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INNOVATION IN ACTION: TURNING IDEAS INTO REALITY

Chapter 43
Thermomate: Bringing A New Concept in Portable Beverage Temperature Solutions to the Market

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ABSTRACT

In the fast-paced and convenience-driven environment of college life, students often face difficulties in accessing beverages at their desired temperatures due to limited facilities in dormitories and academic buildings. Thermomate is a conceptual solution that addresses this problem by offering a portable, smart tumbler capable of both heating and cooling drinks. This study explores the idea development of Thermomate using a conceptual methodology, based on logical reasoning, creativity, and existing technologies such as thermoelectric modules. Through analysis of student needs and limitations of current solutions, the proposed tumbler stands out for its practicality, portability, and potential to support hydration and well-being among students. While still in its ideation phase, Thermomate presents a compelling opportunity for future product development and commercialization aimed at improving daily convenience and health habits for students and other users in mobile lifestyles.

Key Words: Smart tumbler, Thermoelectric technology, Student lifestyle, Portable beverage container, Hydration solution.

1. INTRODUCTION

The bustling and often chaotic environment of college dorms, where convenience and time are precious commodities, satisfying a simple craving for a hot or cold beverage can quickly transform into an inconvenient and even frustrating ordeal. Students are frequently confronted with long journeys to distant water dispensers or malfunctioning elevators that make getting

drinks up and down many steps of stairs a tiring work. Furthermore, many dorms do not have adequate conveniences for keeping the correct temperature of drinks throughout the day. A hot coffee can cool down before you get to class, while a cold drink can heat up way too rapidly in the dorm room.

Thermomate is an ideal answer for tackling the daily issues that many students confront. Thermomate provides a clever, portable, and incredibly efficient drink temperature management solution that blends in perfectly with the hectic lifestyle of contemporary college students. It is portable, simple to use, and easy to maintain, allowing students to enjoy their drinks for hours on end at the ideal temperature, whether they like them steaming hot or cool. For students who wish to optimize their time and minimize disturbances to their routine, the ease of a smart, portable drinking container that adapts to your needs makes it an essential tool.

Thermomate stylish and useful design makes it unnecessary to make several trips to the water dispensers. Thermomate makes sure that your drink stays at the perfect temperature without requiring any additional effort, whether you're working late into the night, hurrying to an early class, or just chilling in your college room. The ease of owning a portable, smart tumblethat adapts to your needs makes it an essential tool for students looking to maximize their time and avoid disturbances to their routine.

2. LITERATURE REVIEW

Drinking at the right temperature is crucial for many people, ranging from the student to the office worker and even the traveler. It enhances your comfort, productivity, and overall well-being. But refrigerators or hot water dispensers, for that matter are not everywhere, especially for students living in dorms. This leads to a demand for beverage containers that can maintain temperatures.

Now studies confirm that beverage temperature affects both personal mood and mental performance skills. Drinking cold beverages preserves bodily hydration levels and this supports maximum cognitive performance. Enhanced mental focus together with better attention results from proper hydration especially during hot weather which dehydrates the mind (Saftarina & Fauziah, 2023). Hot beverages including tea and coffee create relaxation while offering comfort to users. Hot beverages create feelings of relaxation through their warmth thus they provide stress-reduction benefits in demanding moments like testing or moving between locations (Mentes et al., 2019). Hot beverage consumption leads to increased comfort feelings based on scientific evidence which supports both emotional state and brain processing capabilities (Aung et al., 2023).

Refrigerators, thermos flasks, and electric dispensers all have some limitation, they either cost too much, are typically bulky, or even totally banned in dorms. Newer options, such as vacuum-insulated bottles, may heat or cool, but rarely do both at a fairly reasonable price, and it is often heavy. ThermoMate has come out with a more affordable, stylish, and portable bottle, heating, and cooling beverages for students and travelers and office workers so they can have convenience wherever they go.

3. METHODOLOGY

This research is fully based on thinking and idea development without using any case studies or data collection. The approach is conceptual in which the main focus is to explore and develop the idea of a self heating and self cooling tumbler using logic, creativity, and general knowledge from existing tumblers. There is no experiments or surveys were done for this research.

The process started by identifying common problems people face when using normal tumblers without any add-on feature. For instance drinks getting cold too fast or being too hot to drink. The idea of smart temperature control was explored using simple reasoning. The concept involves combining heating and cooling functions in one tumbler using technology that already exists, such as thermoelectric elements (like Peltier modules) and rechargeable batteries.

Instead of studying actual products, the idea was imagined by the team members and improved step by step by thinking about how it would work in real life. For example, how the user would turn it on, how long the battery would last, or how safe it would be. Basic features like portability, button control, safety, and user convenience were also considered as part of the design idea.

Since this is only a conceptual research, the purpose is not to prove whether the product can be built right now. However, to show that it is an interesting and useful idea that could be developed further in the future.

4. DISCUSSION & RESULT

The Thermomate tumbler is one of the useful and practical solutions especially for students who live in college and face long days of learning classes. Since they are not allowed to bring personal appliances such as kettles and mini-fridges, they also are not provided, only relying on water dispensers that are located quite far from students' residences and lecture halls. Because of that, many students face difficulties getting hot or cold water during the day. Based on the problems, Thermomate is designed to solve the issues by keeping hot or cold water for a long period of time, allowing students to enjoy their drinks anytime without having to move from their study space.

This product idea deserves attention because it is portable, easy to use and ensures student’s health is more awake by encouraging them to drink more water according to the proper amount. It also will help students to save the time and their money pocket from buying drinks from the outside. However, to make sure this product works properly in real-life situations, prototyping and testing are required since this idea is still in the conceptual stage.

5. CONCLUSION & RECOMMENDATIONS

In conclusion, the Thermomate tumbler is a smart and practical solution to a common problem faced by students, especially those living in dorms or spending long hours on campus. Without easy access to kettles or fridges, students often struggle to get hot or cold drinks, especially when water dispensers are far from hostels or classrooms. This can lead to dehydration and affect their focus in class. Thermomate addresses this issue by allowing users to heat or cool drinks anytime, anywhere, just like a portable kettle and fridge. Lightweight, user-friendly, and

easy to carry, it fits perfectly into the busy lifestyle of students and encourages hydration while saving money on outside drinks.

To move forward, a prototype should be developed and tested among students in real-life situations such as during classes or outdoor activities. Their feedback on performance, comfort, and usability will help improve the product. After refinement, a business plan can be created to launch the tumbler through campus shops, events, or online platforms. If successful, the product can expand to other markets like office workers or travelers. With proper development and promotion, Thermomate has strong potential to improve everyday life for students and beyond.

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