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Sparkle Aplenty

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ABSTRACT

One of the most crucial jobs is cleaning the toilet so that the area where we clean ourselves is constantly free of any pollutants. However, it is really challenging because it takes a lot of effort and time. Due to a lack of time and exhaustion from a demanding class schedule, many students do not clean their toilets. So, we decided to develop a toilet cleaning equipment innovation that would benefit the market. Our product uses an extremely rough and abrasive brush where it will support the entire weight of the body while standing if it is positioned beneath the slippers. Consequently, the body's weight can be utilized to wash the toilet floor with little effort. These sandals' bottom surface can be taken off since Velcro strap holds the brush to the bottom of the footwear. Therefore, a different surface type, such as microfiber, can be used to wipe the floor, allowing it to dry more quickly. Our products use high quality microfiber cloth that can swiftly absorb significant amounts of water. All these ideas were also applied to gloves. Thus, the issue of exhaustion and a lack of time when cleaning the toilet may be solved with Sparkle Aplenty.

Keywords: Exhaustion; microfibre; footwear

INTRODUCTION

Cleaning the toilet is one of the most important tasks to ensure that the area where we clean ourselves is always free of any pollutants. It is quite difficult, though, because it requires a lot of time and work. Many college students who live on campus don't clean their toilets because they lack the time and are worn out from a hard educational schedule. Many kids use filthy restrooms every day, which is undesirable because it might cause an increase in infections. We have heard reports of numerous guys chastising pupils for using the filthy restrooms. As a result, a lot of students could rebel and feel stressed. Our group has made the decision to create a market-friendly breakthrough in toilet cleaning equipment. We chose to modify already-existing toilet brushes. To make washing the floor even simpler, we placed a brush underneath the sandals. For scrubbing, the glove's surface may be converted to a brush, and for wiping, it can be utilized as a microfiber surface. Another feature we include in our products is a place to put the soap so that it is easy to add soap during the washing process. The issue of exhaustion and a lack of time when cleaning the toilet may be solved with Sparkle Aplenty. In this project, all relevant details on the advantages, cost analysis, target market, and product specs will be provided. Before deciding on our project, we raised several issues in our conversations. We have gathered some information from a small group of students to identify the issues and limitations of typical cleaning supplies. According to our research, standard cleaning brushes take a long time to remove dirt and are difficult to use on floors with dirty stains. So, it will take more force and energy to clean the dirt [1]. Additionally, using a standard brush requires bending over, which negatively affects our posture. Other than that, typical toilet brushes are



made of low-quality materials, which readily crack and fall off after numerous uses. The cost of repeatedly purchasing toilet brushes will be high. The next problem is the sluggish drying of many surfaces after cleaning. For instance, a mirror in a steamy, wet bathroom makes it challenging to see the face since it is not clear. Thus, after considering all the problems regarding the current toilet cleaning tools, our group decided to improvise and add some special features to the toilet brush and gloves. By using physics concepts, we have learnt, we hope our Sparkle Aplenty can bring more benefits not only to students but to all cleaners and households.

INNOVATION DEVELOPMENT

Sparkle Aplenty is a toilet cleaning equipment innovation that would benefit a lot its user. We implement several physic theories on our product to improve the efficiency in our product [2]

- The main material used to make the sandal were Acetal (Polyoxymethylene, POM) which is known for high resistance to heat, abrasion, water, and chemical compounds. This will make our sandal durable and long lasting.
- The main material of our gloves was made of combination of Polyester and Nitrile Butadiene Rubber. This material is waterproof so it will make the user more comfortable wearing them because no water will be absorbed.
- The brushes were made of Brown Coir Fibers which is the same material to make coir brushes. This material has high friction coefficient; hence the scrubbing process will be much easier.
- The fabric we use is high-quality microfiber fabric. The fibres in microfiber fabric are so tiny and dense that they create more surface area from dirt and dust which will make cleaning dust and dirt more efficient.
- On the outsole of our sandal and gloves, we insert a Velcro Strap. This will able the user to convert between brushes or Microfibre fabric.
- To make the cleaning much more efficient, detergent capsules were placed inside the brush and microfibre fabric. This can help the stain detached easily because detergent can reduce the surface tension between floor surface and stain.
- Sparkle Aplenty sandals sizes start with 5 UK to 12 UK and the gloves size is small, medium, large and extra-large. This will enable everyone to use them.

We apply force concept in our product as shown in Figure 1 and Figure 2. The forces that we applied on our product is force and friction force. Friction force is used to remove the dirt and stain on the surface [1]. The brush we use are very rough which lead to higher friction force. The higher the friction force, the easier the dirt and stain removed.



