

**Smart Aqua Drop: The Effectiveness of Using Arduino Button’s**

**Feasibility of Automated Hydration Facilitation Apparatus**

**among College Students Cainta Catholic College**

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**Chapter 1:**

**Introduction 1.1**

In this generation the development of new technologies, a variety of different solutions have emerged to attack the problems facing us all. Yet some technologies have become daily essentials, while others are still neglected or underutilized. People get immediate access to information though the internet and websites thanks to artificial intelligence (AI) that is universally applied on machines.

The researchers made a research proposal system entitled Smart Aqua Drop for the students of Cainta Catholic College so that they do not have difficulty buying at the canteen or outside. Buying bottled water consumes 10 to 15 minutes of wasted time especially when you buy outside.

It is in the light of this situation that our research project sets out to provide an innovative solution. By using the possibilities of Arduino buttons to build up an automated water supply system, we propose "Smart Aqua Drop." By offering students a convenient and inexpensive means of getting drinkable tap water within reach in school, our project aims not just to serve them but also to help the college. This project could provide a healthier and more effective teaching environment for students. It also costs less.

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According to the researchers, the idea of this project helps the students to ease their time and to know the importance or the effectiveness of the usage of the water dispenser in the lives of the college Student

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**Background of the Study**

Cainta Catholic College is a private school, a lot of students studying here, including the elementary, junior high school, senior high school and college. Cainta Catholic College has 3 buildings: the Centennial Building, Cardinal Santos Building, and Our Lady of Light High School Building. Cainta Catholic College has a canteen located in the Centennial Building, first floor. College students buying foods here and bottled water. College students queuing to the cashier to exchange chips before they can buy bottled water. Some of them go outside to buy bottled water if it is not available in the canteen.

Developing an Automated Hydration Facilitation Apparatus would make the process of buying water easier. There will be no hassle in queuing. This will not only benefit the students but will also benefit the students and school because of the feasibility of the machine. The purpose of this study is to help college students to buy water easier.

Furthermore, the researchers focus on the system to determine the effectiveness of the Automated Hydration Facilitation Apparatus Using Arduino Buttons in the lives of college student.

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**Statement of the Problems**

The study aimed to develop the Smart Aqua Drop: The Effectiveness of Using Arduino Button’s Feasibility of Automated Hydration Facilitation Apparatus among College Students at Cainta Catholic College.

Specifically, it sought to answer the following questions.

1. What is the demographic profile of the respondents?

1.1. Program

1.2. Section

1.3. Year Level

1. What is the level of effectiveness of using Arduino Button’s Feasibility of Automated Hydration Facilitation Apparatus among College Students at Cainta Catholic College in terms of:

1.1. Convenience

1.2. Accessible

1.3. Accuracy

1.4. Efficiency

1. Is the Smart Aqua Drop system usable to college students of Cainta Catholic College?

1.1. Yes

1.2. No

1. Is there a significant difference between the existing or current water dispenser and the proposed Automated Hydration Facilitation Apparatus?

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**Hypothesis**

There is no significant difference between the existing or current water dispenser and the proposed Automated Hydration Facilitation Apparatus among college students.

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**Significance of the Study**

The study focused on the effectiveness of water dispensers using Arduino uno for minimizing students to go outside. Moreover, the research findings will be beneficial to the following:

**College Students.** The study is beneficial to college students as it reduces the time they spend going outside the premises, such as Cainta Catholic College, to get water. By having easy access to water dispensers within the campus, students can save time and stay more focused on their academic activities.

**Businesses.** This research could aid business establishments in reducing virus

transmission. Primarily to those that cater to the public, such as schools, canteen, faculty rooms and other indoor and outdoor areas to help hydrate people.

**Schools.** This study will serve as inspiration to the Cainta Catholic College by informing them about the significant contribution of the Automated Hydration Facilitation Apparatus minimizing the time they spend going outside, thereby encouraging them to implement the Automated Hydration Facilitation Apparatus school canteen, faculty and public establishments where many people around.

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**Researchers**. Through their research, they will be prepared to face a variety of challenges and gain a thorough understanding of the importance of hydration, particularly during school hours such as outdoor activities.  This will also assist the researchers in improving their knowledge, skills and communication skills with one another, as well as in gaining new experiences, broadening their horizons, and being capable of opening to new opportunities.

**Other Researchers.** This study will restore innovative ideas and serve as a valuable resource for future researchers who wish to conduct research on the effectiveness of water dispensers using Arduino uno.

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**Scope and Delimitation of the Study**

This study focuses on developing and evaluating the hydration facilitation system by using Arduino technology. The system aims to look at whether the device can assist students in drinking water effectively, not only in terms of effectiveness but also feasibility, when used by students in college.

**Scope**

* **Study Population:** The study will focus only on the college students who are already enrolled in Cainta Catholic College. The population consists of students who are always busy and sometimes participate in activities that might provoke unsatisfactory hydration.
* **Automated Dispensing —** Use of Arduino-based systems to control water dispensing based on user input (e.g. button presses).
* **Adjust Drink Warmth** — Optional integration of temperature to help the users if they want their drink either hot or cold. This controls the temperature when users already choose their selected type of temperature.
* **Evaluation Metrics**: The study will take quantitative data, such as the number of times the consumer utilizes water and its constant usage, as well as qualitative feedback of users on its experience, ease of use, and benefits. These are major metrics that the effectiveness and feasibility of the system can be measured by.

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**Delimitation**

* **User Interface** — Basic interface (e.g. LEDs or simple LCD) will be used instead of advanced displays or touchscreens.
* **Limited Features** — Excluding cashless payment systems and other payment options, focusing only on water dispensing.

This framework helps clarify what the project will cover and its limitations, ensuring a focused approach to a school environment.

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