

Original Research

Received 09 June 2026

Revised 28 July 2026

Accepted 10 August 2026

Natural Resources for Human Health 2026, Vol. 6 (6): 39–50

KEYWORDS:

Analytic Hierarchy Process (AHP), Burdur, MAKÜ İstiklal Campus, space adequacy, sustainable campus planning.

Spatial Adequacy in Sustainable Campus Planning: An Evaluation of MAKÜ İstiklal Campus through the Analytic Hierarchy Process

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ABSTRACT: In this study, using the İstiklal Campus of Burdur Mehmet Akif Ersoy University (MAKÜ) as a case study, an evaluation model based on the Analytic Hierarchy Process (AHP) was developed to measure the adequacy of spaces using an analytical and objective method. The basic structure of the study was defined as 7 main criteria and 44 sub-criteria. To determine the importance weights of the criteria, the opinions of a group of 18 experts with experience in campus planning and design were consulted; the resulting pairwise comparison matrices were aggregated using the geometric mean method and subjected to a consistency check ($CR \leq 0.10$). The current status of the workspace was scored using a 5-point Likert scale, and a Suitability Score (SS) was calculated using an arithmetic mean-based standardization model to prevent the number of sub-criteria from creating an unfair advantage. According to the analysis results, the most important main criterion determining campus space adequacy, as identified by the experts, was “Universal Design (0.24),” followed by “Ecological Quality (0.17),” “On Campus Circulation (0.15),” “Space Organization (0.14),” “Social Opportunities (0.13),” and “Cultural Opportunities (0.10).” The criterion with the lowest importance was determined to be “Aesthetic Quality (0.07).” In the assessment of the current situation in the study area, it was determined that the MAKÜ İstiklal Campus received an overall spatial adequacy score of 2.64 out of 5.00, falling between the “Very Slightly Adequate (2)” and “Partially Adequate (3)” categories.

1. INTRODUCTION

University campuses, which are regarded as important indicators of a society's level of development (Dong et al., 2023) go beyond being mere spaces for academic activities; they function as self-sufficient small towns that meet needs such as housing, social interaction, cultural activities, and recreation (Büyüksahin Sıramkaya & Çınar, 2012; Göçer et al., 2020; Özkan et al., 2022; Büyükoztürk & Şenol, 2026). Planning these complex structures using a holistic approach that considers ecological, social, and spatial aspects forms the foundation of sustainable campus design. Launched in 2010 to measure and benchmark this vision of sustainability in which a university minimizes its negative impacts on the environment, economy, society, and health the

University of Indonesia (Universitas Indonesia: UI) GreenMetric Sustainable University Ranking, launched in 2010 to measure and compare this sustainability vision which aims to minimize a university's negative impacts on the environment, economy, society, and health is today one of the most widely used and recognized evaluation systems (Dawodu et al., 2022; Jiang & Kurnitski, 2023; UI Greenmetric, 2026). This model evaluates universities across seven main categories: construction and infrastructure, energy and climate change, waste, water, transportation, education and research, and governance and digitalization; it encourages campuses to preserve green spaces, enhance accessibility, and develop inclusive designs (Günaydin et al., 2025; UI Greenmetric, 2026).

Outdoor spaces on university campuses, recognized as primary areas that address students' needs for relaxation, socializing, exchanging ideas, and developing a sense of belonging (Göçer et al., 2020; Alnusairat et al., 2021; Özkan et al., 2022), are considered fundamental components that support campus life in terms of their functional characteristics and spatial roles (Jia et al., 2021). Studies in the fields of environmental psychology and landscape architecture clearly demonstrate that the vegetation, water features, and aesthetic landscape compositions in outdoor spaces reduce students' academic stress, alleviate cognitive fatigue, and promote psychological renewal (Gulwadi et al., 2019; Ding et al., 2024; Li et al., 2024; Soliman et al., 2024). At the same time, spaces free of physical barriers and designed in accordance with inclusive (universal) design principles directly enhance overall quality of life and satisfaction with the space by strengthening users' connection to the campus (Salihoglu & Karasümen Açıkgöz, 2021; Özdemir & Nalbant, 2022; Özkan et al., 2022). However, research on campuses tends to focus more on buildings than on outdoor environments (Tourinho et al., 2021; Manahasa et al., 2026).

