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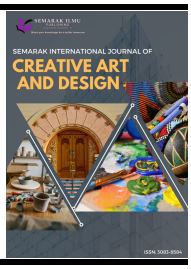

AuraSync: A Multifunctional Wellness Device for Enhancing Sleep, Relaxation, and Daily Productivity

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ABSTRACT

This study presents AuraSync, a multifunctional wellness device designed to address the rising prevalence of sleep-related issues among young adults aged 18 to 34. Developed for students and professionals navigating demanding routines, AuraSync integrates a diffuser, Bluetooth speaker, and an alarm clock into a single minimalist unit that enhances sleep quality, reduces stress, and promotes healthier daily habits. The design process followed a user-centered approach involving benchmarking via Pugh Matric, user surveys, and iterative prototyping inspired by sensory, nature-based, and minimalist design principles. User testing revealed the product's effectiveness, with 90% of participants experiencing sleep difficulties and 85% expressing interest in a combined scent, sound, and light-based solution. Aligned with Sustainable Development Goals (SDGs) 3,11, and 12, AuraSync contributes to personal well-being, supports compact urban living, and encourages responsible consumption. The findings indicate that AuraSync is a promising tool to support healthy lifestyles in modern environments.

1. Introduction

In today's increasingly fast-paced world, the demands of daily life frequently outweigh the importance of rest and well-being. For young adults aged 18 to 34, especially students and professionals, balancing work and health has become a challenge [1]. Lack of sleep, exposure to stress, and overstimulation from digital media contribute to physical and mental exhaustion [2].

Global development priorities, such as those outlined in the United Nations Sustainable Development Goals (SDGs), highlight the importance of good health, sustainable communities, and responsible consumption [3]. Human-centered and sensory design principles also provide valuable frameworks for addressing these well-being challenges [4]. In line with sustainability in design and lifestyle choices, integrating eco-conscious thinking into daily living has become increasingly relevant [5].

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Meta-analyses confirm that aromatherapy significantly improves sleep quality in adults and reduces stress and anxiety [6]. However, many wellness tools available on the market are too specialized and lack integration of multiple sensory features [7]. Wearable and smart-device innovations have been explored to address sleep quality, but these often focus on a single sense, such as sound [8], or rely on closed-loop acoustic stimulation approaches [9], which do not combine other sensory inputs. Similarly, some designs target mental state–based sleep induction but remain niche in functionality [10]. Other research explores ubiquitous computing approaches and acoustic analysis for sleep improvement [11], as well as the effects of essential oils and sound environments on anxiety and relaxation [12]. Addressing these limitations is important because improving sleep and relaxation routines can have a direct positive effect on mental health, daily performance, and overall lifestyle quality [1].

AuraSync was developed to address these gaps. It is a multifunctional wellness device combining a diffuser, speaker, and clock to create an environment conducive to rest and productivity [4]. Aligned with Brunei Darussalam's Wawasan 2035 and the SDGs – specifically SDG 3 (Good Health and Well-Being), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production) – AuraSync offers an integrated approach to wellness while promoting sustainability [3,5].

The goal of this project is to create AuraSync, a multipurpose health tool that combines an alarm clock, Bluetooth speaker, and diffuser to enhance wakefulness in the morning, relaxation, and sleep quality. It promotes sustainable living habits and tackles the dearth of integrated, multisensory wellness resources available to young adults. The primary goals are to create a user-centered prototype, test it with actual users to confirm its efficacy, and match its features with sustainable and sensory design principles.

2. Methodology

2.1 User Research

A structured questionnaire was distributed to 45 respondents aged 18-34. The majority (90%) reported sleep-related issues, while 85% expressed interest in a device that integrates scent, sound, and gentle lighting. These insights validated the demand for a user-centered wellness product.

2.2 Benchmarking

Using a Pugh Matrix, AuraSync was benchmarked against existing wellness products including Hatch Restore, Dodow, and Philips SmartSleep. Criteria included feature integration, sustainability, aesthetics, and affordability. AuraSync emerged superior due to its compact form, eco-conscious design, and multifunctionality [4,11-14].

2.2 Ideation and Concept Development

Concept generation was inspired by nature, particularly the lotus flower and the biological circadian rhythm, representing purity, balance, and cyclical harmony. These themes were integrated into both the product's visual form and its functional delivery of sensory stimuli. Figure 1(a) shows the early sketches of the concept, while Figure 1(b) presents the final initial design sketch.

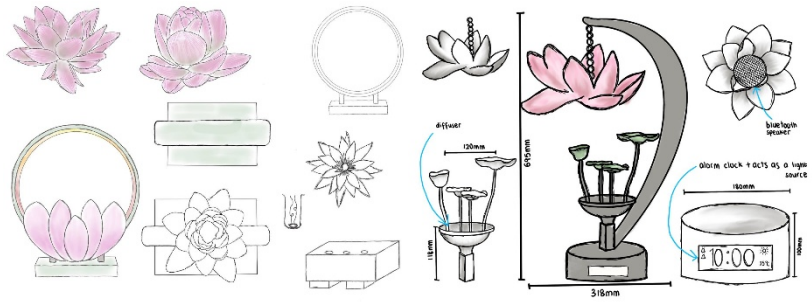

Fig. 1. (a) Early sketches of the concept b) Final design sketch

2.2 Prototyping and Testing

Low and high-fidelity prototypes were built and tested with the target demographic. Functional tests focused on the effectiveness of scent dispersion, audio clarity, and the alarm's gentle wake-up system. Feedback led to improvements in button layout, speaker placement, and aromatherapy cartridge insertion.

