

# Wood Education with a focus on Housing, Wood Products and the Wooden Environment

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## 住まい・木製品・木質環境に着目した木育に関する研究

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### ABSTRACT

Wood education is an initiative for us to interact with, learn from, and live with trees. The goal is to deepen familiarity with trees, understand tree culture, and foster a rich mindset that proactively considers the relationship between people, trees and forests. This study addresses the issues of housing education through the experience of housing and wood products. It also discusses the development of a wood environment and community planning.

In terms of the Sustainable Development Goals (SDGs), a wood education workshop was planned to connect forests and people. The forest experience and cooperation with children, carpenters, and related companies that make wooden benches are effective in the revitalisation of the forest environment and community planning. This valuable technique can help for people form their own opinions about the wooden environment.

**KEY WORDS** : Lumbering, Japanese Timber, Local timber used for houses, Local Timber for Housing, Forest Environment, Environmental Education

### INTRODUCTION

In Japan, changes in the living environment and the natural environment are due to the pursuit of convenience and economic efficiency. This has led to a lack of connection between people, nature, and things, causing various problems in both society and nature.

Japanese lifestyles have changed drastically. Wood products have been replaced by plastic and petroleum products due to the prioritisation of efficiency and convenience. This has reduced the opportunities to be connected with wooden

products in daily life. As a result, it is feared that the interest in lumber and forests will wane, and the techniques and culture of using wood will become obsolete.

In response to these changes, the term Mokuiku introduced in Hokkaido<sup>1</sup> has ever since spread to other parts of Japan. This concept seeks to cultivate a rich mindset that allows children to think independently about the relationship with humans, trees, and forests through the affinity for trees right from childhood.

Learning about the advantages of wood and its use is an important topic for housing and

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environmental education. This study clarifies the experience of using wood products and wooden houses, the issues involved in housing education, and examines the possibilities of addressing environmental issues and community development.

## METHODS

The Wood Education project, which was proposed by the Mokuiku Project, was launched in September 2004. It was a joint initiative by the provincial government and residents. It is an initiative for all people, including children, to interact with, learn from, and live with trees. The purpose of this project is to nurture a rich mind that can independently think about the relationship between people, trees, and forests through the affinity for trees right from childhood. We will identify such trends throughout Japan by raising awareness about forests and the environment.

**Promoting the use of wood:** The supply of wood in Japan has declined<sup>2</sup> since 1996, and social and economic changes have caused domestic demand for wood to wane and the supply of domestically produced wood to be reconsidered. It is important to strengthen the supply of wood products that are competitive in terms of quality, performance, price and quantity of domestic timber, and to provide valuable products that take advantage of the characteristics of timber to meet the diverse needs of consumers.

To achieve the SDGs for a sustainable world, the use of wood, with its low carbon footprint and renewable features, is a global and international target. Various companies and organisations have established networks to expand wood use in the private sector.

**Practicing the creation of a wood-scented town:** Tokyo has local timber from Tama and Saitama has Nishikawa timber. In this study, the Chiba Prefecture was selected as a case study. The promotion of housing education in which universities can collaborate with communities through children's forestry experience, and through cooperation between carpenters and construction companies that make wooden benches, is examined, focusing on Chiba's timber production areas.

*Mokuiku Hiroba* is a facility in Saitama where children play and learn with wooden products as a base for wood education. Referring to the concept MOKUYUKAN opened in Gifu, the issues of residential education clarified in addition to children's experience with wood, and discuss the development of wood-based environment and community planning.

## Wood Education Initiatives

Forestry Agency had declared in *Base Plan for Forest and Forestry* of September 2006<sup>3</sup>, that "Mokuiku," or "wood education," was an educational activity. Learn the advantages of wood as a material and the importance of its use, to deepen the knowledge of wood and the understanding of wood cultivation.

The Hokkaido Mokuiku project of September 2004 proposed the word *Mokuiku*. The project aims to increase sensitivity through contact with wood using the five senses, learning to take care of oneself through the experience of "*making with, using, and thinking with hands,*" and to develop consideration toward people and nature. Through the experience of playing with, learning and doing things with wood, we aim to create individuals who can experience pleasure,

demonstrate empathy, and develop an interest in the community, society, and industry that support our daily lives (Table 1).

The “Wando Mokuiku” programme has extended the range of ages and activities covered by wood education in Aomori Prefecture<sup>4</sup>. Even before the term “Mokuiku” emerge, “tree planting and tree-raising work,” “woodworking classes,” and “forestry environmental education” were conducted. These wood educations were offered to elementary school students and older. In addition, activities to “convey the importance of tree culture” and “Tree Festival to make the most of trees” have been held in various parts of the prefecture, and various wood education activities have been implemented (Table 2).

