



EXTENSÃO UNIVERSITÁRIA E GERAÇÃO DE RENDA NO CONTEXTO DA PANDEMIA DO CORONAVÍRUS (SARS-COV-2)

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RESUMO

A pandemia do novo coronavírus (SARS-COV-2) teve especial performance do Brasil, por vários fatores, trazendo consequências econômicas e sociais. O Projeto de Extensão Lonarte do Departamento de Design da Universidade Estadual de Londrina trabalha com reutilização de banners de PVC com dois grupos de costura em situação de vulnerabilidade social. A preocupação com as realidades produtivas dos grupos motivou a equipe do projeto a realizar este estudo com o objetivo de verificar as demandas e como tem se comportado a renda, além de apresentar possíveis estratégias para garantir o equilíbrio econômico e financeiro desses grupos. A metodologia empregada foi bibliográfica exploratória, entrevista por pautas e o mapa mental como ferramenta de criatividade. As entrevistas revelaram a necessidade de maiores demandas de trabalho. A aplicação de conceitos do Design de Sistemas (pois o problema que se coloca é considerado caótico) e Design para a Inovação Social levou a criar conexões entre novos atores, como uma cooperativa de catadores e uma de serviços médicos, que possibilitaram sistematizar a encomenda junto aos grupos de costura, para confecção de aventais destinados aos colaboradores de uma cooperativa de materiais recicláveis, utilizados como EPIs para proteção contra o contágio do Coronavírus e possibilitando a geração de renda para os grupos de costura.

Palavras-chave: Sustentabilidade. Reutilização. Inovação Social. Geração de Renda. Design Sustentável.

UNIVERSITY EXTENSION AND INCOME GENERATION IN THE CONTEXT OF THE CORONAVIRUS (SARS-COV-2) PANDEMIC

ABSTRACT

The new coronavirus (SARS-COV-2) pandemic has affected Brazil in many ways, causing a range of economic and social problems. The Lonarte Extension Project, of the State University of Londrina (UEL), concerns the reuse of PVC banners, involving two sewing groups in situations of social vulnerability. The motivation for carrying out this study was the need to evaluate their productivity and financial condition, in the current situation, so that they could be assisted. The methodology applied in this study was an exploratory

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bibliography, guided interviews, and use of the mental map as a tool for creativity. The interviews with the seamstresses from the groups revealed the need for greater work demands. The application of Systems Design concepts (since the problem that arose could be considered chaotic) and Design for Social Innovation enabled the creation of links among new actors, including a Recyclable Waste Collectors Cooperative and a Medical Work Cooperative, which made it possible to implement a systematized framework for the sewing of PPE for use in the protection of the collectors from coronavirus contagion.

Keywords: Sustainability. Reuse. Social Innovation. Income Generation. Sustainable Design.

EXTENSIÓN UNIVERSITARIA Y GENERACIÓN DE RENTA EN EL CONTEXTO DE LA PANDEMIA DE CORONAVIRUS (SARS-COV-2)

RESUMEN

La pandemia del nuevo coronavirus (SARS-COV-2) tuvo un desempeño especial en Brasil, debido a varios factores, lo que trajo consecuencias económicas y sociales. El Proyecto de Ampliación Lonarte del Departamento de Diseño de la Universidad Estadual de Londrina trabaja con la reutilización de banners de PVC con dos grupos de costura en situación de vulnerabilidad social. La preocupación por las realidades productivas de los grupos motivó al equipo del proyecto a realizar este estudio, con el objetivo de verificar las demandas y cómo se ha comportado la renta, además de presentar posibles estrategias para garantizar el equilibrio económico y financiero de estos colectivos. La metodología utilizada fue la bibliografía exploratoria, la entrevista por pautas y el mapa mental como herramienta para la creatividad. Las entrevistas revelaron la necesidad de mayores demandas laborales. La aplicación de conceptos de Diseño de Sistemas (porque el problema planteado se considera caótico) y Diseño para la Innovación Social llevó a crear conexiones entre nuevos actores, como una cooperativa de recolectores y una de servicios médicos, lo que permitió sistematizar el orden en conjunto para los grupos de costura, para la confección de delantales destinados a los empleados de una cooperativa de materiales reciclables, utilizados como EPIs para protegerse del contagio del Coronavirus y posibilitar la generación de renta para los grupos de costura.

