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Integration of IKIGAI Philosophy with Light and Water Landscape Design: A Curriculum for Promoting Mental Wellbeing and Community Resilience

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Abstract

This research paper proposes an innovative curriculum framework that synthesizes the Japanese concept of IKIGAI with principles of light and water landscape design to foster mental wellbeing, tranquility, and community cohesion. Drawing from interdisciplinary research conducted in collaboration with Nakagawa Canal Art Association, this paper explores how thoughtfully designed waterfront illumination can create environments that enhance residents' sense of purpose, belonging, and psychological comfort. The curriculum encompasses theoretical foundations, practical design methodologies, and community engagement strategies, providing educators and urban planners with a comprehensive approach to teaching and implementing wellbeing-oriented landscape design. Findings from preliminary field studies along the Nakagawa Canal demonstrate the significant potential of IKIGAI-informed design principles to transform urban waterscapes into healing environments that support both individual peace of mind and collective mutual support.

Keywords: IKIGAI, Landscape Design, Light Design, Water Environments, Mental Wellbeing, Community Resilience, Curriculum Development, Urban Planning

Introduction

The Challenge of Urban Wellbeing and Community Cohesion

Urban environments present significant challenges to residents' mental wellbeing and social cohesion. High density, noise pollution, and disconnection from nature contribute to stress and a decline in community bonds, vital for mutual support (citation needed here). This situation is aggravated by a lack of integration between environmental psychology, the principles of *Ikigai* (the Japanese concept of finding purpose and meaning in life), and practical design interventions.

Research Gap and the Novel Curriculum Framework

While research has examined the individual benefits of nature and the *Ikigai* philosophy (García & Miralles, 2016; Mogi, 2017; Kaplan, 1995; Ulrich et al., 1991), a critical research gap exists in translating these insights into comprehensive, community-focused environmental

design strategies. Current approaches often prioritize aesthetic or functional aspects over holistic wellbeing considerations.

This research addresses this gap by proposing a novel curriculum framework integrating the *Ikigai* philosophy with light and water landscape design. We hypothesize that thoughtfully designed waterfront illumination, guided by *Ikigai* principles, can cultivate healing urban environments that foster a strong sense of belonging, purpose, and psychological comfort, promoting individual wellbeing and community resilience. This innovative curriculum provides educators and urban planners with the tools to create truly wellbeing-oriented spaces, moving beyond conventional design paradigms and fostering a deeper understanding of the dynamic interplay between the built environment, human experience, and community wellbeing. Our framework is validated through preliminary field studies along the Nakagawa Canal in Nagoya, Japan.

Theoretical Framework

IKIGAI and Environmental Psychology

IKIGAI has traditionally been studied in contexts of individual life purpose and longevity. García and Miralles (2016) explore the concept as a secret to longevity in Okinawa, while Mogi (2017) examines its application to daily happiness. This research extends its application to environmental design, proposing that physical spaces can be created to support the four components of IKIGAI. Passion can be evoked through environments that create sensory pleasure and joy; mission through spaces that serve community needs and promote prosocial behavior; vocation through designs that reflect local identity and provide economic benefits; and profession through solutions that leverage technical expertise and craftsmanship.

Environmental psychology research demonstrates that natural elements, particularly water, can reduce stress, improve mood, and enhance cognitive function. Kaplan (1995) proposed the Attention Restoration Theory, which suggests that natural environments help restore directed attention fatigue. White et al. (2010) further established that environments containing water (blue spaces) were associated with higher preferences, positive affect, and greater perceived restorativeness than those without water. When water features are complemented by appropriate lighting design, these effects can be amplified and extended into evening hours, as demonstrated by Nasar and Bokharaei (2017) in their studies of public square illumination.

Light, Water, and Perceptual Experience

Light interacting with water creates unique perceptual experiences through reflection, refraction, and movement. These visual phenomena have been shown to induce states of fascination and "soft attention" that support psychological restoration (Kaplan, 1995). The constantly changing patterns of light on water surfaces create what environmental psychologists term "soft fascination," a form of involuntary attention that allows the directed attention system to rest and recover (Johansson et al., 2025). Seasonal and temporal variations in light further enrich these experiences, creating environments that reward repeated visits and foster place attachment (Oe, 2025b).

Studies in neuroscience and environmental psychology demonstrate that the visual patterns created by light on water can induce alpha brain wave activity associated with relaxation and

creative thinking (Ulrich et al., 1991). This physiological response offers one mechanism by which waterfront illumination may contribute to mental wellbeing. Furthermore, the presence of illuminated water in evening environments can enhance perceived safety and comfort, encouraging social interaction during hours when many urban spaces are underutilized.

