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TRAINING AND SUSTAINABILITY IN PRISON EDUCATION: THE MANUFACTURE OF HANDMADE SOAPS AS A SOURCE OF INCOME

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ABSTRACT

The work was developed in a collaboration between the Federal University of Santa Maria (UFSM) and the State Penitentiary of Santa Maria (PESM). PESM inmates often face a shortage of personal hygiene materials, and a low-cost soap formula was then developed, using recycled frying oil that could be manufactured in the PESM itself, using the facilities of the ecological soap factory already existing and operating in the penitentiary, meeting the demand for this hygiene item. Quality control of the manufactured products was carried out through physical-chemical tests and analyses on the premises of the Department of Chemistry of UFSM. Another important objective that was achieved was through training for inmates. They were instructed on how to manufacture soaps in the most appropriate way, following the legislation and safety standards. Prison education actions are very important for inmates when they are released, as they favor their professional training and subsequent reintegration into society, in addition to promoting remission of sentence. The result of the work was very positive. In addition to having obtained a soap formula that can be used safely, after the training, an evaluative questionnaire of the action developed was applied and the approval of the inmates was observed, concluding that the activity was productive and qualified them.

Keywords: Social inclusion. Low-cost soaps. Recycled frying oil. Persons deprived of liberty.

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INTRODUCTION

The State Penitentiary of Santa Maria, Rio Grande do Sul (PESM) currently has about 900 inmates. To have access to personal hygiene products, inmates depend on their families or the release of this material through the courts, which is done annually. However, many of their family members are very needy and cannot afford to deliver the material and if the court decision is not favorable for the purchase of hygiene products, most inmates are left without this fundamental item. At the same time that there is a shortage of hygiene products in prisons, there is an increase in the consumption of oils for frying food, with an increase in water pollution by these contaminants. Due to its difficult disposal and because it is so impactful on the environment, one way to reduce this damage is to reuse the oil for the manufacture of cleaning items, such as soaps and soaps (SANAGUANO, 2018). The main objective of this work was to develop a low-cost soap formula that could be manufactured in PESM, meeting the demand for this hygiene item, as well as the quality control of the products manufactured through physical-chemical tests and analyses. Through training, the inmates were instructed on how to manufacture their products in the most appropriate way, following the legislation and safety standards, favoring their professional training and subsequent reintegration into society. From an environmental perspective, the objective of the work was to intensify the collection within UFSM and the community of Santa Maria, making it aware of the need for proper disposal and increasing the collection of oil used in frying.

THEORETICAL FRAMEWORK

Prisons can have a very large dehumanizing power, which contributes to the increase in the recidivism rate, reaching around 90% of former inmates (TOMÉ, 2011). Structural problems and lack of financial resources hinder the work of rehabilitation of inmates (BARATTA, 2002)

In relation to the principle of the dignity of the human person, provided for in Article 1, III, of the Constitution of the Federative Republic of Brazil of 1988, it is emphasized that everyone must be treated equally and in a dignified manner, and the Penal Execution Law No. 7,210/1984 guarantees the prisoner and the internee the due assistance and other legal guarantees. However, many convicts end up forgotten in prisons, due to family abandonment, thus not having a foundation. And as they already live in an environment that can be hostile, even without the help of their families, they often end up becoming

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worse people than they were even before they were imprisoned (MACHADO and GUIMARÃES, 2014).

It is assumed, therefore, that the promotion of opportunities for assisted reintegration, that is, with professionalization practices, requires efforts from institutional and community organizations, in order to ensure the professional qualification and stable occupation of former prisoners, so that they acquire autonomy and quality of life after leaving prison (TOMÉ, 2011). In this sense, professional training courses reduce the idleness of citizens deprived of liberty and help in the remission of the sentence.

The development of a soap formula that has a low cost and is within the desired parameters for this personal cleaning product goes against what is determined by the Federal Constitution of 1988 and the Law of Penal Executions, with regard to the dignity of prisoners, since it is a product of basic necessity and that should be provided whenever necessary for those who are serving their sentences.

