

Research Article

The Impact of Integrating Undagi Indigenous Knowledge with Contemporary Interior Design Curriculum Content on Achieving Sustainable Development Goals (SDGs)

I Kadek Dwi Noorwatha*, Imam Santosa, and Gregorius Prasetyo Adhitama

Faculty of Art and Design, Institute Technology of Bandung, Indonesia

ORCID

I Kadek Dwi Noorwatha: <https://orcid.org/0000-0001-8292-2321>

Abstract.

This conceptual study examines the role of the undagi's indigenous knowledge in interior design education curriculum content, and as a modern interior design challenge that accelerates Sustainable Development Goal (SDG) attainment. Undagi, a traditional Bali and Nusantara (ancient Indonesia) architectural technique, uses sustainable materials and has significant potential to accomplish the SDGs. The critical approach is a conceptual-fundamental examination that inductively explores the connectedness of knowledge essential to the interior design curriculum. Traditional undagi knowledge (lontar) and international and national interior design curriculum requirements are analyzed. Studies demonstrate that integrating a culture-based interior design curriculum with SDGs has many benefits, including: (1) Active designer involvement in global issues; (2) Preservation of traditional cultural resources; (3) Creation of Indonesian interior designs with international selling points; (4) Increasing the tradition-based creative economy; (5) Forming the mindset of future Indonesian interior designers who are culturally sensitive and love their cultural resources; and (6) Harnessing the knowledge that interior design creates spaces that influence their inhabitants.

Keywords: connectivity, Undagi indigenous knowledge, interior design curriculum, SDGs, Bali

Corresponding Author: I Kadek Dwi Noorwatha; email: noorwatha@isi-dps.ac.id

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1. Introduction

Global architects and designers can become “ambassadors” of Sustainable Development Goals (SDGs) by designing for markets and local communities [1]. The constructed environment uses a lot of energy, resources, and waste. Designers' methods can also worsen inequality and health [2]. Traditional or vernacular building methods in historic locations are the result of the master builder's knowledge and ingenuity in using local materials and environmental aspects [3]. Traditional architects or master builders in



developing nations are losing out to modern architects and designers with Western-style built environment design education [4]. Every discipline is influenced by culture, including design. Current design education excludes non-Western cultures since it is Eurocentric [5].

Interior design as an industry in Indonesia has promising economic potential in the future. In the first quarter of 2022. The increase touched 45 per cent and has an increasing trend. The growth of the interior design industry is supported by the rise of property development, which also contributes to the high demand for interior design services. This is inseparable from the incessant development of the property sector, especially in big cities [6]. Bali is the region with the highest growth in property popularity in residential [7]. This explains that the interior design industry in Bali is growing, especially those with hospitality designs that have Balinese identity as one of the tourist attractions.

As one of the regions with regional regulations governing building requirements that must follow traditional architectural philosophies [8], Bali's master builder undagi role also declines and disappears. Undagi in Bali is a continuation of the Nusantara archipelago (now Indonesia)'s ancient 'master builder', identified by the Sukawana A1 inscription in Bali from 882 AD [9], which is still operating. Undagi is essential to Balinese spatial design, and Balinese architecture is a tourism emblem [10,11]. Balinese architecture, which uses sustainable principles and natural materials [12,4], has significant potential to accomplish the SDGs in built environment design, notably in education.

Therefore, it poses the research topic of how undagi' indigenous knowledge in interior design curriculum for strata 1 (S1) connects to SDGs. A conceptual study on incorporating undagi' indigenous knowledge into an interior design education curriculum to expedite SDG accomplishment, particularly in built environment culture and design. According to Ozorhon, indigenous architectural knowledge is essential to architectural and interior design education [13].

2. Research Methods

This study uses a fundamental-conceptual methodology to analyze undagi' indigenous knowledge and interior design curriculum requirements inductively and qualitatively. The study has three phases. The initial phase examined interior design curriculum studies based on national [14,15] and international standards [16]. This study analyzes

how indigenous knowledge is incorporated into interior design curricula especially in Strata 1 (S1), specifically in CIDA's Body of Knowledge. In the second phase, undagi's indigenous knowledge was compared between traditional undagi education and modern architectural/interior design. The final part develops undagi's indigenous knowledge into the interior design curriculum. It is then cross-validated using the 17 UN Sustainable Development Goals (SDGs).

