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# Welding Training for Assisted Communities at Tanjungpati Children's Special Correctional Institution

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**ABSTRACT**

*The juvenile correctional system (LPKA) in Indonesia carries out a fundamental mandate to rehabilitate correctional students (Andikpas) and prevent the recurrence of criminal acts (recidivism). A crucial instrument in correctional rehabilitation is competency-based vocational training. This study aims to analyze the theoretical relevance of the Shielded Metal Arc Welding (SMAW) welding training program based on the Indonesian National Work Competency Standard (SKKNI) at LPKA, identify existing structural implementation challenges, and formulate optimization strategies through a collaborative model. The results of the analysis show that welding training is a very effective strategic program. The industrial sector in Indonesia needs at least 45,000 welding experts, proving the high demand for the job market. These skills serve as a powerful catalyst to achieve desistance by providing the human capital needed to get a stable job, thus overcoming the job instability associated with the risk of repeat crime. Despite having great potential, the implementation of coaching programs at LPKA is hampered by limited funds, inadequate facilities, and a lack of expert instructor Human Resources (HR). To overcome this obstacle, it is recommended to adopt a Mutualistic Partnership model with external parties, which aims to ensure the standardization of the 320 Hours of Training (JP) curriculum in accordance with SKKNI, competency certification, and integration of vocational work readiness measurements. This partnership creates mutual benefits and strengthens LPKA's capacity on an ongoing basis.*

***Keywords***: *Fostered Children, Desistance, Vocational Training, SMAW Welding, Mutualistic Partnership*

## 1. INTRODUCTION

The juvenile criminal justice system in Indonesia, represented by the Special Children's Development Institute (LPKA), no longer focuses on retribution or retribution, but on the rehabilitation and reorientation of the lives of correctional students **(Diputri et al, 2025)**. The essence of penitentiary is to return guilty individuals to society in better and more productive circumstances than before. The main purpose of this coaching is to prevent children from

repeating criminal acts (recidivism) after returning to society, a process known academically as desistance.

Correctional rehabilitation at LPKA is supported by a strong legal framework. The 1945 Constitution of the Republic of Indonesia mandates the fulfillment of children's rights. Specifically, LPKA is explicitly required to provide formal education, non-formal education, skills training, coaching, and the fulfillment of other rights in accordance with the provisions of laws and regulations **(Devi et al, 2024)**. The implementation of this program does not stand alone, but is supervised and determined based on the results of community research (Litmas) conducted by the Correctional Center.

The selection of the type of vocational training for Correctional Students must be based on two main criteria: potential contribution to the desistance process and high relevance to the needs of the job market. Welding engineering training, particularly Shielded Metal Arc Welding (SMAW), meets both criteria.

Indonesia faces a significant shortage of welding experts **(Candra, 2020)**. According to reports, the country needs around 45,000 welding experts with various specifications to meet development needs in key sectors such as infrastructure, oil and gas, and automotive. This high demand is not only in large industrial centers such as Makassar (where PT Industri Kapal Indonesia needs this competence), but also throughout the country **(Anwar et al., 2024)**. This data shows that welding is a high-value skill that promises job stability.

In addition, the welding engineering curriculum taught in vocational education institutions has proven to be highly relevant to the needs of the industry. For example, in one of the vocational schools in Yogyakarta, 88.89% of basic welding competencies are categorized as relevant to industrial needs **(Fachruddin et al., 2025)**. Therefore, if this training is adopted and standardized in LPKA, it has the potential to become one of the high-impact interventions in rehabilitation.

## 2. METHOD

The implementation of this community service activity is designed systematically to ensure that the transfer of SMAW welding knowledge and skills to LPKA assisted residents runs effectively. The implementation method is divided into four main stages as follows:

### 2.1 Preparation and Coordination Stage

The initial stage includes formal coordination with the LPKA leadership to harmonize the schedule of activities and licensing. A field survey was conducted to map the specific needs of the fostered children and an in-depth discussion about the profile of the trainees. Technical preparations include the procurement of standard Personal Protective Equipment (PPE), as well as the preparation of SMAW welding machines and consumables such as electrodes.

