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A Training of Light Steel Construction Installation for the Community of Kramat Jati Subdistrict, East Jakarta City

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A B S T R A C T

The limited supply of wood, especially teak wood, and its high price have encouraged the search for alternative light steel construction materials, especially for roof frames. Light steel as a light and flexible steel alloy, resistant to termites, its application requires competent human resources to ensure productivity and quality. Realizing this, the Community Service Team of the Indonesian Christian University held a training activity on the installation of light steel construction for the people of Kramat Jati Village. Through the method of socialization and direct training, participants are expected to gain a better understanding of the characteristics of light steel materials, technical installation standards, and practical skills in assembling light steel roof frames independently. This program aims to improve public understanding of the properties and profiles of light steel and practical skills in assembling simple light steel construction frames.

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INTRODUCTION

Kramat Jati District, which is one of the districts in East Jakarta City, has an area of 13 km2, approximately 6.91% of the total area of East Jakarta City. See Figure 1(a) Map of East Jakarta City Area. Kramat Jati consists of 7 urban villages (including Kramat Jati Urban Village), 65 Citizens' Associations, 644 Neighborhood Associations, and 104,058 families. The population of Kramat Jati District is 318,446 people, consisting of 160,034 men and 158,412 women [1]. Kramatjati Urban Village is located on Jl. Community Service No. 32 RT 002 RW 010 Kramatjati Village, Kramatjati District, East Jakarta Administrative City 13510. Kramat Jati Village has 10 Citizens' Associations, 108 Neighborhood Associations, with an area of 151.58 ha, the number of Family Cards is 14,269 KK, the population is 42,817 people (Data April 2024). The administrative boundaries of Kramat Jati Village are as follows (Central Statistics Agency of East Jakarta City, 2023):

Figure 1. Maps of Kramat Jati Subdistrict Area

Nowadays, wood materials are very difficult to obtain, especially teak wood because the amount is limited and the price is expensive (Kompas, 2009). One of the prominent challenges is the limited availability of wood materials, especially teak wood, which is increasingly difficult to obtain and expensive (Meraj, 2024). The difficulties of finding wood materials and the high price of wood makes people look for other alternatives as construction materials and light steel materials are quite popular materials for construction because they are easy to apply in various types of construction, especially roof frame solutions. Light steel roof frames have been widely used to replace wooden roof frames, in addition to being easy to apply, they also prevent damage to wood materials due to termites. Light steel is a type of steel alloy that contains several metal elements, this material after cooling is formed by reprocessing the composition of its atoms and molecules until it becomes light and flexible steel (Nugroho, 2015). Human resources are one of the important factors in determining the productivity of light steel roof frame work (Riski & Yulianto, 2023). Therefore, human resources are needed who have competence in their fields in installing light steel roof frames to increase the productivity and quality of the work. From the background above, the Main Problems of the Kramat Jati Urban Village Residential Area can be

described as follows: a) The problem of the need for alternative materials other than wood which is limited and expensive. The need for light steel construction as an alternative material that is easy to apply and termite-proof; b) The problem of the need for human resources that have; and c) The problem of the lack of community skills in the practice of assembling light steel construction model frames.

Based on the above problems, to overcome and find solutions to the problems, the Community Service Team together with partners from Kramat Jati Village intend to empower the Community in Kramat Jati Village by determining a community service topic entitled Improving Knowledge and Skills of Light Steel Construction of the Kramat Jati Village Community, Kramat Jati District, East Jakarta City. The Community Service Activities of the Indonesian Christian University located in Kramat Jati Village, East Jakarta City, began by exploring the active participation of the Kramat Jati Village Community, starting from identifying potential and problems, assisting in preparing a program for handling problems.

Community Service Activities of the Community Service Team of the Indonesian Christian University in the context of Improving Knowledge and Skills of Light Steel Construction of the Kramat Jati Village Community, Kramat Jati District, East Jakarta City, have the following objectives: 1) Improving knowledge through socialization and counseling to the Community regarding knowledge of light steel materials including material properties, forms of light steel profiles according to applicable standards SNI 8399 (SNI 8399, 2017); 2) Improving community skills in the practice of assembling light steel construction model frames.

The expected benefits of this service are that the partner community has the knowledge and skills to make simple light steel construction. The knowledge and skills include the Transfer of Science and Technology to partners consisting of practical knowledge, how to use tools, techniques for cutting light steel, techniques for making light steel joints, and methods for constructing roof truss frames (Adiwijaya et al, 2020). In addition, service through light steel construction training is considered very useful considering that light steel materials are currently in great demand for construction and are easy to apply. The results obtained from PKM activities can benefit the partner community to be able to make various types of constructions made of light steel such as trusses, pedestrian bridges, and other simple small buildings such as guard posts or garbage buildings.