3. Result & Discussion

3.1. Cultural and Indigenous Knowledge Position in the Body of Knowledge of Interior Design Education

Guerin has articulated the contemporary predicament interior design education faces in the 21st century. According to Guerin, interior design education in the 21st century must address several key issues. These include the establishment of a professional identity, the incorporation of liberal arts principles, the integration of interdisciplinary elements, and a focus on international perspectives, such as the development of culturally responsive design [17]. These challenges and changes have led to changes in the scientific Body of Knowledge (BoK) of interior design. The Council of Interior Design Education (CIDA) mentions the challenges of interior design education in the changing world era. This caused a change in BoK from 2010 which only listed six BoK categories, to sixteen in BoK 2022. Interior design has evolved in both its practical application and academic discourse due to its response to social changes and focus on Sustainable Development Goals. This emphasises 'health, safety, and welfare. Thus, interior design promotes inclusivity, plurality, and collaboration among stakeholders, sustainable design approaches, and ecologically friendly materials. These values respect the world's vast cultural diversity. The 2020 Professional Standards of CIDA will be used to document the cultural component of the Interior Design Body of Knowledge (BoK) for 2022. For understanding future designers in the context of growing global events, culture is fundamental. This function includes the following, under the 2020 professional standard's introduction [16].

The interior design curriculum can integrate enormous cultural potential, according to Hadjiyanni [18]. Indonesian interior design curricula for strata 1 (S1) stress cultural integration. This technique preserves local cultural resources and brings culture closer to interior space users. Increasing identification and place branding can boost tourism

by creating a sense of place. The possibility for exporting creative firms and the interior design multiplier impact to produce local income. Bali, like other cultural tourism destinations, needs interior design that embodies the local spirit. This design should combine traditional Balinese architecture with modern lives [19,8]. Thus, incorporating Balinese dwelling culture into modern interior design while keeping its cultural traits is crucial.

3.2. Undagi Indigenous Knowledge as Interior Design Curriculum Content Potentiality

Undagi's explicit knowledge texts, Lontar, contains Balinese architectural norms (Figure 1). Gede Maha Putra states that lontar manuscripts like *Ashta Kosali*, *Ashta Kosala*, *Ashta Bhumi*, and *Sikuting Umah* include *undagi*' explicit knowledge in their Balinese building manuals.

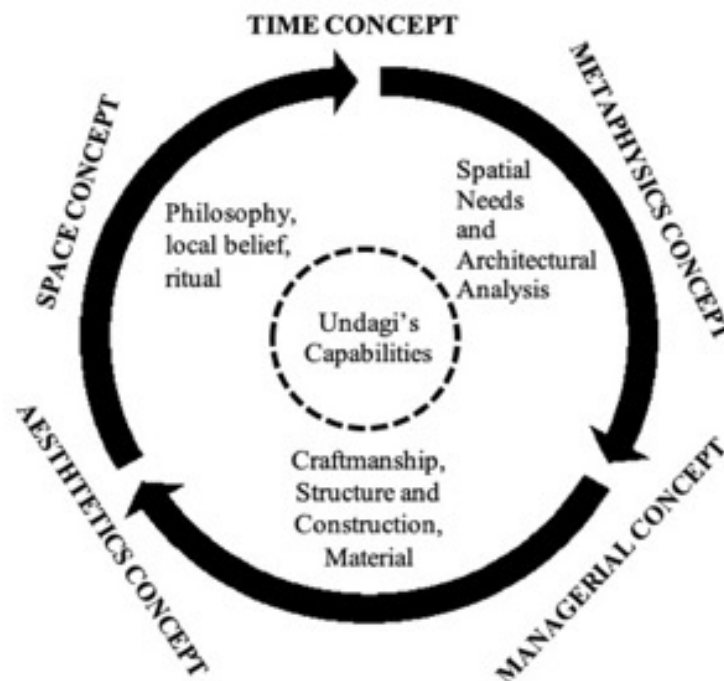


Figure 1: Undagi Explicit Knowledge Formulation. Source: Putra [20,21].

Undagi's tacit knowledge includes craftsmanship, construction methods, measuring tolerance (*pengurip*) [22], and aesthetics intuition [12,11]. The undagi's lontar text contains these academic concepts: 1. Cosmological balance, Tri Hita Karana. 2. Tri Angga, or value hierarchy. 3. Cosmological orientation, Sanga Mandala. 4. Natah—open space. 5. Scale and proportion. 6. Built environment chronology. 7. Structure clarity matters.

8. The value of authentic materials [23]. These principles are classified: Discussion centers on Spatial Principles and Building Forms. Principles of structure. Utility and human aspects are important in engineering, design, and psychology. These concepts optimise system, product, and service usability, efficiency, and safety for humans. Practitioners can improve user experience, the Ornament Principle, and the Material Principle by applying these concepts to development [24]. The differences between undagi and designers who represent their periods make it difficult to fully integrate undagi knowledge into interior design education (see Table 1).

TABLE 1: Differences in Knowledge Transmission of Traditional and Modern Architects.

