STEM Learning Activity in Taiwan:
The Design and Making of Ping-Pong Ball Launcher

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Brief Summary
In order to implement STEM education, this article briefly introduces the context of ping-pong ball launcher, the STEM learning contents of ping-pong ball launcher, the final product of ping-pong ball launcher, and the related resources of ping-pong ball launcher. It is suggested that this activity could be utilized in senior high school level, and the key factors in developing students' skills in integrating STEM knowledge and competency are arranging their learning experiences during the engineering design process properly.

Keywords: ping-pong ball launcher, STEM, Taiwan

The Context of Ping-Pong Ball Launcher

Ping-Pong Ball is a suitable sport for all ages. People who love to play ping-pong ball often find it difficult to play alone due to sometimes their sports partners don't have time to play with them. Therefore, a lot of different automatic ping-pong ball launchers can be bought on the market but the prices are usually very expensive. In order to meet the needs of ping-pong ball players, please design and make a ping-pong ball launcher. This machine should meet the following criteria: (1) The ping-pong ball launcher must be able to launch the straight and spin balls; (2) The ping-pong ball launcher must be able to launch more than 20 balls continuously; (3) The materials of this ping-pong ball launcher should be less than 20 US dollars.

The STEM Learning Contents of Ping-Pong Ball Launcher

The STEM learning contents of ping-pong ball launcher are listed in Figure 1. The technology teachers should follow the engineering design process (Figure 2) in guiding students in designing and making the ping-pong ball launcher. According to the engineering design process, students can explore the roles of STEM knowledge and competency and learn to applying them in designing and making the ping-pong

ball launcher. Besides, it is important that the technology teachers should apply the real products or examples in our daily life when introducing the STEM knowledge. For example, the baseball launcher is an excellent example in explaining the principle of friction. Based on the experiences, students will have better understanding in applying friction in designing and making the ping-pong ball launcher.

