CATEGORY: LANDSCAPES FOR HEALTH: DESIGNED LANDSCAPES

Designed Landscape Elements

Designed landscape elements—hardscapes and softscapes—promote health in a variety of ways, such as improved accessibility reducing physical barriers, and improved indoor air quality through plant absorption, as well as elements that provide sense of place and/or sensory stimulation, important for elder and mental health populations (Fleming, 2021). Other designed landscape features include rooftop gardens, indoor greenspace, window farms, workplace greenery, with many of these based on principles of universal design & accessibility. Articles on the role designed landscapes played in access to the outdoors during COVID-19 began being published in 2020 (Padial-Ruz et al., 2021; Iqbal, 2021; Shoari et al., 2020). Articles related to designed landscapes and their impact on densely populated communities are appearing in the literature (Adilov et al., 2024; Belaire et al., 2023; Fang et al., 2021; Pataki et al., 2021). A renewed interest in historic designed landscapes is emerging across the globe, in part due to cultural importance, geographers' input into the discussions and research (Dushkova & Ignatieva, 2020; *Nature and Society*, 2024; Phares, 2024; Tate & Eaton, 2023).

Related topics have been included in Landscapes for Health subset enabling gardens & adaptive gardening.

Key Organizations
AgrAbility
Americans with Disabilities Act
American Society of Landscape Architects – Professional Practice Universal Design
Centers of Disability Services (local organizations)
National Center on Accessibility
Nature and Society
The Center for Health Design

Books, journals & epublications on designed landscape elements
Americans with Disabilities Act *https://www.dol.gov/general/topic/disability/ada*
Barton, H., Grant, M., & Guise, R. (2021). *Shaping neighbourhoods: For local health and global sustainability*. Routledge.
Bell, S. (2019). *Elements of visual design in the landscape*. Routledge.
Carman, J. (2021). Design for generations. https://designforgenerations.com/everyday-restorative-gardens/*HERD Journal*
Dietzel, K. (2016). *Correlating patterns in the urban landscape: Biophilia and landscape configuration*. Michigan State University.
Hutchinson, J. (2022). *Implementing Landscape Design Principles to Improve Green Spaces and Promote Ecotherapy on a College Campus*. Univ. of Maine.
Phares, H.H. (2024). *Extended engagement: A novel approach to sustained relationships with designed landscapes.*
Rothert, G. (1994). *The enabling garden: Creating barrier-free gardens*. Taylor Trade Publishing.
Tai, L., Haque, M.T., McLellan, G.K., & Knight, E.J. (2006). *Designing outdoor environments for children: Landscaping schoolyards, gardens, and playgrounds.* McGraw Hill.
Tate, A., & Eaton, M. (2023). *Designed landscapes: 37 key projects*. Taylor & Francis.

Research & articles on designed landscape elements

Recently published selected research & articles:

Adilov, Z.K., Iqizi Musayeva, Z.M., Zakirova, M.S., & Shonazarov, D. R. (2023). Organizing healthy landscapes in densely populated urban areas. *E3S Web of Conferences*, 403. EDP Sciences.

Allahyar, M., & Kazemi, F. (2021). Effect of landscape design elements on promoting neuropsychological health of children. *Urban Forestry & Urban Greening, 65*, 127333.

American Society of Landscape Architects. (2021). Universal design.

American Society of Landscape Architects. (2021). Universal design: Gardens.

Belaire, J.A., Bass, H., Venhaus, H. et al. (2023). High-performance landscapes: Re-thinking design and management choices to enhance ecological benefits in urban environments. *Land*, *12*(9), 1689.

Bell, S., Mishra, H.S., Elliott, L.R. et al. (2020). Urban blue acupuncture: A protocol for evaluating a complex landscape design intervention to improve health and wellbeing in a coastal community. *Sustainability*, *12*(10), 4084.

Bell, S.L., Foley, R., Houghton, F. et al. (2018). From therapeutic landscapes to healthy spaces, places and practices: A scoping review. *Social Science & Medicine*, *196*, 123-130.

Brilli, F., Fares, S., Ghirardo, A. et al. (2018). Plants for sustainable improvement of indoor air quality. *Trends in Plant Science, 23*(6), 507-512.

Browning, M.H., Saeidi-Rizi, F., McAnirlin, O. et al. (2021). The role of methodological choices in the effects of experimental exposure to simulated natural landscapes on human health and cognitive performance: A systematic review. *Environment and Behavior*, *53*(7), 687-731.

Cipriano, C., Kilag, O.K., Echavez, R. et al. (2024). Exploring the Landscape of Fitness Programs for government employees. *International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence (IMJRISE)*, *1*(4), 53-59.

Cummings, B.E., & Waring, M.S. (2020). Potted plants do not improve indoor air quality: A review and analysis of reported VOC removal efficiencies. *J Expo Sci Environ Epidemiol.,* 30, 253–261.

Diehl, R.M. (2019). Perspective: Psychological accessibility—A perspective on therapeutic garden design. In R. Haller & Capra (Eds.), *The profession and practice of horticultural therapy.* CRC Press.

Dushkova, D., & Ignatieva, M. (2020). New trends in urban environmental health research: From geography of diseases to therapeutic landscapes and healing gardens. *Geography, Environment, Sustainability, 13*(1), 159-171.

Fang, Y., Que, Q., Tu, R. et al. (2021). How do landscape elements affect public health in subtropical high-density city: The pathway through the neighborhood physical environmental factors. *Building and Environment*, *206*, 108336.

Fleming, L. (2021). Horticulture for health framework. *ISHS Acta Horticulturae 1330: XV International People Plant Symposium and II International Symposium on Horticultural Therapies: The Role of Horticulture in Human Well-being and Social Development.*

Gavrilidis, A.A., Nita, M.R., & Onose, D.A. (2023). Healthy landscapes: A review of the research on urban landscapes associated with health and wellbeing. *Journal of Urban and Regional Analysis*, *15*(1), 27-53.

Goto, S., Gianfagia, T.J., Munafo, J.P. et al. (2017). The power of traditional design techniques: The effects of viewing a Japanese garden on Individuals with cognitive impairment. *HERD, 10*(4), 74-86.

Gramkow, M.C., Sidenius, U., Zhang, G., & Stigsdotter, U.K. (2021). From evidence to design solution—on how to handle evidence in the design process of sustainable, accessible and health-promoting landscapes. *Sustainability*, *13*(6), 3249.

Hady, S.I.M.A. (2021). Activating biophilic design patterns as a sustainable landscape approach. *Journal of Engineering and Applied Science*, *68*(1), 46.

He, M., Wang, Y., Wang, W.J., & Xie, Z. (2022). Therapeutic plant landscape design of urban forest

parks based on the Five Senses Theory: A case study of Stanley Park in Canada. *International Journal of Geoheritage and Parks*, *10*(1), 97-112.
Iqbal, S.A. (2021). COVID-19 and the need for more accessible and designed hospital outdoor spaces in developing countries. *HERD, 14*(2), 368-372.
Lacanna, G., Wagenaar, C., Avernaetem, T., & Swamim, V. (2018). Evaluating the psychosocial impact of indoor public spaces in complex healthcare settings. *HERD: Health Environments Research & Design Journal, 12*(3), 11-30.
Liu, C., Herrup, K., Goto, S., & Shi, B.E. (2020). Viewing garden scenes: Interaction between gaze behavior and physiological responses. *J Eye Mov Res., 13*(1), 10.16910/jemr.13.1.6.
Martin, K., Nanu, L., Kwon, W.S., & Martin, D. (2021). Small garden, big impact: Emotional and behavioral responses of visitors to a rooftop atrium in a major hospital. *HERD, 14*(3), 274-287.
Melchionni, B. (2021). Integrating ecological and human health: Restorative environmental design in therapeutic landscapes (Master's thesis, University of Georgia).
Morgan, S.C. (2019). Considerations and adaptations to safely accommodate program participants. In R. Haller, K. Kennedy & C. Capra (Eds.), *The profession and practice of horticultural therapy*. CRC Press.
Moser, S. (2023). The garden visitor experience: Multisensory meaning making in designed landscapes. *Museum Management and Curatorship*, *38*(6), 679-695.
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National Park Service. (n.d.). Guidelines for the treatment of cultural landscapes. Defining landscape terminology.

Ouf, T.A., Makram, A., & Abdel Razek, S.A. (2021). Design indicators based on nature and social interactions to enhance wellness for patients in healthcare facilities. In Trapani, Mohareb (Eds.), *Advanced studies in efficient environmental design and city planning*, 449-461. Springer, Cham.
Padial-Ruz, R., Puga-González, M.E., Céspedes-Jiménez, Á., & Cabello-Manrique D. (2021). Determining factors in the use of urban parks that influence the practice of physical activity in children: A systematic review. *Int J Environ Res Public Health., 18*(7), 3648.
Pataki, D.E., Alberti, M., Cadenasso, M.L. et al. (2021). The benefits and limits of urban tree planting for environmental and human health. *Frontiers in Ecology and Evolution*, *9*, 603757.
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Saeedi, I., & Dabbagh, E. (2021). Modeling the relationships between hardscape color and user satisfaction in urban parks. *Environment, Development and Sustainability*, *23*(4), 6535-6552.
Sherk, J.T., Fu, W., & Neal, J.C. (2020). Site conditions, maintenance costs, and plant performance of 10 extensive green roofs in the research triangle area of Central North Carolina. *Hort Technology, 30*(6).
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Zhang, R., Yuan, Y., Zhai, Y., & Han, C. (2023). Visual appraisal of designed landscapes in high-rise residential areas rendered by residents living at different heights. *Journal of Environmental Planning and Management*, *66*(11), 2373-2387.

Zhang, Q., Zhang, H., & Xu, H. (2021). Health tourism destinations as therapeutic landscapes: Understanding the health perceptions of senior seasonal migrants. *Social Science & Medicine*, *279*, 113951.
Zayed, R.A., El-Gohary, G., & Abdelrehim, S.M. (2022). Implications for new cities' landscape design using place-making: A comparative analysis study. *IOP Conference Series: Earth and Environmental Science*, *1056*(1), 012045. IOP Publishing.
Zhong, W., Schröder, T., & Bekkering, J. (2022). Biophilic design in architecture and its contributions to health, well-being, and sustainability: A critical review. *Frontiers of Architectural Research*, *11*(1), 114-141.

Examples of designed landscape elements

Baltimore Washington Medical Center, Glen Burnie, MD utilizes the natural slope of the site to make the site feel cozy and sheltered.
https://naturesacred.org/sacred_place/baltimore-washington-medical-center/

Botanica Garden in Wichita, Kansas is planning a barefoot sensory garden according to its website, in addition to its Sally Stone Sensory Garden, garden on the rocks, & woodland walk, incorporating several topographical features into the public garden.
https://botanica.org/

Greenest Block in Brooklyn, window box planting contests, and other initiatives to restore the landscape and Brooklyn residents' spirits after Hurricane Sandy – initiatives by the Brooklyn Botanic Garden in New York.

https://www.bbg.org/news/restorative_gardening_on_brooklyns_coast
https://www.bbg.org/community/greenestblock

Matthaei Botanical Gardens & Nichols Arboretum specifically designed display gardens, trails and public buildings to be accessible, taking into account inclines, slopes and clearance.
https://mbgna.umich.edu/visit/accessibility-matthaei-nichols/

San Francisco Botanical Garden in Golden Gate Park uses wayfinding signage that marks the accessible route with ISA symbols.
https://www.intersticearchitects.com/project/sf-botanical-garden-pathways/

Schwab Rehabilitation Hospital rooftop garden in Chicago, Illinois, is designed as an accessible greenspace on the roof of a hospital with children's play area, space for horticultural therapy and complementary therapies to take place outdoors, meadow plantings, and water elements.
https://www.greenroofs.com/projects/schwab-rehabilitation-hospital-rooftop-garden/

The Atrium Courtyard Garden at Navesink Harbor is a rooftop garden, part of a residential building.
https://designforgenerations.com/case-studies/the-atrium-courtyard-garden-at-navesink-harbor/

The Healing Garden at Kimball Medical Center rooftop garden is accessible to hospital patients, staff, & visitors; location adjacent to hospital entrance with views from patient rooms.
https://designforgenerations.com/case-studies/the-healing-garden-at-kimball-medical-center/

Videos, webinars & websites on designed landscape elements
Accessible Gardens information from Univ. of Florida provides ideas for paths, beds, & adaptive methods & tools.
https://gardeningsolutions.ifas.ufl.edu/design/types-of-gardens/accessible-gardens.html

Historic England website discusses designed landscapes, identifying historic examples, their landscape features, and the characteristics that are associated with this garden-rich nation.
https://historicengland.org.uk/research/current/conservation-research/designed-landscapes/

Insights & Solutions resources online with trends, tools & resources for improving healthcare environments focus on indoor & outdoor gardens in healthcare settings.
https://www.healthdesign.org/insights-solutions/open?f%5B0%5D=field_resource_type%3A1222

Nature Sacred.org website and publication *Design and Fund Accessible Gardens* provide examples of gardens using universal design principles, suggesting ideas for garden construction & tool selection to promote nature connections that improve health.
https://naturesacred.org/

The IDEA Center for Public Gardens launched by the American Public Garden Association, with support from the Denver Botanic Gardens and the Institute for Museum and Library Services has an initiative supporting, promoting and teaching inclusion, diversity, equity and accessibility (IDEA) on its website.
https://www.ideacenterforpublicgardens.org/

The Universal Garden website from *Americans with Disabilities Act National Network* introduces important concepts for universal gardens using universal design principles including examples.
https://adata.org/universal-garden

The Windowfarms project video demonstrates why & how to build an indoor garden that can grow food
https://www.youtube.com/watch?v=PkCuPrsPn_I

Universal Garden in Boise Idaho demonstrates universal design principles in the garden.
https://nwadacenter.org/success-stories/universal-garden

Related organizations
American Society of Landscape Architects

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