Learning Elements	Traditional Transmission	Architect	Contemporary Architecture Education
Learning Resources	Undagi / direct practitioners		Lecturers / Practitioners and non-practitioners
Method	Direct interaction in the field		Intermediary and in the studio
Process	Apprentice, practice	observation,	Theory+practice (limited)
Object of Study	Real case		Case examples/simulations (can be real or fictitious)
Tools	Everything that will be used on the job		Simulation
Duration of Study	Unlimited (until expert)		4-5 years

Source: Putra [20]

This analysis will further examine the association between undagi knowledge and the scientific interior design body based on the connectivity mentioned above. The examination of the relationship between undagi' indigenous knowledge and the scientific field of interior design, particularly in Section II: Knowledge and Application, can be presented in Table 2.

The integration connection should be incorporated into the lecture content to enhance the emphasis on local wisdom within the interior design program.

Relevance of Undagi' Indigenous Knowledge of the SDGs

After discussing Undagi's indigenous knowledge's contribution to interior design expertise, its contribution to the Sustainable Development Goals is evaluated. This analysis is presented in Table 3.

TABLE 2: Undagi's Knowledge Connectivity and Interior Design BoK Analysis.

Undagi's Indigenous Knowledge and Creation Method	Interior Designer Professional Body of Knowledge Section II's Correlation
DESIGN KNOWLEDGE	
a. Philosophy, local belief and ritual	16. Regulation & Guidelines; 10. History
b. Spatial Needs and Architectural Analysis	14. Environmental Systems & Human wellbeing; 7. Human-centered design;
c. Craftmanship, Structure and Construction, (Natural) Material	15. Construction; Product & Material; 11. Design Elements & Principles
DESIGN PHILOSOPHY	
a. Metaphysics Concept (Ritual, ethics)	6. Business Practises & Professionalism
b. Space Concept (orientation (<i>hulu-teben; padma bhuwana</i>), site division (<i>ngedum karang</i>), dimension module (<i>gegulak</i>), <i>bhuwana agung-bhuwana alit</i> (macrocosm-microcosm unity), layout, placement)	7. Human-centered design; 14. Environmental Systems & Human wellbeing
c. Time Concept (propitious day (<i>Dewasa ayu</i>))	16. Regulation & Guidelines
d. Aesthetics Concept (<i>nguwub</i> (proportional), <i>adung/pangus</i> (appropriate), <i>medengen</i> (religious atmosphere), <i>ahbra</i> (charisma), <i>agung</i> (monumental; astonishing), <i>metaksu/caksu</i> (luminance; spirit), <i>rasa kelangwan</i> (trancendental aesthetics)).	11. Design Elements & Principles; 8. Design Process; 15. Construction; Product & Material
e. Managerial Concept (collaboration and job desk between <i>Sulinggih, Pemangku, Sangging, Juru, Tukang</i> and <i>Krama</i>)	5. Collaboration; 9. Communication; 15. Construction; Product & Material
f. Materiality Concept (Timber knowledge, Timber construction, Timber felling procedures)	15. Construction; 12. Product & Material
DESIGN & BUILT PRACTICE	
a. Ngorten (discuss with client brief, site analysis, environmental consideration)	9. Communication, 14. Environmental Systems & Human wellbeing
b. Ngewacak (Literature studies, architecture exploration on material, dimension and form, preparing dimension module (<i>sukat, sikut</i> and <i>gegulak</i>))	16. Regulation & Guidelines; 7. Human-centered design; 14. Environmental Systems & Human wellbeing
c. Ngarencana (on site visit and body & place measurements)	8. Design Process; 7. Human-centered design; 14. Environmental Systems & Human wellbeing
d. Ngawangun (built in collaboration with other expertise)	5. Collaboration, 9. Communication; 15. Construction; Product & Material
e. Nyuciang (inauguration ritual)	16. Regulation & Guidelines;

Source: Noorwatha et al. [19]

TABLE 3: Connectivity of Culture-Based Interior Design Curriculum to SDGs.