University campuses, most of which feature extensive green spaces, are rarely used as recreational areas for the mental and physical well-being of their users (academic staff, administrative staff, students, and other stakeholders) and residents living in the surrounding area. However, because campuses provide a natural environment, they have great potential to meet this demand (Ribeiro et al., 2024). Therefore, assessing the quality, accessibility, and adequacy of campus spaces is a multidimensional urban design problem for planners and decision-makers (Özdemir & Nalbant, 2022). When addressing such spatial issues, subjective evaluations based solely on user surveys fall short of objectively revealing the physical causes underlying outdoor space usage practices (Özdemir & Nalbant, 2022; Seifzadeh, 2024; Vizguerra Morales & Mederos Nieto, 2024; Yi et al., 2024). To create a successful and sustainable residential area, quantitative and analytical decision-making models are required (Özdemir & Nalbant, 2022). Multi Criteria Decision Making (MCDM) methods enable the simultaneous evaluation of multiple criteria that may conflict with one another (accessibility, ecological quality, spatial organization, aesthetics, etc.). Developed by Thomas L. Saaty, the Analytic Hierarchy Process (AHP) is a powerful mathematical model that reduces this complex decision-making problem to a hierarchical structure and calculates the objective importance weights (Suitability Coefficients (SC)) of criteria through pairwise comparisons based on expert opinions. The integration of AHP into spatial analysis enables the prioritization of design criteria within a transparent and reliable framework, thereby providing scientific guidance for selecting the most appropriate physical interventions to be implemented in settlements (Özdemir & Nalbant, 2022; Büyüköztürk & Şenol, 2026).

Although there are many studies that examine campus outdoor spaces, pedestrian accessibility, or sustainability metrics in isolation, studies that provide a holistic spatial adequacy analysis by bringing together the diverse criteria that define a campus—such as ecological quality, accessible design, aesthetic quality, cultural opportunities, spatial organization, social opportunities, and on campus circulation—along with their sub-criteria under a quantitative model framework like AHP are quite limited. In this context, the selection of the İstiklal Campus of Burdur Mehmet Akif Ersoy University (MAKÜ) as the study area enables the analysis of the spatial adequacy of a contemporary campus located outside the city, spread across a large area, and required to address intensive urban infrastructure needs within its own boundaries.

This study aims to objectively identify the strengths and areas for improvement of the İstiklal Campus by generating expert-based (through face-to-face meetings with experts) quantitative findings through primary and secondary criteria established using sustainability indicators and spatial adequacy criteria in campus planning and design. It is anticipated that this methodological framework will provide decision-makers with a strategic roadmap as universities align with international green campus evaluation systems such as UI GreenMetric. Furthermore, it is believed that this model will make a unique contribution to the landscape architecture literature by introducing a measurable, objective, and innovative approach to spatial evaluation.

2. MATERIALS AND METHODS

2.1 Study Area

The primary setting of this study is the İstiklal Campus of Burdur Mehmet Akif Ersoy University (MAKÜ). Located in Türkiye's Western Mediterranean Region, Burdur Mehmet Akif Ersoy University was established by Law No. 5467, published in the Official Gazette dated March 17, 2006, Issue No. 26111. The university, which initially comprised 3 faculties, 1 college, 3 institutes, and 5 vocational schools, currently conducts its educational activities as of the 2020–2021 academic year with 12 faculties, 5 colleges, 4 institutes, 13 vocational schools, and the State Conservatory of Turkish Music (URL-1, 2026). The university has ten campuses, located in the provincial center and in various districts. According to official data as of January 7, 2025, the MAKÜ İstiklal Campus has the highest student enrollment, with 22,312 students (URL-2, 2026). Furthermore, the İstiklal Campus has the largest number of academic staff (1,001) and administrative staff (585) (URL-1, 2026). The primary reason for selecting the MAKÜ İstiklal Campus as the research site is that it is the campus with the highest level of usage by students, academic staff, and administrative staff alike. Furthermore, because the İstiklal Campus is located outside the city and spans a large area, it is a modern campus that must address the need for dense urban infrastructure within its own boundaries. Figure 1 shows the location of the study area.