Palabras clave: Sostenibilidad. Reutilización. Innovación social. Generación de renta. Diseño sostenible.

INTRODUCTION

All academic community has turned their attention to the current health situation that began in China at the end of 2019, and rapidly spread all over the world. The new Coronavirus disease (SARS-COV-2) made us rethink everything that has been done and planned. It has impacted the academic, scientific, political, and economic environments. Everyone had their lives affected or altered by this scenario. Our Cartesian anthropocentric essence advocates that man has domain over all natural factors. On the contrary, the

experience that the planet is currently going through, unprecedented to our generation, has taken humankind to reflect on how much control man has over nature, which is very limited.

The Lonart Extension Project from the State University of Londrina (UEL), is composed of a multidisciplinary group, with professors, professionals, and students from the areas of design, fashion design, administration, and environment, which has been working with two sewing groups in situation of social vulnerability. This work aims to verify how the demands for products behaved during this period and how these groups obtained their income in addition to proposing solutions through the Systems Design theory. This Extension Project arose from the need to give a destination to used Polyvinyl chloride (PVC) banners turning them into raw material for sewing groups to make objects. Through the municipal service of Solidarity Economy, some groups were found in the Londrina region with the potential to be part of the Extension Project. The initial idea was to develop products and services such as eco-bags for conferences, and other products for academic and scientific events. However, since February 2020, Brazil has been suffering the impacts of the pandemic, and in the absence of a vaccine for the disease, social isolation was indicated by the World Health Organization, authorities and specialists in the field of Health, which has caused the temporary suspension of the Extension Project activities.

Social isolation and the closure of non-essential businesses have practically paralyzed the economy unevenly, further deepening social inequalities, and generating impoverishment of the most vulnerable populations. "There is the risk of social chaos because due to the uncertainty of the the duration of quarantine, the lack of perspective and despair, worrying social reactions may be generated, and the containment of this depends on the government response to the economic recession" ([ARRETCHE, 2020](#), p. 1). The low-income population is more affected by the pandemic from health and economic perspectives since in most cases they cannot make social isolation and work remotely, because this decision directly impacts their income, in addition, they have less access to quality health services. The research methodology of this work was exploratory, with bibliographic delineation and interview by guidelines, which aimed to verify the current reality of the producer groups and work demands during the pandemic.

As a result of the interaction among several institutions involved in this system, such as a Medical Work Cooperative, a Cooperative of Recyclable Waste Collectors, and professors of NINTER (Interdisciplinary Nucleus of Waste Studies), this work was able to temporarily supply the demand for orders and income for the producer groups and to provide Personal Protective Equipment (PPE) to the Cooperative of Recyclable Waste Collectors. The elaboration of this system and the interaction among the institutions open ways for the groups to find new business opportunities.

RESEARCH METHODOLOGY

This research has an exploratory and bibliographic approach based on papers from relevant journals. The survey carried out through this methodology allowed researchers to understand concepts and possible convergences among them ([GIL, 1999](#)). Afterward, a field study was carried out through an interview with previously defined guidelines, members of the Retraço Novo group, and the Marrecas group, to draw their current panorama. The questions were:

1. How is the demand for products during the pandemic?

2. Are the group members working at the office or isolated?
3. How good are their incomes?
4. Did the members of the group get emergency assistance from the government?

The creativity methodology adopted was a mind map, a visual tool for organizing ideas and connecting actors that make up a complex problem.

Design Performances

Design performance has changed over the past three decades. Praxis evolution of graphic and product design to service design and system design is remarkable, covering a wide range of activities as a change agent, problem manager, and knowledge integrator. The traditional conception of design praxis has been expanded to new practices. Nowadays, design strategies are being used to create innovative services, work on social questions, and create public services and politics ([JUNIOR; DIEHL; SNELDERS, 2019](#)).