Due to the large amount of oil used in frying, both in restaurants and homes, incorrect disposal causes environmental concerns, because when disposed of incorrectly, being thrown directly down the sink or stored in containers that will be destined for landfills, it will cause serious damage to the environment (RABELO AND FERREIRA, 2008)

The recycling process makes it possible to reduce the consumption of raw materials, energy use, and air and water pollution, while also reducing the need for conventional waste treatment and the emission of greenhouse gases (PRATA, 2018).

The recycling of vegetable oils and fats used in frying allows them to be used as raw material in the manufacture of soaps and soaps after the washing process. (CASTILHOS, 2021)

The manufacture of soaps is done through a saponification reaction between the mixture of oils and sodium or potassium hydroxide and they can be obtained by two different methods: cold saponification, also known as "*Cold Process*", whose disadvantage is only the waiting time for the reaction to have occurred until its end, which is about 60 days, and the hot method, also known as "*Hot Process*", where the reaction takes place in a much shorter time, about two to three days (AARON, 2019). Once produced, soaps must be evaluated for their physicochemical characteristics, as compliance with specifications must be seen as a necessary requirement to guarantee the quality, safety and efficacy of the product and not only as a regulatory requirement (ANVISA, 2008).

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METHODOLOGY

The soaps were produced by the cold method. In this work, the results obtained for three different formulations of soap are presented. Two produced only using soybean oil, one from recycled oil and the other from commercial soybean oil. The third soap was obtained by mixing castor oil, coconut oil, canola oil and palm oil. The formulations were calculated using the Mendruland soap calculator, available on the https://calc.mendrulandia.es/?lg=pt website. Measurements of pH, foam stability, wear and determination of free acids were made. The results obtained are shown in Table 1.

Table 1. Results of physicochemical parameters obtained for the soaps tested.

	Amostra 1	Amostra 2	Amostra 3
Desgaste[1]	38%	28%	35%
pH[2]	10,26	10,38	10,35
Ácidos livres[3]	0,93%	0,11%	0,36%
Espuma	persistente	persistente	persistente

Sample 1- Mixture of canola, palm, coconut and castor oils; Sample 2 – Untreated recycled oil and salt; Sample 3 – Soybean oil and salt.

1. **Sample left to rest for 19 hours in water**
2. **The maximum pH recommended by Anvisa for soaps is 10.4**
3. **The maximum value allowed is 2% free acidity in oleic acid**

Two classes were trained, each with five students, due to safety issues, and the results of the questionnaires answered after each training are shown in figure 1.

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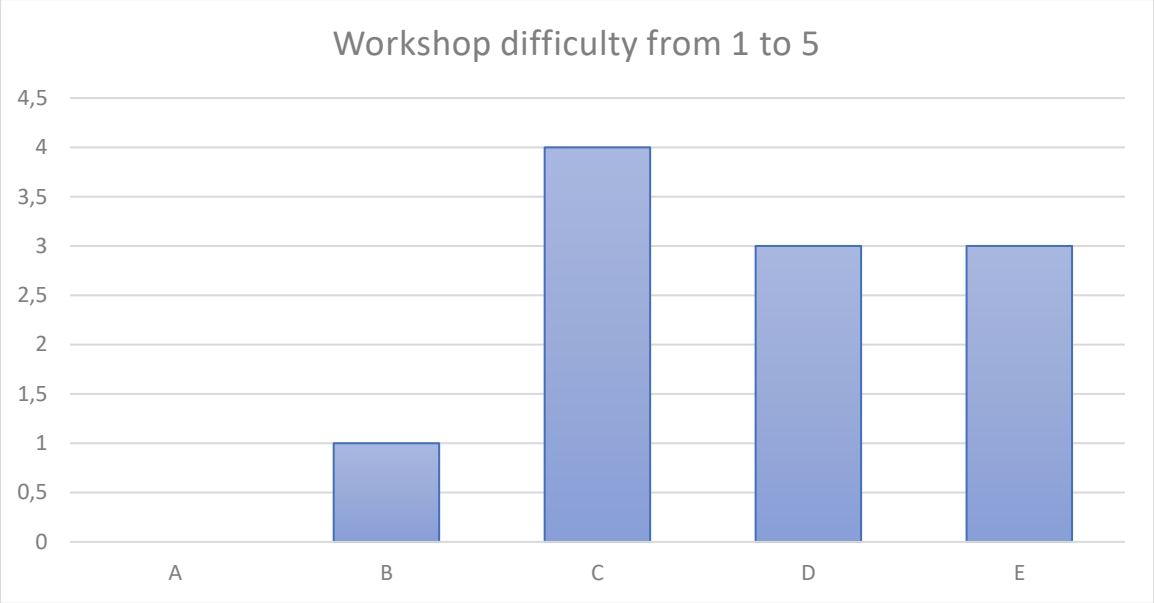
Figure 1. Results obtained after the training carried out in the PESM.
First Workshop



