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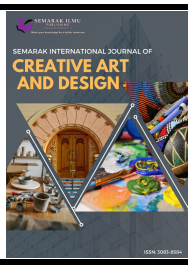

Serenity Bloom

Nor Aiman Sukindar[1,2], Dk Siti Nurhasyimah Pg Norarffin[1,*], Ahmad Syamaizar Ahmad Sabli[1]

[1] Product Design, School Design Universiti Teknologi Brunei, Jalan Tungku Link Gadong, BE1410, Brunei Darussalam
[2] Department of Manufacturing and Materials Engineering, Kulliyyah of Engineering, International Islamic University Malaysia, 53100, Gombak, Selangor, Malaysia

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ABSTRACT

Serenity Bloom is a bedside table design project focused on improving sleep wellness and night time routines. It addresses common issues like stress, clutter, and poor bedtime habits by offering a user-centred solution that minimizes disruptions and creates a calming environment. The design includes features such as soft lighting, organized storage, and nature-inspired elements, particularly drawing from the symbolism of the morning glory flower. Developed through user surveys, precedent studies, and iterative prototyping, the table was tested through a Time Efficiency Test, Post-Test Reflection Survey, and Behavioural Observation. The project demonstrates how thoughtful design can support sleep hygiene and mental well-being, offering a practical yet meaningful contribution to everyday wellness.

1. Introduction

Sleep is a fundamental physiological process essential for maintaining overall health and well-being. It is characterised by reduced consciousness, decreased sensory activity, and suppressed muscle function, allowing the body and mind to rest and rejuvenate. Although sleep is a universal experience, its complexities and the impact it has on our daily lives are often underestimated. Sleep can either boost or weaken resilience, for example getting enough sleep leads to a better mood, increased productivity, and an overall sense of greater life satisfaction. People who experience more positive emotions in their daily lives tend to sleep better, and in return, this quality sleep further enhances their mood [1].

Additionally, sleep enhances focus, creativity, and energy, all of which contribute to improved performance at work, school, or in other areas. During sleep, both the brain and body undergo essential repair and restoration at a cellular level. It also helps regulate hormones and strength. Sleep hygiene refers to a set of practices and habits that aims to ensure a restorative and good quality of sleep and to avoid or to treat certain sleep disorders [2]. It involves both creating an optimal sleep environment and maintaining healthy sleep habits. Healthy sleep begins with a consistent schedule,

* *Corresponding author.*
E-mail address: hasyimah.pgn@gmail.com

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improved bedtime habits, and balanced daily routines, all of which support natural sleep patterns. When these habits become part of daily life, sleep naturally improves and feels more effortless. Equally important is the physical sleep setting. A calm, comfortable, and clutter-free bedroom signals the body and mind to unwind, making it easier to transition into restful sleep [3]. Clutter, in particular, can disrupt this process. The presence of disorganized or unnecessary items in the bedroom often leads to feelings of stress and mental unrest. Many people may not realize that clutter affects mental health by increasing stress levels [4]. Dr Rick Hanson, author of Hardwiring Happiness, explains that elevated cortisol—the body's stress hormone—can overstimulate the brain's alarm system (amygdala) and damage the hippocampus, which plays a role in calming stress responses. Over time, this makes the brain more vulnerable to stress, showing how our surroundings directly influence our sleep and mental well-being [5].

A nightstand also known as a bedside table, bedside cabinet, night table, or day stand—is a small piece of furniture typically placed next to a bed to hold items needed during the night. Traditionally simple in form, modern bedside tables have evolved into multifunctional units that reflect contemporary lifestyles and interior design preferences. Many now feature built-in wireless chargers, USB ports, and ambient lighting controls, blending convenience with aesthetics. As they combine practicality with personal style, nightstands have become essential elements in today's bedrooms, serving both functional and decorative purposes [6].

Furniture plays a vital role in shaping the sleep environment especially bedside tables, which often serve as the final interaction point before sleep and the first upon waking. Despite their importance, bedside tables are frequently overlooked in their potential to support sleep wellness.

The present study focuses on addressing the current design problem related to poor night time routines and an unsupportive sleep environment, often caused by stress, anxiety, and environmental disturbances. These factors negatively affect sleep quality and user well-being, highlighting the need for thoughtful, wellness-centred solutions. The overall objective of this project is to design an innovative bedside table that enhances the night time environment, supports healthier bedtime habits, and promotes restorative rest. By integrating calming design elements and user-centred functionality, the proposed product serves as a strategic tool to improve sleep quality and foster a more tranquil and supportive personal space.

2. Methodology

2.1 Survey Analysis

In Week 9 of the study, a Google Form survey was conducted with 62 respondents from various age groups, offering a range of insights. The survey aimed to explore users' sleep habits and common disruptions, preferences for bedside table features and aesthetics, and their needs for tools or functions that support healthier night time routine.

According to the survey, the majority of respondents (77.4%) were young adults, with a fairly balanced distribution across genders. Most reported sleeping only 5 to 6 hours per night, suggesting busy lifestyles that may contribute to poor sleep quality. Stress and anxiety were identified as the main factors disrupting sleep, followed by environmental issues such as temperature, lighting, and noise.

Over half of the participants (54.8%) currently own a bedside table, highlighting its common presence in bedroom setups. Frequently stored items included mobile phones, water bottles, personal belongings, and night lamps indicating a mix of convenience and essential nightly needs.
Participants expressed strong interest in functional features such as wireless charging, USB ports, adjustable night lighting, and built-in storage. There was also notable interest in smart features,

including integrated lighting controls and Bluetooth speakers, pointing to a demand for multifunctional and tech-integrated furniture.

2.2 Concept Generation and Sketch

Before beginning the concept generation and sketching phase, it is crucial to study ergonomics and apply anthropometric data to ensure both functionality and a positive user experience. Due to the absence of official anthropometric data in Brunei, this project uses Malaysian data as a reference. This choice is supported by the physical similarities between the Bruneian and Malaysian populations. By using this data, the design can remain relevant and ergonomically appropriate for Bruneian users, while maintaining accuracy and effectiveness in the development process [7]. This approach supports the creation of more inclusive, user-centred solutions within the local context despite the lack of localized measurements.

The concept generation outlines the creative process undertaken to develop innovative design solutions for the bedside table project. To facilitate this process, various ideation tools were employed, including the SCAMPER technique, which encourages exploring modifications and improvements to existing ideas. This method allowed for a comprehensive examination of potential design features and functions, fostering a more creative approach to problem-solving [8].

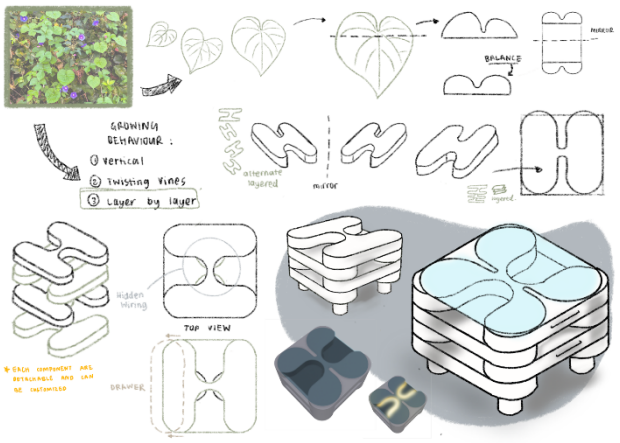


Fig. 1. Ideation design 1

The bedside table design is grounded in the philosophy inspired by the Morning Glory. For Ideation 1, as shown in Figure 1 presents the initial design of the bedside table, inspired by the heart-shaped leaf of the morning glory, which forms the basis of its unique “H” structure. This concept is further developed through a layered form that reflects the leaf’s blooming process, adding visual depth and character. It features a central opening for wireless charger wiring, detachable components for customization, and built-in drawers for storage. The acrylic tabletop mimics a leaf's appearance, while an LED light beneath adds ambient lighting and highlights the organic design, creating both a calming atmosphere and a visually striking bedroom piece.

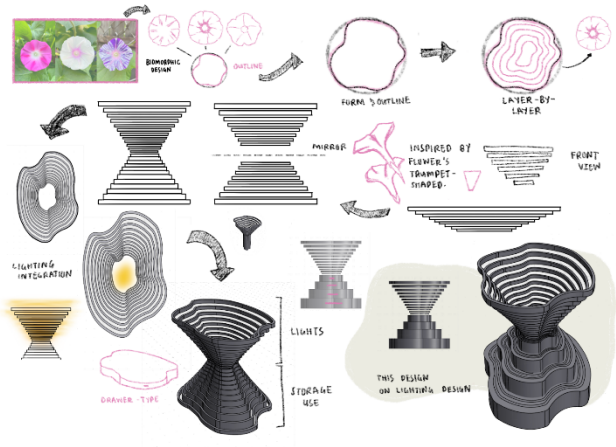


Fig. 2. Ideation design 2

Ideation 2 illustrated in Figure 2 showcases the second bedside table design, featuring a biomorphic form inspired by the flowing, trumpet-like shape of morning glory petals. Using a layered structure, the upper section includes ambient lighting to enhance the calming atmosphere and highlight the organic shape. The lower section provides three drawers of varying sizes, offering functional storage while maintaining the natural aesthetic. This design blends beauty and practicality, serving as both a visual centrepiece and a useful bedside unit.

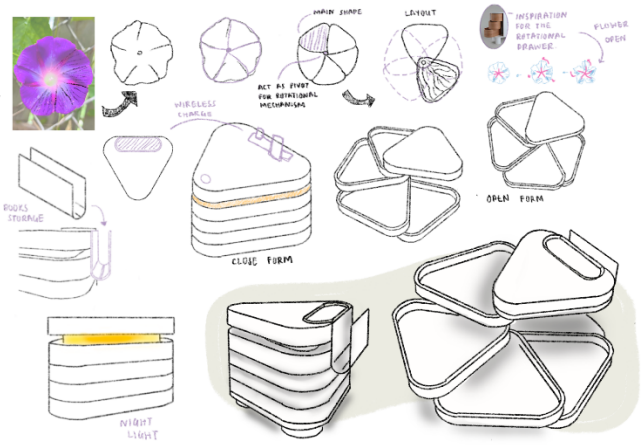


Fig. 3. Ideation design 3

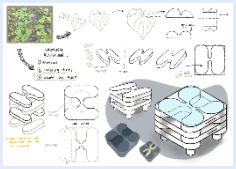
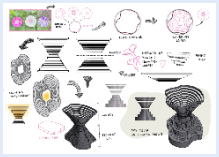
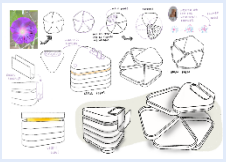
Figure 3 presents the final bedside table design, inspired by the blooming motion of morning glory petals. It features a unique rotational drawer mechanism that opens to resemble five petals, creating an engaging and elegant form. The tabletop includes space for wireless charging, while a rear compartment offers convenient book storage. LED lighting enhances the ambiance and highlights the floral concept. This design blends aesthetic inspiration, modern functionality, and practical storage into a distinctive and user-friendly piece.

2.2 Concept Selection

The Pugh matrix was created by Stuart Pugh, who served as the head of the design division and was a professor at the University of Strathclyde in Glasgow. This matrix is a valuable decision-making tool that assists in identifying the most viable and feasible option among a set of alternatives [9]. To assess the design options, Pugh Methods are applied, enabling to determine the most suitable for

the final design. This approach will involve a systematic comparison of each option against specific criteria, allowing for a clear evaluation of their strengths and weaknesses.

Table 1
Concept selection: PUGH method table

Requirements	Weight (%)	Datum	 DESIGN 1		 DESIGN 2		 DESIGN 3	
			Score /5	Total	Score /5	Total	Score /5	Total
Usability (Functionality + Ease of Use)	20	0	5	1	4	0.8	5	1
Storage	10	0	3	0.3	3	0.3	5	0.5
Wireless Charge	5	0	1	0.05	2	0.1	4	0.2
Night Light	5	0	3	0.15	5	0.25	3	0.15
Ergonomics	15	0	3	0.45	3	0.45	3	0.45
Size & Proportion	15	0	4	0.6	3	0.45	3	0.45
Visual Appeal	10	0	4	0.4	4	0.4	4	0.4
Ease of Manufacturing	15	0	4	0.6	2	0.3	3	0.45
Total				= 3.55		= 3.05		**= 3.6**
Rank				2		3		**1**

The weightage in Table 1 reflects the importance of each criterion in evaluating the bedside table designs. Usability (20%) holds the highest priority due to its significance in everyday use. Storage (10%) is considered important but less critical, as the table is meant for convenience rather than extensive storage. Features like wireless charging and night light (each 5%) are seen as beneficial add-ons, but not essential for all users. Ergonomics and size/proportion (15% each) are key to ensuring comfort and adaptability to different room layouts. Visual appeal (10%) contributes to aesthetics, while ease of manufacturing (15%) ensures practical feasibility.

Each design is scored from 1 (poor) to 5 (excellent), with weighted scores calculated and summed for a total score. As shown in Table 1, Design 3 received the highest overall score, closely followed by Design 1, and then Design 2. Based on the Pugh Method, Design 3 was selected as the final choice, offering the best balance of functionality, aesthetics, and usability.

3. Design Development

3.1 Final Design

The chosen design was refined and improved based on user feedback, enhancing its functionality, aesthetics, and usability. These updates also incorporated Design for Manufacture (DFM) principles

to ensure the design is practical for production, considering factors like material choice and ease of assembly. By balancing user needs with manufacturing feasibility, the final design is both user-centred and production-ready.

The 3D models and renderings shown in Figure 4 to Figure 7 were created using Autodesk Fusion, selected for its precision and versatility. This software enabled detailed exploration of proportions, material finishes, and functionality before proceeding to physical prototyping.

Fig. 4. 3D Rendering for both close and open view

Fig. 5. 3D Rendering for both close and open view from back view

Fig. 6. Close up view from the back view of the bedside table

Fig. 7. Close up view of the shelves

Perspective renderings, shown in Figure 8, were created by modelling the design in *SketchUp* and using *Enscape* to generate high-quality contextual visuals. This combination allows for realistic and immersive representations of the product within its intended environment, enhancing the viewer's understanding of its form and setting.

Fig. 8. Perspective renderings with serenity bloom

3.2 Preliminary Prototypes

To evaluate the structural stability and overall balance of the bedside table design, a preliminary prototype was developed as an initial physical model. This prototype was 3D printed using PLA+ filament, chosen for its improved strength and durability compared to standard PLA. The printing process was carried out using a Creality K1 Max 3D printer, which provided the required precision and scale. The prototype was scaled down to 1:25 to effectively visualize the overall form,

proportions, and spatial composition of the bedside table. This scale was selected to conserve printing time and material while still allowing for meaningful observation of key design features.

As shown in Figure 9, the furniture maintains a compact and minimal appearance when closed. However, Figure 10 highlights a functional limitation—when the drawers are opened, the structure exhibits slight instability, particularly towards the rear. This issue indicates the need for design refinement to improve weight distribution and support during drawer extension.

Fig. 9. Close structure of serenity bloom

To improve the structure and ensure better balance when the drawers are open, it is suggested to increase the size of the internal rod. A thicker and sturdier rod would help support the weight more effectively, especially towards the back where the instability was observed. This adjustment is important not only for enhancing the functionality of the bedside table but also for creating a safer and more reliable user experience. By strengthening the internal support, the design becomes more stable and durable, which is essential for everyday use and long-term performance.

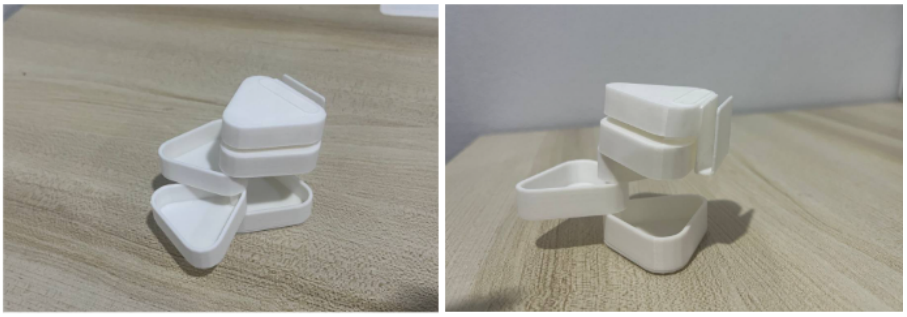


Fig. 10. Open structure of serenity bloom

In Figure 11, the prototype is disassembled to showcase the individual components of the product, offering a clearer understanding of its construction and internal layout. These insights from the preliminary prototype informed the next steps in improving both the functionality and stability of the design.

Fig. 11. Parts by parts of serenity bloom

3.3 Final Prototype

The bedside table was fabricated in collaboration with *Hiap Guan*, as Universiti Teknologi Brunei lacks the facilities for full-scale production. Chosen for its expertise in furniture and interior solutions, *Hiap Guan* provided the necessary technical support. The manufacturing process took around 13 days, including time for component delivery from *Temu* and quality adjustments.

3.3.1 Manufacturing process

The production of the bedside table followed a well-coordinated manufacturing process, beginning with the preparation of materials and progressing through each fabrication stage with precision.

The process began with the preparation of 12mm thick plywood, which was first cut into smaller squares. Measurements were then traced, and the curves and borders were sketched to allow easier cuts in the later stages. The main triangular shape of the bedside table was cut using a jigsaw. To allow the wood to bend easily, parallel grooves (kerf cuts) were made using a table saw. These kerf-cut panels were assembled onto the triangular base and secured with a pneumatic nail gun to ensure a strong hold while maintaining a smooth finish as seen in Figure 10.

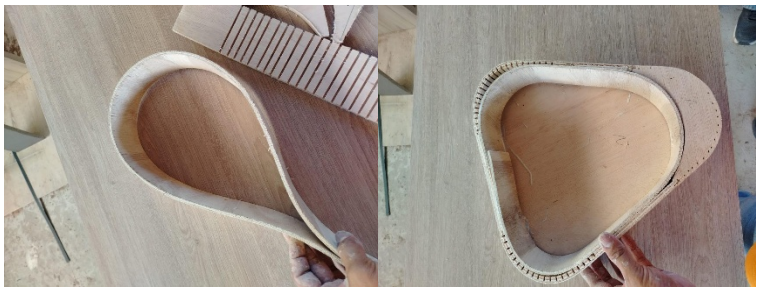


Fig. 12. Kerf cuts and assembly

For the underlighting feature, an acrylic sheet was sandwiched between wooden pieces. A template was used to ensure proper placement and easier gluing during the final assembly. It features incorporated glow-in-the-dark pebbles.

Fig. 13. Underlighting feature

In the tabletop section, the charging port location was marked, and deeper cuts were made to allow adjustments during installation. The rod mechanism was cemented to the base, and a steel structure was added at the top to distribute the load more evenly rather than concentrating it at one point. In Figure 14, after spraying all parts with a medium oak colour using a spray gun, PVC leather cloth was installed at the base of each drawer. Finally, on Day 13, the bedside table was officially completed and delivered.

Fig. 14. Finishing look

3.3.2 Final Assembly

The final product, as presented in Figure 15 to 18, is positioned beside a bed to provide a realistic context for its intended use and placement. This setup allows for a comprehensive demonstration of the bedside table's functionality within a typical bedroom environment.

Fig. 15. Close and open up view of the final assemble product

During the final assembly phase, several improvements were incorporated based on insights gained from earlier prototypes. Notably, adjustments were made to enhance the stability and balance of the table, ensuring that it remains sturdy both when drawers are closed and extended.

The internal support rod was reinforced to address previous issues of instability, resulting in a more reliable and durable structure.

Fig. 16. Close up view of each shelf

Fig. 17. Table top with charging port

Fig. 18. View showing the book storage

The assembled product features multiple functional elements designed to improve the user experience. Key highlights include easily accessible shelves for book storage, a built-in charging port for convenient device connectivity, and glow-in-the-dark pebbles that provide subtle ambient lighting for night time use as seen in Figure 17, 18 and 19. These design elements not only contribute to the aesthetic appeal but also serve practical purposes that enhance everyday usability.

Fig. 19. The under light Feature during the day and night

Before proceeding to user testing, the bedside table demonstrated smooth drawer operation, stable support when loaded with typical items, and effective integration of electronic components

such as the charging port. However, challenges during the final build phase included ensuring precise alignment of drawer tracks and securing the glow-in-the-dark features without compromising the table's sleek design. These challenges were overcome through careful adjustments and material selection, culminating in a product that balances form and function.

Overall, the final assembly reflects a significant progression from the initial prototype, incorporating refinements that improve both performance and user experience, setting a strong foundation for the forthcoming user testing phase.

4. Testing and Validation

The user testing for Serenity Bloom involved a Time Efficiency Test, a Post-Test Reflection Survey, and User Behavioural Change Observation to assess its effectiveness in minimizing disruptions, supporting healthy routines, and enhancing the night time environment.

In the Time Efficiency Test, participants saved an average of 4.4 seconds turning off alarms and 6.2 seconds retrieving items in low light, showing a 60.5% improvement in accessibility. This indicated reduced night time disruptions.

The Post-Test Survey showed that most users found it easier to access items, appreciated the quiet drawers, and benefited from features like wireless charging and organized storage. Many users reported reading more and using their phones less at night.

Behavioural observations confirmed a shift toward more mindful routines, such as reading or using prayer beads instead of screen time. Users also stored devices away to avoid distractions and reduce stress.

Suggestions for improvement included adding a humidifier, lighting, wheels, handles, and cup holders. Overall, Serenity Bloom achieved its goals by improving efficiency, encouraging healthier habits, and creating a more calming sleep environment.

5. Conclusion

This project explored how product design can enhance sleep wellness by developing a functional and purposeful bedside table. Addressing factors like stress, anxiety, and environmental disturbances, the final design—Serenity Bloom—incorporates wellness-inspired and nature-driven elements to promote relaxation and healthier night time habits. Despite fabrication challenges, the product met its goals and aligns with SDG 3 by supporting mental and physical health through better sleep hygiene. It also contributes to Wawasan 2035 Goal 2 by enhancing quality of life in Brunei and beyond. While further testing could refine its functionality, Serenity Bloom presents a promising step toward more mindful and wellness-oriented product design.

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