

Hong Kong Student Science Project Competition 2022

Template of Extended Abstract (Invention)
(Word Limit: 1,000 words, Pages: 2 pages only)

Team Number: JAPE060

Project Title: Denture Cleaner

Project Type: Invention

To our best knowledge and after thorough literature research, as at 6/6/2022 , there are no* similar works. If there are, the reference links are as below:

The enhancement our project has made for the existing related products or research is summarized as below:

***Please delete if not applicable. HKSSPC values the originality of works. Students must conduct literature research thoroughly to ensure that their works are unique, and to list relevant reference materials to complement the research or invention.**

I. Background

Nowadays, more and more elderly have to use dentures since they suffer from different teeth problems. Teeth are really important to us since we use them to eat. It will be inconvenient if their teeth have problems. Therefore, the elderly use dentures but it is really hard for them to clean the dentures. The elderly often complain that they cannot clean the dentures properly. And this may cause the worst teeth and oral condition problems. Therefore, it is important for them to clean the dentures well.

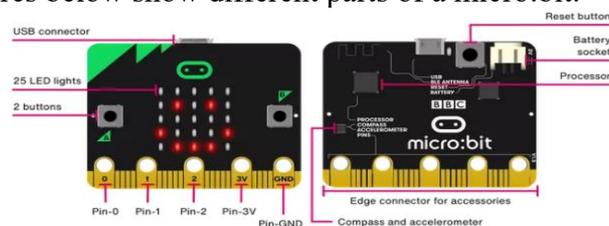
II. Objectives

Someone may say that there are Denture Cleansing Tablets for them to clean, but lots of elderly have complained that they cannot clean their dentures well. How can we solve this problem? We would like to invent a denture cleaner for denture users to clean and sanitize their denture every day. This brings lots of benefits because if your denture is not clean, you may have oral hygiene problems, like periodontal disease. If cleaning denture is only a pressing-button issue, then elderly won't be resistant to clean the denture.

III. Methodology

For our invention, we thought of using a brush connected to a low-speed motor, a base connected to a servo motor and a microbit used to control the motions of the motors.

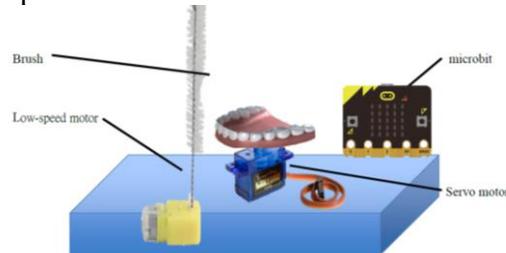
A micro:bit is a minicomputer. Which takes information from inputs like buttons, and makes something happen on outputs. The pictures below show different parts of a micro:bit.



A Microbit

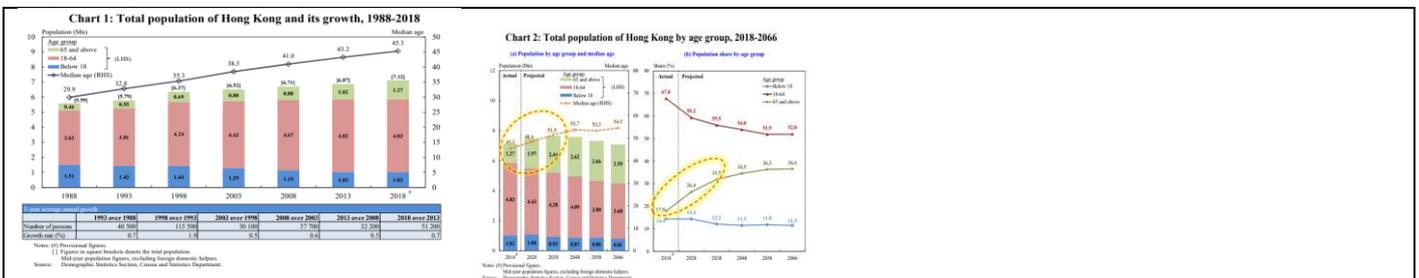
IV. Design of Invention

- Describe the **design** and the **principle** of invention (e.g. The ideation of the projects, the prototypes or creative solution as far as applicable)
- Provide sketches / drawings / photos of the invention



This is more convenient as the elderly don't have to wash it themselves. This cleaner uses a toothbrush and different kinds of motor so that it will be faster for us to clean it. If the users need it quickly but they think their denture is too dirty, this will help them a lot.

V. Application / Market Need



According to the American Dental Association, there are approximately 57% of people ages 65 to 74 wearing some form of denture.

In the geriatric population the ratio of edentulous individuals is 2 to 1. About 23 million are completely edentulous and about 12 million are edentulous in one arch. 90 percent of those who suffer from edentulism have dentures.

Our Denture Cleaner can help the elderly cleaning their denture more convenient and less time-consuming. As there will be more and more people needs to suffer from edentulism have dentures, our product can help their life become more convenient.

VI. Conclusion

Based on our thoughts, we need to find out the time for the machine to clean the dentures. Therefore, we need to carry out experiments about how long it takes to clean something similar to dentures since we don't have it. Moreover, we should carry out experiments about cleaning, like what place should we put the sponges and toothbrush to make it better for cleaning uses.

We truly hope that our invention can benefit and help the Denture users, especially elderly users, to clean their denture properly and cleaner to prevent worst oral and teeth problems.

✳ Our project is developed based on our school's previous project and the enhancement is as below: