

Teaching Traditional Building Knowledge Online at a Contemporary University: Learning from Traditional Knowledge Holders

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Teaching Traditional Building Knowledge Online at a Contemporary University: Learning from Traditional Knowledge Holders

Aparna Datey

Abstract

This research focuses on traditional knowledge holders who teach Vāstu vidya or the knowledge of architecture online at a contemporary university in India. Efforts towards decolonizing have led universities to add content on traditional knowledge into course curricula. Typically, content is added to existing courses which are taught by academics. However, there is deep rooted and systemic perception that traditional knowledge is not scientific. The courses at Indian Institute of Technology-Hyderabad are unique as the curriculum is devised and taught by traditional knowledge holders, who have adapted their teaching to the online format. This study asks what university educators who teach architectural design in contemporary academies can learn from traditional knowledge holders. The research involved visiting traditional knowledge holders to discuss the online curriculum, their teaching approaches, Vāstu design principles, application of traditional building knowledge and visiting buildings or case studies including residences and temples. This paper contributes towards increasing awareness of the traditional knowledge system, its relevance to contemporary university teaching and adds empirical research that helps validate its value and significance for a broader audience.

Keywords

Traditional building knowledge, Vāstu, Traditional knowledge holders, Architecture education, Online teaching and curriculum

Key contributions/Pathways to collaboration

- In response to the decolonization movement within academia, there has been a growing body of publications focused on traditional building knowledge. These include books that examine the selective and fragmented use of such knowledge by architecture professionals, self-identified Vāstu consultants, and traditional craftsmen. Topics covered range from the history and construction of temples to the role of traditional artisans. Additionally, journal articles explore the integration of traditional knowledge into academic curricula, its underlying principles and practical applications, as well as its contributions to sustainability, environmental benefits, and wellbeing.
- Efforts towards decolonizing have led universities to add traditional knowledge into existing courses which are typically taught by academics. In architecture education, design studios are often taught by practitioners but there is a divide between academia

and practice. The courses discussed in this paper are unique as they are taught by traditional knowledge holders at a contemporary university in India and have the potential to contribute towards connecting academia and practice.

- This study contributes towards research methodology rooted in the oral learning and teaching traditions in India, ways to integrate theory and practice in architecture education by including curricula developed by traditional knowledge holders and increasing awareness of traditional building knowledge system and its relevance to contemporary university teaching.

Introduction

This study focuses on traditional knowledge holders, Brahmasree Sri Kanipayyur Krishnan Namboodiripad (henceforth Brahmasreeji) and his son Sri Kanipayyur Krishnan Namboodiripad (henceforth Krishnanji), who teach Vāstu vidya or the knowledge of architecture online at a contemporary university in India. ‘Sri’ is a respectful prefix and ‘ji’ is a respectful form of addressing elders. Efforts towards decolonizing have led universities to add traditional knowledge content into existing course curricula which are typically taught by academics. The elective course ‘Design Principles in Indian Architecture’ discussed in this study is unique as the curriculum is devised and taught by traditional knowledge holders (TKH) for the Master of Technology program in the Department of Heritage Science & Technology at Indian Institute of Technology-Hyderabad (IIT-H). It is one of two University Senate approved electives taught by the participants (the other course is Materials Used in Heritage Structures). This paper contributes towards increasing awareness of the traditional knowledge system, its relevance to contemporary university teaching and adds empirical research that helps validate its value and significance for a broader audience. This research is embedded in scholarly knowledge of Vāstu Shastra or the science of architecture, and extensive research on its application and practice.

Architecture education and practice in India

This section provides a brief overview of architecture education and practice in India and the value of traditional technical and scientific knowledge for higher education.

Ancient tradition

Architecture has been taught and practiced in India for centuries and Vāstu Shastra outlines the holistic approach to design, construction, and training of architects. Vāstu vidya scientifically produces congenial settings for living and working by taking advantage of the benefits provided by nature (Bonshek, 2020; Datey & Bonshek, 2024). Vāstu pedagogy is based on the ancient guru-shishya (teacher-student) system. It emphasizes the relationship between teacher and students and the context in which learning occurs which is at a gurukul or home of the guru (kul means both house/residence and lineage) (Viswanathan & Ambasta, 2023). The guru is a “steward of knowledge” (Chetan, 2019) and the pedagogy is “rooted in experiential learning and oral tradition...Complex philosophical concepts were often conveyed through allegorical stories and parables, making them accessible to learners of all ages” (Barman, 2020; Ghonge et al., 2020). Oral learning is about “developing attentive hearing (shravanam), profound thought (mananam), and internalisation via repetition (abhyasa), not