No.	SDGs	The Role of the Built Environment Designer in the SDGs	Relevance to Knowledge (undagi) as the basis for the Culture-Based Interior Design curriculum
1.	No Poverty	Producing affordable residential designs, empowerment	Architecture is a labor-intensive work involving several specialists (Managerial Concept); collaboration process between designer, builder, artisan and stakeholders.
2.	Zero Hunger	Producing eco-friendly building designs and agricultural land	Architecture pays attention to the concept of good and bad land (Space Concept); Harmonization with nature, man and the divine; enhance the land potential with no harms.
3.	Good Health and Well-Being	Building design should embody that promotes health and well-being	Architecture pays attention to the concept of good and bad land (Space Concept); Harmonization concept with nature, man and god; enhance human quality of life
4.	Quality Education	Built environment design can provide educational value and knowledge contribution	Architecture is a labor-intensive work involving several specialists (Managerial Concept); Culture based education for good living
5.	Gender Equality	Building design must be inclusive for all residents regardless of gender.	Architecture pays attention to the concept of good and bad land (Space Concept); Balinese architecture is gender related from construction, décor and dualism philosophy (<i>rwa bhineda</i>).
6.	Clean Water and Sanitation	Building design with a good water cycle and adaptive to climate change	Architecture pays attention to the concept of good and bad land (Space Concept); harmonization with nature especially water cycle on human built environment.
7.	Affordable and Clean Energy	Wise building design towards energy use	Architecture pays attention to the concept of good and bad land (Space Concept); eco friendly energy base on harmonization with nature.
8.	Decent Work and Economic Growth	Design buildings that have a positive economic impact on the surrounding community	Architecture is a labor-intensive work involving several specialists (Managerial Concept); human empowerment as traditional as complex labour-work.
9.	Industry, Innovation and Infrastructure	The building design is able to provide innovation and contribute to economic growth for local entrepreneurs	Architecture produces a feeling of pleasure for its creation and novelty (aesthetics concept); culture based design for value enhancement.
10.	Reduced Inequalities	Designers are required to have social responsibility and inclusivity	Architecture pays attention to the concept of good and bad land (Space Concept); all human in one family (<i>vasudhaiva kutumbakam</i>) concept.
11.	Sustainable Cities and Communities	Designers participate in building cities and settlements that are inclusive, safe, strong, resilient and environmentally friendly	Architecture pays attention to the concept of good and bad land (Space Concept); harmonization with nature, human and divine for good living.
12.	Responsible Consumption and Production	Designer wise in material consumption	Architecture pays attention to the concept of good and bad land (Space Concept); harmonization with nature, human and divine for good living.
13.	Climate Action	Wise and active building design in reducing the impact of climate change.	Architecture pays attention to the concept of good and bad land (Space Concept); harmonization with nature, human and divine for good living.

TABLE 3: Contiued.

No.	SDGs	The Role of the Built Environment Designer in the SDGs	Relevance to Knowledge (<i>undagi</i>) as the basis for the Culture-Based Interior Design curriculum
14.	Life Below Water	The design must pay attention to life underwater	Architecture pays attention to the concept of good and bad land (Space Concept); harmonization with nature, human and divine for good living.
15.	Life on Land	Designers wisely use environmentally friendly materials	Architecture pays attention to the concept of good and bad land (Space Concept); harmonization with nature, human and divine for good living.
16.	Peace, Justice and Strong Institutions	Designers echo society's commitment to justice, democracy and inclusivity	Architecture pays attention to the concept of good and bad land (Space Concept); cosmic orientation
17.	Partnerships for the Goals	Collaboration with all parties to realize the SDGs goals	Architecture is a labor-intensive work involving several specialists (Managerial Concept); The students are taught to work collaboratively in accordance with the professional work climate that works with related colleagues from international citizens.

Source: Data Processing, 2023

The indigenous knowledge of *undagi* is important for achieving the SDGs in architecture. This highlights the importance of eco-friendly designs, renewable resources, a labor-intensive economy, and inclusivity. The criteria above can be used in interior design curricula to accelerate SDG achievement. *Undagi*'s indigenous wisdom, which is vital to sustainability, might be included into interior design education. *Undagi* in Bali, a cultural institution that preserves traditional building, is used to reflect on culturally-rooted interior design education. When incorporating indigenous architectural wisdom, many elements must be considered. Artists and designers must be creative while respecting Balinese architecture [8]. Traditional Bali houses are made sustainably using *undagi*'s indigenous wisdom and traditional architecture. The globalization should also be considered in future design to improve life quality. The new culture has changed to fit ancient conventions, showing that old traditions are lasting [25]. A harmonious exchange between traditional and contemporary aspects facilitates integration to achieve Sustainable Development Goals. Thus, culture-oriented interior design education must share information and skills from traditional master-builders to promote a local architectural history. To preserve creative traditions for future generations, this education is essential.

4. Conclusion

This shows that *undagi*'s indigenous knowledge is relevant to included in the interior design curriculum because of its sustainability philosophy, which the UN promotes for

the Sustainable Development Goals. A SDG-compliant culture-based interior design program has many benefits. One effect is designer participation in global challenges. Preservation of traditional culture. (3) Designing Nusantara-themed interiors for global sale. (4) Traditional creative economy improvement. (5) Teaching Indonesian interior designers cultural awareness and resource appreciation. Room design impacts residents. Cultural designers seek to build settings that convey their philosophy. These locales, like Tri Hita Karana, promote harmony between humans, the environment, and the divine to benefit all life on Earth.

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