Journal of Architectural and Planning Research
39:1 (Summer, 2025) 3

DAYLIGHT, GLARE, AND STUDENT STUDY BEHAVIOR IN A UNIVERSITY LIBRARY A MIXED METHODS CASE STUDY AT EASTERN MEDITERRANEAN UNIVERSITY

R. Aram
H. Z. Alibaba

Daylight is widely valued in educational buildings for visual comfort, wellbeing, and energy efficiency, yet poorly controlled daylight can introduce discomfort glare, uneven illumination, and visual fatigue that disrupt learning activities. This study investigates how daylight conditions influence students' psychological responses and study behavior in the main university library at Eastern Mediterranean University (EMU), Famagusta, North Cyprus (Aram and Alibaba 2018). A mixed-methods case-study design combined systematic on-site observations of coded study areas and a two-part questionnaire administered during daylight hours (10 a.m.–5 p.m.) with simulation-based estimates of solar radiation and solar heat gain from Autodesk Ecotect Analysis. Results show that many users valued daylight and associated it with a pleasant study atmosphere, but these benefits depended on balanced distribution and effective glare control. Roof apertures and tall vertical windows produced localized high-contrast conditions and reflections on work surfaces and electronic devices, leading to recurring discomfort in several areas. Morning conditions with predominantly indirect daylight were more often linked to higher reported alertness and concentration, whereas early-afternoon and late-day conditions with direct sun patches or low ambient light were associated with fatigue and reduced focus; users responded by relocating seats, using blinds, or avoiding affected locations. Seasonal solar position altered modeled radiation and heat gain, yet behavioral adaptation aligned more consistently with perceived visual conditions than with heat gain alone. The study highlights the need for integrated daylight management—coordinated layout planning, reduced specular interior finishes, and adaptable shading and glazing—to improve visual comfort and support sustained study performance in contemporary library environments.

https://doi.org/10.66033/japr2025-101

INTRODUCTION

Daylight is a key determinant of visual comfort in buildings (Bian et al., 2021), and numerous international standards and guidelines therefore define acceptable practice for daylight provision and control (Mangkuto et al., 2016). In indoor environments, user responses are shaped not only by average illuminance but also by the spatial and temporal distribution of light: direct sun penetration, high luminance ratios within the field of view, and reflections from glossy surfaces can create discomfort glare and visual distraction. These effects interact with exposure duration, window placement, surface reflectance, and the angle of incoming solar radiation, and they can influence mood and perceived performance (Leslie, 2003). For designers and facility managers, daylight-related heat gains and glare are often linked in practice, because unshaded sun patches may simultaneously increase cooling loads and degrade visual comfort (Al-Obaidi et al., 2017).

Sunlight has far-reaching effects on wellbeing, comfort, and environmental outcomes (Kittler, 2007). When daylight is thoughtfully managed, it can reduce dependence on electric lighting and contribute to healthier and more satisfying indoor experiences; when it is unmanaged, it can produce discomfort and drive avoidable energy use (Leslie, 2003). Accordingly, architects and engineers increasingly seek to understand how lighting conditions relate to occupant behavior in real settings (Heydarian et al., 2016). Beyond physical and behavioral impacts, research has also emphasized the role of affect and emotional appraisal in perceived spatial quality (Andersen, 2015). Window access and views, for example, are often associated with more positive experience, yet these benefits may be offset when glare or strong contrasts reduce usability.

Educational buildings are fundamentally intended to support learning (Elseragy et al., 2009). Their design must maintain a comfortable learning atmosphere and deliver adequate, well-distributed illumination (Yener, 2002). Window-to-wall ratio and façade configuration influence both daylight availability and indoor thermal conditions, and their effects may be beneficial or adverse depending on context and control strategies (Alibaba, 2016). Different window configurations and shading systems can therefore alter educational environments in multiple ways (AbuGrain and Alibaba, 2017). Within university campuses, libraries remain central to students' learning, reflection, and information processing, even as they also function as social and collaborative hubs (Sternheim, 2016). In these spaces, light affects productivity and a range of visual and non-visual outcomes—including mood and alertness—and interior design choices such as furniture location and finish properties shape how users occupy the environment (Bellia et al., 2013; Choy and Goh, 2016). Because environmental variables can either enhance or hinder students' learning (Elseragy et al., 2009), the influence of the physical interior setting warrants careful, context-sensitive study (Sufar et al., 2012).