just about memorisation...based on student's aptitude (adhikara), maturity, and character, the guru delivered information gradually...tailored to match student's interests and aptitudes, teaching strategies ranged from recitation to debates, introspection to hands-on exercises" (Bhat & Javaid, 2024, p. 25, 26). Students received broad and interdisciplinary education in art, sculpture, philosophy, astrology, geometry, dance, music, yoga and more, and spent many years with the teachers before practicing on their own (Dhanorkar, 2017, p. 90, 93). Content and pedagogical knowledge of architecture is held in ancient texts such as Sthāpatya Veda (complete knowledge of establishing buildings), existing buildings and experts. The preserved ancient texts, manuals and treatises are a repository of knowledge on architectural design (Acharya, 1980). In addition to theoretical and practical aspects, they provide guidance on "personal behaviour, moral character and social conduct" (Piplani & Brar, 2020). The knowledge is also embedded in buildings such as temples which manifest the philosophy, principles, and practices (Ray et al., 2022). Practitioners are organised in guilds, a family-based apprenticeship model (Viswanathan & Ambasta, 2023) and included the knowledge, community and practice (Gangey, 2019).

Britain and colonial India

The foundations of contemporary architecture education can be traced back to medieval guilds—collectives of master-builder artisans who shared work practices, knowledge, kinship, and learning directly on building sites. In 17th-century Europe, this evolved into a model where apprentices of varying levels and backgrounds were guided by a master, lived communally, and learned through hands-on experience in workshops (Cuff, 1992). In France, this workshop model was formalized as the atelier, which later developed into the École des Beaux-Arts (1671–1793), offering a curriculum that blended formal instruction with practical training. In 18th-century Britain, architectural training typically involved self-directed apprenticeships or pupillage, where articulated pupils paid to learn from a master in exchange for labour (Crinson & Lubbock, 1994). To address the lack of structured training for these pupils, the Architectural Association (AA) was founded in London in 1847, marking the decline of the articulated system. By the 1920s, most students received comprehensive formal training under the supervision of practitioners, primarily in polytechnics or art schools, with some attending universities and others gaining experience through architectural offices.

Architecture education in colonial India followed a similar trend. A two-year draughtman certificate was added at Sir J. J. School of Art and Industry (Bombay, 1857) in 1896 and became a four-year course in 1908. The structure of the program was rooted in European tradition and technical aspects of construction craft were prioritised. A program for training architects was established in 1913, however, the curriculum was aimed at producing draughtmen and architectural assistants (Chakraborty, 2015). In 1922, the program became a full time 5-year diploma course with a modified curriculum for architects who could practice independently. In 1929, the course was aligned with the final examination of the Royal Institute of British Architects (RIBA) and the school was renamed J.J. School of Architecture. In the same year, the Indian Institute of Architects (IIA) was established to regulate the profession (Fernandez, 1967). There were also art schools founded by Indian princes such as the Jaipur School of Art (1866) and Kala Bhavan in Baroda (1890) which trained craftsmen in traditional crafts and techniques (Tillotson, 2006; Fujita 2017). In the mid-nineteenth century,

polytechnics were established primarily for educating engineers to support the empire building project (Singh & Solanki, 2016). A department of architecture was established at Delhi Polytechnic in 1941.

Post-independence

By late nineteenth century, Indian elite were drawn to the technical curriculum at Massachusetts Institute of Technology (MIT, US) (Jain, 2020). This led to the establishment of IITs in five cities in India starting in 1951 which were a result of India's vision of modernisation, and arguably, tipped architecture education towards being "technically biased" (Mehta, 2006). In 1952, Department of Architecture and Regional Planning opened at IIT-Kharagpur and the first architecture students graduated in 1958. In 2017, Vāstu was introduced in history courses for undergraduate and postgraduate students from architecture, civil, electrical and mechanical engineering and facility management and were taught "solar principles, ecological elements...biotic system" (Hindustan Times, 2017). By the early 1970s, there were 12 schools/departments of architecture and more than 400 by 2020 (Piplani & Brar, 2020, p. 94). Council of Architecture (CoA), a regulatory body, was established in the early seventies to oversee architecture education and All India Council of Technical Education (AICTE) was formed in the early 1980s to regulate all technical education.

Contemporary architecture education does not incorporate traditional knowledge in a meaningful way. Colonisation and undervaluing traditional knowledges have strengthened a belief that there was no education system in India prior to the arrival of the British or that it is old-fashioned (India Today Webdesk, 2018). Courses on Vāstu are taught in introductory forms in universities and applied in selective and fragmentary ways by architecture professionals, self-proclaimed Vāstu consultants, and traditional craftsmen (Chakrabarti, 1998a,b). Such piecemeal approaches do not recognise the holistic and integrative approach of traditional knowledge (Fergusson et al., 2021, 2020). Government initiatives like the establishment of Indian Knowledge Systems (IKS) in 2020 and a board for promotion of Vedic education set up in 2022 could support mainstream acceptance of traditional knowledge systems.