Curriculum Design and Methodology

Curriculum Structure

The proposed curriculum consists of four interconnected modules designed to build comprehensive understanding and skills in IKIGAI-informed environmental design. The first module, Theoretical Foundations, provides students with deep understanding of IKIGAI philosophy, environmental psychology, and principles of light and water design. This foundational knowledge enables students to comprehend the psychological and cultural dimensions of landscape illumination alongside technical considerations.

The second module, Assessment Methods, develops students' abilities to evaluate site conditions, community needs, and impacts on wellbeing. This includes training in both quantitative and qualitative research methods, ethically responsible community engagement, and systematic documentation of environmental conditions across various temporal scales.
The third module, Design Applications, focuses on practical approaches to implementing IKIGAI-informed landscape lighting. Students learn to develop lighting master plans, select appropriate technologies, create seasonal lighting strategies, and integrate interactive elements while balancing aesthetic impact with ecological considerations. This module emphasizes hands-on learning through progressively complex design challenges.

The fourth module, Community Engagement, equips students with strategies for involving residents in all phases of environmental design projects. This includes methods for conducting participatory workshops, developing effective communication materials, establishing frameworks for ongoing community stewardship, and facilitating cross-sector partnerships. This module recognizes that sustainable, wellbeing-enhancing environments require meaningful community investment.

Each module incorporates lectures, field studies, design exercises, and community interaction, following a progressive learning path from theory to practice. The curriculum design intentionally integrates knowledge across disciplines, requiring students to synthesize insights from psychology, aesthetics, technology, ecology, and community development.

Research Methodology

The curriculum development was informed by a mixed-methods research approach including comprehensive literature review spanning environmental psychology, Japanese philosophy, lighting design, and urban planning. This theoretical foundation was complemented by analysis of case studies examining successful waterfront illumination projects globally, with particular attention to projects that demonstrated positive impacts on community wellbeing and social cohesion.

Field observations at Nakagawa Canal under varying light conditions provided essential contextual understanding of the interplay between built environment, natural elements, and

lighting. These observations were conducted systematically across seasons and times of day to document the full range of potential light-water interactions and their effects on human experience.

Interviews with local residents regarding their relationship with the canal environment revealed existing patterns of use, emotional associations, and aspirations for the space. These perspectives proved invaluable in identifying design considerations that might not be apparent through purely technical assessment.

Collaborative design workshops with community members and technical experts allowed for testing and refinement of curriculum elements in real-world contexts. These workshops enabled iterative development of teaching methodologies and design principles responsive to both community needs and technical constraints.

Data from these diverse sources was analyzed using both quantitative and qualitative methods to identify key principles and practices for incorporation into the curriculum. This analysis focused particularly on identifying elements that consistently supported experiences of tranquility, social connection, and meaning—core components of wellbeing aligned with IKIGAI philosophy (Oe, 2025c).

Key Curriculum Components

Module 1: Theoretical Foundations

This module provides students with conceptual understanding of IKIGAI philosophy and its applications to environmental design (Ahrendt et al., 2024). Students engage with Japanese philosophical traditions and contemporary interpretations of IKIGAI, examining how its principles of balance and meaningful engagement can inform spatial design (Oe. 2025d). This philosophical foundation is complemented by exploration of research on the psychological effects of water environments on human wellbeing, including attention restoration, stress reduction, and enhancement of creative thinking (Silva et al., 2024).

Technical principles of light design are also covered, including color temperature, intensity, and temporal variation, with particular attention to how these elements interact with water surfaces. Students examine the cultural and historical significance of water in urban contexts across different societies, considering how these cultural associations influence perception and experience of waterfront environments. Throughout, sustainability considerations in landscape illumination are emphasized, including energy efficiency, wildlife impacts, and light pollution.

Learning activities include readings of both theoretical texts and case studies, lectures from experts across disciplines, reflective exercises connecting personal experience to design principles, and cultural immersion experiences that provide embodied understanding of concepts (Richardson et al., 2024). Students are encouraged to develop critical perspectives on existing theory while identifying opportunities for innovative application to contemporary design challenges.

Richardson et al. (2024), Community of Inquiry design decisions across disciplines. Journal of Computing in Higher Education, 1-42.

Module 2: Assessment Methods

Students learn techniques for conducting comprehensive site analyses of waterfront environments（Ji et al., 2025）, including assessment of physical features, existing lighting conditions, movement patterns, and ecological factors. These technical assessments are complemented by methods for measuring community perceptions and needs through surveys, interviews, and observational studies. Students develop proficiency in both quantitative and qualitative data collection, with emphasis on ethical and inclusive research practices (Castilla et al., 2024).