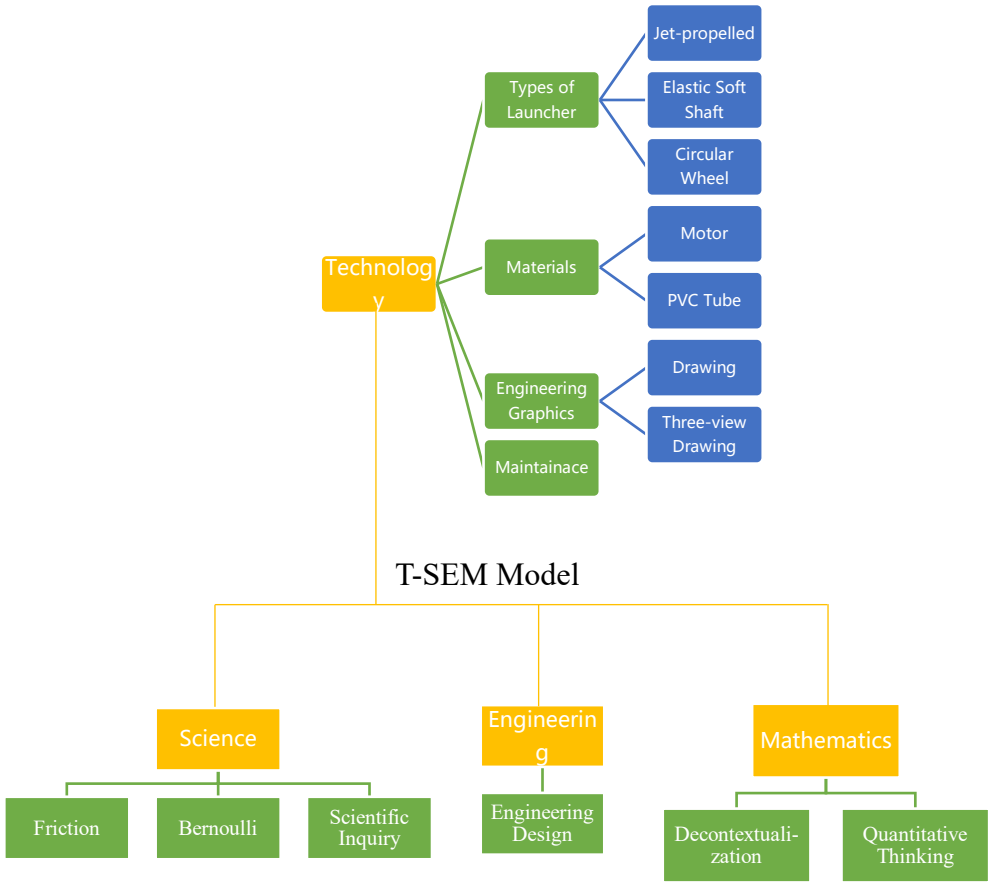

Figure 1. The STEM Learning Contents of Ping-Pong Ball Launcher

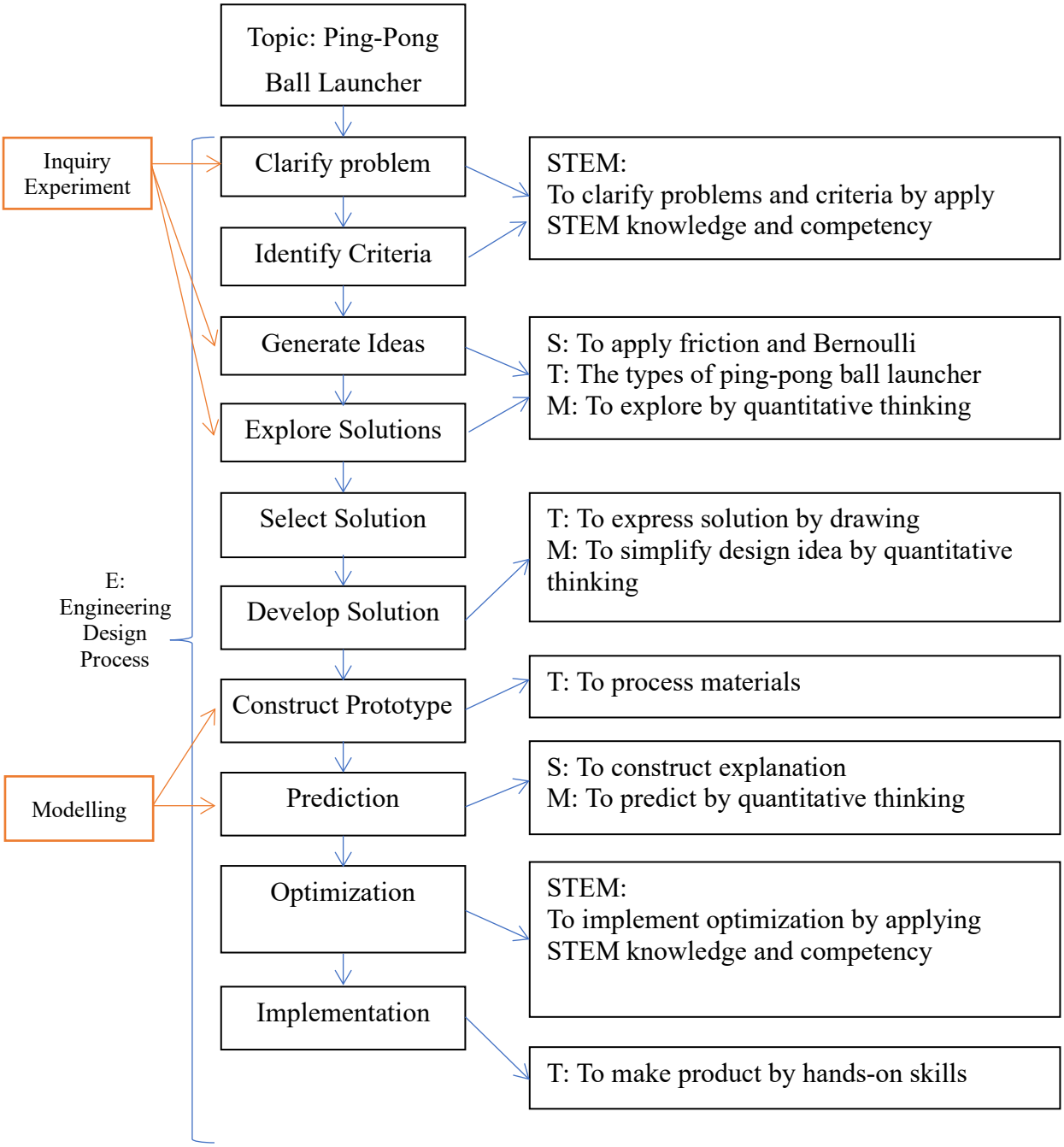

Figure 2. The Engineering Design Process of Ping-Pong Ball Launcher

The Final Product of Ping-Pong Ball Launcher

In order to meet the ping-pong ball players' needs and previous criteria of this project, the following exemplars of ping-pong ball launcher could be referenced. There are three major parts of designing and making the ping-pong ball launcher: (1) The storage and sending balls part; (2) The controller of the speed of sending balls part; (3) The launching balls parts (including straight and spin balls).

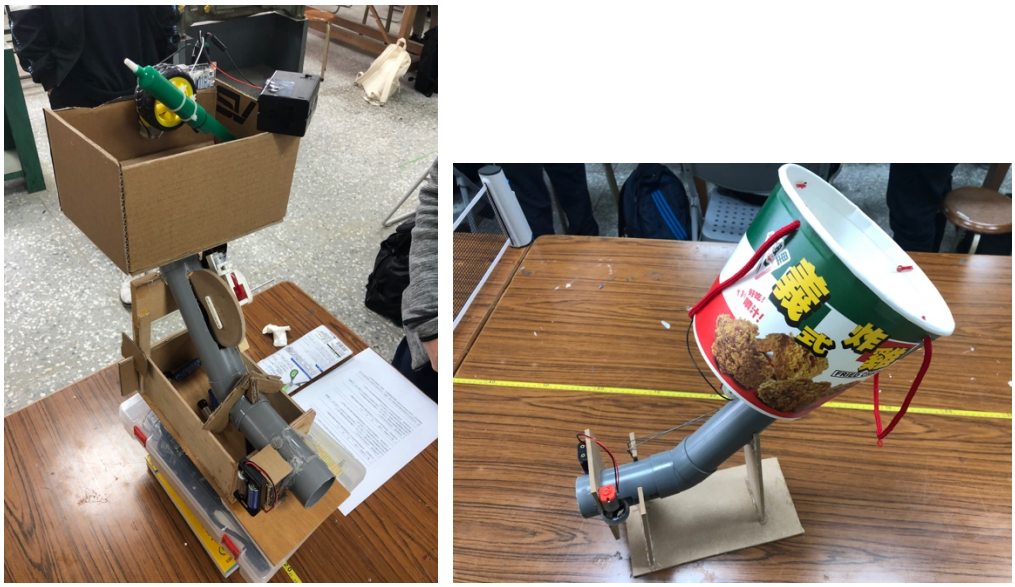

Figure 3. The exemplars of ping-pong ball launcher

Related Resources of Ping-Pong Ball Launcher

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