My undergraduate education in India in the late 1980s was at School of architecture, Center for Environmental Planning and Technology (CEPT), which began as an autonomous institution, and is now CEPT University. The curriculum was rooted in European models and briefly introduced traditional building knowledge in history courses. Furthermore, narrow categorisations of architecture as Western and non-Western during postgraduate education at MIT intensified the issue. As an educator, I am acutely aware that architecture education and design pedagogy is shaped in the Global North (Western Europe and North America) and influences the Global South.

Value of traditional knowledge for higher education

Research emphasizes that teaching traditional technologies in contemporary universities is critical for valuing its contributions and relevance for addressing current global challenges. Research questions the reliance on Western scientific knowledge alone (de Vries, 2023) and addresses the Western anthropocentric worldview (Kaul, 2023). Maluleke and Gumbo (2023) highlight the role of cooperative and experiential learning in decolonizing technology education

for helping learners contextualise their learning and suggest employing collaborative methods involving teachers, parents, students and community members for integrating indigenous knowledge, and recommend using case studies, field trips, and videos or demonstrations of making to showcase indigenous ways of knowing and doing. Viswanathan and Ambasta (2023) discuss the use of case studies, particularly temples which embody architectural pedagogy. Scholars also discuss curriculum that includes diverse knowledges and provides tools for thinking, organizing and understanding the place of humans in a connected world (Lemon, et al., 2023), contextual problem-solving, sustainable use of natural resources and addressing local needs and challenges (Gumbo, 2023; Khumalo & Mapotse, 2023; Ruggedhla, et al., 2023) and studio-based curriculum in the field of design education including visiting/collaborating with cultural communities, developing co-creation tools and techniques, and research on indigenous knowledge systems (Njeru, 2023). Emphasizing the holistic approach of traditional knowledge systems, studies focus on the use of cultural artifacts, myths and stories to broaden understanding and connect contemporary developments to historical drivers of change and learner's own experiences (Axell, 2023). Handayani and Triyanto (2023) focus on relationship-building between teachers and indigenous communities and enabling students to make meaning from their learning. A systematic literature review highlights the potential of Vāstu architecture in enhancing architectural education and practice (Acharya et al., 2025). It suggests that in view of critiques of architectural education about integrating sustainability principles, there is a need for methods and frameworks that include traditional pedagogies. It identifies a gap in research on integrating traditional architectural knowledge into contemporary curricula for developing “culturally responsive and inclusive educational frameworks” and the lack of research on “optimal pedagogical approaches and frameworks...especially in remote/online learning environments.” This study asks what university educators who teach architectural design in contemporary academies can learn from TKHs.

Methodology

When preparing for conducting the research, I was keen to employ research methods that are appropriate for working with traditional knowledge and elders. A recent editorial provided valuable information about working with TKH and Indigenous methods such as Talanoa, yarning circles, masi and vā-kā (Heinrich, et al., 2024) which emphasize the value of oral traditions, deep listening (Bobongie-Harris et al., 2021), experiential learning and storytelling (Callaghan, 2024). Listening and storytelling methodologies like yarning (Walker, et al., 2014, p. 1216) and Talanoa (Vaiote, 2006) prompt relationality, responsiveness to audience or customisation, immerses listeners in the story and creates knowledge through meaning making (Phillips & Nguyen, 2021) and has a positive influence on practice (Kovach, 2009). Storytelling is about “knowing the world” (Datta, 2018) and in research contexts it can ensure cultural safety, holistic learning, relationship building, and experiential learning which enhances validity of data. Furthermore, sound is a characteristic of Vedic knowledge which is learned through what is heard (shruti), memorization (smriti) and preserved in ancient texts. Interestingly, shruti also means Veda or complete knowledge that is heard from teachers. I grew up listening to stories and learned Sanskrit recitation from my grandparents and parents. In this study, I employed listening as a methodology because it is an integral part of the ancient education tradition in India. Listening “invites entrance to human communication and

consciousness beyond discursive thinking, to dwelling places of understanding that language cannot, as yet, reach” (Lipari, 2010, p. 360). The emphasis is on learning without written documents, interpreting and understanding content, verbal and non-verbal communication, and relating or attending to others (Yuliani, et al., 2023).

I was introduced to the TKHs by an esteemed Ayurvedic practitioner who teaches at a local clinic and who I have known for some time. He connected me with the director of the clinic who then recommended me. This established my credibility as a well-intentioned researcher who would respect and use the knowledge appropriately. Research in the indigenous context requires “preparedness of the researcher to show respect” (Tripura, 2023). I listened to the participants as they shared stories such as “the earth is our vehicle.” While the story was about making complex concepts understandable, the emphasis was on drawing inferences from experiences, particularly those that are not obvious (like the movement of the earth).

The Earth rotates from West to East...and it is also going around the Sun. There is movement, we may think we are not moving but the Earth is moving in these two ways. What is important is that in a moving vehicle you must be safe. The Earth is our vehicle...it's always moving...basically it is about how we will be comfortable and stable. The movement in these two directions is keeping Earth stable. Earth's movement influences us in our homes or doing our karma in our homes. If direction is proper, our destiny is also proper...otherwise it is vibrating...to provide equilibrium we need proper orientation...it will give a better result...benefits... [you must be] careful...because it has to be passed on in the right way...

The story was primarily about the responsibility of the architect: connecting individual lived experiences to society and the whole world (Menon, et al., 2018). Popular understanding of karma (actions) as retribution or causality does not fully explain the concept as role-related duties and responsibilities. Therefore, ‘proper’ does not mean a dogmatic or fixed way, rather it implies acting in ways that benefits all and is in accord with natural law. According to Vedic philosophy (darshan or seeing the truth), complete knowledge (Veda) is inquiry driven and conception of knowledge derives from Rishi-Devatas-Chhandas or the subject, process and object respectively (Prasad, 2023). As learner-centred education, teaching involves verbal testimony, sharing examples, direct experience and storytelling. The student-teacher relationship and the process of knowing, doing and being are important. Furthermore, the participants were cautious about knowledge being “passed on in the right way.” They were keen to teach online as they wanted to share the knowledge with future practitioners. However, they are careful about what is included, particularly as the online course could not include an experiential learning component.

After returning to Australia, I transcribed the recordings and sorted through the photographs. I remained in touch with the participants to clarify and deepen understanding, and they generously responded. This reciprocity adds to the quality and trustworthiness of the research and is possible due to the respectful relationship established between participants and researcher. Another aspect of the interaction was that information was shared by participants when and if appropriate. For example, when I asked about the meaning of a specific concept and its relevance, they said: “we can talk about that later.” I took that to mean I would need

further grounding before the information would be meaningful. This indicates approaches to learning in the guru-shishya tradition where knowledge is tailored to learner capabilities.

Our interactions were authentic and rich and forms the basis of this study. Listening and visiting buildings accompanied by the participants were enriching ways to research and empowered me as a researcher, educator, and learner. It provided a critical lens and space for self-reflection to understand traditional building knowledge and practices and its value, relationship with place and land within the Vedic paradigm and a perspective on teaching traditional knowledge online in contemporary universities. I sought and received participants' blessings prior to seeking publication. Making sense of what I was listening to occurred through transcriptions of conversations, visiting Vāstu buildings, selecting photographs and ongoing conversations. From this inquiry process, I was able to identify data, learned about participants' approach and reasoning for structuring and teaching the online course and the curriculum's integral relationship with the scientific Vāstu knowledge preserved in ancient texts. A combination of description and photographs elaborates on what I heard and saw. It enables readers to read and see what I experienced, how I interpreted the data and contributes to knowledge on this topic.

Traditional Vāstu knowledge holders and educators

In January 2025, I met Brahmasreeji and Krishnanji at their home-office in Kunnamkulam near Thrissur in Kerala (Fig. 1). Their family is from Kanipayyur (near Kunnamkulam) and their connection to place goes back many centuries (their names include place of origin, given name and community they belong to).

Figure 1

Author (left) with Brahmasree Sri Kanipayyur Krishnan Namboodiripad (centre) and Sri Kanipayyur Krishnan Namboodiripad (right) in their office



Our conversations were conducted in English with some Sanskrit words scattered in. Although I was born in India, I do not speak Malayalam, the local language in Kerala. However, I did learn Sanskrit for four years in middle school and practiced recitation with my grandparents and parents. I expressed that I wanted to learn about Vāstu and how they teach it online. They spoke about Vedic philosophy, Vāstu principles, the main texts and the calculation tables they use in their practice which are a shorthand for complex calculations (Fig. 2).

Figure 2

A page of the Vāstu perimeter table showing equations for calculating the perimeter which is used by the participants in their practice



STANDARD MEASUREMENT CHART

PERIMETER	AGE	THODI
3	0	0
4	1	1
5	2	2
6	3	3
7	4	4
8	5	5
9	6	6
10	7	7
11	8	8
12	9	9
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200	197	197

IMPORTANCE OF PERIMETER

Brahmasreeji showed me around their home-office (Fig. 3, 4, 5) and his brother's house (Fig. 6, 7, 8) which were designed using Vāstu principles in the traditional Kerala style. They incorporate newer materials like concrete to adapt to contemporary construction practices and innovatively use traditional materials like mud for cooling interiors. Listening to Brahmasreeji as he showed me around the buildings was integral towards making sense and underscored why visiting buildings with elders was important for learning.

Figure 3 and 4

Participants' office entrance with overhanging wooden roof built using traditional construction techniques and columns and plinth using local laterite stone



Figure 5

Participants' home using concrete beams which is a commonly used material for contemporary construction and thick mud walls for cooler interiors



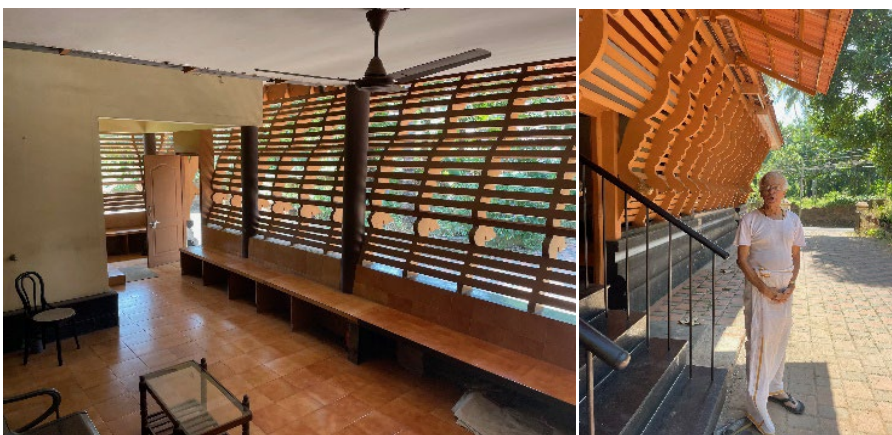
Figure 6

Brother's house entrance built in the traditional Keral style with deep overhanging wooden roof



Figure 7 and 8

Brother's office entrance interior and exterior which uses wooden slats that are a typical feature of Kerala architecture



The participants arranged for a guided tour of Sree Vadakkunnathan temple (a UNESCO awarded conservation project they were a part of) to help me experience and understand Vāstu design principles and traditional construction techniques (Fig. 9). They explained that “if you see the construction of old temples there is no difference. New temple construction even today

there is no difference, it has been the same.” The visit and listening to the participants helped in understanding concepts: “[Y]esterday you went to the Vadakkunnathan temple, there is a compound wall, and at its centre is the Shiva temple...Gopuram...it is practically and scientifically facing to this centre...that is the principle...Gopuram is facing West but according to us it is facing to the centre.” The temple preservation project highlighted the continuous building tradition in India employing local materials, traditional construction techniques, and skilled craftsmen.

Figure 9

Sree Vadakkunnathan temple, Western entrance ‘Gopuram’ which is one of the four entrance gateways and inside the fortified enclosure are the main shrines and temple theatre



Embodiment of Vāstu knowledge

Brahmasreeji (b. 1940) embodies the knowledge and practice of Vāstu. He trained under his grandfather's brother Panditharajan Sri Kanipayyur Shankaran Namboodiripad (1891-1981) whose portrait is prominently displayed in their office (Fig. 10). Panditharajanji was well versed in the Vedas, astrology, astronomy and Vāstu vidya. He was innovative and integrated drawing into his practice which is typically not part of the traditional building construction process (Fig. 11). He translated (Sanskrit to Malayalam) Manuṣyālaya Chandrikā, a manual for constructing residences and other texts which still are used by the participants.

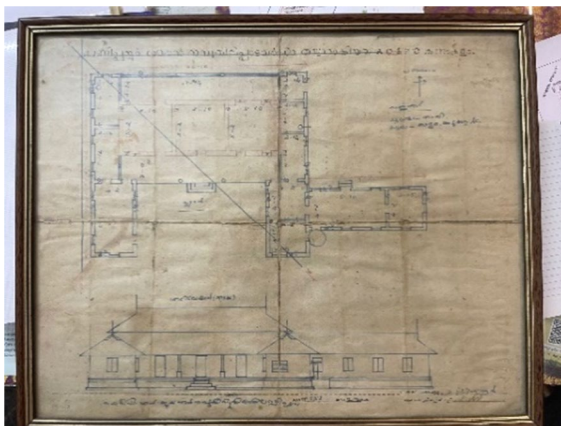
Figure 10

Portrait of Panditharajan Sri Kanippayyur Shankaran Namboodiripad displayed prominently in the participants' office



Figure 11

A plan drawing by Panditharajan Sri Kanippayyur Shankaran Namboodiripad, framed and proudly shared by participants



Brahmasreeji attended gurukul and studied the ancient texts for five years. He also received formal education (Bachelor and Master of Science degrees in Mathematics) and lectured at Christ College, Irinjalakuda (1965-66) and Sree Kerala Varma College, Thrissur (1966-67). He joined the family profession in 1969. A combination of gurukul training and formal education in mathematics enabled him to connect traditional knowledge to contemporary contexts, materials and practices. He is the Dean of Vasthuvidya Gurukulam (recognised by Mahatma Gandhi University, Kerala) established in 1993 to preserve ancient knowledge. The gurukul offers courses in English and Malayalam to civil engineers, architects and traditional craftsmen. Since 1995, he has held the position of Dean for Sthāpathya Veda at Maharshi Mahesh Yogi Vedic University at Vlodrop, Netherlands. He is the recipient of numerous awards and degrees. Under his leadership and guidance, the family-run Panchangam Press has been publishing books on various branches of traditional Indian science to preserve the knowledge. His building projects include residential complexes, commercial buildings, resorts, ashrams, temples, churches, dance theatre, airport, hotels and hospitals. He was part of a team that received the 'Award of Excellence' in 2015 for the conservation of the Sree Vadakkunnathan Temple. He is joined by his son, Krishnanji who studied Vāstu texts under his father's younger brother Sri Parmeswaran Namboodiripad and later under his father. He completed a diploma in Civil engineering from Delhi University in 2001 and has designed houses, commercial buildings and temples in India, USA and Malaysia. He assists his father in the reconstruction and renovation of temples and teaches at the Vasthuvidya Gurukulam.

Teaching traditional knowledge online at a contemporary university

The participants teach two University Senate approved online elective courses (2 credits, 3 hours twice weekly) in the Master of Technology program in the Department of Heritage Science & Technology at IIT-H: 'Materials Used in Heritage Structures' and 'Design Principles in Indian Architecture'. The department focuses on the application of science and technology for conservation and development of tangible (monuments, archaeological sites) and intangible heritage (knowledge systems, cuisine, medicine, dress, art, language, symbols, stories). In 2023, Brahmasreeji was invited to a conference "Reviving practice of Indic architecture – from libraries to laboratories" hosted by the university where he presented on the dimensional system, following which he was invited to develop a curriculum. The participants are open to and "are accepting [of] new technologies while implementing this [course]...narrow-minded thinking prompts some teachers to be wary of sharing freely." The participants share the lessons via slide presentations along with live oral commentary.

In the course structure, there is direct correlation between lecture titles and chapter titles of ancient Vāstu texts which highlights that the participants are careful about the credibility of the knowledge and how it is passed on (Table 1). The curriculum emphasizes that the main purpose of a building is the protection of the human body from climatic elements and for a dwelling to be ideally suited for living, its construction must adhere to natural law.

Table 1

Online course curriculum follows the chapter structure of ancient Vāstu texts.

* Further research is needed to explore content that was not discussed during my visit.

	Lecture title	Content
1	Selection of land	Selection of land/plot which takes into consideration terrain/slope (sthalaguna), hydrological (jalaguna) and biotic (vrukshaguna) factors and orientation https://www.linkedin.com/pulse/selecting-ideal-plot-views-krishnan-nambudiripad-sthapati-sthapati/
2	Gaja Prishta temple - Case study	Types of temple architecture including unique designs such as half round shape and big shrines (two and three tier) employing unique materials and features
3	Selection of trees for building construction	*
4	Wooden roof design in different structures	*
5	Wooden joinery details	*
6	Importance of direction	Specification of 8 directions (4 cardinal directions and 4 corner directions - NE, SE, SW and NW) with reference to a focal point - Brahmasthana https://kanippayyur.in/vasthu/importance-of-direction-in-vasthuvidya/
7	Dwishala & Trishala - Case study	Types of residences and principles of single roof houses (ekashala), L-shaped roof houses (dwishala) and C-shaped roof houses (trishala) and elaborate how these principles can be adopted in contemporary settings https://kanippayyur.in/vasthu/the-importance-of-design-in-vasthuvidya/
8	Chaturshala - Case study	Types of residences and principles of courtyard house (chaturshala or nalakettu) and elaborate how these principles can be adopted in contemporary settings
9	Parts of a house	*
10	Design of walls and materials used in heritage structures	*
11	Dimensional system - Part 1	Dimensions and proportional measurement system https://kanippayyur.in/vasthu/dimensional-systems-in-vasthuvidya/
12	Dimensional system - Part 2	Calculations using the Perimeter table
13	Kuzhikalari - Case study	*
14	Veedhi kalpana sutravinyasam - Ghandeekarnam	*
15	Position of rooms	Positioning of functions and activities
16	Position of well and gate	*
17	Sree Vadakkunnathan temple, Thrissur - Case study	Award-winning temple which has all angaas or parts (garbhagriha/inner sanctum, shikhara/vimana or tower, mandapa/hall, antrala/vestibule, pradakshina path/ circumambulatory path and gopuram/gateway)
18	Dhwajam – Panchaprakara - Case study	*

The first lesson is on plot selection which emphasizes connection to land, place, influences of climate and the importance of preparing “architects to build with respect to our place on this earth.”