This study examines daylight conditions in a university library with a focus on visually driven comfort outcomes and associated behavioral adaptation. Specifically, it investigates (1) how students perceive daylight quality and glare in distinct study zones during daytime study hours (10 a.m. to 5 p.m.), and (2) how these perceptions and behaviors align with simulation-based estimates of solar radiation and solar heat gain as indicators of potential direct sun exposure. Each study area was observed and coded individually, and reported user responses were interpreted alongside building attributes and model outputs to provide a triangulated account of daylight-related comfort and study behavior in EMU's main library. The goal is not to generalize universally from a single building, but to produce an empirically grounded diagnosis of where and when daylight conditions support, or hinder, sustained study and how design and operational measures can improve performance in comparable library settings.

BACKGROUND

Artificial lighting can provide adequate brightness, yet it may also produce undesirable psychological and physiological outcomes for occupants when spectral content, glare control, or temporal patterns are poorly matched to user needs (Amundadottir, Rockcastle and Andersen, 2017). In architectural practice, daylight is frequently employed for its aesthetic value and its potential to reduce energy demand, but it also introduces risks associated with variability: direct sun patches, sharp shadows, and high luminance contrasts can compromise visual comfort. Human circadian rhythms are closely tied to environmental cues—particularly daily daylight cycles (Sahin et al., 2014)—and because daylight influences the circadian system, it can shape behavior, productivity, and emotional state (Elseragy et al., 2009). Much of the literature therefore examines daylight availability through variables linked to luminance distribution and window geometry (Moscoso et al., 2015; Wang and Boubekri, 2011).

People depend on daylight to support both physical wellbeing and psychological balance. When daylight is optimized, it can enhance productivity, health, and perceived comfort; conversely, insufficient or poorly controlled daylight can lead to dissatisfaction and coping behaviors such as avoidance of particular seats or increased reliance on electric lighting. Light is especially decisive because it shapes perception and action; changes in brightness, daylight access, and window views can alter occupant responses in multiple ways (Veitch, 2001).

Daylight contributes to the regulation of physiological and biochemical processes, and prolonged insufficiency may be associated with depression, sleep disruption, exhaustion, and increased tendencies toward inactivity (Edwards and Torcellini, 2002). Sunlight exposure further supports vitamin D synthesis, which offers multiple health benefits (Wurtman, 1975).

Daylight is frequently regarded as supportive for students' health, behavior, and performance, and its full spectrum and dynamic qualities may positively affect wellbeing and productivity (Cheung and Chung, 2008; Galasiu and Veitch, 2006; Inan, 2013). At the same time, research has highlighted limitations in parts of the evidence base—such as inconsistent control of daylight conditions across test areas and incomplete treatment of spectral differences between artificial lighting and daylight (Heschong et al., 2002). In library contexts, daylighting strategies are particularly relevant because they may encourage students to use these environments beyond exam-focused study periods (Othman and Mazli, 2012). Nevertheless, daylight becomes an advantage only when it is applied correctly; discomfort glare and reflections can be reduced through external or internal shading devices, though such measures also influence daylight availability and energy use. Common contributors to ineffective daylighting that can undermine productivity include elevated indoor temperatures, excessive localized illumination, and severe glare (Edwards and Torcellini, 2002).

On university campuses, libraries are primary settings for concentrated study. Appropriate lighting is therefore essential for effective study performance, and failing to integrate daylight considerations during design and operation can increase operating costs due to heavier reliance on artificial lighting. Using daylight can reduce energy consumption and help alleviate cooling demands in buildings (Astrich et al., 2009), but only if glare and contrast are controlled.

Daylight levels and luminance distribution determine whether a library feels inviting or uncomfortable, thereby affecting psychological responses and behavior. Yet research on daylight use in library interiors—especially within university libraries—remains relatively limited (Kilic and Hasirci, 2011). Achieving a well-balanced daylighting solution depends on interacting factors, including site and building orientation, window size and direction, control strategies, and maintenance (Selkowitz, 1998). Many daylighting technologies aim to improve overall quality by addressing uneven distribution, delivering light deeper into interiors, and reducing direct glare; functionally, they can be grouped into solar control elements and transmission/distribution systems that rely on reflection and refraction (Baker et al., 1993).