Figure 1. Location of the study area (URL-3, 2026; URL-4, 2026)

To assess the adequacy of campus space, an expert questionnaire was prepared based on the studies by Gökşen et al. (2017), Liu (2021), and Delibaş (2024), as well as the criteria and sub-criteria outlined in the UI Greenmetric Sustainable University Rankings Guide (2026). In evaluating the form, the opinions of experts who regularly use the MAKÜ İstiklal Campus and are well-versed in campus planning and design were sought, and face-to-face interviews were conducted with these experts. Of these experts, 3 are interior architects, 3 are landscape architects, 2 are urban and regional planners, 3 are civil engineers, 2 are architects, 3 are biologists, and 2 are administrative staff. Microsoft Office Excel 2019 software was used to prepare and calculate the matrices for the main criteria identified in the study, as well as the scoring for the sub-criteria.

2.2 Methods

This study involves a multi-criteria evaluation process aimed at quantitatively analyzing the adequacy of campus space, specifically at the MAKÜ İstiklal Campus. In this context, the study consists of four main stages: a literature review; data collection related to the main and sub-criteria for determining campus spatial adequacy; analysis of the obtained data; and evaluation and conclusions (Figure 2).

A literature review related to this study was conducted to examine the sustainability indicators of UI Greenmetric (2026) and the criteria for spatial adequacy in campus planning and design. During the data collection phase, a “Hierarchical Model of Spatial Adequacy” was developed that is appropriate for the physical and functional structure of the MAKÜ İstiklal Campus. In this context, the primary basis for determining the main and sub-criteria for spatial adequacy on campuses was the work of

Gökşen et al. (2017), Liu (2021), Delibaş (2024), and the UI Greenmetric Sustainable University Ranking Guide (2026). To determine the relative importance of the identified primary and sub-criteria, the opinions of 18 experts specializing in campus planning and design, as well as user experience, were sought.

The data analysis phase identified the following key criteria for spatial adequacy in the campuses: ecological quality, barrier-free design, aesthetic quality, cultural opportunities, spatial organization, social opportunities, and circulation within the campus. To determine the “SC” for these main criteria, the pairwise comparison method was used within the framework of the Analytic Hierarchy Process (AHP), one of the multi-criteria decision-making methods.

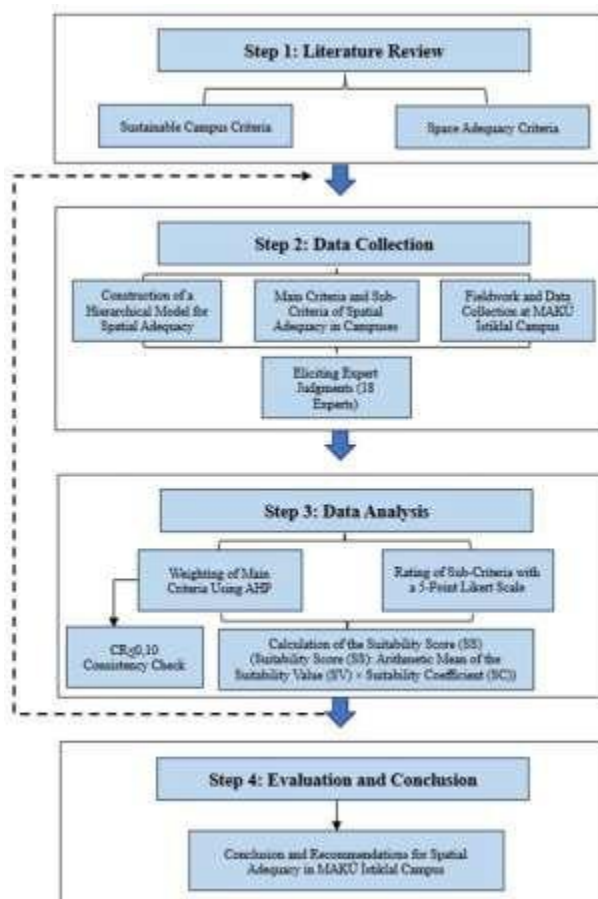


Figure 2. Methodology flowchart

Developed by Saaty (1987), the AHP is a general theory of measurement. It is a non-linear framework for conducting both deductive and inductive reasoning based on several factors (Saaty, 1980; Saaty, 1987). The application of AHP is based on three fundamental principles (Saaty, 1980; Karakuş & Yıldız, 2022):

- (i) Identifying the problem and establishing a hierarchy,
- (ii) Creating a comparative decision-making preference matrix,
- (iii) Determining factor weights.