Every place has some natural climatic conditions...that is why selection of land is first...When we are seeing the land, what are the good and bad lakshnas or qualities...consider where mountains and water bodies are...Then you have to consider sunlight...and the importance of direction...How to prevent the extreme conditions that are outside...for example, here we have these simple windows but now some people are using French windows...which is okay in France because they need more sunlight in their cold climate. But here, we don't need that...then you have to use air conditioning...consuming more energy. New technologies, engineering principles we need...but something is missing. We have to feel comfort and peace of mind in the building...

The participants underscore the importance of accompanying elders on building sites and learning from visiting existing buildings and construction sites.

I used to travel...mainly for temple construction new and renovation...also factories, residential...Through experience I learned the subject...My son travelled with me...[seeing] older temples and hereditary constructed houses, he can understand, or we can explain it...how it has been done by the craftsman, thickness of the walls etc...

However, the course is offered online and does not include such a component due to being in different cities. However, in the online curriculum a third of the lessons (2, 7, 8, 13, 17 and 18) focuses on case studies or precedents.

I advise students to visit heritage structures....by showing we can teach them the basic...We can discuss how is it executed, why, what were the requirements in the past and now, even if requirement changes what are the things to be followed. We have included case studies, so students have an idea since they cannot physically visit.

Four lessons (3, 4, 5 and 10) focus on selection of materials and construction techniques. Participants emphasized constructing ‘properly’ based on what Shastras or texts say:

...one point of reference is the centre of the earth...wherever we are on earth, it maintains our stability...all parts and parcels are concentrating to that point...you will think the wall [is] parallel, but it is not...How can it be parallel?...because it is concentrating direct to the centre of Earth...Therefore, Shastras say that...for stability, if on the ground floor you have 36 cm [wall thickness], then from outside you reduce six cms and continue 30 cm...for the next ten feet, after that again six cms. So that...inclination will be concentrating...centre of gravity and stability will be proper.

In lessons 6, 9, 15 and 16 students are introduced to the importance of orientation, directions, house parts and position of various functions. Orientation to the East is associated beneficial effects because the Sun signifies a vital and generative force. The positioning of activities is

based on the quality of Sun's energy from different directions at various times of the day. For example, kitchens are positioned to the southeast as the energy from that direction is associated with transformation and digestion.

When we are making a boundary it's centre is focused to the centre of the earth and to the Sun...we have to make it one. There are other forces from the East, Southeast, South, Southwest, West, Northwest, North and Northeast...concentrate to the centre...Brahmasthan. The eight directions and up and down makes a sphere...earth and another sphere...the total universe...we are inside that sphere...that must be in [our] mind. East is East for everyone regardless of India or Australia. Sun's rays or energy are transmitted to the earth through space/Akash to wind/Vayu, then it transfers to fire/Agni, water/jala [and finally] to the earth/prithvi...That is another principle...it is a cycle...

Lessons 11 and 12 are about the dimensional system which is discussed in two parts to first provide awareness of the system and then to be able to calculate. It is through the dimensions which relate to human measurements that cosmic aspects are manifested.

Dimensioning system is important...Basic will be providing awareness of the dimensional system in level one, what it is, how it was invented from the Manushya Pramana [human measurements], unit of measurement...hasta and angula [hand and fingers]...Part two provides detailed [information] including the calculations that are in the perimeter table...how to find the Sun's perfect energy, where the stars are...there is an equation for that...It's all an arithmetic approach...Depending on where buildings face, we have to choose specific dimensions...there are so many calculations...how to find the Sun's perfect energy...there is an equation for that...our forefathers have found it. Where the stars are...It's all an arithmetic approach...All the measurements will consider the natural...Sun, Moon, Aakash [sky] etc...qualifications and disqualifications.

Listening to learn from traditional knowledge holders

Listening to Brahmasreeji, I realised that I was hearing Vedic knowledge (his title of 'Brahmasree' is an honorific given to those possessing Vedic knowledge). In view of the critiques of architecture education in India which notes the lack of holistic approaches (Mehta, 2006), the online course taught by TKHs redresses this limitation and offers a strong example of countering the effects of coloniality (Mignolo & Walsh, 2018). It addresses the reduction of "sophisticated technological knowledge to the craft of the 'uneducated'" and "relegation of indigenous knowledge to the margins, as distinct from formal education" (Viswanathan and Ambasta, 2023). This study asked what university educators who teach in contemporary academies can learn from TKHs. What I learned from listening is that elements of knowledge are shared at appropriate times and stages, recognizing the lineage of elders is a critical part of understanding what they teach, connecting theory and practice are important for learning and it is not enough to merely include traditional knowledge content, rather it is imperative that TKHs design and deliver the curriculum.