The diagram shown in Figure 1 was prepared according to concepts and ideas of [Buchanan, \(1992\)](#). The first dimension is related to the traditional praxis of the graphic designer. The second one is about products in general, in their visual and structural aspects, and their cultural relationship with human beings. The third dimension shows the management and strategic planning of objects and people, connections and consequences are in the center of this topic. The last level integrates the previous ones and treats complex problems or wicked problems, that is, it concerns issues related to the human being and various social spheres such as economic, political, cultural, historical, legal, environmental issues, etc., comprising several interrelated services ([BUCHANAN, 1992](#), [BUCHANAN, 2001](#), [SAMPAIO, et al., 2018](#)).

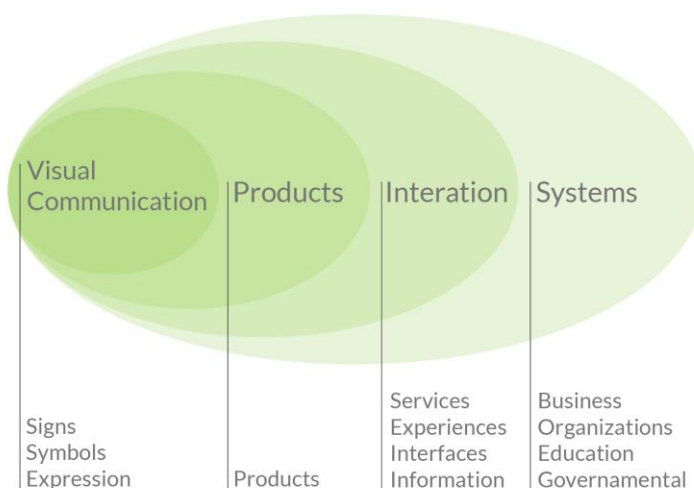


Figure 1. Design performance levels ([BUCHANAN, 1992](#)).

Following the same reasoning, Brussel and Valckenaers (2017) described four levels of problems: the simple, the complicated, the complex, and the chaotic. A demand for a layout creation for a disc cover, for example, is a simple problem, because there is a briefing and a possible solution. Aircraft designers are working with complicated problems, but just

like simple ones, they have briefing. Complex problems do not have briefing, they involve human beings, they may change, and they are unpredictable. Due to the need for responses from other areas, they must be explored by a multidisciplinary team. The chaotic problems (like the one in this research) are contextualized in unusual situations, such as a pandemic when people are taken by action, then by reason ([JUNIOR; DIEHL; SNELDERS, 2019](#)).

The last two levels of problems involve human beings and all their complexity. This research involves the investigation of two groups in situation of social vulnerability. A specific methodology for this typology of work was selected.

The social aspect of design had its embryo with the Englishman John Ruskin, and in the 1970s, Victor [Papanek \(1972\)](#) continued Ruskin's thoughts with his publication in "Design For The Real World", where he defended the idea that design should be turned to the community, fleeing market consumerism. According to Victor [Margolin \(2002\)](#), in "Politics of The Artificial", designers are worried about the economic and social values of goods that they create, by taking into consideration the welfare of who is producing them.

[Manzini \(2014\)](#) defines design for social innovation as "a process of change emerging from the creative re-combination of existing assets, which aims to achieve socially recognized goals in a new way." (p.1) To explore alternatives for new ways of living and working through new relationships among actors, enabling the construction of a new product system. "Design for social innovation enables designers to play a central role in solving social and environmental problems, through the involvement and development of collaborative processes for promoting new production systems." ([JOLY; STRAIOTO; FIGUEIREDO, 2014, p.76](#)).

Characterization of the object of study

This research took the behavior of the sewing groups during the pandemic as its object of study, and after investigation work, the need of creating work relationships among the groups and the Cooperative of Recyclable Waste Collectors (Cooperative A) arose.