In the AHP, each factor is compared in pairs using the pairwise comparison method, and the relative values are evaluated according to their relative importance to one another. Finally, a pairwise comparison matrix is constructed (Saaty, 1980; Karakuş & Yıldız, 2022).

Step 1: Determining the weights.

In the Saaty method, the principal eigenvector of the cross-correlation matrix between pairs of the two main criteria is used to calculate the weights of the factors. Table 1 shows the description of the ratings between the two factors on a nine-point scale (Drobne & Lisec, 2009).

Table 1. The pairwise comparison scale used for AHP preferences (Saaty, 1980)

Verbal Preference Provision	Description	Numerical Value
Equal Preference	Two activities contribute equally to the objective.	1
Moderate Preference	Experience and judgment lead one to prefer one activity over another to some extent.	3
Strong Preference	Experience and judgment make one activity significantly more preferable than another.	5
Very Strong Preference	It is strongly preferred based on a certain criterion, and its dominance is readily apparent in practice.	7
Extreme Preference	The evidence supporting the idea that an activity is chosen based on its value is highly reliable.	9
Intermediate Values	Values falling between two consecutive judicial decisions, to be used when a compromise is necessary.	2, 4, 6, 8
Inverse (Opposite) Values	When an element is compared to another element, one of the above values is assigned. When the second element is compared to the first element, it has the opposite value.	1/...

Step 2: Consistency of pairwise comparisons.

The accuracy of pairwise comparisons is measured by calculating the consistency ratio (CR) (1), which is used to assess the relative weight of each factor. CR is the ratio of the Consistency Index (CI) to the Random Index (RI). When CR is less than 10%, the comparison between criteria is considered acceptable; otherwise, CR allows for a reevaluation of the comparison (Karakuş & Yıldız, 2022).

$$CR = CI / RI \quad (1)$$

Depending on the matrix configuration, the RI value is a pre-calculated constant determined by the size of the decision matrix. Table 2 shows the RI value based on the number of factors. CI is calculated using (2).

$$CI = (\lambda_{max} - n) / (n - 1) \quad (2)$$

Table 2. Randomness index table (Saaty, 1980)

n	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49

Here, $\lambda_{max} = (Weight1 * S1 + Weight2 * S2 + Weight3 * S3 + \dots)$; n = number of criteria.

Once the CI has been calculated, the CR equation is applied. If the result is less than 10%, it can be concluded that the pairwise comparisons are acceptable. If this value is greater than 10%, the pairwise comparisons are inconsistent. In this case, the entire process must be repeated from the beginning (Karakuş & Yıldız, 2022).

Step 3: Geometric Mean.

The geometric mean is a special type of average in which the values of the numbers are multiplied by their respective percentages, and then the root is taken, as explained in (3) (Karakuş & Yıldız, 2022).

$$Geometric\ Mean\ (GM) = \sqrt[n]{X1 * X2 * X3 * \dots * Xn} \quad (3)$$

Here, n represents the number of returns in the series, and X is a variable.

According to Tavşancıl (2014), ratings on the Likert scale are 3, 5, 7, 9, and 11; since the 5-point scale has the optimal value, it is the most commonly used type of Likert scale. For this reason, the sub-criteria associated with the main criteria identified in this study were evaluated using the “Suitability Value (SV)” on a “5-point Likert scale.” In this evaluation, the ratings are ranked as follows: 1 (Not at All Adequate), 2 (Very Slightly Adequate), 3 (Partially Adequate), 4 (Mostly Adequate), and 5 (Completely Adequate). To prevent the unequal number of sub-criteria under the main criteria from creating an advantage or disadvantage in the mathematical distribution, the Suitability Score (SS) for each main criterion was calculated by multiplying the arithmetic mean of the SVs of the relevant sub-criteria on the 5-point Likert scale by the Suitability Coefficient (SC).

