Transforming Reclaimed Sea Glass Into Sustainable Jewellery With Embedded NFC for Environmental Education

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Glass waste in coastal environments poses long-term ecological risks due to its non-biodegradable nature. Sea Gems aimed to transform sea glass into sustainable jewellery while educating consumers about environmental responsibility. The project investigated how sea glass can be engineered into functional, durable, and aesthetic necklaces, and how integrating digital technology could enhance environmental awareness. Sea glass was collected from local beaches, sorted, and incorporated into jewellery prototypes. NFC tags were embedded beneath the sea glass to provide access to online information about glass waste and sustainability. Prototypes were tested for structural integrity, wearability, and user engagement. Data included feedback from participants on comfort and appearance, as well as quantitative metrics of NFC interactions. Results demonstrated that reclaimed sea glass can be successfully engineered into wearable jewellery that withstands typical use. Users reported high levels of satisfaction with design and comfort, and NFC interaction metrics indicated engagement with educational content. Incorporating digital technology within a tangible product increased user awareness of environmental issues related to glass waste. This project highlights a practical, design-based approach to reducing glass pollution while promoting sustainability education. The combination of reclaimed materials, wearable design, and interactive technology provides a replicable model for environmentally conscious product design. Future work could explore scalability, expanded materials, and broader consumer engagement strategies.

Awards Won: