

From Pixel to Pavement: Exploring the Significance of Sustainable Typotecture in University Campus Environments

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ABSTRACT

Universities must provide facilities that promote student well-being and support the development of an ecologically conscious generation through sustainable campus activities. Considering the functional design of everyday student facilities is crucial since student activities rely heavily on resource availability and adaptability. This study explores the sustainable design of a large-scale typographic bench, or "typotecture," prominently displaying the acronym "FSSR" on university campuses. The objective is to identify the significance of installing sustainable typotecture in campus open spaces. Through distributing 160 questionnaires and conducting quantitative analysis using IBM's SPSS Statistics 25 software, the research examines the multifaceted impact of this sustainable design feature. The findings highlight the profound influence of sustainable typotecture in enhancing institutional image and fostering community cohesion. It serves as a symbolic representation of institutional identity, eliciting a sense of pride and belonging among students, faculty, and visitors. Additionally, the study reveals its role in raising awareness and appreciation for typography and landscape architecture, stimulating educational dialogue, and fostering interdisciplinary learning within university settings. Sustainable typotecture contributes to creating vibrant, eco-friendly campus environments, aligning with environmentally friendly practices outlined in the UI Green Metric World University Rankings. It also enhances satisfaction with green spaces. Overall, this research underscores the transformative potential of sustainable typotecture in enriching the academic experience, supporting institutional goals, and promoting environmental sustainability within university campuses.

Keywords: Environment, Image and Identity, Sustainable, Typography, Typotecture



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1 INTRODUCTION

In the context of three-dimensional typography, "From Pixel to Pavement" represents the change from digital design—represented by pixels on screens—to physical implementation—represented by pavement or actual structures. It shows how typographic designs are developed from digital ideas to physical installations that are placed on university campuses. This expression captures the idea of bringing typographic concepts to life by highlighting their significance and influence on the campus's physical layout. Therefore, this study unravels the significance of typography integrated into physical facilities, referred to as Typotecture, to assess its impact on university campuses.

Typotecture, as described by Mak & Ho (2020), is the capacity of type to adapt to gravity, adopt physical shapes, expand into space, and imitate architectural designs. Typotecture is a novel concept merging typography with architecture, forming a unique approach to design where graphic elements are integrated into the built environment. The core objective of typotecture is to establish a cohesive and meaningful connection between typographic elements and architectural structures.

Universities are increasingly recognizing the importance of providing facilities that not only promote student well-being but also contribute to the development of an ecologically conscious generation. The integration of sustainable practices into campus infrastructure is crucial, as student activities depend significantly on the availability of resources and the capacity to adapt to various situations (Savitri, 2021). This study explores the concept of sustainable design through a specific focus on a large-scale typographic bench, termed "typotecture," which prominently displays the acronym "FSSR" on university campuses. The objective is to assess the significance of such installations in campus open spaces.

The significance of integrating typography into physical campus facilities lies in addressing the need for outdoor spaces among students, enhancing the aesthetic appeal, fostering a sense of community, and promoting sustainability on university campuses. By understanding users' perceptions and needs, campus planners can create environments that cater to both physical and social aspects. The design is seen as essential for fostering interdisciplinary practices in universities, as open spaces play a significant role in students' experiences and interactions on campus. According to Abu Ghazze (1999), open spaces are memorable areas for students, where they engage in communal university life through various activities such as studying, socializing, and resting.

2 LITERATURE REVIEW

2.1 The Role of Sustainable Typotecture in Enhancing Campus Aesthetics and Function

Sustainable typotecture, an integration of typography and architecture, plays a pivotal role in shaping the aesthetic and functional aspects of university campuses. According to Siyanbola et al. (2023), the design elements enhanced the environment's aesthetics and effectively demonstrated the practical application of creativity. By incorporating eco-friendly materials and designs, sustainable typotecture are capable to promotes environmental consciousness while enhancing the visual appeal of campus spaces. Teye et al. (2023) further emphasize that university crests and other typographic elements are essential in fostering a sense of pride and belonging among the campus community. These elements act as cultural symbols that encapsulate the history and values of the institution, thereby reinforcing its identity and enhancing the overall campus experience.

2.2 Impact of Sustainable Typotecture on Community Cohesion and Institutional Image

The presence of well-designed typotecture on university campuses can greatly influence community cohesion and the institution's image. Fiho and Brandli (2016) discusses on a campus planning methodology based on compromises with stakeholders and public participation can effectively achieve sustainability objectives in higher education campuses. By utilizing typographic installations that resonate with the university's identity, institutions can create landmarks that serve as gathering points, thereby fostering interaction and community engagement. Owusu-Agyeman (2021) highlights that supportive campus structures, including thoughtfully designed typotecture, can mitigate feelings of otherness and enhance students' sense of belonging. These installations not only beautify the campus but also serve as constant reminders of the institution's commitment to sustainability and community values.

2.3 Practical Applications and Perceptions of Sustainable Typotecture in Campus Spaces

The practical application of sustainable typotecture in campus open spaces involves creating designs that are both functional and visually appealing. Ridha (2020), notes that direct interaction with the environment as a learning medium fosters a sense of familiarity and love for the surroundings, making learning more real and factual. By providing seating, shade, and aesthetically pleasing installations, universities can enhance the usability of these areas. This research utilizes a three-dimensional representation of typotecture to help participants understand and select their preferred areas, emphasizing the importance of clear layout comprehension for informed decision-making. The incorporation of current views and proposed designs in the questionnaire further aids in capturing students' perceptions and preferences, guiding the development of effective typotecture solutions.

3 METHODOLOGY

3.1 Case Study

This descriptive survey research utilized stratified random sampling to select respondents, ensuring random selection within a specific area. Over 400 students occupy the academic building of Department of Graphic & Digital Media and the Department of Photography & Creative Imaging, Art & Design (FSSR 2) at UiTM Seri Iskandar Campus, Perak, Malaysia. From this population, 160 respondents were chosen to complete the questionnaires. The selection of students from FSSR 2 as respondents was deliberate, as they are the primary users of these areas. Long-term residents of an area tend to have greater familiarity and broader subjective evaluations of their environment (Mao et al., 2020). These factors also influence landscape familiarity and knowledge.

The existing open spaces around the building have the potential for sustainable landscape design to benefit students. However, these spaces are currently underutilized, lacking facilities such as benches or seats and proper landscaping to support a green environment. Consequently, students face challenges in spending quality time in the faculty area. Active design approaches can improve the environmental psychology of university campuses, promoting physical, mental, and social activity among students (Azeez, 2023). Based on respondent input, this research explores students' perceptions of campus open spaces around the faculty and identifies the need for sustainable typotecture installations to improve their quality of life on campus.

3.2 Data Collection

Virtual reality utilizing 3-D modeling software is an innovative approach for landscape preference research. To accurately capture the visual essence of typotecture design the researcher created a 3D representation of the FSSR alphabets using 3D Studio Max, a professional software for developing 3D animations, models, games, and images. This was complemented by Adobe Photoshop CC, a photo-editing and design tool primarily used for correcting image flaws and enhancing photos with various effects.

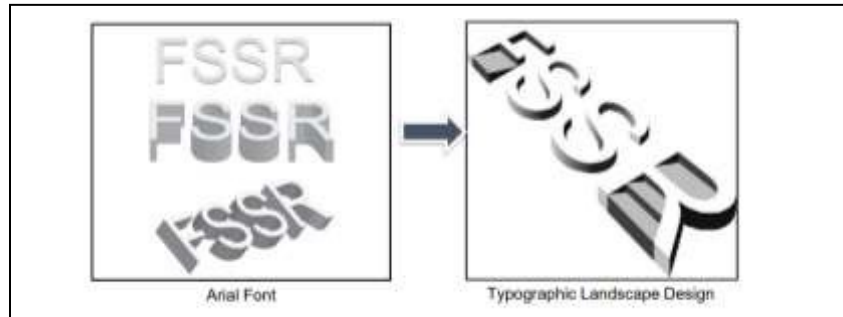


Figure 1 Three-dimensional visual using Arial typeface in a different angle
Source: Author

Imaginary landscape scenes can be visualized using computer simulation tools to depict real situations (Atwa et al., 2019). The 3D graphic illustrates the installation of a gigantic typeface in five selected areas within the faculty's open spaces, functioning as seating (Figure 2). This large seating area is designed using Arial Regular fonts, with the letters FSSR representing Fakulti Seni Lukis & Seni Reka (Figure 1). The three-dimensional visual is then combined with the actual visuals of the selected areas to clearly convey the researcher's concept.



Figure 2 Five proposed area with proposed design of FSSR typotecture
Source: Author

In this research, the researchers introduced a three-dimensional representation of typotecture design to help participants understand the idea of five selected areas that focusing on the significance of typotecture in campus university. It was essential for respondents to clearly understand the layout of each preferred area to make decisions through questionnaires survey. The questionnaire included both open-ended and close-ended questions. This section aimed to gather information on the importance of integrating typography and architecture (Typotecture) in faculty open spaces. Questionnaires were handed out to respondents during class, after obtaining permission from the class lecturers. Some were also distributed to respondents on campus to facilitate further inquiries. Before answering the questions, respondents were given a brief overview of the research to ensure clarity. Respondents cooperated well, resulting in a smooth data collection process.

4 RESULTS

This section presents the demographic profiles of the respondents in terms of socio- demographic characteristics. A total of 160 students participated in the research, all significant users of the Faculty of Art and Design open spaces. This group was selected due to their familiarity with the campus environment, ensuring the validity of the research.

Table 1 indicates that more than half of the respondents (n=116, 72.5%) were aged 18-20. In terms of gender, female students dominated the sample (n=96, 60%), reflecting the higher female enrolment at UiTM Seri Iskandar during that particular year. Regarding the program of study, the majority (n=131, 81.8%) were diploma students from the Graphic Design and Digital Media Department (AD111), while the remaining respondents (n=29, 18.1%) were from the Department of Photography and Creative Imaging. In terms of the semester of study, the highest frequency (n=42, 26.5%) was among first-semester diploma students. Overall, the majority (n=118, 73.8%) of respondents were diploma students, with the remainder being degree students (n=42, 26.3%).

Table 1 Socio-demographic Characteristics of Respondents

		Respondent (n=160)
Demographic Profile	Category	Frequency (%)
Age	18-20	116 (75.2)
	21-23	43 (26.0)
	Others	1 (0.6)
Gender	Male	64 (40)
	Female	96 (60)
Programme	AD111	89 (55.6)
	AD117	29 (18)
	AD241	42 (26.2)
Semester	Diploma	
	- Part 1	42 (26.25)
	- Part 3	24 (15.0)
	- Part 4	26 (16.25)
	- Part 5	26 (16.25)
	Degree	
	- Part 5	22 (13.75)
- Part 6	20 (12.5)	
Mode	Diploma	118 (73.8)
	Degree	42 (26.3)

Table 2 presents the findings from the survey conducted. It was discovered that 'Build up the image' achieved the highest ranking with a mean score of 4.42, which was followed by well' was the third choice among respondents, with a mean score of 4.20, regarding the significance of typotecture design on the faculty campus.

Table 2 The Significance of Typotecture Design

Factors	Mean	SD	Rank
Build up the image	4.42	0.546	1
Attracts students to spent time in the area	4.17	0.588	4
Affect pattern of students' activities	3.93	0.634	7
Lessen the use of energy in faculty	3.73	0.760	9
Enhance the students' quality of life	3.85	0.814	8
Influence learning process	3.99	0.721	6
Engage with nature very well	4.15	0.648	5
Spread knowledge about Typography	4.22	0.647	2
Function very well	4.20	0.677	3

Note: 1.00-1.49=Strongly Disagree, 1.50-2.49=Disagree, 2.50-3.49=Mixed Feeling, 3.50-4.49=Agree, 4.50-5.00=Strongly Agree

5 DISCUSSIONS

From the findings earlier, Table 2 presents nine variables concerning the significance of the Typotecture design concept. Most respondents rated "Built-up the image" as the most crucial factor, with a score of 4.42. This is aligned with what was suggested by Falahatkar and Aminzadeh (2020), stated that urban natural landscapes and sense of place are crucial factors in shaping the identity and image of cities, with residents and visitors also influenced by tangible and intangible factors.

The second-highest ranking factor is "Spread knowledge about typography" with a score of 4.22. This reflects the respondents' familiarity with typography, a fundamental component of their art studies. As typography is a required course for art students, they believe that integrating typotecture design into campus open spaces can educate others and create an engaging environment. The respondents agreed that this idea is capable to enhance understanding of typography through the installation of letter-shaped designs, stimulating curiosity and inspiration. This result is supported by Martiningrum (2020), who states that large university signage has artistic value and serves as an institutional icon, demonstrating how typotecture design installations can provide educational value.

The third-ranked factor, "Function very well," scored 4.20. Respondents positively perceived the usability of the typotecture design installation, acknowledging the need for outdoor activity spaces. They believe the installation will benefit campus users. Campus open spaces offer relaxation, socialization, and transit benefits, with preferences varying by age, occupation, and time spent at the university (Tudorie et al., 2021).

These findings indicate that respondents' backgrounds significantly influenced their views. The majority believe that typotecture can elevate the faculty's image, spread typography knowledge, and serve as a functional space for campus users. According to Chernyavskaya (2022), typography has an expressive language that shapes space concepts and influences human behavior through design solutions that reflect the space's function and identity.

Overall, this study demonstrates that the physical campus landscape, when enhanced by typotecture, can contribute to sustainability by benefiting students. The value of typotecture is evident in how it reflects the campus identity and promotes sustainability within the built environment.

CONCLUSION

The results revealed that students strongly recognize the significance of typotecture design for future campus sustainability. Awareness of campus issues has enlightened students about the needs for sustainable landscapes. The added aesthetic value can attract both students and visitors, encouraging them to spend time on campus. Additionally, the unique typotecture design can elevate the image and identity of a faculty or campus, becoming a significant landmark.

The research highlights the significance of typotecture design and landscape as highly functional amenities for students. The survey captured respondents' views on the importance of typotecture installations, introducing new knowledge of typography to education. Despite the persistent issue of inadequate outdoor facilities, this topic has been underexplored. The study's findings can significantly enhance the identity of educational institutions both domestically and internationally. Sustainable typotecture creates vibrant, eco-friendly campus environments, aligning with the practices of the UI Green Metric World University Rankings. It enhances satisfaction with green spaces and underscores its transformative potential in enriching the academic experience, supporting institutional goals, and promoting environmental sustainability on campuses.

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AUTHOR CONTRIBUTION

Norita Abdul Kadir: Conceptualized and designed the study, wrote the paper, led methodology development, and authored the original draft. Shahrnizam Sulaiman: Supervision, reviewed existing research, and editing. Norhafizah Abdul Rahman: Supervision, provided expertise in research methods and data analysis. Syahrul Nizam Shaari: Visualization, designing VR and wrote parts of the paper.

CONFLICT OF INTEREST

There are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

REFERENCES

- Abu-Ghazzeh, T. M. (1999). Communicating behavioral research to campus design: Factors affecting the perception and use of outdoor spaces at the University of Jordan. *Environment and behavior*, 31(6), 764-804.
- Atwa, S. M. H., Ibrahim, M. G., Saleh, A. M., & Murata, R. (2019). Development of sustainable landscape design guidelines for a green business park using virtual reality. *Sustainable Cities and Society*, 48, 101543.
- Azeez, S., Mustafa, F., & Ahmed, R. (2023). The Role of the Active Design Approach in Improving the Environmental Psychology of a Healthy Built Environment: The Case of a University Campus. Buildings. <https://doi.org/10.3390/buildings13081999>.
- Chernyavskaya, V. (2022). Typographic landscape in urban space: a sociolinguistic approach.

- environment and cultural diversity in enhancing students' sense of belonging in higher education. *Journal for Multicultural Education*. <https://doi.org/10.1108/jme-06-2021-0089>.
- Falahatkar, H., & Aminzadeh, B. (2020). The sense of place and its influence on place branding: a case study of Sanandaj natural landscape in Iran. *Landscape Research*, 45, 123 - 136. <https://doi.org/10.1080/01426397.2018.1560401>.
- Filho, W., & Brandli, L. (2016). Engaging Stakeholders in Education for Sustainable Development at University Level. *Engaging Stakeholders in Education for Sustainable Development at University Level*. <https://doi.org/10.1007/978-3-319-26734-0>.
- Mak, M. Y., & Ho, A. G. (2019, July). The Advertising Effects of Typotecture: Associated Learning Factors and Emotions. In *International Conference on Applied Human Factors and Ergonomics* (pp. 182-193). Springer, Cham.
- Mao, Q., Wang, L., Guo, Q., Li, Y., Liu, M., & Xu, G. (2020). Evaluating Cultural Ecosystem Services of Urban Residential Green Spaces From the Perspective of Residents' Satisfaction With Green Space. *Frontiers in Public Health*, 8(July), 1–16. <https://doi.org/10.3389/fpubh.2020.00226>
- Martiningrum, I. (2020). The Meaning of Typographic Design in Malang Urban Space: Based on Signs and Objects Relations. 195(Hunian 2019), 119–123. <https://doi.org/10.2991/aer.k.200729.019>
- N., T., B., A., & F., E. (2023). The Significance of University Crests from Both Cultural and Historical Perspectives: A Case Study of the University of Education, Winneba, Ghana. *The International Journal of Humanities & Social Studies*. <https://doi.org/10.24940/thejihss/2023/v11/i5/hs2305-013>.
- Owusu-Agyeman, Y. (2021). The relationship between supportive campus
- Ridha, A. (2020). Environmental Utilization of Indonesian Language Learning Media <https://doi.org/10.31219/osf.io/akqdu>.
- Savitri, M. (2021). Sustainable Campus Architecture and Society 5.0. *IOP Conference Series: Earth and Environmental Science*, 794. <https://doi.org/10.1088/1755-1315/794/1/012240>.
- Siyabolola, A., Oladesu, J., Afolabi, B., & Uzzi, F. (2023). Adapting Flat Design Concept in Digital Graphics to Wayfinding Signage Development: Redirecting Movement and Recreating the Environment. *VCD*. <https://doi.org/10.37715/vcd.v8i1.3207>.
- Slovo.ru: Baltic accent. <https://doi.org/10.5922/2225-5346-2022-4-5>.
- Tudorie, C., Vallés-Planells, M., Gielen, E., Arroyo, R., & Galiana, F. (2020). Towards a Greener University: Perceptions of Landscape Services in Campus Open Space. *Sustainability*. <https://doi.org/10.3390/su12156047>.