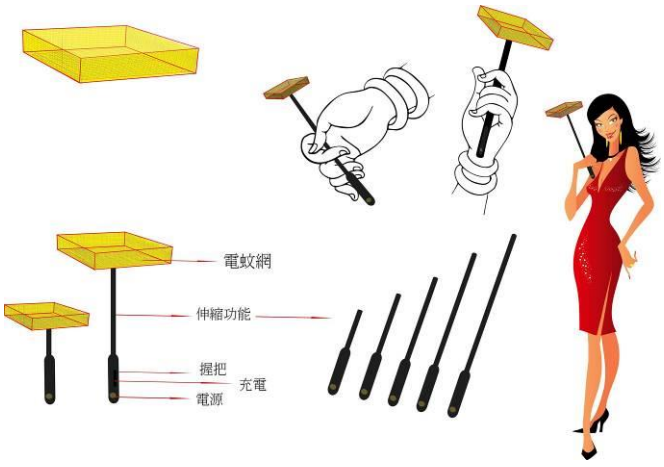

Fig. 1. *Appearance of the product*

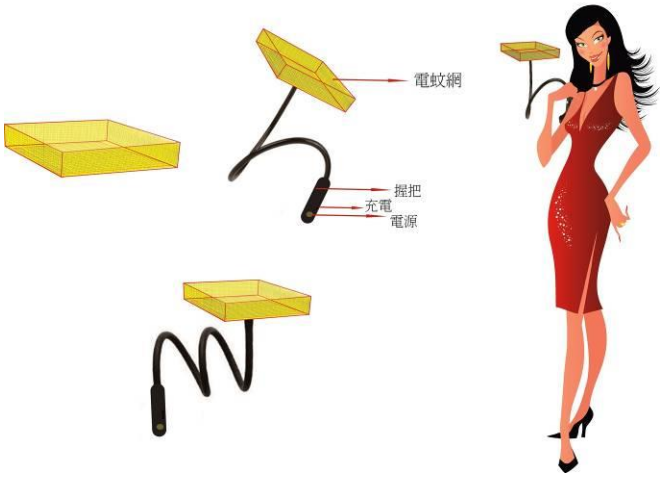

Fig. 2. *Appearance of the product*

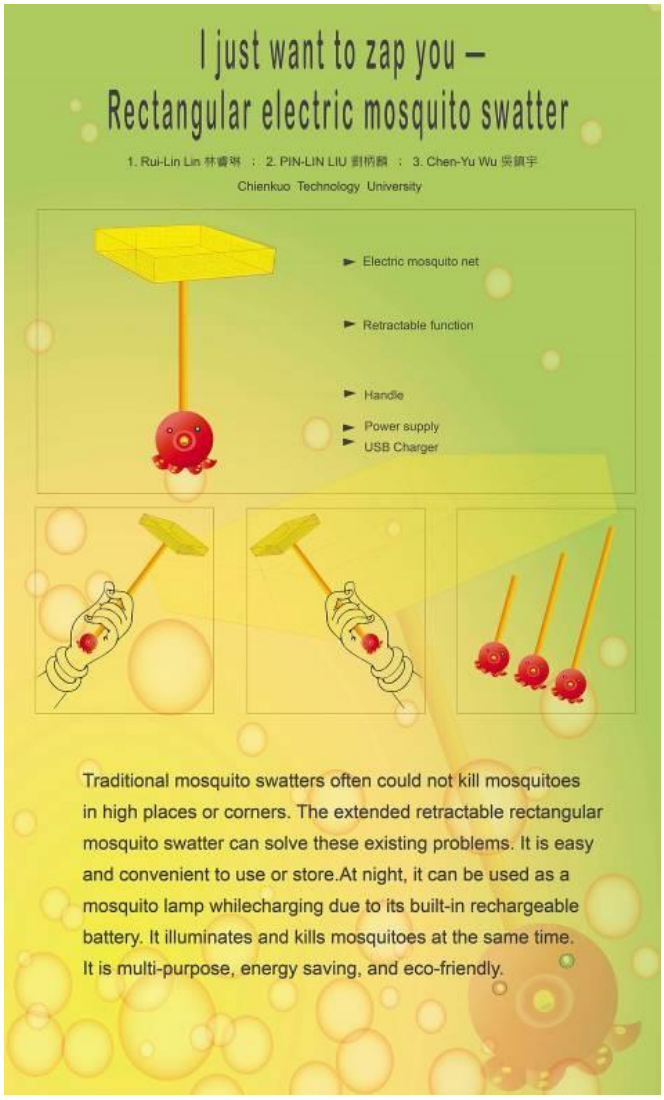

Fig. 3. *Poster design*

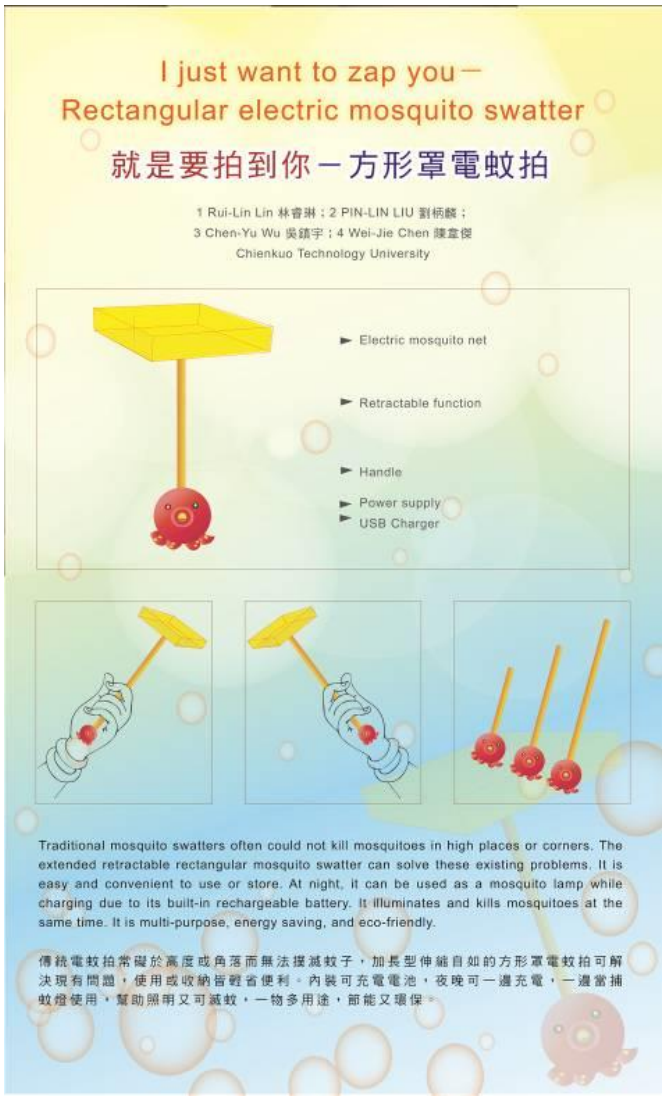

Fig. 4. *Poster design*

V. CONCLUSIONS

In general, the results for the innovative research and development of this study are summarized and illustrated below:

(1) Problem identification: Problem identification: Identified problems of existing product and proposed ideas for creative improvement.

(2) Creative features: Used as a swatter during the day and as mosquito lamp and illuminator at night. It is multipurpose, economical, and affordable.

(3) Creative applications: Creation is simple and easy to use.

(4) Commercial production: The design of this creative innovation can be provided as reference for mass production by related industries.

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