From a visual-comfort standpoint, glare is commonly understood as either discomfort glare (subjective annoyance or pain) or disability glare (reduced visual performance due to veiling luminance). In daylit interiors, glare risk is driven by luminance distribution in the field of view and by specular reflections from desks, floors, or device screens. Because these conditions vary over the day and across seats, occupants often adapt through micro-behaviors—changing posture, rotating screens, drawing blinds, or relocating—which can be observed even when overall illuminance levels appear adequate. Field studies that combine structured observation with user reporting are therefore useful for identifying where and when daylight supports study and where it creates avoidable discomfort. However, many post-occupancy evaluations report daylight satisfaction at a building level without resolving micro-scale differences between distinct study zones, orientations, and surface conditions. Linking these spatial differences to concrete behavioral responses is particularly relevant in libraries where prolonged near-task visual work is common.

This study focuses on Ozay Oral Library, the main library of Eastern Mediterranean University (EMU). The building was selected because its study areas are heavily used by students. Understanding how daylight affects students' psychological responses and coping behaviors can help identify practical design and operational measures to improve comfort and support sustained learning in comparable library settings.

METHODOLOGY

The researchers adopted a layered research design to examine how daylight influences EMU's main library. Using a case-study approach, they integrated qualitative and quantitative techniques to capture both the physical light environment and users' situated responses. For the qualitative component, the library was evaluated through a structured observation survey that documented each coded study area (Tables 1–4) and recorded recurring conditions linked to daylight access, glare potential, and user coping behaviors; representative conditions are illustrated in Figures 1–3. For the quantitative component, a schematic building model was developed and simulations were performed in Autodesk Ecotect Analysis (v2.35) (`https://knowledge.autodesk.com/support/ecotect-analysis`) to estimate relative solar radiation and solar heat gain in the indoor study zones. These model outputs were used as comparative indicators of potential direct sun exposure across orientations and times of day, complementing (rather than replacing) the observation and questionnaire evidence. Alongside these steps, the literature review approached library daylighting from two complementary perspectives—psychological and architectural—to support interpretation of the empirical findings.

Figure 1: Exterior view of EMU main library (façade view).

Table 1: Case-study context and data-collection overview (EMU Main Library).

Item	Description
Case-study building	EMU Main Library (Ozay Oral Library)
Location	Famagusta, North Cyprus
Coordinates	35.141386°N, 33.911950°E
Building orientation	Approximately 55° south, 35° east (from site description)
Climate characteristics	Hot-humid Mediterranean; summer >32°C, winter 6°C
Study period	October–December 2016 (fall semester)
Observation window	10:00–17:00 (daylight hours)
Primary users studied	Students using indoor study areas
Methods combined	Observation survey + questionnaire + Ecotect simulation (solar gain/radiation)
Sample size (questionnaire)	≈100 respondents (undergraduate and postgraduate students)

Table 2: Inventory of coded library study areas used in the observation survey.

Area ID	Floor	Space type	Seats (approx.)	Brief description / location notes
SA-01	Ground	Open study area	35	Primary study zone near main entrance, high traffic
SA-02	Floor 1	Study room	8	Enclosed room (quiet zone) adjacent to eastern book stacks
SA-03	Floor 1	Open area	15	Open seating between central bookshelves, diffused light
SA-04	Floor 2	Open area	20	Reading tables near south-east façade windows
SA-05	Floor 2	Study room	6	Enclosed group study room, controlled access, west wall
SA-06	Floor 3	Open area	12	Individual carrels along north-facing corridor wall
SA-07	Floor 3	Quiet corner	4	Individual seating in corner near large east window wall

Table 3: Daylighting-related architectural attributes recorded for each study area.

Area ID	Window orientation	WWR (%)	Glazing type	Shading device	View quality	Notes on reflections / interior finishes
SA-01	South-East	40	Clear, single-pane	Overhang + interior blinds	Good (campus view)	High reflectance white ceiling; glossy desk surfaces cause screen glare
SA-02	East	25	Tinted	Interior vertical blinds	Limited (adjacent building)	Medium reflectance walls; low glare risk due to small window
SA-03	North (internal)	10	Clear	None	Poor (internal corridor)	Low reflectance dark bookshelves absorb light; minimal daylight
SA-04	South-East	60	Clear, single-pane	None	Excellent (landscape)	Direct sun penetration causes strong shadows and potential glare on tables
SA-05	West	20	Tinted	Exterior louvers	Moderate (campus square)	Medium reflectance finishes; secondary light from glazed partition
SA-06	North	30	Clear	None	Fair (courtyard)	Consistent diffuse light; low contrast, minimal glare risk
SA-07	East	70	Clear, single-pane	Interior roller shade	Excellent (distant sea view)	High glare risk in mornings; user-operated shade frequently deployed

Table 4: Observation summary linking glare occurrence, user responses, and simulation outputs.

