

Research Article

Teaching and Learning Innovation in Management of Technology and Innovation: Mini Portable UV Sterilizer

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Abstract: The Portable Mini UV Sterilizer is an innovative sanitation device designed to improve conventional cleaning methods by effectively eliminating germs and microorganisms that may survive regular disinfectants and hot water cleaning. Using advanced UV light technology, the device disinfects surfaces within seconds, making it suitable for public spaces such as shopping complexes, playgrounds, hotels, workplaces, and homes. Its compact, lightweight, and portable design allows users to conveniently carry it in handbags, backpacks, or luggage for on-the-go disinfection. The sterilizer is user-friendly, efficient, and practical for sanitizing surfaces such as tabletops, bedding, and personal hygiene items, offering a safer and more hygienic solution for everyday use.



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1. INTRODUCTION

The handheld portable UV light sterilizer is a One-button operation product. Sterilization in a short time for many surfaces in the home, office, public area, or hotel in 10 seconds. Its features are the ultimate sterilizer that can eliminate and disinfect 99.9% of germs, viruses, and bacteria. It is useful for cleaning frequently touched areas, especially baby toys, bedding, and other frequently touched areas. Light and compact function in one product because it is portable and Easy to carry and use outside or at home, because it can disinfect when needed while traveling. Just turn on the button to activate and deactivate the product. Comes with a lanyard and a built-in case as a complimentary. It has a built-in rechargeable battery that makes it easy for users to charge it and the material is durable ABS plastic that reduces the possibility of breakage. Digital indicators for germ, virus, and bacteria detection levels make it the best detection product.

Nowadays, the most uncontrollable issue is the spreading of diseases. The fact is that harmful germs and microscopic organisms can escape even the most thorough cleaning with disinfectants, hot water, and bleach. However, in the worst-case scenario, it can cause illness and death. Most of the place is dangerous, especially in public areas such as shopping complexes, playgrounds, hotels, workplaces, or homes. The more frequent use of the products more the risk for germs or bacteria on the entire surface whether it is tabletops bedding or hygiene products.

Years past, the most epic is the coronavirus, the virus which spread like a wind, flowing like a water and raging like a fire to all countries in the world. The day when the world is shut down for a while. The plague attacked humans so badly that it caused many people to fall ill with severe symptoms and even worse caused deaths that were difficult to control in most countries. The coronavirus 2019 (COVID-19) affected life around the world which chaotic situation involved isolation, an economic shutdown, and also contact restrictions. In those particular days, the problem starts to take place when all humans did not know how to solve the outbreak of COVID-19.

Even today, people still did not know how to prevent and decrease the outbreak of germs, bacteria, and viruses. Most of the places that are often visited by humans have the potential of those outbreaks and most of us did not know how to kill germs, bacteria, and viruses effectively. As we have liquid for spray sanitizer on hands and surfaces, the liquid will also harm the skin for long-term use, and some people cannot use it due to sensitive skin. Unlike ordinary disinfection methods, UV light disinfection is a physical method for killing bacteria, germs, and viruses. Therefore, the bacteria in question cannot build immunity to it. That's a huge plus, particularly for hospitals and assisted living facilities and afford to buy for some company for some specific place only. The size of the sterilizer machine to kill germs, bacteria and viruses are bulky and expensive so peoples are not afforded to buy it.

2. METHODOLOGY



Figure 1. The transition innovation of the UV sterilizer machine into a mini portable product.

The handheld portable UV light sterilizer is a One-button operation product. Sterilization in a short time for many surfaces in the home, office, public area, or hotel in 10 seconds. Its features are the ultimate sterilizer that can eliminate and disinfect 99.9% of germs, viruses, and bacteria. It is useful for cleaning frequently touched areas, especially baby toys, bedding, and other frequently touched areas.



Figure 2. The product detail.

3. FINDINGS

3.1. Functional Specifications of Product Innovation



Figure 3. The operation method.