**Green Children’s Conference** in 2003, the Gifu Prefecture began promoting education in the forest environment and trees for a wide range of ages, from infants to adults. Visitors can learn about forest environmental education at the Gifu Academy of Forestry<sup>5</sup>, a new type of vocational school that aims for a system to revitalise the local economy while maintaining the function of the forest as a natural environment by effectively utilising its rich resources based on the concept of Aiming for Symbiosis between Forests and People.

Gifu Mokuikan<sup>6</sup> opened in 2020 as a child care facility where visitors can play a game with wood touching it by their whole body, and carpentry courses are offered. To further promote *Gifu Mokuiku* in cooperation with the citizens of Gifu Prefecture, the *Gifu Mokuiku 30 Year Vision*<sup>7</sup> has been formulated to share the vision and ethos of wood education.

Table 1. Wood Education Program

Hokkaido-kai-do	Hokkaido-kai-do citizens and the provincial government collaborate to study and propose the necessary steps to create a <i>Mokuiku</i> philosophy and promote wood education.
Aomori Pref.	Forestry policy division forest environment education FY 2005 The Central and Southern Prefecture Government implemented the <i>Wando Mokuiku</i> Promotion Project in 2014-2015, and conducted wood education mainly for preschool children.
Gifu Pref.	Learning from forests and trees includes learning through activities related to forests and trees, such as nature experiential activities, forestry, and wood architecture.
Ciba Pref.	The wood education, promotion policy. Wood working classes, declaration of wood startup, woodwork workshops using prefectural wood, and a wood education toy café.
Mokuiku Japan 21	Wood Education, developed by the Japan Good Toy Committee, a nonprofit organisation, develops various activities on the basis of its experience in operating a museum of toys and crafts made from plentiful home wood and conducting various courses in human resource development.
Wood Start	Corporation Art and Play Creation Association Activities in collaboration with municipalities, kindergartens, and enterprises.

Table 2. Forestry Environmental Education

<p><b>Forestry Environmental Education</b></p> <p>To promote efforts to realise a society in which forests and people coexist by deepening the understanding and interest in the relationship between forests and people's lives and the environment through hands-on activities in forests.</p>
<p><b>Instructor Guide</b></p> <p>In 2005, the Forestry Department of the Prefecture of Aomori prepared the "Guide of Environmental Education of the Aomori Forest" for trainers in forest environment education. This guide includes procedures and practical activity programmes to conduct practical activities in the forest, primarily for elementary students.</p>
<p>Aomori Prefecture, Wando Mokuiku</p>

The wood education, promotion policy in Chiba Prefecture<sup>8</sup> was established for the five-year period from fiscal 2020 to 2024, and wood education programme of Chiba Prefecture is divided into three types of activities: "touch," "learn," and "act." By providing activities that match the experience and understanding of the target population, the programme continues to encourage attachment to forests and woodlots. Declaration of wood startup in Sanbu City<sup>9</sup>, wood working classes, workshops using prefectural wood, and a wood education toy café were organised.

The Japan Good Toy Committee is an NPO that aims to select and promote *good toys* from amongst the toys overflowing in the market and to contribute to society through training toy specialists<sup>10</sup>. The wood education activities include the exhibition of wooden toys in the Tokyo Toy Museum, *Wood Education Caravan*, *Wood Start*, *Baby Wood Education Plaza*, *Baby Mokuiku Terakoya*, and *Children's Expo of the Gifts of the Forest*.

### Implementation of Wood Education:

**Aim of Mokuiku**, wood education utilises the five senses; sight, hearing, taste, smell, and touch, to have fun whilst experiencing wood, and furthermore, to understand nature and the environment through the characteristics of wood, its effects. Observing plants in their natural habitat cooperative development play through making wood products (Table 3).

**Education on the use of Chiba Prefecture timber:** The programme provides opportunities to learn, think about, and propose methods of using Prefectural timber in the community and society by offering classes in wood product design and research on "community creation" using timber at high school departments and universities in Chiba Prefecture.