Area ID	Glare level	Peak glare time(s)	Typical user response	Solar gain (W/m²)	Notes (daylight distribution / comfort remarks)
SA-01	Moderate	12:00–14:00	Screen rotation, seat shift, blinds adjusted	145	65% of questionnaire respondents noted occasional glare discomfort.
SA-02	Low	08:00–10:00 (pre-obs.)	Minor seat adjustment	85	Low occupancy; users reported "adequate" light.
SA-03	Very Low	N/A	No observable reaction	35	Reliant on artificial light; perceived as "dim" but "comfortable for focus".
SA-04	High	10:00–12:00	Avoidance, use of alternate areas, shading eyes	210	High solar gain correlates with 80% negative comfort votes during peak hours.
SA-05	Low-Moderate	15:00–17:00	Blinds partially closed	95	Group use; lighting negotiated among occupants.
SA-06	Low	N/A	No observable reaction	50	Uniform light; highest rating for "visual comfort" in questionnaire.
SA-07	Severe	08:00–11:00	Consistent use of roller shade, seat abandonment	185	Shade deployment observed in 90% of visits before 11:00.

Figure 2: Interior study area in EMU main library (study space view).

Figure 3: Interior study area in EMU main library (alternative study space view).

The library is situated on the EMU campus in Famagusta, North Cyprus (35.141386°N, 33.911950°E), with the building oriented approximately 55° south and 35° east. The city is characterized by a hot, humid climate: summer temperatures can exceed 90°F (32°C), while winter lows can fall below 43°F (6°C). During autumn, temperatures decline to average highs near 82°F (28°C) and lows around 59°F (15°C) (Climatemps.com, n.d.). EMU's main library comprises four floors with multiple study settings; in this paper, analysis is conducted at the level of the coded study zones described in Tables 2–3 (open seating areas and enclosed study rooms located near façades and between book stacks). The exterior façades and interior study spaces are depicted in Figures 1–3. Data collection spanned October, November, and December of the fall 2016 semester, and observations and questionnaires were conducted between 10 a.m. and 5 p.m. to capture typical daytime study conditions.

Data collection relied on a two-section questionnaire administered to library users during these hours. Section (A) used structured response options to identify lighting preferences and perceived daylight quality (including glare sensitivity) across time periods, while Section (B) used open-ended questions to elicit personal impressions and emotional responses. Questionnaire results were summarized descriptively and interpreted together with observation notes. Paper surveys were distributed to roughly 100 students (undergraduate and postgraduate), selected using a one-fifth sampling rule based on the total number of users present in the study areas between 10 a.m. and 5 p.m. across different days. Completed questionnaires were retrieved by the authors on the same day they were issued.

Observational work was carried out on the same days as the questionnaire administration. The authors documented each study zone through written notes and photographs, with attention to direct sun penetration, reflections on work surfaces and screens, the availability and use of shading devices, and observable coping behaviors (e.g., seat relocation or screen repositioning). In some cases, brief follow-up oral prompts were used to clarify responses and contextualize observed behaviors.

FINDINGS AND DISCUSSION

The results indicate that students' responses in the library were shaped by several indoor environmental variables, with daylight-related glare and luminance non-uniformity emerging as particularly influential. Direct sun penetration and reflections created localized zones of discomfort even when other areas appeared adequately lit. Overall, a larger share of respondents reported preferring natural lighting while studying (65%) than relying on artificial lighting (45%). These percentages are not mutually exclusive, as many users described electric lighting as a supplement to daylight when daylight was insufficient or uncomfortable.

Across the coded study areas, daylight access between 10 a.m. and 5 p.m. was most strongly associated with roof apertures (about 581 ft^2/54 m^2) and desks located near tall vertical windows. Approximately 56% of users across all floors reported receiving meaningful daylight during these hours. However, observations and comments emphasized uneven distribution: some seats benefited from diffuse or reflected daylight, while other seats experienced high contrast, sun patches, or veiling reflections on work surfaces and screens. As summarized in Table 4, these conditions were accompanied by recurring coping behaviors such as seat relocation and blind use where available.