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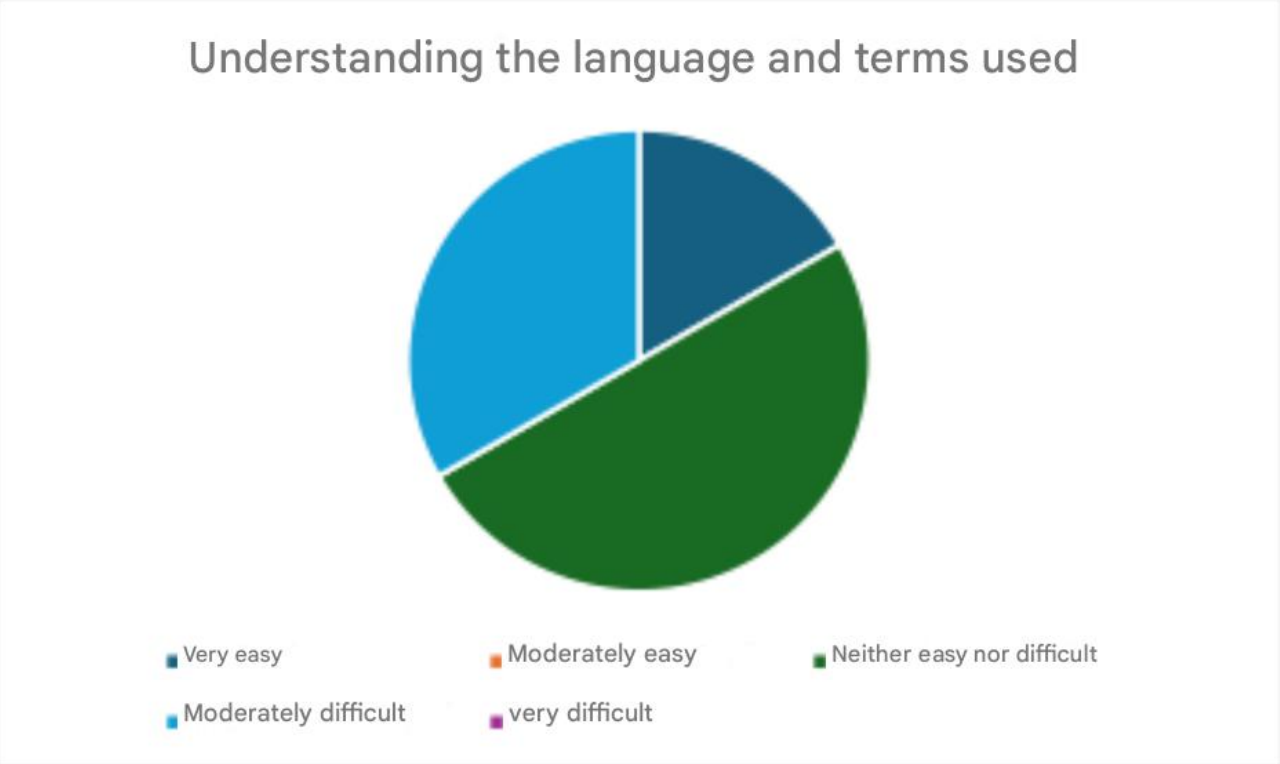