Table 3. Types of Wood Education

<p><b>Play experience with wooden toys</b></p> <p>Utilise all five senses and have fun whilst experiencing wood. Introduction, free play.</p>
<p><b>Observation of familiar plants</b></p> <p>Touch "wood" before it becomes a toy.</p>
<p><b>Making with wood</b></p> <p>Experience "making products" with materials made from wood.</p>

*Comments on wooden toys*

- ✓ *The grain of the wood is gentle, and we can feel the differences in color, texture, touch, warmth, weight, smell, and sound.*
- ✓ *Safe, secure, natural, long-lasting, and tastes better the more we use it.*
- ✓ *Soft, calming, and good for the development of the five senses. The child had a quiet expression. Easy to communicate with children.*
- ✓ *It was like a forest bath. I could feel it on my skin and with my whole body.*
- ✓ *I hope for an opportunity to reflect about nature and the environment.*

Guide to wood education for children

*Comments on trees, forests and tree education*

- ✓ *The concept of this project is to “touch” and “enjoy”.*
- ✓ *The variety of toys can be made from a single tree.*
- ✓ *I was impressed by the fact that we can make various toys out of a single tree.*
- ✓ *I want to do wood education in order to incorporate this effect into my daily life.*
- ✓ *I would like to do wood education in order to incorporate this effect into my daily life.*
- ✓ *Comments on “trees and forests” and “tree education. If you are concerned, wash the items of the person who is ill separately from those of others in the home.*

Guide to wood education for children

### Wood Education for College Students

created a concept map of their forest and tree experiences<sup>11</sup>. The first theme of the presentation focused on their wood education. The preliminary collection of ideas using the KJ method led to the possibility of community development focusing on wooden benches. The workshop revealed the need for product development and information dissemination on wooden benches with lumber dealers.

The Bench for Community Development project became an advanced learning programme, which include lumber distribution in Chiba, working with lumber stores, applying for grants, improving designs, product development, and hometown gift applications. Making benches from local lumber enhances networking with construction companies, local government, and citizen. This is beneficial for community development (Table 4).

Table 4. Wood education workshop

<b>Preparation</b>
Theme setting
Preparing materials and tools
<b>Implementation</b>
Time schedule
Presentations 1,2, and 3
Workshops 1,2, and 3
Critique Workshop
<b>Results evaluation and review</b>
Workshop 1: Interacting with trees - past and future
Development: What will be promoted by architecture, furniture, and bonsai?
Workshop 2: Design a bench with a carpenter.
Development: Develop products with wood dealers, wood growth workshops with construction companies, and disseminate information on social media sites.
Workshop 3: Things and projects that connect forests and people - upstream, midstream and downstream.
Development: Wooden toys carnival at Kashiwa.

### Promotion of Wood Use:

The number of Japanese-style rooms in houses is declining. The data<sup>12</sup> from 1987 to 1996 indicates that, in 1987, the most common type of Japanese-style room was “two rooms” which was 35% and “three or more rooms” which was 40% of the total Japanese-style rooms. The percentage of “Japanese-style rooms with two rooms” was 44%.

The following year, in 1988, a survey was conducted in Okinawa, and data on the average number of Japanese-style rooms was also compiled. The “urban lumbering” has been accelerated by the Acts for Promotion of Wood Use in Public Buildings (enacted in 2010), which encourages wood use in public buildings and in various other areas, such as urban buildings. The use of wood in urban areas is accelerated by the Public Buildings Wood Promotion Act, passed in 2010.

**Convert buildings to wood:** To convert non-residential buildings to wood, it is also necessary

to publicise information on the advantages of wood construction and its associated cost as compared to other materials.

With regards to wood construction and housing, since 2009, the number of wooden housing units has accounted for merely 60% of all new housing<sup>13</sup>. According to the 2008 Housing and Land Survey, the Ministry of the Interior and Communications, timber construction accounts for nearly 57% of the 53.66 million units in the housing stock<sup>14</sup>. It is suggested that the issue of wood construction and wooden spaces should be entrusted to non-residential buildings.

**Promote the use of wood in public buildings** enacted in 2010, in accordance with the Act to promote the use of wood in public buildings, which was revised by building-related Acts and regulations, municipalities have formulated policies to promote the use of wood, and the number of municipalities actively using domestic wood is increasing year by year. To compete with imported timber, there is a demand for clarification of quality control and liability for defects in wooden building materials, and a demand for the supply of products with reliable quality and performance. For example, 47 municipalities in Chiba Prefecture have developed policies to encourage the use of wood in public buildings<sup>15</sup>. The 2021 policy review will position the city as a decarbonised society and extend the use of wood to include buildings.