Sharing elements of knowledge at appropriate times and stages

My experience of listening to the participants emphasized that learning requires understanding that knowledge is provided after gauging the level of students or that teachers determine the appropriate time and stage when each element of knowledge is shared with students so that they can make sense of it and use it responsibly. As mentioned in Table 1, participants only discussed certain topics with me. While they did not refuse, they clearly let me know that they were sharing what was appropriate for my level. True to the guru-shishya tradition, the participants were careful about the 'right way of passing on' and 'proper' application of Vāstu knowledge. They noted that in the online course, "initially we have to give some basic awareness...knowledge to the [students] and then provide more advanced..." Additionally, it was only after our initial conversation that the participants showed me around their home and arranged for me to visit the temple. During these visits they explained and showed how concepts are applied (orientation and parts of buildings, organisation of rooms), which in the online course, they explain by including case studies.

Recognizing the lineage of elders

It is important to recognise the lineage and provenance of elders to understand what they teach. Brahmasreeji noted that the knowledge they put into practice is passed down from "our grandfather" who held the title of Panditrajan which means 'king of scholars and teachers' and one who embodies oral traditions. He translated many texts from Sanskrit into Malayalam which are used by the participants in their practice. The participants understood expertise as "living - that is, practicing - incarnation of the knowledge and skills" (Parker, 2003). Numerous times during our conversation, the participants said "Shastras say" and alluded to the rootedness of the knowledge in ancient texts. They reiterated that: "We are teaching using these texts. [The translations are] a compilation from seven main texts or moolgrantha [root texts] and is a practical manual...explanation...for easy understanding." For example, while the knowledge of selecting land and dimensioning system is in the texts, it is orally transmitted, learned through visiting building sites or sharing case studies and requires guidance which underscores the importance of teachers who embody the knowledge.

Connecting theory and practice

Brahmasreeji emphasized interconnectedness as the main principle of design: "the earth and all living organisms on earth [must] survive together, maintain equilibrium...that is the first principle." He reiterated that buildings represent the cosmos and measurements manifest it. Alignment with cardinal directions provides benefits of living in harmony (Datey & Bonshek, 2024). There is strong correlation between astronomy, mathematics and building science (Rajasekhar & Jose, 2019) which are manifested via the perimeter or Vāstu enclosure calculations (Jayashree, 2024). There are six criteria for determining perimeter dimensions which are called ayadi shadvarga (Chakrabarti, 2000; Patra, 2014; Sachdev, 2000). These criteria are useful for calculating proportions and scale (Rayjada and Chauhan, 2017) and are a "quality-channelling measurement system" (Lipman et al., 2022). Precise mathematical measurements that "mirror the cosmos" are translated into building form by master builders and craftsmen (Bandyopadhyay, 2019). The participants noted that "also important are the tools and how the craftsmen will translate the measurements into built form." The dimensions are executed by traditional craftsmen who were trained as apprentices and learned techniques

and ethics from a master. This system continues to exist to some extent even today. Traditional craftsman's "professional activity puts into form and practice his knowledge of the Principle...[which] is imparted to him through the Tradition...[and] is not only an oral transmission of information..." (Kramrisch, 1958) but practical knowledge within a community of practice (Viswanathan & Ambasta, 2023).

Teaching traditional knowledge in universities

The participants used storytelling to teach and connect concepts such as the influence of the Earth's movement on orientation and stability of buildings for the purpose of human comfort and wellbeing. Stories helped establish connection and I as a learner could ask questions, seek clarification, make sense of new knowledge and link prior knowledge. Listening to stories is transformative as it "allows for the recognition of options for new roles, relationships, and actions" (McCann, et al., 2019). Sharing case studies is another teaching strategy used by the participants not only because "[N]ew temple construction even today...has been the same," but it "gives ideas...to some extent that can be adopted to the house also." As the online mode poses limitations for acquiring practical knowledge from experience, they employ case studies which enables deepening understanding of place and its contextual aspects, construction techniques and materials. Case studies provide grounding in the holistic knowledge system since temples manifest the philosophy and principles (Viswanathan & Ambasta, 2023; Dutta & Adane, 2014), houses elaborate on passive design principles and materials (Joseph, et al., 2020) and other structures emphasize designing for specific functions and highlight the connection between buildings and health (Bonshek, 2020).

Conclusion

The participants convey Vāstu knowledge with integrity and highlight the value of holistic education that integrates scientific principles, ethical values, sustainable practices and emphasizes knowing, doing and being. Traditional knowledge can equip students to address environmental challenges, use traditional technologies for innovation, manage resources efficiently and equitably, and become interdisciplinary thinkers and practitioners. Teaching traditional knowledge at universities makes traditional knowledge accessible to a wider audience and contributes towards shifting perspectives about its relevance in contemporary lives. However, accessibility can increase chances of selective and partial application of the knowledge. Therefore, to enrich learning experiences and ensuring that traditional knowledge is respected and accurately presented, it is crucial to employ teaching methods such as storytelling, sharing case studies and experiential learning and providing opportunities for students to engage directly with traditional practices, knowledge holders and communities.

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