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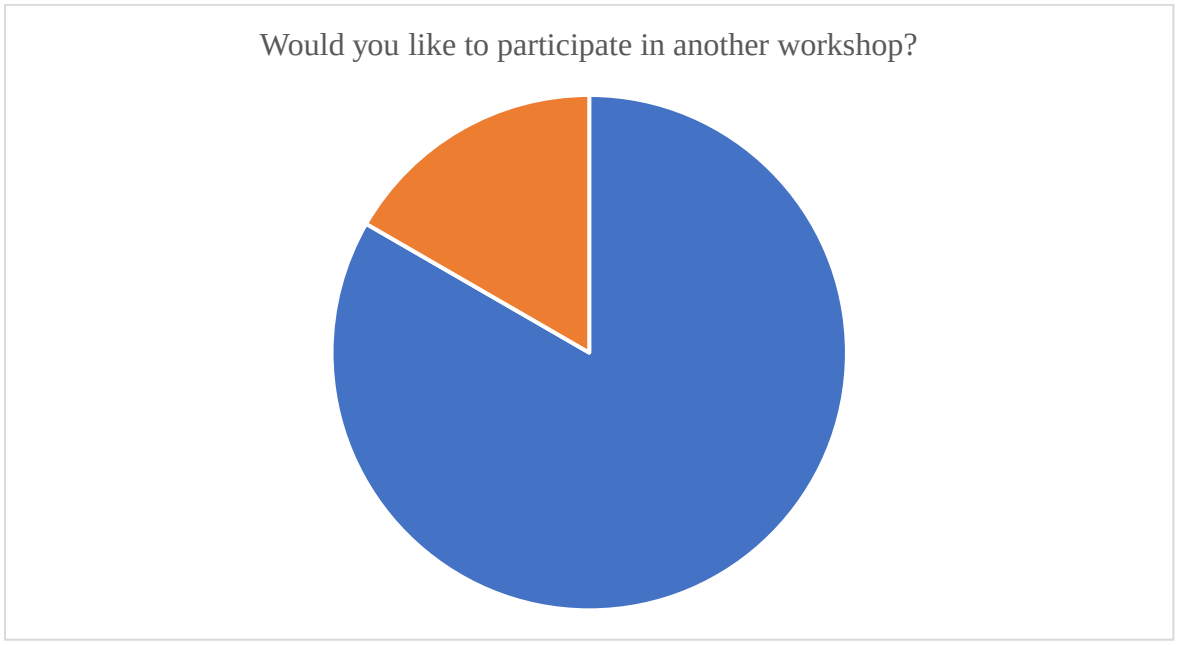
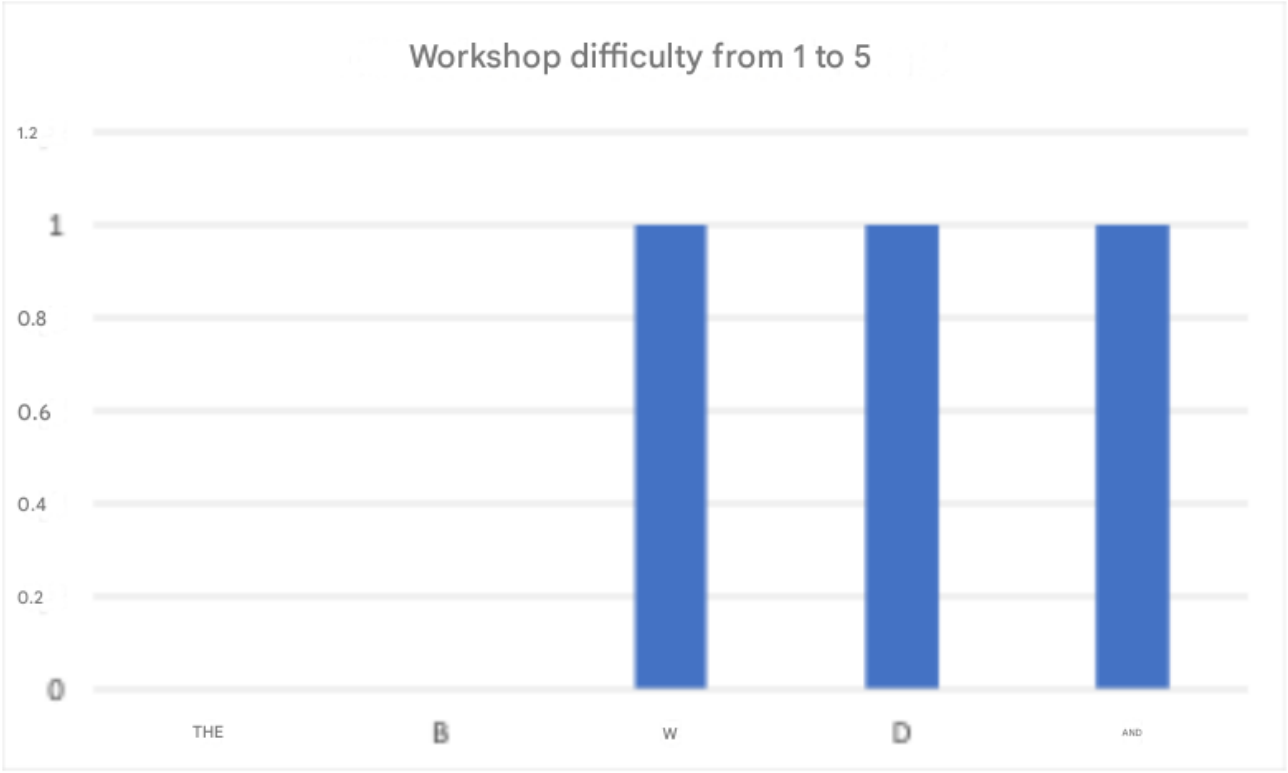