### 2.2 Counseling and Providing Materials in the Classroom

Participants were given a theoretical understanding that included basic knowledge of SMAW welding, equipment functions, and metal joining techniques. The main focus of this session was socialization on Occupational Safety and Health (K3) to provide an understanding of work risks and the importance of using safety devices when operating an electric welding machine. The method of delivering material uses interactive presentations and discussions to increase the interest of the participants. The delivery of material in the classroom can be seen in Figure 1.

**Figure 1. Material Delivery Activities in the Classroom**

## 2.3 Stage of Implementation or Welding Practice

At this stage, participants conduct hands-on practice under the guidance of a professional instructor. Practice starts from the introduction of the flame arc, welding training for the underhand position (underhand/flat or 1G position), to the technique of making blunt joints. To motivate the entrepreneurial aspect, the practice is directed at making simple products that have both use and selling value, such as metal shoe racks. The ratio of practice is predominantly regulated compared to theory to ensure maximum mastery of technical skills. Welding practice activities can be seen in Figure 2.

**Figure 2. Welding Implementation and Practice Activities**

## 2.4 Evaluation Stage

The initial evaluation begins by measuring the mental readiness and basic knowledge of the participants regarding the world of welding through a pre-test session. Participants will be given a short oral test covering the introduction to welding machine components, the functions of various types of electrodes, and the identification of personal protective equipment. The most crucial thing in this stage is to ensure that every school child understands work safety procedures in order to avoid the risk of accidents. In addition, instructors also need to assess participants' interests to find out their main motivation for joining this training. With this initial

data, the practicum curriculum can be adjusted to be more interesting and effective for teenagers. The activity flow diagram can be seen in Figure 3.

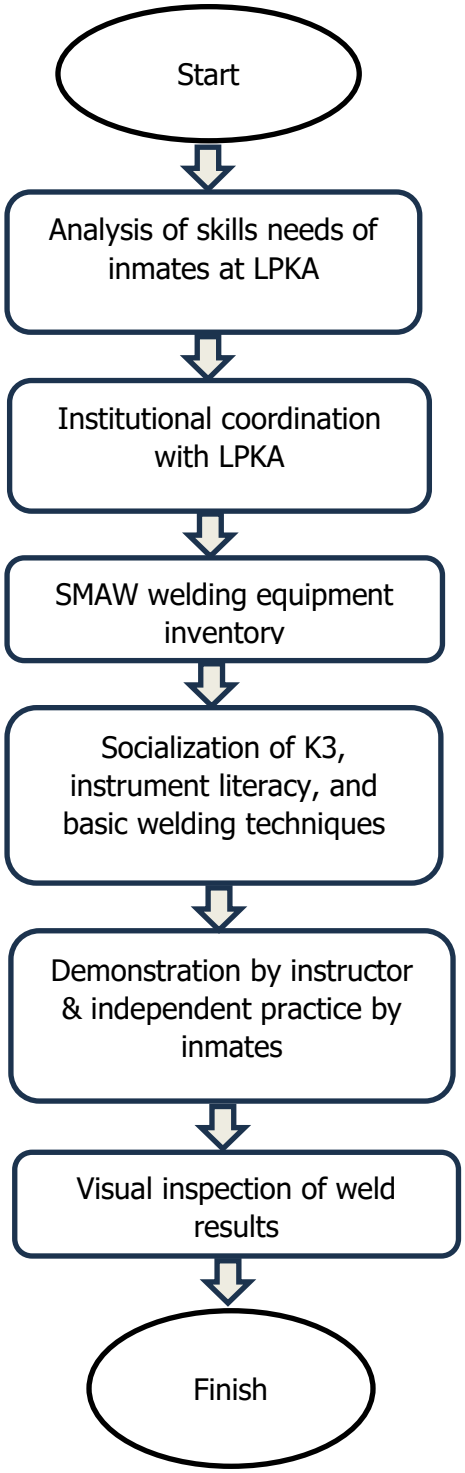


**Figure 3. Activity Flowchart**

During the training process, formative evaluations are conducted periodically to directly monitor the development of technical skills. Instructors will observe the participants' discipline in consistently using safety equipment such as welding helmets, leather gloves, and aprons.

The assessment also covers basic techniques such as how to ignite the arc, hand stability when holding the welding rod, and accuracy in regulating the electric current on the machine. Given that school children's concentration often fluctuates, close supervision is carried out to ensure they remain focused until the welding line is complete. Any technical obstacles that arise in the field will be corrected immediately so that participants do not repeat the same mistakes on the next workpiece.