3. RESULTS AND DISCUSSION

Specifically, for the MAKÜ İstiklal Campus, this study analyzes the adequacy of campus space numerically, based on the works of Gökşen et al. (2017), Liu (2021), Delibaş (2024), and the UI Greenmetric Sustainable University Rankings Guide (2026) were used as the basis for the numerical analysis of spatial adequacy at the MAKÜ İstiklal Campus. The main criteria identified were ecological quality, universal design, aesthetic quality, cultural opportunities, spatial organization, social opportunities, and on-campus circulation. The “SC” values obtained using the AHP method applied to these main criteria were, in order: universal design (0.24), ecological quality (0.17), on-campus circulation (0.15), spatial organization (0.14), social opportunities (0.13), cultural opportunities (0.10), and aesthetic quality (0.07). “SV” values were obtained by scoring the sub-criteria for each main criterion using a 5-point Likert scale (1: Not at All Adequate, 2: Very Slightly Adequate, 3: Partially Adequate, 4: Mostly Adequate, 5: Completely Adequate).

To prevent the unequal number of sub-criteria under the main criteria from creating an advantage or disadvantage in the mathematical distribution, the “SS” for each main criterion was calculated by taking the arithmetic mean of the “SV” scores on the 5-point Likert scale for the relevant sub-criteria and multiplying it by “SC” (Table 3).

Table 3. Analyses of the main and sub-criteria for determining spatial adequacy in residential complexes.

CRITERION	CODE	SUB-CRITERION	SV	Mean SV	SC	SS
Ecological Quality	1	Conservation of the ecological value and characteristics of the site	2	2.10	0.17	0.36
	2	Water-efficient landscape design (rainwater harvesting, bio-ditches, permeable surface design, xeriscaping, etc.)	2			
	3	Reusable water / wastewater treatment	2			
	4	Use of zero-emission vehicles (electric vehicles, bicycles, etc.)	2			
	5	Reduction of CO ₂ emissions	2			
	6	Renewable and green energy	2			
	7	Management of organic, inorganic, sewage, and hazardous waste	2			
	8	Use of recyclable materials	2			
	9	Climate-resilient design	2			
	10	Use of native plant species appropriate to the region	3			
Universal Design	1	Approaches to universal design in transportation corridors (vehicle, pedestrian, and bicycle lanes)	3	3.00	0.24	0.72

	2	Universal design approaches for open, semi-open, and enclosed spaces	3			
	3	Campus site furnishings for universal design	3			
	4	Parking capacity for people with disabilities	3			
Aesthetic Quality	1	Harmony between architecture and landscape architecture	2	2.16	0.07	0.15
	2	The use of water in design	2			
	3	Diversity of plant composition	2			
	4	Seasonal accentuating effect of the landscape	2			
	5	Visual quality of buildings	3			
	6	Visual quality of green spaces	2			
Cultural Opportunities	1	The quality and quantity of cultural events	3	2.33	0.10	0.23
	2	Presence of campus culture	2			
	3	Cultural harmony between the campus and the city	2			
Spatial Organization	1	Settlement on the land	2	2.42	0.14	0.34
	2	Density and quality of the built environment	3			
	3	The presence of enclosed, semi-enclosed, and open spaces	3			
	4	A design approach based on local culture	2			
	5	User health	3			
	6	The use of natural elements (plants, water, natural materials, etc.) in spatial design	2			
	7	Seasonally adaptive spatial design	2			
	8	Safety and security facilities	3			
	9	Space design for the well-being of students, faculty, and administrative STAFF	2			
	10	Concept-based spatial design	2			
	11	The quality of the square within the campus	3			
	12	Design of furnishings according to campus culture	2			
Social Opportunities	1	Accessibility of social facilities	3	2.75	0.13	0.36
	2	Availability of diverse social activity spaces	3			
	3	Integration of indoor and outdoor social opportunities	2			
	4	The economic situation of social services	3			

