AQUA ELIXIR

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College ***:*** *B N M Institute of Technology*
Branch ***:*** *Electronics and Communication Engineering*
Guide(s) ***:*** *Dr. Rekha P and Dr. Bharathkumar Hegde*
Student(S) ***:*** *Mr. B K Krutin*
Ms. Harshitha K S
Ms. Kavana K P

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Introduction:

Access to clean and pure drinking water is an indispensable aspect of human well-being, yet the increasing challenges associated with water quality underscore the need for a comprehensive understanding of purification techniques. In today's world, where the availability of uncontaminated water is often compromised, it becomes imperative for each individual to be well-informed about the various methods employed to ensure the provision of high-quality water to present and future generations.

Creating a comprehensive wireless sensor network (WSN) and IoT system to monitor and transmit crucial water quality parameters such as pH, dissolved oxygen, and conductivity for drinking water involves integrating various hardware and software components. Additionally, incorporating GSM technology enables the system to notify both end-users (customers) about filter status and service providers for timely replacements.

Objectives:

1) Research, understand and study the Technological Innovations in Water Purification Methods.
2) Evaluate the Effectiveness of Different Purification Technologies.
3) Examine Microcontroller-Based Water Monitoring Systems.
4) Explore Integration of IoT Technologies.
5) Understand the Impact of Water Quality on Public Health.
6) Evaluate Environmental Impacts of Water Contamination.

Methodology:

Hardware and software Setup: An IoT module with Wi-Fi capabilities (ESP8266 or ESP32) is chosen. Program the microcontroller using an integrated development environment (IDE) such as Arduino IDE or Platform. Necessary sensors such as pH, turbidity etc are interfaced to the microcontroller. An app is developed using Blynk server for data updation and alert notification.
GSM (SIM800L) module is used for transmitting mobile voice and data service.

Conclusion:

Sensors were interfaced to the node MCU and tested for the performance. All the sensors connected behaved as designed and yielded good results. Efforts are continued to improve the sensitivity and the accuracy of the results.

Scope for future work:

1) Technology Integration.
2) In-Depth Analysis of Sensors.
3) Global Water Quality Challenges.
4) Health Implications and Waterborne Diseases.
5) Environmental Impact Assessment.
6) Emergency Preparedness and Resilience.