

Creative Design Study of Luminous Stroller

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Abstract—Existing strollers are often rarely noticed by cars and motorcycles when on the street at night. In order to attract the attention of drivers and thus maintain the safety of infants and young children, reflective stickers were affixed to the stroller tires or flashing LED lights were installed on the tires.

Keywords—LED, strollers, infrared, young children, creative design.

I. INTRODUCTION

Due to low birth rate, every child is a treasure to the family. This led to the ingenious design of comfortable and safe commercially available strollers. At present, there are more innovative models than ever before. Babies can sit or lie down, face forward or backward; seat height is adjustable; safety guard is removable; front wheels are free-rotating. Some strollers stress convenient assembly and disassembly, breathable materials, presence of sun shade, ventilation windows, rain cover, mosquito net, shopping basket, and shopping bag. As for mechanisms, there are strollers with fixed wheels, brake, switch lock, protective cover for safety handrail, head restraints, anti-skid cuffs, or reflective stickers affixed to the stroller safety guard.

Designs for stroller safety and comfort are almost impeccable. But danger due to low visibility when traveling at night in dimly lit streets has yet to be resolved. This innovative research presents creative thinking and discussions about possible issues that may be encountered when using strollers in the dark.

II. LITERATURE REVIEW

Some scholars believe that parenting style and the quality of life requirements vary in different countries. However, infant and toddler travel services system must be well thought-out to make it more convenient and safe, as well as to reduce stress on the caregiver and encourage more birth [6]. In related research about strollers, new technologies and new materials were applied and tested in order to produce a more lightweight and durable stroller [4] [8]. Moreover, research was made on stroller requirements of handicapped children in hopes of providing them with the most comfortable and safe design [5]. Stroller innovation and research are continuously being carried out with regard to material, structure, shape, color, etc. so as to give users a more convenient, safe, and comfortable product.

Some scholars investigated safety issues when using strollers and found that there is a high proportion of head and face injuries due to capsizing [1]. Others explored how to safely put a stroller on the bus or boat

and considered that stroller interior safety must be tested and controlled [3]. Another group studied the causes of death due to careless use of trolleys, car seats, and other safety equipment among infants under 2 years of age and found that these incidents mostly occurred when the children were unattended, the seat belt was not fastened, or they were strangled or covered with objects. [2] [7].

III. CREATIVE DESIGN

Every person has the ability to think creatively. The success of a creative thinker lies on whether he can instantly record his ideas and put them to practice. Many creative ideas are not put into practice; therefore, there are still daily inconveniences or risk factors that await the sustained effort of creative people.

This article covers the creative process of teaching and learning. The students were encouraged to think creatively and trained on decision-making scheme. Through group discussions and teaching, the students were guided on how to propose the best design and to provide users with the best quality design, so that creativity can be implemented in the society and bring optimum benefits to human life.

IV. DESIGN RESULTS

In the creative invention mentioned in this article, reflective stickers were affixed on stroller wheels. These stickers shine when used at night and warn vehicles and pedestrians of the presence of the stroller. The following is the poster design (figure 1) entered in the Indonesian International Invention Exhibition and Competition, and the poster submitted to an international poster exhibition (figure 2). In addition, this creative idea has passed the creative works selection of Chienkuo Technology University and received subsidized funding to participate in the 2016 International Young Inventors Award (IYIA). It was also given a proof of entry in competition (figure 3), won a silver medal (figure 4) (figure 5). Lastly, photograph of the creators is shown (figure 6).



Fig. 1. Poster design



Fig. 2. Poster design



Fig. 3. Proof of entry in competition



Fig. 4. Silver prize



Fig. 5. Silver medal



Fig. 6. Creators photo

V. CONCLUSIONS

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

- (1) Problem identification: Problems were discovered in the living environment and energy-saving and low-carbon methods of improvement were proposed.
- (2) Creative concept: Affixing reflective stickers on stroller wheels help make night travel more safe.
- (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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