Second Workshop



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The workshop included a theoretical introduction of the content, addressing topics such as acids and bases, pH, saponification reaction and manufacture of soaps and soaps.

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In the next meeting, a practical class was held, with the manufacture of soap produced only with soybean oil. It was observed that the Second Panel was more homogeneous, with a better understanding of the contents covered. Both classes were satisfied with the workshop, which was evidenced by the answers left in the space for comments: "The course was great", "Thank you for the opportunity", "There could be more courses like this", among others.

CONCLUSIONS

Based on the results obtained, it is concluded that the use of recycled oil can be used for the manufacture of low-cost soaps, since the results obtained for the physicochemical parameters tested for this type of soap are within the values stipulated by ANVISA and are comparable to soap formulated with the mixture of oils. To be used in the manufacture of soaps, the oil must be washed beforehand, to avoid any harmful effect on the skin.

The soap making workshop given to the inmates achieved the proposed objective. The participants became professional and were able to feel useful and productive, have remission of sentence, possibility of generating future income and for the State, generating economic benefits. Educational and work activities are tools for rehabilitation due to their ability to prepare people deprived of liberty for social reintegration, contribute to the reduction of crime rates and mitigate the effects of incarceration. It is found that the positive effects aroused during this process make the subject want, in some way, to repair the damage caused to society, contributing to personal rehabilitation and the construction of a more inclusive society.

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