Student participation in community service activities is in accordance with the Village Development and Empowerment model regulated in the Decree of the Chancellor of the Indonesian Christian University Number 180/UKI.R/SK/PP.1.7.2/2020 concerning the Independent Learning Independent Campus (MBKM) Implementation Guidelines (Ministry of Education, Culture, Research, and Technology, 2024). The Main Performance Indicators (IKU) refer to the 2024 research and community service guidebook (Natalia, et al. 2020), in accordance with: 1) IKU 2 Students Gain Experience Outside Campus, that students who participate in community service activities

have at least 6 credits of off-campus learning experience; 2) IKU 4 Lecturer Qualifications, that the chief lecturer implementing the service has a Doctoral qualification in Architecture and Urban Sciences and has a Functional Position of Senior Lecturer, has a professional certification (Architect Registration Certificate / STRA) from the Indonesian Architects Council (DAI) and has professional experience in the Indonesian Architects Association (IAI) as an administrator for 12 years; 3) IKU 7 Collaborative and Participatory Classes, that the courses recognized with community service activities are the Architectural Design and Technology Studio Course 5 (6 credits) which is a course using a project learning method (team-based project). This Community Service Plan is in accordance with the roadmap for the 2025-2030 superior community service theme from the Community Service Roadmap of the Indonesian Christian University, namely Energy, Natural Resources, Climate and Environment. See Figure 2. Roadmap for Community Service 2025-2030. The basic concept of the Indonesian Christian University is that community service must be unique and the result of superior research (Institute for Research and Community Service, Indonesian Christian University, 2025).

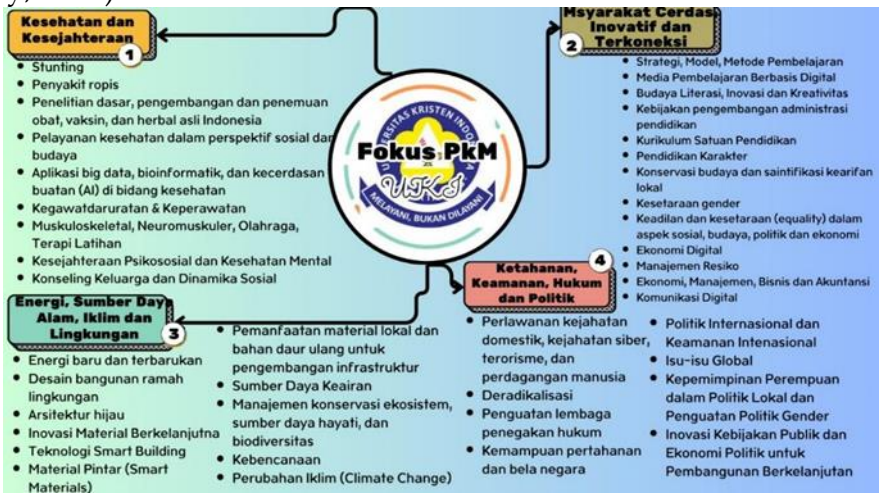

Figure 2. UKI Community Service (PKM) Roadmap

IMPLEMENTATION AND METHODS

The method of implementing activities carried out in the activity of Improving Knowledge and Skills of Light Steel Construction for the Community of Kramat Jati Village, Kramat Jati District, East Jakarta City, uses several stages, namely: 1) The First Stage is Preparation/Orientation, carried out by forming a Community Service Team, including determining the members of the Team of Lecturers and students who will participate, managing permits and legalization of activities and preparing activity materials; 2) The second stage is field observation, which was carried out in the residential area of Kramat Jati Village, Kramat Jati District, East Jakarta City, in order to see directly the condition of the residential infrastructure and facilities, especially the existing simple small buildings; 3) The Third Stage is Implementation of Activities, which is carried out in 2 activity processes, namely: Socialization and counseling to the Community, and Training, in order to improve Community skills in the practice of assembling light steel construction model frames; and 4) The Fourth Stage is Mentoring,

Evaluation, and Sustainability, which is a stage carried out as an effort to obtain input on whether the program activities that have been carried out continue to run well and sustainably and are followed up by the community.

RESULTS AND DISCUSSION

The implementation of the activity was carried out in the activity of Increasing Knowledge and Skills of Light Steel Construction for the Community of Kramat Jati Village, Kramat Jati District, East Jakarta City using several stages, namely:

The first stage is preparation/orientation, carried out by forming a Community Service Team, including determining the members of the Lecturer Team and students who will participate, permits and legalization of activities and preparing activity materials. Preparation/Orientation is an initial coordination activity with the partner community that must be carried out, as a basis for identifying the needs of the partner community that will be followed up in the form of community service activities. This preparation is also carried out with the intention of finding out how much potential there is in the target partner area, what problems are faced, as input to provide a solution to problems in community life. At this stage, the activities carried out are: conducting an inventory of problems and their locations, absorbing community aspirations to determine the level of community needs and mapping all potentials and problems as planning materials.