The Brazilian social reality and producer-group vulnerability

The history of Brazil has a long and painful process of slavery as the main component of its social formation. As a legacy of this and other historical aspects, today, the Brazilian population lives in a complex social reality, with part of it exposed to social vulnerabilities and adversities such as environmental risks, lack of basic sanitation, sub-housing, hunger, violence, infant mortality, low education level, among others.

These situations result in a reality with different degrees of social exclusion. In this context, "(...) social vulnerability can be understood as the state of greater or lesser exposure of individuals and populations to factors of social inequity, and also contexts of deprivation of social rights." ([LIMA; GUIMARÃES, 2018, p. 42](#)).

This reality is always present throughout the country. It is not different in the urban and rural periphery of Londrina, in the state of Paraná, where the groups studied in this research live: Retraço Novo and Marrecas.

Lerrovile District is located 49 km away from Londrina, and it has a Human Development Index (HDI) of 0,683, which can be compared to the lowest indexes in the State ([IBGE, 2010](#)). Irerê District is located 25 km away from Londrina and emerged in the

1930s, in the area of the old Marrecas farm. Currently, its urban population is twice the rural population and because it is close to Londrina, many people travel to the city to study and work.

In both districts, more than 60% of households in the urban area are led by women. Social vulnerability and the large number of breadwinner women can be some of the factors that encourage solidarity-based economic entrepreneurship, largely developed by women. Among these groups, Marrecas Group in Irerê and Retraço Novo Group was established 14 years and it is formed by 3 women and one man, who work in the sewing area. They, currently, work in a house provided by the city hall (Figures 2 and 3) and their main source of income is the sewing of trampoline bases for a company in Londrina, and bags produced from the leftovers of the material. However, according to the group, this work is not a constant demand and the value paid per bag is low.



Figures 2 and 3. Part of Marrecas team in their head office and Marrecas and Lonart team together.

Due to the difficulties of maintaining income with the confection of materials for trampolines, the Marrecas Group has been articulating to produce eco bags with modelings and banners supplied by the Lonarte Project, commercialized in the Solidarity Economy Fairs. However, with the social isolation caused by the pandemic, the proposal remained only on the project level, interrupting production.

The Retraço Novo Group has four women who came together in early 2018 when they took a sewing course promoted by Senai. In addition to taking a training course in management, collective work, solidarity economy, product design, and sustainability, coordinated by the designer Bianca Baggio.

The Group has a sewing work strategy that is already consolidated, with creation capacity, good finishing, and financial management. The group first produced objects made of banners for a medical work cooperative, until then, their main source of income.



Figure 4 and 5. Retraço Novo and Lonart teams.

According to Bianca Baggio, the establishment of the group was very important for financial situation of the participants and for their self-esteem. In the specific case of two seamstresses, the creation of the group also allowed them to spend more time with their families, since they worked as housekeepers in Londrina and spent, on average, 6 hours a day commuting.

Both groups have as common characteristics strong engagement with the solidarity economy, sewing work, and experience with products made from banners, both of them have equipment capable of sewing PVC banners, in addition to being composed primarily by breadwinner women. The banner is a very versatile tool for advertising products and services in stores, exhibitions, fairs, among others. It is also commonly used to present papers at academic events or even as a way to publicize events due to its excellent print quality and affordable cost. However, in general, its usage time is short, when the event ends it is discarded. According to the Environmental Collection on Solid Waste and Basic Sanitation developed by the Federal Senate in the 2015-2016 biennium, it is considered a non-hazardous waste from commercial establishments and service providers. In terms of Life Cycle Analysis, its final destination was not intended for recycling, since its components are difficult to separate, it is interesting that its usability is as long as possible ([NAJELISKIA; PALHANO; MATOSO, 2017](#); [SAMPAIO et al., 2018](#)).

The material used in the banners is composed of Polyvinyl Chloride (PVC), a chemical compound derived from petroleum, a non-renewable resource that has low degradability. Internally it is composed of polyester, to ensure the product's resistance. "They present a high decomposition time, and are difficult to recycle for being composed of two different kinds of material, thus, they are sent to landfills without any separation or recovery." ([NAJELISKIA; PALHANO; MATOSO, 2017, p. 61](#)).

Another important aspect is

[...] the interference in the presence of the banner material for the decomposition process of organic matter in landfills, as it hinders the gas exchange due to the formation of impermeable layers making it impossible for the organic carbon to oxidize from organic waste for the necessary realization of microorganisms responsible for

decomposition. ([SILVA et al., 2019, p. 61](#))

However, due to its resistance, there are many possibilities for its use as a raw material for making other products. That has brought a new social and economic perspective to the producer groups from Irerê and Lerroville.

The work of the Cooperatives of Recyclable Waste Collectors during the pandemic

Londrina generates an average of 400 tons/day of material considered as non-recyclable waste that goes to the Waste Treatment Center, and 60% of this waste could be recycled ([SAVIANI, 2014](#)). Currently, Londrina has 8 registered Cooperatives of Recyclable Waste Collectors which, together, collect about 600 tons of recyclable materials monthly ([CMTU, 2020](#)).

The implementation of the National Solid Waste Policy (PNRS) has caused an increase in the merit of the collectors and recyclers, autonomous or belonging to cooperatives, because solid wastes started to be seen as recoverable and as an economic good with social value, generating work and income and promoting citizenship. When the waste reaches the cooperatives' warehouses, it goes through sorting transported by a conveyor belt where members of the cooperative separate the various types of materials to be sent to the recycler.

Amid this reality, there is a need to dispose of waste produced by the population. According to Aligleri ([UEL, 2020](#)), "there has been a change in the generation of waste during this period of isolation", when wastes that were no longer produced by large generators, such as companies and industries, for instance, started to be generated in homes, resulting in a greater amount of waste to be sent through the public collection, also causing an increase in the number of packages, which are mostly recyclable.

Another aspect pointed out by Aligleri ([UEL, 2020](#)) is that, despite the alerts from health agencies, many masks coming from homes arrived in the middle of recyclable materials, besides that, many members of the cooperatives do not make the proper use of PPEs, aggravating the risk of COVID contamination.

The University Hospital (HU) of UEL is the reference hospital for COVID-19 in the region. Due to the large volume of waste produced at the hospital, the recyclable materials couldn't stop being collected. This work is performed by Cooperative A.

Even though a large number of suspected or confirmed patients with COVID-19 are admitted to the HU, for financial reasons, Cooperative A has made the decision to continue collecting the recyclable materials produced at the Hospital. However, even if the waste is quarantined according to the rules, there is still a risk of contamination, thus, PPE is necessary to ensure the minimum safety for the members of the cooperative during the stages of sorting and classification of materials.

Due to the high contamination risk situation of Cooperative A, the responsible member contacted NINTER, which has projects developed with cooperatives, reporting the total absence of PPEs to classify the wastes received, including the ones from health-service sectors, such as HU. This demand was discussed with the NINTER group, with a consensus on the urgency to provide masks, gloves, and aprons for this group of collaborators. This information has made up our mind map and was an important factor in achieving the goals of this research.

RESULTS

The results of the research were based on the need to meet the demands of the producer groups, formed by the seamstresses from Irerê and Lerroville, as well as the interlacement of the demand for PPE from the Cooperative A of Recyclable Waste Collectors, which provides services to the University Hospital of the State University of Londrina, both directly impacted by the pandemic, either by the risk of contamination or the economic issue.

In an interview on July 20th, 2020, with one of the seamstresses from the Retraço Novo group, when asked how the group has dealt with the situation of social isolation at work, the interviewee narrated that they had been working together in their work office since the beginning of the pandemic. As this is a collective work, in which each one performs a part of the sewing of a certain product, the separation would disarticulate the production; besides, not all of them would have an adequate place to work at home.

Regarding the demand for products, it was said that usual orders such as bags and cases were paralyzed. There had been a 15-day break from work, a worrying period when orders ceased. However, a new demand emerged for the production of fabric masks for two companies. Later, there was a solicitation for fabric masks made by the medical work cooperative for a nursing home. Also, the group received an order of TNT lab aprons for health workers from the health department of the municipality of Londrina.