On-Campus Circulation	1	Continuous transportation corridor (vehicle, pedestrian, and bicycle lanes)	3	3.20	0.15	0.48
	2	Car park capacity	3			
	3	Traffic Volume and Capacity of Vehicle-Pedestrian Lanes	4			
	4	Quality and quantity of pedestrianized areas	3			
	5	Access to places	3			
TOTAL					1	2.64

Looking at the current status of research area applications (SV Mean), the area in which MAKÜ İstiklal Campus performed best was “On-Campus Circulation,” with a score of 3.20. The fact that “Traffic Volume and Capacity of Vehicle-Pedestrian Lanes” under this criterion was rated “Mostly Adequate (4)” contributed to raising the score for this criterion. As part of the evaluations, face-to-face interviews were conducted with experts; “Universal Design”, which had the highest “SC”, ranked second with an average “SV” score of 3.00, remaining “Partially Adequate”. The weakest criteria within the campus’s “SV” average were, in order: Ecological Quality (2.10), Aesthetic Quality (2.16), Cultural Opportunities (2.33), Spatial Organization (2.42), and Social Opportunities (2.75). When the standardized “SS” values for all criteria are summed, the MAKÜ İstiklal Campus’s spatial adequacy score was determined to be 2.64 out of 5.00. This score indicates that the campus falls between the “Very Slightly Adequate (2)” and “Partially Adequate (3)” levels in terms of spatial adequacy.

The fact that “Universal Design” received the highest coefficient of 0.24 in the AHP analysis aligns perfectly with the vision that defines universities as inclusive public spaces offering equal opportunities for everyone (Özdemir & Nalbant, 2022; Büyüköztürk & Şenol, 2026). However, the fact that accessible pedestrian routes, facilities, and parking lots were rated only “Partially Adequate (3)” in the study area indicates a discrepancy between theory and practice. The sloping topography and the layout of the MAKÜ İstiklal Campus, which spans a large area, physically hinder the establishment of an uninterrupted circulation network for wheelchair users, resulting in a lower “SV” score for this criterion. In their study on campus accessibility, Büyüköztürk and Şenol (2026) emphasized that the continuity of pedestrian paths and ramps is the most important criterion, yet obstacles are encountered in practice. In a study by Manahasa et al. (2026), the lack of infrastructure for people with disabilities was also identified as the primary source of dissatisfaction regarding open spaces on the campus.

Under the “Ecological Quality” main criterion, which has a weight of 0.17, the sub-criterion “Use of native plant species appropriate to the region” received a rating of “Partially Adequate (3),” while all other criteria received a rating of “Very Slightly Adequate (2).” It was determined that the settlement demonstrated a weak im-pact/performance in terms of “Ecological Quality (SV Mean: 2.10).” In this context, the studies by Dawodu et al. (2022) and Jiang and Kurnitski (2023) emphasize the role of universities in combating global climate change and note that international assessment systems such as “UI GreenMetric” or “STARS” directly measure carbon footprint, energy, water efficiency, and waste management. In the UI GreenMetric (2026) guidelines, water recovery systems and zero-emission transportation policies, in particular, are among the prerequisites for a green campus. The fact that the sub-criteria covering these parameters at MAKÜ remain at the “Very Slightly Adequate” level indicates a need for urgent infrastructure improvements to compete in international sustainability rankings.

Although the sub-criterion “Traffic Volume and Capacity of Vehicle-Pedestrian Lanes” under the main criterion “On-Campus Circulation” (with a weight of 0.15) at the MAKÜ İstiklal Campus was rated “Mostly Adequate (4),” it has been determined that this capacity is not supported by universal design principles to the level of “Completely Adequate (5)” in accordance with universal design principles. The other sub-criteria of this main criterion have been rated “Partially Adequate (3).”

