Literature Review

Chen Zhang

Texas Tech University

Before constructing a mousetrap car, it is important to know how it works. Donna [3] points out that a mousetrap car is powered by the energy of a wound-up mousetrap's spring and what is the most basic form should be. The author's article is clear and concise, although it requires a woody mainframe which is hard to build for the majority, he showed the audience how to build a mousetrap car with limited time and budget. In his design, he explained how to make body then attach the wheels, in the end how to power the car by setting up the mousetrap and string attached on the rare axel. At the end of his article is the troubleshooting part and tips for success part, both of them are useful because they solve the real problems that audiences may face.

The weight of a mousetrap car is a crucial element of its design because more mass cause more inertia which will hold the car from still to move, so make the car lightweight could make it easier to accelerate. In Teresa Coppens' article [2], he explained how to use fewer materials to build a functional mousetrap car. The author is a science teacher in Toronto and designed a mousetrap car for his eldest son. In his design, the most instructive part is to build the car's mainframe with four eye hooks which connect the axle and mousetrap, this smart move gets rid of the need to build an extra mainframe which brings extra weight to the car. Another fact that grab my attention was that he straightens the snap bar as the rod to drive the car instead of using an extra rod, this also reduces the total weight of the car. Finally, he uses tapes to attach the edge of the car's edge to increase the car's friction to gain better acceleration. His overall design is simple and low-cost, it effectively reduces the total weight of the car.

The mousetrap car competition considers material's cost as a crucial part to measure the points. In North Bank [1]'s video, the author uses cheap elements to build a functional mousetrap car within 3 minutes. What impressed me was the author's ingenuity. Most of the author's viewer complained that the hardest part is rolling the dowels in the paper and attach the string to the axle from the lever since the video is 3 minutes, the audiences need to practice some of the details by their own. The material he uses mainly is paper, which makes the entire process hard to manage, but the mousetrap car is significantly lightweight. His video revealed us how to set-up a basic mousetrap car with a limited budget, and it's effective and practical.

Travel long-distance or start fast are the two factors people tend to pursuit when they design a mousetrap car for most cases. To adapt the mousetrap car for distance rather than speed, WikiHow [6] lists the four main modifications necessary. These modifications include a large rear wheel, use thin, light wheels, use a narrow rear axle, also create traction by giving the edges of the wheel’s friction. All the modification made this mousetrap car tend to move longer than other designs; the author also points out that some customization of the frame may prolong the car’s one-time mileage. For instance, building the mainframe as light as possible, make the frame long and narrow, use glue instead of nails for lightweight, reduce the air resistance, and keep the frame's structural integrity. In the last part of this article, the author states that maximize power is another crucial element to build a long-distance travel mousetrap car.

After watching tens of mousetrap car's design, people are tired of how it looks. When it comes to the appearance of the mousetrap car itself, Anja Kroon [4]'s solution catches my attention when I saw her mousetrap car's picture. She uses two big records as the car's wheels, which allows me to realize that we could use an artistic way to design this car besides an engineer way. Her design report is well-organized, it starts from terminology paragraph then the material list; after that, she presents a step by step to build this artistic mousetrap car. The detail of her build process is considerable which shows that she treats this as an art rather than an engineer's project, for instance, she uses graphite to decrease friction between the rod and the axel, she also cut the woodblock in the u-shape. At the end of her report, she put some pictures of how she made the car during that process, it makes the report looks fewer technicians but entertaining and interesting.

The design of a mousetrap car usually focuses on its mileage or speed people willing to pursuit performance rather than its appearance. Yuri Ostr [5] demonstrate a cool mousetrap car made by solid metal and monster truck's wheels. His mousetrap car is a good example of how to design a car from different aspects. If Anja Kroon [4] shows the audience that a designer could put art elements into a mousetrap car's blueprint, Yuri Ostr [5] manifests how to build a good-looking man-like one. This design illustrates that it's better to add personal preference once you finish the basic mousetrap car.

The conclusion is, there are many ways to build a mousetrap car, the best implement should have both good-performance and good-looking design. The performance is the fundamental of a car, but attractive looks also essential for both designer and viewers.

# Works Cited

1.Bank, N. (2016, 12 25). *How To Make A Mousetrap Car (EASY).* Retrieved from YouTube: https://www.youtube.com/watch?v=J6xDXaPNfwU

2.Coppens, T. (2018, Fab 14). *How to Build a Mousetrap Car for Science Class.* Retrieved from We Have Kids: https://wehavekids.com/education/How-to-Make-a-Mousetrap-Car-for-Science-and-Physics-Class

3.Cosmato, D. (n.d.). *Build a Mousetrap Car For Your Science Project.* Retrieved from Bright Hub Education: https://www.brighthubeducation.com/science-fair-projects/62364-simple-steps-on-how-to-build-a-mousetrap-car/

4.Kroon, A. (n.d.). *Mousetrap Car Built with Records.* Retrieved from blogspot: http://anjakroonphysics.blogspot.com/2015/10/how-to-build-mouse-trap-car.html

5.Ostr, Y. (2018, 3 23). *How to Make a Car from Mousetrap (Catapult Car) .* Retrieved from YouTube: https://www.youtube.com/watch?v=FC7kySCmeQI

6.WikiHow. (2019, June 12). *How to Adapt a Mousetrap Car for Distance.* Retrieved from wikiHow: https://www.wikihow.com/Adapt-a-Mousetrap-Car-for-Distance