The module covers approaches to evaluating existing lighting conditions and identifying opportunities for enhancement, including tools for measuring illumination levels, documenting glare and shadows, and analyzing color rendition. Students also learn methods for assessing psychological responses to environmental interventions, drawing on established protocols from environmental psychology while developing innovative measures specific to IKIGAI-related outcomes (Zhang et al., 2023).

Ji et al. (2025), Measurement and influencing factors of urban waterfront street vitality from the perspectives of behavior and perception. Environmental Research Communications, 7(1), 015041.
Lin, Shen & Silfvenius (2024), Human-centric and integrative lighting asset management in public libraries: insights and innovations on its strategy and sustainable development. Sustainability, 16(5), 2096.
Castilla et al. (2024) The Influence of the Public Lighting Environment on Local Residents' Subjective Assessment. Applied Sciences, 14(3), 1234.
Zhang et al. (2023) Lighting environmental assessment in enclosed spaces based on emotional model. Science of The Total Environment, 870, 161933.

A significant component involves techniques for documenting seasonal and temporal variations in site conditions, recognizing that waterfront environments are dynamic systems whose characteristics and effects shift across time scales. Students develop systematic observation protocols and documentation methods that capture these variations and their implications for design.

Throughout this module, emphasis is placed on evidence-based approaches and development of robust research skills that can inform design decisions and evaluate outcomes. Students complete field exercises applying these methods in real environments, developing competence through practiced application.

Module 3: Design Applications

This module develops practical design approaches for implementing IKIGAI-informed lighting in waterfront environments. Students learn processes for creating comprehensive lighting master plans that address aesthetic, functional, psychological, and ecological considerations. This includes methods for selecting appropriate lighting technologies and fixtures based on technical requirements, environmental conditions, and desired experiential outcomes.

Students develop competencies in seasonal and temporal lighting strategies that respond to changing conditions and support diverse uses of space across time. This includes

consideration of daily rhythms, seasonal shifts, and special events that may require adaptable lighting solutions. The module also introduces concepts of interactive and responsive lighting elements that can enhance engagement and create personalized experiences aligned with IKIGAI principles of meaningful activity and connection.

Technical challenges specific to waterfront installation are addressed, including moisture protection, access for maintenance, power distribution, and structural considerations. Students learn approaches to balancing aesthetic impact with ecological considerations, developing designs that enhance human experience while minimizing disruption to wildlife, particularly nocturnal and aquatic species.

Through design exercises of increasing complexity, students apply theoretical knowledge to practical challenges, receiving feedback from instructors, peers, and community stakeholders. These exercises culminate in comprehensive proposals that demonstrate integration of technical competence with sensitivity to psychological and cultural dimensions of environmental design.

Module 4: Community Engagement

The final module equips students with strategies for meaningful community involvement throughout the design process. Students learn approaches to conducting participatory design workshops that elicit creative input while building collective ownership of projects. This includes techniques for engaging diverse stakeholders, including those who may be traditionally underrepresented in planning processes.

The module covers development of communication materials tailored to diverse audiences, including visualization techniques that make technical concepts accessible to non-specialists. Students also explore frameworks for establishing ongoing community stewardship of lighting installations, recognizing that sustainability requires continued investment beyond initial implementation.

Students learn methods for designing temporary installations that test concepts and gather feedback before permanent implementation, an approach that reduces risk and builds community support through visible short-term successes. The module also addresses establishment of evaluation metrics for community impact, enabling ongoing assessment and adaptation of installed designs.

Particular emphasis is placed on facilitating cross-sector partnerships for implementation, including strategies for engaging government agencies, businesses, educational institutions, and community organizations in collaborative efforts. Students develop understanding of various stakeholder motivations and concerns, learning to identify shared interests and create mutually beneficial projects.

Throughout this module, inclusive approaches that respect local knowledge and needs are emphasized, with recognition that successful environmental interventions must be grounded in genuine understanding of community context and aspirations.

Case Study: Nakagawa Canal Project

Project Context

The Nakagawa Canal in Nagoya provides an instructive case study for curriculum development. Constructed in the early 20th century to support industrial transportation, the canal has undergone significant transformation as manufacturing declined and urban development patterns shifted. Today, while still functioning as water infrastructure, the canal primarily serves recreational and aesthetic functions within the urban fabric.

The area surrounding the canal reflects typical challenges of post-industrial waterfront zones, including aging infrastructure, underutilized spaces, and disconnection between water and adjacent neighborhoods. However, it also offers substantial opportunities for enhancement, including relatively clean water, accessible banks, and existing pedestrian circulation.

The research team collaborated with local stakeholders including the Nakagawa Canal Art Association, neighborhood associations, municipal officials, and faculty from Nagoya Institute of Technology to develop and test curriculum elements in this real-world context. This collaboration allowed for practical application of theoretical principles while addressing actual community needs.

Implementation Findings

Preliminary implementation of curriculum elements yielded several key insights that informed refinement of the educational framework. Temporal considerations emerged as particularly significant, with lighting designs that responded to seasonal changes showing strongest community resonance. Residents expressed particular appreciation for installations that highlighted autumn leaf reflections and summer firefly season, suggesting that alignment with natural cycles enhances the impact of artificial illumination.

Community participation proved crucial to successful implementation, with residents most valuing designs they had contributed to directly. This finding underscores the importance of genuine participatory processes rather than merely consultative approaches. The curriculum's emphasis on community engagement techniques was strengthened in response to this observation.

Technical aspects revealed that LED systems offering programmable color variation provided greatest flexibility for expressing IKIGAI principles through different lighting schemes. This adaptability allowed for responsiveness to community feedback and seasonal adjustments without requiring physical reinstallation. The curriculum was accordingly enhanced to emphasize flexible, programmable systems.

Microclimatic effects emerged as an unexpected area of interest, with light interactions with water mist and fog creating particularly impactful experiences. These ephemeral conditions produced some of the most commented-upon and photographed moments during pilot installations, suggesting special potential for designs that intentionally incorporate or enhance these natural phenomena.

Perhaps most significantly, regular gathering spaces illuminated for evening use showed increased multi-generational interaction compared to pre-implementation patterns. Areas

with seating arranged to allow water viewing while facilitating conversation became informal community hubs, supporting the IKIGAI principle of social connection. This observation reinforced the curriculum's focus on designing not merely for visual experience but for social functioning.

These findings collectively informed refinement of the curriculum framework, with particular enhancement of modules addressing temporal design strategies, participatory methods, technical specifications, and social space planning.

Educational Outcomes and Assessment

The curriculum aims to develop several key competencies among students that integrate theoretical understanding with practical application. First, students should develop theoretical understanding manifested as the ability to articulate connections between environmental design and psychological wellbeing, drawing on diverse disciplinary perspectives to explain how physical environments influence human experience. This includes comprehension of IKIGAI principles and their relationship to environmental psychology concepts.

Second, the curriculum cultivates technical skills including capacity to design and implement appropriate lighting solutions for waterfront environments. Students should demonstrate proficiency in lighting calculation, fixture selection, system design, and integration with site conditions. These technical competencies must be guided by conceptual understanding to create environments that effectively support wellbeing.

Third, students develop research abilities including skills in gathering and analyzing data on environmental impact. This encompasses both quantitative methods for measuring physical parameters and qualitative approaches to assessing human experience. Students should demonstrate capacity to design research protocols, collect and analyze data, and translate findings into design implications.

Fourth, the curriculum builds communication competence, defined as ability to engage effectively with diverse stakeholders throughout the design process. This includes skills in visual communication, verbal presentation, facilitation of group processes, and translation of technical concepts for non-specialist audiences. These communication skills are essential for the collaborative approaches central to IKIGAI-informed design.

Finally, students develop integrative thinking demonstrated through capacity to synthesize aesthetic, functional, cultural, and psychological considerations in coherent design proposals. This high-level competency requires students to navigate complex, sometimes competing factors without reducing them to simplistic formulas or prioritizing technical concerns over human experience.

Assessment strategies include project portfolios documenting design processes and outcomes, field research reports demonstrating methodological competence, community feedback evaluations measuring effectiveness of engagement efforts, and reflective journals exploring connections between theory and practice. These diverse assessment approaches

reflect the multifaceted nature of the subject matter and the range of competencies being developed.

Implications for Practice

Applications in Urban Planning

The curriculum provides urban planners with frameworks for incorporating wellbeing metrics into waterfront development, extending beyond conventional measures of economic return or environmental compliance. These frameworks enable consideration of how design decisions influence psychological restoration, social connection, and sense of meaning—factors increasingly recognized as essential to sustainable urban communities.

Planners also gain methods for balancing aesthetic enhancement with ecological preservation in sensitive waterfront environments. The curriculum's emphasis on evidence-based assessment provides tools for evaluating tradeoffs and identifying solutions that serve both human and ecological needs. This is particularly valuable in dense urban areas where competing demands on limited waterfront resources require carefully considered compromises.