The sub-criteria under the “Spatial Organization” main criterion—which has a weight of 0.14—including “Density and quality of the built environment; The presence of enclosed, semi-enclosed, and open spaces; User health; Safety and security facilities; The quality of the square within the campus” were rated as “Partially Adequate (3).” The other sub-criteria were evaluated as “Very Slightly Adequate (2).” It was determined that the “Spatial Organization” criterion is “Partially Adequate (3)” in terms of the site’s basic structural and plaza layout, but it contains serious deficiencies regarding the integration of natural elements into the spatial design and the site’s layout. In their study, Agrawal and Yadav (2021) note that designing open spaces and enclosed areas as interconnected networks forms the foundation of campus layout, and that integrating the built environment with the

landscape is critical to student success. As emphasized in the spatial layout studies conducted by Göçer et al. (2020) and Günaydın et al. (2025), the lack of open spaces intended for long-term use and the failure to design out-door spaces in an integrated manner with pedestrian-oriented facilities hinder the efficient functioning of campus spaces. The fact that the relationship between indoor and outdoor social facilities at MAKÜ İstiklal Campus is rated as “Very Slightly Adequate (2)” demonstrates that fluidity and spatial integration between indoor and outdoor spaces have not been achieved.

Social and Cultural Opportunities, which have importance weights of 0.13 and 0.10, respectively, have become a significant factor threatening students’ sense of belonging and life satisfaction due to their low SV means of 2.75 and 2.33. In their study, Salihoğlu and Karasümen Açıkgöz (2021) statistically demonstrated that the factor most influencing university students’ perception of overall quality of life is satisfaction with socio-cultural areas ($\beta = 0.382$). It was determined that the social facilities at the MAKÜ İstiklal Campus partially meet basic minimum needs; however, the connection between indoor and outdoor spaces is lacking, and the overall performance of social spaces needs to be improved. In their study, Manahasa et al. (2026) emphasize that campus open spaces should be evaluated not only in terms of their environmental aspects but also in terms of sociocultural sustainability; they note that, in addition to social interaction, diversity of activities, and user participation, outdoor facilities such as covered areas, gathering spaces, and seating elements form the foundation of campus satisfaction. In their studies, Erçevik and Önal (2011) and Göçer et al. (2020) state that university campuses located outside the city must be self-sufficient like an urban settlement; otherwise, the campuses will become isolated, severing social integration between city residents and students. The fact that the MAKÜ İstiklal Campus has been very weak in terms of cultural activities and urban integration indicates that the campus has become an isolated area serving solely an educational function, rather than a vibrant and social “academic space”.

Limited access to the city’s cultural opportunities heightens the vital importance of on-site facilities. On the other hand, the fact that one of the sub-criteria with the lowest score under the “Social Opportunities” criterion namely, “Integration of indoor and outdoor social opportunities” received a score of 2 indicates that the architectural and urban design of the development fails to ensure a seamless transition between indoor and outdoor spaces. In this context, Alzamil et al. (2023) noted in their study that natural areas on campuses are important spaces that facilitate students’ socialization. Furthermore, as emphasized by researchers such as Göçer et al. (2020), Çakın and Güngör (2023), and Manahasa et al. (2026), the lack of transitional spaces (semi-open areas, courtyards) that connect buildings to the outdoor environment reduces the potential use of campus plazas. The absence of these transitional spaces, which would allow students to step out of the buildings and socialize, is the primary cause of the stagnant outdoor culture at the MAKÜ İstiklal Campus.

In the AHP analysis, this stems from experts weighting the “Aesthetic Quality (SC: 0.07)” criterion as the least important one, and from the architectural and landscape harmony, water usage, plant diversity, seasonal impact, and visual quality of green spaces within the campus landscape being rated as “Very Slightly Adequate (2).” This situation serves as evidence that, in the planning and design of campuses, aesthetics is viewed merely as a secondary “visual embellishment.” However, from an international perspective, environmental psychology categorically rejects this view. In the studies by Gulwadi et al. (2019), Ding et al. (2024), and Karkala Prabhu et al. (2025) have demonstrated in their studies that campus green spaces, water features, and complex designs integrated with nature serve not merely as aesthetic details but as psychological renewal tools that alleviate students’ attention fatigue and reduce academic stress and anxiety. Çakın and Güngör (2023), on the other hand, emphasized in their study that visual quality directly enhances a sense of place. The neglect of plant compositions and water features at the MAKÜ İstiklal Campus results in the campus’s potential for psychological well-being being completely overlooked.