3. Results

The final prototype of AuraSync successfully integrates a diffuser, Bluetooth speaker, and alarm clock into a single, compact unit. Developed using a combination of 3D-printed components, sustainable materials, and ultrasonic diffuser technology, the design prioritises both aesthetic appeal and functional efficiency. The diffuser operates quietly with consistent mist output, the speaker delivers clear audio for both relaxation and wake-up purposes, and the alarm system features gradual light and sound activation for a gentle waking experience.

Figure 2 shows the final functional prototype from the front, highlighting its compact footprint, minimalist form, and clean button layout. This visual demonstrates the physical realisation of the design concept and its readiness for user evaluation.

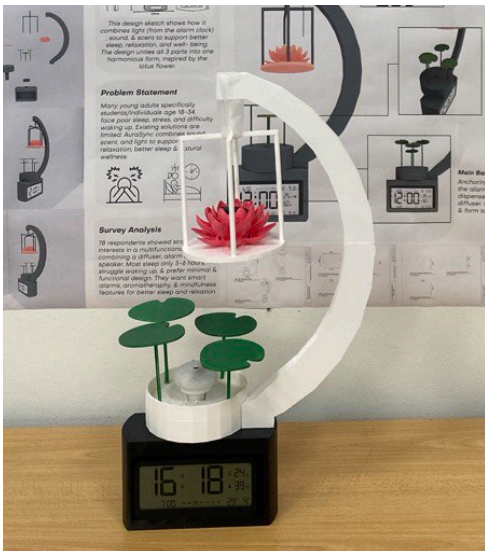

Fig. 2. Aurasync final product

To communicate the design intent and aesthetic integration into a living space, Figure 3(a) illustrates AuraSync rendered within a modern interior, showing how it complements contemporary

décor while contributing to wellness routines. Figure 3(b) presents a standalone 3D render, providing a clear view of its proportions, material finishes, and key functional areas.

Fig. 3. (a) Aurasync rendered interior view (b) AuraSync 3D rendered view

Performance testing of the prototype confirmed that:

- The ultrasonic diffuser maintained optimal mist output for up to six hours of continuous operation.
- The Bluetooth speaker produced distortion-free audio at moderate listening volumes.
- The gradual light and sound alarm completed a smooth two-minute transition from sleep to wake-up mode.

These results validated the technical readiness of AuraSync for real-world evaluation. Following prototype completion, user testing was conducted to assess its effectiveness, usability, and user satisfaction. The findings from this evaluation are presented in the User Testing section.

3. User Testing

User testing was conducted to evaluate the functionality, usability, and overall effectiveness of AuraSync in improving relaxation, sleep quality, and morning wakefulness. Ten participants aged 18–34, all of whom reported experiencing occasional or frequent sleep difficulties, were recruited from the target demographic. Each participant used the prototype for three consecutive nights in their own sleeping environment.

Feedback was collected through post-use surveys and informal interviews, focusing on setup experience, performance of each feature, and design impressions. Quantitative results indicated that 72% of participants reported an improvement in their overall sleep experience compared to their usual routines. Qualitative feedback highlighted appreciation for the calming aromatherapy, the gentle alarm system, and the space-saving multifunctional design. Several participants also suggested additional preset modes, smartphone integration, and more customizable scent options for future iterations.

The following tables summarise key feedback from participants:

Table 1
Summary of participant feedback on AuraSync's features – Functional performance

User	Setup	Diffuser	Speaker	Alarm Clock
User 1	Intuitive, quick-start guide suggested	Lavender scent calming	"Surprisingly good" sound	Soft wake-up light
User 2	Easy, ports could be labeled	Eucalyptus scent pleasant	Clear and seamless	"Sunrise effect" appreciated
User 3	Simple, sticker guide suggested	Strong mist preferred	Clear sound	Gradual wake-up

Table 2
Summary of participant feedback on
AuraSync's features – Design and Suggestions

User	Multifunctionality	Design	Suggestions
User 1	Reduces clutter	Minimal, sleek design	Preset modes, battery backup
User 2	Tailored to small spaces	Calm art piece aesthetic	Mood lighting, USB port
User 3	Space saver	Elegant, wellness-centered	Smartphone sync, mist timer

Overall, the results of user testing validated AuraSync's design objectives. The combination of scent, sound, and gentle lighting was well-received, with participants confirming its potential to improve relaxation and support healthier sleep routines. These findings support further refinement and potential market introduction of the product.

3. Conclusion

AuraSync demonstrates how a thoughtful, environmentally friendly product design can help address sleep-related challenges while promoting general well-being. By fusing aromatherapy, sound therapy, and soft-light alarms into a single, compact device, it reduces clutter, supports sustainable living, and improves relaxation, sleep quality, and morning wakefulness [14].

Customizable scent pods, app integration for smart control, and modular additions to accommodate a range of customer requirements are possible future enhancements. These advancements will bolster AuraSync's position as an eco-friendly, user-centered solution for better living.

More than just a sleep aid, AuraSync is a lifestyle partner that combines sustainability, technology, and wellbeing in a well-thought-out design. It demonstrates how minor adjustments to product design may encourage eco-friendly, thoughtful, and healthy living by reinventing daily activities.

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