Concerning the seamstresses' income, it is important to emphasize that all of them received emergency aid from the federal government. According to the interviewee, the July 2020 income was better than the income before the beginning of the pandemic, due to the request for the manufacture of the lab apron, bringing a momentary relief, but made them apprehensive, as there were no prospects for sequential orders.

On the same day, a seamstress from the Marrecas group in the district of Irerê was interviewed on the phone. Unlike the other, in the Marrecas group some elderly people were part of the risk group and stopped going to the workplace during the pandemic.

During the isolation period, the group continued to provide services for a company in Londrina that manufactures and sells trampolines. The other demands ceased and the group started to produce masks. However, the amount paid per mask produced was R\$0.28 and they still needed to pay for the line. The group produced 1,000 masks and decided to refuse orders, concluding that the work did not compensate financially. This situation contributed to the decline of the group's income during the pandemic, going from an average income of R\$1,000 to less than R\$500. Except for one person, the group received emergency aid from the federal government.

About the work demand of the groups, one of the differences between them is that Retraço Novo has an interlocutor who makes contact with the public power and other companies, allowing greater visibility for the group, unlike Marrecas, which follows only the demands from the trampoline company.

The Process of creating solutions: perspectives and opportunities

Taking into account the interview, the most urgent need of the groups was the uniformity of requests to bring financial stability to their members. The residual-raw material

that UEL and the Lonarte extension project were tapestry fabrics and PVC banners.

Among the various tools for creatively combining ideas to try to solve problems, Tony Buzan's mind map was chosen. It is a visual tool to organize, memorize, analyze, and make new associations among elements of a system. It starts from a central idea and branches out according to the possible associations (Figure 8). This technique has become very popular because it organizes the elements in a similar way that is understood by our brain, so that it strengthens neural synapses, favoring the field for creative insights ([BUZAN, 2009](#)).