4. CONCLUSION

In this study, the spatial adequacy of MAKÜ’s İstiklal Campus was analyzed using a holistic approach that integrated the AHS method and a 5-point Likert scale, based on face-to-face interviews with experts.

According to the analysis results, the campus’s overall spatial adequacy score was determined to be 2.64 out of 5.00. This result indicates that, in terms of spatial performance, the campus falls between the “Very Slightly Adequate (2)” and “Partially Adequate (3)” levels. One of the most striking findings of the study is the discrepancy between the criteria to which experts theoretically assigned the highest priority and the practical implementations on campus. “Universal Design,” identified by experts in the AHP matrix as the criterion with the highest importance weight (0.24), was rated only at the “Partially Adequate (3)” level in terms of its on-site implementation. Similarly, the “Ecological Quality” criterion—which is central to the green

campus vision and ranks second with an importance coefficient of 0.17—constitutes one of the campus’s weakest links, with a very low SV Mean of 2.10. The area where the campus performed best was “On-Campus Circulation,” with an average score of 3.20 “SV”. The low scores received in the criteria of Spatial Organization (2.42), Social Opportunities (2.75), and Cultural Opportunities (2.33) suggest that confirm that the İstiklal Campus, located outside the city, has transformed into an isolated area serving solely an educational function—disconnected from the fluidity between indoor and outdoor spaces—rather than functioning as a self-sufficient, vibrant, and social “academic space”. Finally, the neglect of the “Aesthetic Quality” criterion—which experts assigned the lowest importance weight of 0.07—in the study area is clear evidence that the landscape’s psychological healing and stress-reducing power has been overlooked in the campus planning and design.

To enhance the overall environmental quality of the MAKÜ İstiklal Campus and elevate its ranking in international green campus assessment systems such as UI GreenMetric, the following strategic planning and landscape design interventions are proposed. These include:

- To address the disadvantages posed by the site’s sloping topography, pedestrian routes that are continuous, stepped, and compliant with universal design principles must be designed for wheelchair and stroller users. Although the existing vehicle-pedestrian routes are satisfactory in terms of carrying capacity (4 points), these routes must be upgraded to the “Completely Adequate (5)” level through the inclusion of accessible features and appropriate ramp systems.
- In order to meet the UI GreenMetric criteria, the ecological sub-criteria on campus that are rated “Very Slightly Adequate” must be rapidly improved. To this end, rainwater harvesting systems should be installed, bio-ditches and permeable surface materials should be designed, and xeriscape principles should be adopted. To reduce the campus’s carbon footprint, zero-emission transportation routes (bicycles, electric shuttle routes, etc.) and renewable energy infrastructure should be integrated into the master plan.
- To strengthen social and spatial organization, semi-open spaces, court-yards, and covered and/or gathering areas that establish connections between buildings and open spaces should be designed. By strengthening the relationship between indoor and outdoor social facilities, vibrant focal points and plazas should be created where students can step outside the buildings and socialize.
- Structural and botanical landscape elements should be viewed not merely as visual embellishments, but as tools for psychological renewal that help reduce students’ academic stress and anxiety. The strategic use of water features should be increased throughout the campus, and native plant species appropriate to the region should be selected to create rich botanical compositions that reflect seasonal changes in color and texture.
- To address the cultural mismatch between the campus and the city, the open and enclosed spaces within the campus should be supported by flexible designs (spaces that can be adapted according to the season) so that they can host high-quality recreational and sociocultural events in which the people of Burdur can also participate.

AUTHOR CONTRIBUTIONS

Latif Gürkan Kaya: Conceptualization, Investigation, Writing—Review & Editing.

Ayşen Çoban: Methodology, Writing—Review & Editing.

Hüseyin Samet Aşıkkutlu: Data Curation, Formal Analysis, Writing—Review & Editing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICS STATEMENT

Ethical approval was not required for this study.

DATA AVAILABILITY STATEMENT

Data supporting the findings of this study are available from the corresponding author upon reasonable request.

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