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“Optimizing Innovation in Knowledge, Education and Design”

EXTENDED ABSTRACT



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Assalamualaikum warahmatullahi wabarakatuh,



First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality. I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services. By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality. I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH



WELCOME MESSAGE (i-SPIKE 2023 CHAIR)



We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPIKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPIKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail

Chair

3rd International Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023)

SMART BIP BOTTLE

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ABSTRACT

The "Smart Bip Bottle" is a revolutionary water bottle designed specifically for outdoor enthusiasts. It addresses the need for a multifunctional bottle with innovative features that are currently unavailable in existing products. The bottle incorporates solar lights, card compartments, Bluetooth connectivity, and a distinctive "bip" sound feature to assist users in locating it when misplaced or difficult to find. The primary objectives behind creating this product are to provide convenience in carrying the bottle anywhere, encourage regular hydration among customers, and serve as a helpful sensory device for visually impaired individuals to locate the bottle. This product is a result of combining three essential elements: solar lights for camping illumination, the "bip" sound function to aid in locating the bottle, and a card pocket for storing cards. What sets this bottle apart is its exceptional combination of features, including solar light functionality, Bluetooth connectivity, the distinct "bip" sound when lost, a magnetic design, and a convenient card storage pocket.

Keywords: sensory device, convenience, smart bottle, multifunction, solar light.

INTRODUCTION

In Malaysia, the impact of global warming, such as haze and drought, has raised concerns. Zainal Ariffin Omar, a public health expert, has advised the public to prioritize self-care by staying properly hydrated (The Straits Times News, 2023). Adequate hydration plays a crucial role in various bodily functions, including temperature regulation and maintaining healthy skin. In simpler terms, staying hydrated means drinking enough water. Furthermore, a study published in the journal *e-BioMedicine* by the National Institutes of Health revealed that sufficient water intake is associated with a significantly reduced risk of chronic diseases, premature death, and accelerated aging.

Health experts typically recommend consuming eight 8-ounce glasses of water daily, which is equivalent to approximately 2 liters or half a gallon. This guideline, known as the 8x8 rule, is easy to remember. For individuals engaging in strenuous activities like camping, hiking, or jogging, carrying a water bottle is essential. Therefore, the availability of multi-functional drink bottles appeals to people's needs. The innovation of these bottles caters to individuals preparing for a day trip or heading to the gym. It is important to highlight the key elements and explain their significance.

Introducing the "Smart Bip Bottle," a drink bottle designed specifically for those who frequently engage in demanding outdoor activities. Its exceptional durability makes it the top choice for use in rigorous sports, as it is resistant to breakage. Moreover, its stylish and portable design attracts customers to drink water more frequently. The bottle also incorporates a sensing device, making it easier for individuals to locate it, making it a practical option for them.

The Smart Bip Bottle offers additional features that set it apart from competitors. It includes a solar-powered lamp for night time use and a small pocket to store cards such as credit cards and hotel keys. It also includes a Bluetooth-enabled bottle tracking device, ensuring that it stands out in terms of functionality. Furthermore, the bottle's unique design allows it to be folded in half, facilitating easy storage and placement for consumers. Lastly, the magnetic attraction on the bottle's edge adds to its overall convenience.

OBJECTIVE

The Smart Bip Bottle has four main objectives that differentiate it in the market and serve various purposes. Firstly, the product aims to stand out by incorporating unique design elements, innovative features, and attractive branding. By offering distinctiveness and functionality, the Smart Bip Bottle competes effectively with other products and captures consumers' attention in stores.

Secondly, the bottle seeks to create awareness among users about the importance of staying hydrated. The design and functionality aim to prevent users from misplacing their bottles, thereby ensuring they do not miss out on drinking water and feel motivated to carry it with them.

Thirdly, the Smart Bip Bottle encourages eco-friendly habits by promoting the use of reusable bottles over single-use plastic. Through integrated notifications on the bottle's screen, users are prompted to embrace sustainable practices and reduce plastic waste. This constant reminder helps foster environmentally responsible behaviors.

Lastly, This bottle can be changed from a large size to a smaller size. Its foldable design makes it convenient to carry, and appealing to people of all ages, including children. This aspect is particularly important for children as it serves as a motivator and reminder for them to drink enough water, while also providing a practical and appealing container for their other belongings.

Overall, the Smart Bip Bottle distinguishes itself through its unique design, serves as a reminder for hydration, encourages eco-friendly practices, and provides adaptability for different uses and age groups.

NOVELTY

The Smart Bip Bottle is an innovative advancement in the realm of collapsible bottles. Setting it apart from other foldable bottles, this particular bottle offers a plethora of convenient and compact features. Its introduction is expected to prompt water bottle manufacturers like Haushof, FJBottle, Botella, and Montigo Ace Bottle to enhance their products, especially in terms of the stainless steel component.

One of the notable advantages of the Smart Bip Bottle lies in its simplicity and eco-friendliness. The incorporation of new elements, such as a solar light, contributes to energy conservation and environmental protection. Harnessing the eco-friendly nature and continuous usability of solar energy, a ring-shaped solar light is attached to the bottle's bottom. This feature serves as a torchlight, providing bright illumination for adventurous travellers and campers, facilitating night time mobility. When hung in a camp, it can also function as a nightlight. Additionally, the top of the bottle is foldable, allowing it to be collapsed based on the water level, thus optimizing space utilization.