The second stage is in the form of field observation, conducted in the Settlement environment of the Kramat Jati Village, Kramat Jati District, East Jakarta City, in order to see directly the condition of settlement infrastructure and facilities, especially the existing simple small buildings. The method used in this observation is Primary Data Collection, namely by conducting: Location Survey, Written Data Collection and Documentation Recording, Interviews with local residents and Field Reviews. The second stage of this observation, in addition to identifying the potential and problems of Infrastructure and Facilities in the Village, also conducts analysis in order to develop existing potential and overcome emerging problems, to make improvements. The method used to achieve this method is by holding a community coordination meeting (community discussion forum), this coordination is carried out by involving the village community and community leaders and resource persons related to the Program being implemented.

Figure 3. Coordination between UKI and the Head of Social Affairs Section of Kramat Jati Sub-district

Figure 4. Coordination between UKI and PT Kencana, Head of Economic and Development Section, Community Leaders

The third stage is the implementation of activities, which is carried out in two activity processes, namely;

1. Socialization and outreach to the community
   In order to increase public knowledge regarding light steel materials including material properties, light steel profile shapes according to applicable standards SNI 8399-2017, and also presented models of light steel frame construction, connection tools, light steel work equipment, cutting techniques and connection techniques as well as methods for constructing light steel frames based on applicable standards and design guidelines.

Figure 5. Explanation of the Purpose of Community Service by the UKI Team Leader

Figure 6. Group Photo Between Kramatjati Village Apparatus, Community Service Team, Kencana Baja Ringan And HAPI

Figure 7. Atmosphere and Socialization Materials

Figure 8. Photo After the Socialization

2. Light Steel Installation Training
   In order to improve the skills of the Community in the practice of assembling light steel construction model frames. In this practical activity, participants are directly involved in the process of assembling model truss frames given in the form of working drawings. This method is done because by being directly involved when the activity is carried out, the community can ask a lot of questions and can practice directly about how to measure correctly, techniques for cutting light steel with cutting machines and scissors and the use of drills to turn the connecting screws. The final stage of this practice, the construction of the model frame resulting from the practice of each training participant is evaluated, assessed and discussed to provide comments related to the results of the frame construction practice that has been made according to the dimensions in the working drawings.

Figure 9. Light Steel Construction Installation Practices

Figure 10. Group photo between the Community Service Team, PT Kencana Baja Ringan and HAPI

Table 1. Realization of Activity Programs

NO	DAY/DATE	ACTIVITY	PLACE
01	Day H-3	Licensing & coordination of cooperation	Record
02	H day Wednesday, May 28, 2025	Participant Registration	Kramatjati Subdistrict (Indoor)
	09.00	Opening Mc	Kramatjati Subdistrict (Indoor)
		Singing the Indonesian National Anthem	
		Opening Prayer	
		Greetings from the Christian University of Indonesia byDr. M. Maria Sudarwani, S.T., M.T.	Kramatjati Subdistrict (Indoor)
		Greetings from the Head of the Economic and Development Section of Kramat Jati Village, byMr. Amirudin	Kramatjati Subdistrict (Indoor)
		Greetings from PT. Kencana Maju Bersama byMr. Riyanto Setiabudi	Kramatjati Subdistrict (Indoor)
		Group Photo Session	
		Knowledge Products PT. Kencana Maju Bersama byMr. Resky Septiawan	Kramatjati Subdistrict (Indoor)

		Light Steel Installation Training Theory Material by OlehSTEP	Kramatjati Subdistrict (Indoor)
	11.30	Discussion and Q&A on Light Steel Installation Training Theory Material.	Kramatjati Subdistrict (Indoor)
	12.00	IS READING	
	13.00-17.00	Implementation of Light Steel Construction Training. PIC by Ir. Setiyadi, M.T	Kramatjati Subdistrict (Outdoor)
	17.00	Closing	Kramatjati Subdistrict (Outdoor)

The fourth stage is Mentoring, Evaluation and Sustainability, which is a stage carried out as an effort to obtain input on whether the program activities that have been carried out continue to run well and sustainably and are followed up by the community.

CONCLUSIONS AND RECOMMENDATIONS

Community Service Activities (PkM) themed *"Light Steel Installation Skills Improvement Training"* implemented by the Indonesian Christian University (UKI) in collaboration with PT Kencana Maju Bersama and the Indonesian Applicator Association (HAPI) in Kramat Jati Village, East Jakarta, succeeded in achieving the main objective of the program, namely increasing community knowledge and skills in light steel construction.

Through a socialization and direct training approach, participants gain a better understanding of the characteristics of light steel materials, technical installation standards, and practical skills in assembling light steel roof frames independently. This activity not only provides short-term benefits in the form of increasing individual capacity, but also opens up long-term opportunities through the formation of community collaboration, strengthening industry partner networks, and initiating community empowerment models based on technical skills.

This activity also shows the importance of synergy between universities, professional associations, industry, and local governments in supporting the improvement of human resource quality. It is hoped that similar activities can continue to be carried out sustainably and expanded to other areas that have similar technical training needs, in order to accelerate development based on local independence and skills.

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