The operation method for this product is easy as it is one button to turn it on. First, for the power button, turn it on by pressing the switch button and the disinfection lamp will be lit up and the disinfection lamp can emit UV rays. The function of the lamp on the front side is to indicate the function of the product and whether the product function is ready to kill germs, bacteria, and viruses. It is the indicator that when the disinfection lamp is turned on, the work lamp will light from bottom to top. Then, the other lamp is to indicate the level of the battery, whether weak or strong, to make it easy for the user to charge it at the right time. Digital indicators for germ, virus, and bacteria detection levels

make it the best detection product. Then on the back side of the product is the UV antivirus lamp that emits UV rays to kill germs, bacteria, and viruses, and also has a charging socket. Then handheld to turn the UVC lamp down, 15-20cm away from the item disinfected, and press the start button to disinfect the surface. Reverse protection, it is an auto-sensing flip to avoid the UV rays emits on the human body. For the material for the product, we suggest durable ABS plastic that reduces the possibility of breakage.

3.2. Details of the Product Innovation



Figure 1. The product.

4. DISCUSSION

4.1. Novelty and Uniqueness of Product Innovation

The novelty and uniqueness of this product are light and compact function in one product because it is portable and Easy to carry and use outside or at home, because it can disinfect when needed while traveling. The mini portable size is compact and lightweight means that you can take it with you anytime you want to go out. Just turn on the button to activate and deactivate the product The novelty of this product is a 99.9 % sterilization rate which means the UVC light as radiation is used to disinfect germs, bacteria, and viruses effectively. Comes with a lanyard and a built-in case as a complimentary. The other novelty is a rechargeable battery; the product battery is built-in making it easy to charge. Safety design, the flip autosensing is for safety reasons when the UVC reverses upward the light will turn off automatically which for prevention direct irritation toward the human body. Then turn on the UVC lamp downward the surface light will be turned on again.

4.2. Benefits to Mankind

The mini portable ultimate sterilizer can eliminate and disinfect 99.9% of germs, viruses, and bacteria preventing and decreasing the number of germs, bacteria, and viruses. Its compact size and light weight make it easy to put in a handbag, backpack, tote bag, or luggage. Disinfect when necessary while moving. In addition, it is user-friendly and distinctive in its design. The idea for the production

of this product is very appropriate to the current situation where infectious diseases are spreading and are very worrying. So, this product's value is great for customers because it is a tool that helps prevent early infection. As we have liquid for spray sanitizer on hands and surfaces, the liquid will also harm the skin for long-term use, and some people cannot use it due to sensitive skin.

4.3. Potential of Commercialization

This product has great potential to be commercialized because of its functionality that is responsive to users and as a solution to problems, ultimately creating value for customers. The manufacturing price is expected to be lower but the profit is higher so the price for each product unit is reasonable. Its function is reliable for the current situation where many diseases come from germs, viruses, and bacteria this product is also another unique selling product for commercialization because of its portability. The segment target market for this product is broad as all peoples in the most country suffer terrible situations during COVID-19. Then people tend to buy this product for hygiene purposes and safety to prevent illness that produces by germs, viruses, and bacteria. Especially parents with kids and the elderly will be the most potential customers for this product.

5. CONCLUSION

In the conclusion, this mini portable UV sterilizer is a really good and useful product. This product would be the best product that supporting by many consumers. This mini portable UV sterilizer soon will be an essential product especially when many infectious bacteria nowadays lead to different types of diseases. In addition, this product surely will not burden the user to carry it as the size of the product is mini portable so the potential for commercialization and demand for this product is high. It can be brought and used anytime and anywhere, especially in public areas. However, we believe, the innovation for this potential product will bring a new wave to the market. As we all know, public area is the most possible place for infectious bacteria to be found. Therefore, it is recommended to get this mini portable UV sterilizer for everyone. With this product, people can increase their awareness of bacteria or viruses. So, they can always put their family life for better protection. We would like to recommend this product to be produced in the future as soon as possible.

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