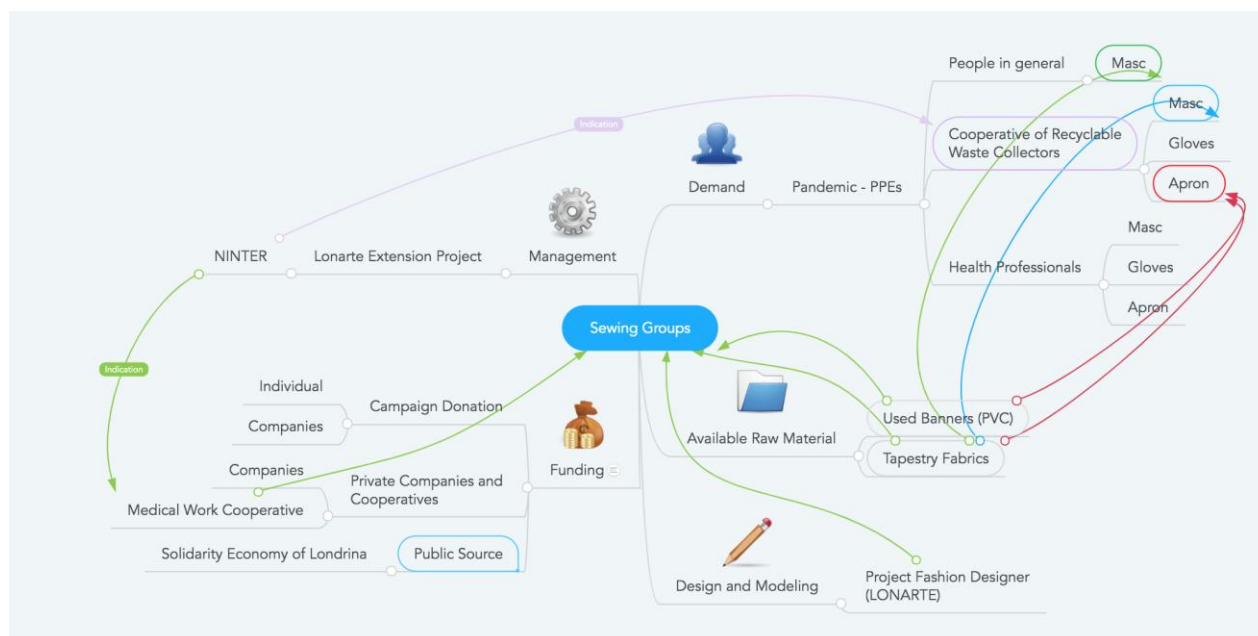


Figure 8. Action mental map of the Lonarte Extension Project.

Initially, the main object of this research was positioned at the center of the mental map. In the sequence, or at level 1, the main actors for the generation of solutions were added: Management, Design and Modeling, Demand, Costing, and Available Raw Material. The subsequent levels show the options available to the project.

Once the possible connections have been made, the questions were:

- Who will develop the management, including transport services?
- Who will model the apron, considering the user?
- Which raw materials are available?
- Who will be in charge of the sewing service?

The questions to be answered were:

- Which PPEs could be produced with the available raw material?
- How would the sewing service be paid?

Regarding the demand, NINTER exposed the need for diverse PPE for the Cooperative A, as reported above. Among them, the apron was the one that could be produced with the PVC banner, and the straps would be made of tapestry fabric, to be malleable, more comfortable, and yet resistant. The possibility of producing masks from this

fabric would be verified, however, for this purpose, it would be necessary to validate the constitution of the fabric and its weft. This would be the next stage of work.

To pay for the service, there were several possibilities, including the sponsoring of private companies, cooperatives, public help, or a fundraising campaign "Adopt an apron", each apron costing R\$10,00.

Contacts were made through NINTER and, initially, financial support from a Medical Work Cooperative, which has a very active sustainability sector, was possible. Thus, the opportunity of producing aprons from used PVC banners with tapestry fabric straps has proven to be quite acceptable and positive (Figure 9).

At first, the financial partnership covered the making of 40 aprons for the Cooperative A. If this system proved successful, according to a survey, 500 aprons would be needed to meet the needs of the other cooperatives of collectors in the city.

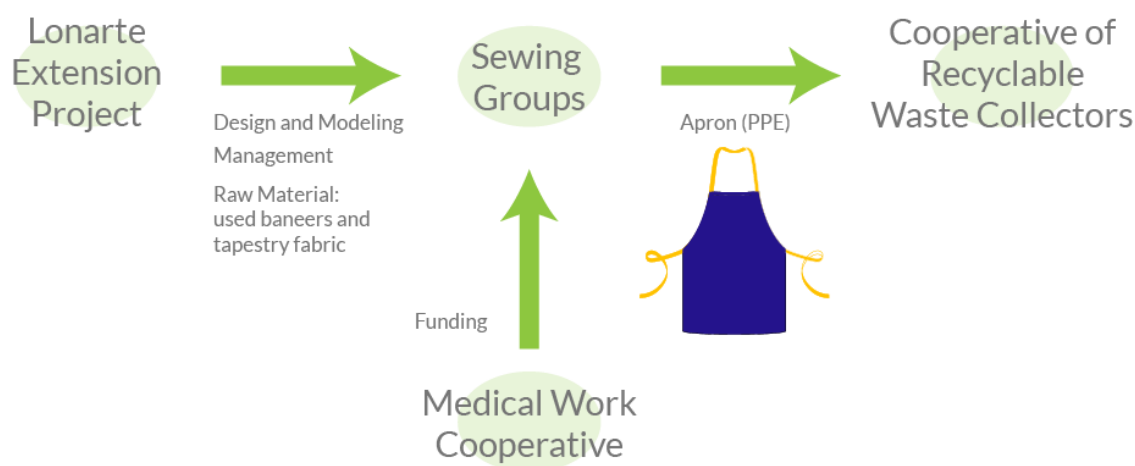


Figure 9. Representative diagram of the possible scenario.