The curriculum offers strategies for leveraging water resources for community resilience, recognizing that well-designed waterfront environments can serve multiple functions including stormwater management, heat island mitigation, and community gathering during both normal conditions and emergencies. This multi-functional approach enhances the value proposition for investment in waterfront enhancement.

Additionally, planners gain approaches to creating distinctive place identity through lighting design, addressing the homogenization of urban environments that can diminish sense of place and community attachment. By incorporating cultural elements and responding to local environmental conditions, lighting design can reinforce community identity while creating environments that support wellbeing.

Educational Implementation

Educational institutions can implement this curriculum through various formats according to their specific contexts and student needs. Interdisciplinary courses spanning design, psychology, and cultural studies offer opportunities to engage students from different backgrounds in collaborative learning that mirrors professional practice. These courses can be structured as studios, seminars, or hybrid formats depending on institutional resources and pedagogical goals.

Professional development workshops for practicing designers provide opportunities to disseminate curriculum concepts to those already engaged in environmental design. These concentrated learning experiences can focus on specific aspects of the curriculum such as assessment techniques or community engagement strategies, allowing practitioners to enhance their existing practice with new approaches.

Community education programs for local stakeholders extend the curriculum's impact beyond traditional educational institutions, building capacity within communities to engage effectively in planning processes. These programs can be tailored to address specific local

conditions and opportunities, empowering residents to participate meaningfully in shaping their environments.

Service-learning projects connecting students with real community needs offer particularly valuable implementation opportunities, providing authentic learning experiences while delivering tangible benefits to communities. These projects require careful structuring to balance educational objectives with community service, but when successful can create powerful learning experiences while building ongoing relationships between educational institutions and communities.

Community Development

Community organizations benefit from tools for assessing local needs and preferences regarding public space, enabling data-driven advocacy and more effective participation in planning processes. The curriculum's assessment methodologies can be adapted for community-based research, building local capacity for self-determination in environmental design.

The frameworks for collaborative design and implementation provided by the curriculum support more inclusive development processes that incorporate diverse perspectives. These frameworks help community organizations structure their engagement with technical experts and governmental entities, ensuring that community knowledge and priorities are effectively incorporated into design decisions.

Methods for evaluating impact on community wellbeing and social cohesion enable ongoing assessment of environmental interventions, supporting evidence-based refinement of existing spaces and informing future projects. These evaluation approaches help communities advocate for continued investment by demonstrating concrete benefits beyond aesthetic enhancement.

Finally, the curriculum offers strategies for sustainable maintenance and evolution of lighting installations, addressing the critical but often neglected post-implementation phase. These approaches help communities develop the organizational capacity and resource strategies needed to ensure long-term success of environmental enhancements.

Conclusion and Future Directions

This research demonstrates the significant potential of integrating IKIGAI philosophy with light and water landscape design to create environments that foster mental wellbeing, tranquility, and community resilience. The proposed curriculum provides a comprehensive framework for teaching these principles to future designers, planners, and community leaders, bridging theoretical understanding with practical application through a structured educational approach.

The curriculum represents an innovative synthesis of disparate knowledge domains, connecting Japanese philosophical traditions with contemporary environmental psychology, lighting technology, and community development practices. This interdisciplinary approach reflects the complex, multifaceted nature of environmental design challenges and the need for integrative thinking in addressing them.

Future research will focus on longitudinal studies of implemented designs to assess durability of effects and evolution of community relationships with enhanced environments. Initial findings suggest promising outcomes, but longer-term study is needed to understand how these environments function across seasonal cycles and as communities change over time.

Cross-cultural applications of IKIGAI-informed design represent another important direction for future exploration. While the current research focuses on Japanese contexts where the concept originated, IKIGAI principles may offer valuable frameworks for environmental design in diverse cultural settings. Comparative studies examining how these principles translate across different cultural contexts could yield valuable insights into both universal and culturally specific aspects of environmental experience.

Development of quantitative metrics for assessing psychological impact represents a third area for future research. While qualitative methods provide rich understanding of individual experience, complementary quantitative measures would strengthen evaluation and potentially facilitate broader adoption of wellbeing-oriented design approaches by providing more easily comparable outcomes data.

Finally, additional curriculum modules addressing emerging technologies such as interactive and responsive lighting systems are under development. These technologies offer exciting possibilities for creating environments that respond dynamically to changing conditions and user needs, potentially enhancing the alignment with IKIGAI principles of engagement and meaning.

By bridging Japanese philosophical traditions with contemporary environmental design, this curriculum contributes to both educational innovation and practical solutions for creating more humane, restorative urban environments. It offers a pathway toward urban spaces that support not merely physical function but psychological flourishing and social connection—essential components of truly sustainable communities.

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