After the training is complete, a final evaluation is conducted by assessing the physical quality of the workpieces produced by the participants. The assessment parameters include the neatness of the weld line, the consistency of the groove width, and the penetration strength of the weld metal into the parent material. Participants are also required to be able to clean weld slag and residual spatter neatly using the tools provided. In addition to technical results, aspects of attitude change, such as responsibility for workplace cleanliness and teamwork, are very important assessment points. This entire evaluation process aims to equip the community with real competencies so that they feel more confident about the future. The collection of welding equipment after practice can be seen in Figure 4.

**Figure 4. Tool Collection after Welding Practice**

## 3. RESULTS AND DISCUSSION

The coordination results show that LPKA has limitations in the human resources of certified instructors and facility budgets. Through this partnership, the service team of the Agricultural Mechanized Technology Study Program (Prodi) fills the competency gap, while LPKA provides direct access to coaching subjects. This partnership reflects the principle of flexibility tailored to the individual needs of the fostered child.

The provision of material in the classroom uses the 2MT (Interest, Material, and Skilled) method which focuses on growing interest before giving heavy theory **(Wormith & Bonta, 2020)**. K3 material is a crucial part of this session. Awareness of the risks of work in electrical welding is not only aimed at physical safety, but also instills the value of responsibility and adherence to procedures. Mastery of basic theories such as understanding currents, electrode types, and the functions of welding equipment is the main capital before participants enter the workshop **(Nur, 2024)**.
In the practical stage, participants were focused on mastering the underhand welding position (*Underhand/flat*or position 1G) according to **(Senjaya, 2018)** standards. With a practice ratio of 80% and theory of 20%, the fostered children are able to penetrate the arc of flame and

make stable welding grooves **(Ministry of Manpower of the Republic of Indonesia, 2021)**. The application of making creative products such as shoe racks is believed to increase the entrepreneurial motivation of participants **(Mahmuda, 2017)**. Some participants expressed a strong interest in working in a post-free welding workshop after seeing the real results of their work. The skill of making products with selling value is a manifestation of increased Human Capital which is urgently needed in the national manufacturing and construction industry.

**Table 1. Achievement of Practical Competency Based on SKKNI Unit (SKKNI, 2020)**

| Practical Activities | Related Competency Units | Participant Achievement Results | Character Values (Soft Skills) |
|---|---|---|---|
| Workshop Preparation | C.24LAS01.031.1 | Participants were able to prepare the tools independently. | Discipline and K3 |
| 1G Welding | C.25LAS01.032.1 | Seamless connection of the blunt plate cracked (0 mm). | Perseverance and Focus |
| Product Fabrication | Shelf/Furniture Manufacturing | The realization of ready-to-sell products has economic value. | Creativity & Entrepreneurship |

A comprehensive evaluation shows that this training successfully createsTurning Point for foster children. Technically, visual inspection of the weld results showed that most participants were able to meet the "pass" criteria especially in terms of slag cleaning and dimensional control. Welding training by joining two metals can be seen in Figure 5.

**Figure 5. Welding Training by Joining Two Metals**

The main obstacle found during the evaluation was the limited duration of the training. To achieve the qualification of a professional 1-3 class welder of the Ministry of Manpower, more intensive training (up to 320 JP) is needed. Therefore, this brief training in community service should be seen as the first step in triggering basic interests and skills that need to be followed

up with an internship program or advanced training. The welding products made by the community can be seen in Figure 6.

**Figure 6. Results of Welding of LPKA Tanjungpati Fostered Children**

## 4. CONCLUSIONS

The implementation of structured community service methods ranging from strategic coordination to evidence-based evaluation has proven to be effective in improving the vocational competence of fostered children at LPKA. The results of the activity showed that SMAW welding training is not only a transfer of technical skills, but a rehabilitation instrument that increases the self-esteem and economic readiness of participants. The mutualistic partnership model is key in overcoming the barriers of facilities and human resources at LPKA, ensuring that the quality of training remains in line with industry standards and SKKNI.

The main recommendations for the sustainability of the program are the integration of this training with the official BNSP certification program and the provision of access to capital or tools for post-liberation graduates to support permanent economic independence.

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