For example, in the northwest façade zones, first-floor tables located nearer the center of the room were reported as more comfortable in the morning because they avoided direct sun exposure, while nearby seats closer to the openings experienced disturbing glare. In comparable northwest locations on the second floor, respondents reported stronger glare and greater disruption, and observations recorded more frequent seat changes and avoidance of the brightest positions.

Survey responses indicated pronounced time-of-day sensitivity. During 10 a.m.–12 p.m., 78% of respondents reported that daylight influenced their study experience, and many described the environment as energizing when seated away from direct sun paths. In the southeastern zones, this pattern coincided with relatively high modeled solar heat gain (about 17,000 W), yet respondents rarely framed discomfort in thermal terms, suggesting that visual conditions were the dominant driver of satisfaction under mechanically conditioned indoor temperatures.

During early afternoon (1–4 p.m.), the same zones more often produced negative responses. Users described fatigue and reduced focus when darker background regions coincided with bright sun patches and specular desk reflections; in this period, model outputs reached roughly 19,000 W in the most exposed zones, consistent with a higher likelihood of direct sun penetration. By late afternoon (4–5 p.m.), respondents commonly preferred moderate daylight levels, and about 72% indicated that both excessive contrast and insufficient ambient illumination could reduce comfort and concentration.

Taken together, the qualitative and simulation evidence supports a coherent interpretation: students value daylight in library study areas, but comfort and seat selection depend primarily on the controllability and visual quality of daylight (uniformity, glare, and reflections). The Ecotect results are best interpreted as comparative indicators of solar exposure rather than as a direct glare metric; nevertheless, when read alongside observed sun patches and user reports, they help identify locations and times of elevated risk and guide targeted operational measures such as relocating workstations away from direct sun paths, reducing specular finishes on desks, and ensuring accessible, user-adjustable shading in high-risk orientations.

CONCLUSION

The findings show that daylight in EMU's main library shapes students' comfort and study behavior, with glare, reflections, and uneven luminance distribution being the primary sources of dissatisfaction. While most users valued daylight, its benefits depended on effective control and balanced illumination: morning conditions dominated by indirect daylight were more often associated with improved concentration, whereas early-afternoon and late-day conditions with strong contrasts or direct sun patches were linked to fatigue, discomfort, and reduced focus. Simulation-based estimates of solar radiation and solar heat gain helped contextualize where direct sun exposure was most likely to occur; however, reported seat selection and coping behaviors aligned more consistently with perceived visual quality than with heat gain alone. Within the limits of a single-building case study and descriptive analysis, the results suggest practical measures for comparable libraries: optimize furniture placement to avoid glare paths, reduce specular interior finishes, and provide adaptable, user-accessible shading and glazing strategies to enhance visual comfort and support sustained learning.

REFERENCES

AbuGrain MY, Alibaba HZ (2017) Optimizing existing multistory building designs towards net-zero energy. Sustainability 9(3):399.

Ahmed MA (2017) A methodology for daylighting optimisation in academic libraries: Case study of EMU main library. Unpublished Master's thesis, Eastern Mediterranean University, Famagusta, North Cyprus, Turkey.

Aram R, Alibaba HZ (2018) Investigation of the effects of daylight in a university Library. Journal of Architectural and Planning Research 35(4):343-56.

Al-Obaidi KM, Munaaim MAC, Ismail MA, Rahman AMA (2017) Designing an integrated daylighting system for deep-plan spaces in Malaysian low-rise buildings. Solar Energy 149(June):85-101.

Alibaba HZ (2016) Determination of optimum window to external wall ratio for offices in a hot and humid climate. Sustainability 8(2):187.

Amundadottir ML, Rockcastle S, Andersen M (2017) Contrast measures for predicting perceptual effects of daylight in architectural renderings. Lighting Research & Technology, 49(7):882-903.

Andersen M (2015) Unweaving the human response in daylighting design. Building and Environment 91(September):101-117.

Astrich B, Morris A, Walters B (2009) Daylight performance in mid/large buildings: Basics, strategies, technologies (Working paper). Austin: University of Texas at Austin School of Architecture.

Baker NV, Fanchiotti A, Steemers KA (Eds.) (1993) Daylighting in architecture: A European reference book. New York: Earthscan.

Bellia L, Pedace A, Barbato G (2013) Lighting in educational environments: An example of a complete analysis of the effects of daylight and electric light on occupants. Building and Environment 68(October):50-65.