**Growth in the solid wood market:** The environment surrounding forest owners who engage in afforestation, silviculture, and logging is becoming increasingly severe, and forest owners are becoming increasingly interested in how the wood they have grown is processed and used. Forest owners are now required to cooperate with lumbering, processing, and

distribution, and to recognise that “active involvement in home building that conveys the good qualities of wood will lead to the expansion of the solid wood market”.

**Purpose of the Forest Environment Tax:**

The public interest functions of forests not only prevent global warming, but also provide various benefits to the people of Japan, such as land conservation and the recharging of water resources. Meanwhile the growing number of forests whose owners and boundaries are unknown and the lack of personnel to perform this task are major problems.

Based on the Forest Management Act enacted in May 2018, the Forest Environment Tax<sup>16</sup> was established to secure stable local financial resources necessary for forest development and so on to achieve Japan’s greenhouse gas emission reduction targets under the framework of the Paris Agreement and to prevent disasters.

**System for supporting forests:** As part of efforts to promote and raise awareness using the Forest Environment Concession Tax, residents will be provided with opportunities to get close to forests and timber through wood education events, such as outdoor activities in forests and playing with wooden toys. This system, started on April 1, 2019, was established as a mechanism to support forests by sharing the burden equally amongst all citizens to secure stable financial resources for forest improvement (Table 5).

Table 5. Establishment of a Forest Environment Tax

Proclaimed in March 2019 Forest Environmental Tax and Forest Environmental Concession Tax Act.
Taxation scheme The forest environment concession tax, levied as of fiscal year 2024.

## DISCUSSION

Practical programme development and human resource development are being promoted as part of the Wood Education Project. It is focused on converting the city into a woody environment, and examining a new trend of living environment where wooden houses are declining and traditional architectural techniques are a world heritage.

**Utilising Japanese Timber for Designer Furniture** by Karimoku Furniture Corp., announced 13 types of wooden chairs from all over Japan in 2021. The company offers a collection of solid furniture that uses unused domestic timber and little used as a means of solving the problem of creating a symbiotic society focused on recycling. Architects and designers create concepts and install furniture in public installations and hotels to instill a way of life in which local wood is readily available.

**Promotion of distribution of lumber produced in Chiba:** *The Chiba Prefecture Lumber Association* was established in 1949. It strives to promote the use of lumber and to improve and develop the lumber industry in the prefecture. To contribute to the preservation of forest resources and the promotion of the local economy, the association is responsible for various projects, including the certification of stores recommended for building houses made of wood in Chiba. The Wood and Housing Information

Center has a model Japanese-style room with a Japanese alcove in the style of an authentic tea ceremony room. A renewal of the exhibition was carried out offering *a space corner utilising diatomaceous earth*. This is a space where visitors can *see, touch, and feel various flooring materials*, and *can also experience the atmosphere by combining different materials using the ceiling and walls as models*. This is a place where visitors can inspect the materials for their own homes by shopping for solid wood produced in Chiba or Japan. The experience of seeing and touching the wood provides a valuable opportunity for visitors to accumulate experience and form their own opinions about the quality of wood.

## CONCLUSIONS

### Bipolarisation in Wooden Spaces

The movement utilises regional lumber in the Japanese housing market was recognised through the examples of construction companies. Regarding the use of wood for interior spaces, as symbolised by the Japanese-style room which is in decline, wood was not used in the traditional style, but as a simple space where people did not mind the presence of knots, and which sometimes became the destination for wood veneer.

Considering the *utilising of wood*, we suggest the reality of spaces utilising wood illuminated by new values, which are in a different category from spaces that use fine wood for posts, beams, and floorboards.

### Creating Woodiness in the Living Environment

As a result of the mainstreaming of large-wall construction methods in wooden houses, Japanese-style rooms have been simplified and spaces for examining and appreciating wood have

been diluted. In examining the movement toward Japanese-style rooms and tatami mat spaces from the perspective of living life by carrying on traditional culture, the rarity of traditional structures in houses built using the *sinkable method*, in which the pillars of the house are exposed, is emphasised. The floor pillars, drop-hangings, floor stile and rail, and floorboards are architectural teaching aids and devices that convey the Japanese culture of heavy use of wood in housing. We also value the desire to go to a lumberyard and see beautiful wood to create furniture and houses.

### Revitalisation of the forest environment for SDGs

It can be inferred from the research conducted by university students, that the attempt to protect the local natural environment and build benches made of local wood is feasible. Although, it will take time to accept new attempts at regional cooperation, future developments in sustainable urban development and the utilisation and revitalisation of the forest environment will be conducted with interest.

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