The Smart Bip Bottle is composed of two materials: silicone at the top and stainless steel at the bottom. The stainless steel portion is equipped with a powerful magnet, enabling the bottle to be securely placed on iron surfaces without the need for constant holding. Another notable innovation is the inclusion of a storage compartment. Users can conveniently store their ID cards, cash, and ATM cards within this storage unit, eliminating the need for an extra wallet when traveling with valuables.

For individuals who often misplace their belongings and struggle to find them, the Smart Bip Bottle offers a Bluetooth connection feature. This unique Bluetooth feature emits a distinctive 'bip' sound, enabling easy location of the bottle. With this functionality, individuals can effortlessly locate and access their drinks without having to seek assistance from others.

SMART BIP BOTTLE FEATURES

The Smart Bip Bottle incorporates five key features, as detailed in Table 1.

Table 1: Features of Smart Bip Bottle

Feature	Description
Materials	The bottle is constructed using two materials: silicone for the top portion and stainless steel for the bottom.
Storage	The bottle includes a storage compartment for keeping items such as ID cards, cash, and ATM cards.
Flashlight	Equipped with a solar-powered flashlight in the shape of a ring light, providing bright illumination.
Button	The bottle features a button that activates the Bluetooth connectivity and emits a distinctive 'bip' sound.
Bluetooth Connectivity	Enables wireless connection to devices, facilitating easy tracking and location of the bottle.

TECHNICAL FUNCTION OF SMART BIP BOTTLE

Smart Bip Bottle is created for those who want to minimize their belongings, for persons who frequently forget about their bottles. The technique of using Smart Bip Bottle is detailed in Table 2.

Table 2: Process of Using Smart Bip Bottle

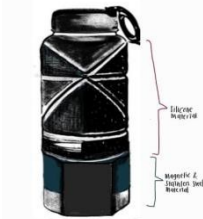

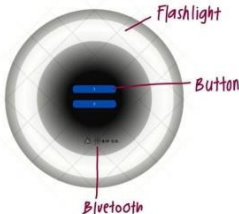
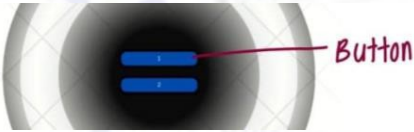

 <p>Figure 1: Materials</p>	<ol style="list-style-type: none"> 1. Fill the bottle with your favorite water, and this bottle will help to keep your water temperature whether warm or cold. 2. The silicone material on the top of the bottle can fold when there is water or not. 3. The stainless steel on the bottom of the bottle is for magnetic purposes.
 <p>Figure 2: Storage</p>	<ol style="list-style-type: none"> 1. Press the button at the bottom to open the storage. 2. Put your credit card or money in storage to reduce the number of items that need to bring to go somewhere.
	<ol style="list-style-type: none"> 1. Press the button 2 to turn the light. 2. The light will auto charge through solar-power. 3. The light will auto off when you put the bottle.

Figure 3: Flashlight	
	<ol style="list-style-type: none"> 1. Button 1: for storage 2. Button 2: first tap for Bluetooth, second tap for light
 <p>Figure 5: Bluetooth Connectivity</p>	<ol style="list-style-type: none"> 1. Select the device from the app's settings to connect your smartphone, smart watch or tablet to the smart bottle through Bluetooth. 2. Bip sound will be activated after the bluetooth is connected. 3. Those who misplace and forgot the location of their bottle will easy to reach through the "bip" sound.

PRODUCT COMMERCIALIZATION

The Smart Bip Bottle boasts a uniquely designed set of features that are difficult to find in the current market. Its exceptional functionality makes it a sought-after item among users, positioning it as a must-have bottle for everyone. The goal is to make this product readily available in both local and international markets, catering to a wide range of consumers.

Given its distinctive qualities, the Smart Bip Bottle is expected to quickly become a favorite among consumers. Its unmatched attributes set it apart from competing products, making it highly desirable. To effectively reach potential buyers, online platforms like Shopee and eBay will be utilized. These platforms provide a convenient and accessible avenue for customers to discover and purchase the Smart Bip Bottle.

By leveraging the reach of online marketplaces, the Smart Bip Bottle can capture the attention of a broader audience, both domestically and internationally. The aim is to create awareness and generate demand for the product by showcasing its unique features and benefits. Through strategic marketing efforts on platforms like Shopee and eBay, the Smart Bip Bottle can establish a strong presence and attract the attention of potential buyers worldwide.

CONCLUSION

This paper presents the Smart Bip Bottle, which offers a range of versatile features. The bottle includes solar lights, allowing users to utilize it at night. Additionally, it emits a sound when misplaced or difficult to locate, aiding users in finding it easily. The bottle also incorporates a small pocket for storing cards, eliminating the need to carry a separate wallet. To activate the

Bluetooth connectivity, users simply press the button located at the bottom of the bottle, which triggers a distinctive "bip" sound, making it convenient to track the bottle's location.

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