Bian Y, Guo B, Zhang D, Su Y, Wang X, Zhang B, Wang Y, Chen Q, Wu Y, Luo P. Estimating socio-economic parameters via machine learning methods using Luojia1-01 nighttime light remotely sensed images at multiple scales of China in 2018. Ieee Access. 2021 Feb 16;9:34352-65.

Canazei M, Laner M, Staggl S, Pohl W, Ragazzi P, Magatti D, Di Trapani P (2016) Room- and illumination-related effects of an artificial skylight. Lighting Research and Technology 48(5):539-558.

Cheung HD, Chung TM (2008) A study on subjective preference to daylit residential indoor environment using conjoint analysis. Building and Environment 43(12):2101-2111.

Choy FC, Goh SN (2016) A framework for planning academic library spaces. Library Management 37(1/2):13-28.

Climatemps.com (n.d.) Famagusta climate and temperature.

Edwards L, Torcellini P (2002) A literature review of the effects of natural light on building occupants (Report no. NREL/TP-550-30769). Golden, CO: National Renewable Energy Laboratory.

Elseragy A, Elnokaly A, Gabr M (2009) Modular eco-class: An approach towards a sustainable innovative learning environment in Egypt. Paper presented at the 8th International Conference on Sustainable Energy Technologies. Aachen, Germany.

Galasiu AD, Veitch JA (2006) Occupant preferences and satisfaction with the luminous environment and control systems in daylit offices: A literature review. Energy and Buildings 38(7):728-742.

Heschong L, Wright RL, Okura S (2002) Daylighting impacts on human performance in school. Journal of the Illuminating Engineering Society 31(2):101-114.

Heydarian A, Pantazis E, Carneiro JP, Gerber D, Becerik-Gerber B (2016) Lights, building, action: Impact of default lighting settings on occupant behaviour. Journal of Environmental Psychology 48(December):212-223.

Inan T (2013) An investigation on daylighting performance in educational institutions. Structural Survey 31(2):121-138.

Kilic DK, Hasirci D (2011) Daylighting concepts for university libraries and their influences on users' satisfaction. The Journal of Academic Librarianship 37(6):471-479.

Kittler R (2007) Daylight prediction and assessment: Theory and design practice. Architectural Science Review 50(2):94-99.

Leslie RP (2003) Capturing the daylight dividend in buildings: Why and how? Building and Environment 38(2):381-385.

Mangkuto RA, Asri AD, Rohmah M, Soelami FN, Soegijanto RM (2016) Revisiting the national standard of daylighting in Indonesia: A study of five daylit spaces in Bandung. Solar Energy 126(March):276-290.

Moscoso C, Matusiak B, Svensson UP (2015) Impact of window size and room reflectance on the perceived quality of a room. Journal of Architectural and Planning Research 32(4): 294-306.

Othman AR, Mazli MAM (2012) Influences of daylighting towards readers' satisfaction at Raja Tun Uda Public Library, Shah Alam. Procedia-Social and Behavioral Sciences 68 (December):244-257.

Sahin L, Wood BM, Plitnick B, Figueiro MG (2014) Daytime light exposure: Effects on biomarkers, measures of alertness, and performance. Behavioural Brain Research 274(November): 176-185.

Selkowitz S (1998) The elusive challenge of daylighted buildings (No. LBNL–41414). Berkeley, CA: Ernest Orlando Lawrence Berkeley National Laboratory.

Sternheim J (2016) I have to change to stay the same. New Library World 117(1/2):22-34.

Sufar S, Talib A, Hambali H (2012) Towards a better design: Physical interior environments of public libraries in peninsular Malaysia. Procedia-Social and Behavioral Sciences 42:131-143.

Veitch JA (2001) Psychological processes influencing lighting quality. Journal of the Illuminating Engineering Society 30(1):124-140.

Wang N, Boubekri M (2011) Design recommendations based on cognitive, mood and preference assessments in a sunlit workspace. Lighting Research and Technology 43(1):55-72.

Wurtman RJ (1975) The effects of light on the human body. Scientific American 233(1):68-77.

Yener AK (2002) Daylight analysis in classrooms with solar control. Architectural Science Review 45(4):311-316.

AUTOBIOGRAPHICAL SKETCHES

Reihaneh Aram, Girne American University; reihaneh.aramgae@gmail.com.

Halil Zafer Alibaba, Middle East Technical University Northern Cyprus Campus (METU NCC).

Manuscript revisions completed 11 April 2025.