Figure 1: All the forces involved in Sparkle Aplenty

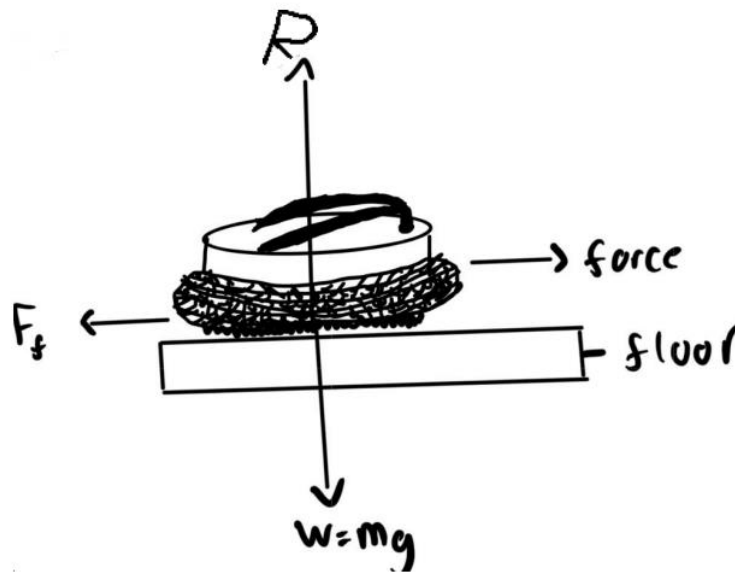


Figure 2: Application of forces in our product.

COMMERCIAL POTENTIAL

Our main target market is students. This is because everyone needs to clean their toilet occasionally. However, time is very limited due to a packed schedule. That's why we created a set of brush gloves and sandals that can be used for showering activities while simultaneously cleaning the toilet. Students need to save their time as they have lots of assignments and tutorials waiting to be done. These products not only serve as cleaning tools that could save a tremendous amount of students' time but also look aesthetically simple. Therefore, the brush gloves and sandals set which is also known as Sparkle Aplenty is very suitable for those who are very concerned about their time management. In addition, this Sparkle Aplenty product should be purchased by students because it is very easy to use to clean the toilet in a short time. This is



because the product comes with detergent pills which are very effective for cleaning the floors, walls and sanitary fixtures. The detergent pills can be used by either stepping on it is using the sandals or crushing it by hand while wearing the glove which can be quite satisfying.

We have made an analysis based on past research on the internet and our own past experiences and we have found that the affordable selling price of the invention is around RM75.70 considering a profit margin of 10%. The list of raw materials and prices are shown in Table 1[3,4].

Table 1: List of prices of raw materials

Materials	Quantity	Price /each
Gloves	1	8.90
Sandal	1	19.90
Coir brush	4	2.00
Detergent capsule	4	0.50
Microfibre fabric	4	1.00
Velcro strape 15mm*150mm	1	23.90
Magic sponge 60mm*50mm	4	1.50
Shoe insole	2	5.00
UHU Contact liquid	1	6.90
	Total	RM 75.70

Our product has a great potential to be marketed. To make an example out of this, firstly we can advertise our product through competition on social media. This way we can attract a way larger marketing audience. Secondly, we can share an interesting poster on our product through email. Email is one of the fastest ways to share information. Lastly, we can also advertise our product via sharing our customers' reviews. With great reviews we surely will buy ourselves a good reputation which will lessen our future customers' doubt and make it easier to buy our product.



Figure 3: Sparkle Aplenty

CONCLUSION

Sparkle Aplenty will continue to develop by adding more features in the future. One of the prominent features that will be added to Sparkle Aplenty is by adding other type of surface to be replace the brushes and microfibre fabric such as rubber surface. This is suitable to be used by elders to prevent them from slip off the floor. Secondly, we will add more variety of colour to our product. This will make our product more interesting and will attract kids to wear them. We also will wider our market such as on online platform and reseller so that our product is easy to get.

ACKNOWLEDGEMENT

First, we would like to thank God for letting us finish our innovation. We also have put all our effort in order to complete this group project. Without our group members' cooperation, we cannot manage to complete this project within the given time. So, we would like to express our gratitude to all our group members for all their hard work. We would also like to say thank you to our teacher, Mrs Nurul Huda Binti Mohd Noor who helped us a lot to finish this group work. Lastly, we also like to give our special thanks to our parents for supporting us throughout our hard time during this project.

REFERENCES

- [1] <https://byjus.com/physics/frictional-force/>
- [2] <https://offer.alibaba.com/cps/e1f5f93f?bm=cps&src=saf&tp1=5c675efbcb5bc>
- [3] <https://www.refinery29.com/en-us/amazon-mop-slippers-review>
- [4] <https://en.wikipedia.org/wiki/Force>