After the connections and partnerships were established the next step was the elaboration of the apron modeling, aiming to meet the hygiene and safety needs, as well as, the needs of the operation and the sorting of materials in the cooperatives. The modeling of the apron was elaborated by a Fashion Design student from the Lonarte Extension Project (Figure 10).

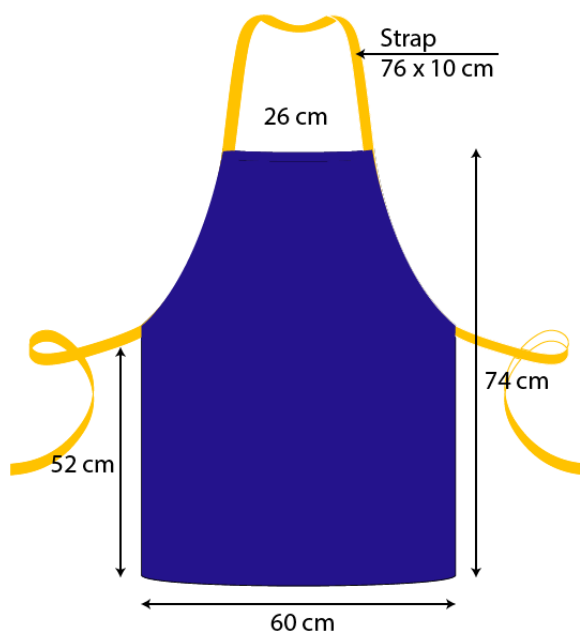


Figure 10. Technical drawing of the apron.

The modeling was then passed on to the groups, as well as the raw material. Figures 11 and 12 show the seamstresses of Retraço Novo sanitizing and making the cut according to the modeling.



Figures 11 and 12. Seamstresses cleaning and cutting the banners.

Figures 13 and 14 show the stages of finishing and the production of the apron straps. Figure 15 shows the aprons already finalized and ready to be delivered to the Cooperative A.



Figures 13 and 14. Stages of finishing and production of straps.



Figure 15. Ready-to-deliver aprons.

The aprons were an important PPE at the time of the pandemic, mainly because of their impermeability and the possibility of hygiene and quick-drying, ensuring greater efficiency and safety to the work of the cooperative members. Figures 16 and 17 show the aprons in use.



Figures 16 and 17. Aprons in use in the Cooperative A.

The production and delivery of the 40 aprons showed the feasibility of using the PVC banners to make the aprons, as well as the adhesion of their use by other cooperatives as an important PPE at the pandemic.

CONCLUSIONS

The pandemic has brought us unusual and urgent demands and unpredictable needs that required us to work in multidisciplinary teams.

This unique situation put us in the face of economic stagnation and, on the other hand, has increased the production flow of certain products such as masks, respirators,

notebooks, headsets, etc., and services, such as health, delivery, online shopping, internet, and IT services.

From the point of view of Cooperatives of Recyclable Waste Collectors, the generation of solid urban recyclable waste has decreased significantly due to reduced consumption, at the same time, the need for more space has arisen, as the waste needed to be quarantined before it was collected. On the conveyor belt, during the stage of sorting the recyclable materials in the cooperative, contact with the waste was risky, especially when the origin of the waste was a hospital facility.

This work was the result of two distinct demands that were interconnected, the PPE for the Cooperative A, and the service for the producer groups. This connection was made possible due to the design of operational systems and the work of multidisciplinary teams.

The sewing groups are temporarily in demand for service, but this work has connected important actors who will make future demands possible. According to [Brussel and Valckenaers, \(2017\)](#), chaotic problems caused by unusual situations have no absolute, but temporary resolution and indicators of future improvements.

The apron proved to be an important PPE, and as a result of this action, it was suggested that they could be produced for the other Cooperatives of Recyclable Waste Collectors. It remains; however, to make viable means of financing the labor costs for the other necessary aprons, continuing the project and helping to generate income for these groups until the economy stabilizes and as an extra source of income since the emergency aid from the federal government is coming to an end.

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