



Article

A Participatory Research Workshop in Northern India— A Transnational Collaboration

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Abstract: In this article, we outline a transnational project shaped by Sustainable Development Goal (SDG) 10: "Reduce inequality within and among countries". SDG 10 provides a cross-cutting approach insofar as the targets refer to income inequality, discriminatory practices and policies, migration policies, and development aid and assist researchers as well as policymakers and community leaders with implementation. The project builds on two online courses for researchers early in their careers: one that covers the research context and one that covers preparing a research question and approach. Community-based participatory research (CBPR) is an impactful method of exploring social inequalities and applying research to solve practical problems. For students to learn the basic steps of CBPR, a workshop was conducted with a rural NGO in India that included researchers from three countries, staff members, and community members. The topic, "waste management", was chosen by the local NGO and integrated with the university program through a CBPR methodology workshop. This article describes the background, learning process, and results of the participatory research workshop and focuses on the collaboration of students, staff, and community members as well as the application of research for action.

Keywords: community-based participatory research (CBPR); sustainable development goals; experiential learning; waste management; India; South Africa; Germany



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1. Introduction

The UN 2030 Agenda for Sustainable Development sets the vision for global action and encourages a bottom–up consultation process. Sustainable development calls for services responsive to people's needs. Social work, social services, and community engagement thus play a vital role in delivering these services and drive a human rights perspective in sustainable development [1–5].

While the monitoring system of the Sustainable Development Goals (SDGs) relies heavily on quantitative indicators, social work and applied social sciences have to deal with complex social problems, cultural practices, and multi-layered social interventions [5]. As the *World Social Science Report* demonstrates, research on inequalities and social justice is in itself interdisciplinary and draws from a number of subfields, such as political science, sociology, gender studies, development studies, developmental psychology, family studies, criminology, and law [5,6].

In this context, social work brings a unique perspective to the study of inequalities as it cannot focus on "problems" alone but sheds light on coping strategies on many levels (individuals, families, and communities) and aims for adequate social interventions (political, economic, legal, welfare, care, etc.). Additionally, evidence-based practices gain importance in social work [7–9]. A research-based curriculum is especially valuable when it comes to critically evaluating social interventions [10,11].

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1.1. Research-Based Social Work Training

This article is based on the experience of a multinational project with students and young researchers to apply research in pursuit of the SDGs. The project is anchored in SDG 10, "Reduce inequality within and among countries", with a special focus on the social, economic, and political inclusion of all (10.2); elimination of discriminatory laws, policies, and practices (10.3); and migration and mobility of people (10.7) [11].

The course follows an "inquiry arc": developing questions and planning inquiries (module 1), applying social science concepts and tools (module 2), using evidence for practice (module 3), and communicating results (module 4). It is offered at four universities: the University of the Western Cape in South Africa, the Tata Institute of Social Sciences in India, the National University of Malaysia, and the Frankfurt University of Applied Sciences in Germany.

Podcasts, reading assignments, group work, and quizzes introduce the participants to the SDGs and international cooperation. The different ethical requirements regarding research within and across countries as well as the theoretical concepts of inequality and intersectionality are also discussed. In addition, examples from a four-country perspective are given on climate justice, gender equality, and global migration.

In line with the participatory theoretical framework in which the course is embedded, a workshop on community-based participatory research (CBPR) was presented. Inequalities cannot be addressed without the persons affected [12,13]. In this paper, we describe the CBPR workshop facilitated with student-researchers and staff from the universities in collaboration with an NGO in India. The international Workshop on CBPR methods and techniques was initiated with three clear objectives:

- First, that all participants learn the method, relevance, and process of CBPR;
- Second, that the local lived realities of communities are brought squarely into the agendas of the SDGs where the discussions on inequalities, climate, migration, and other issues are not limited to generalized quantitative indicators only;
- Third, that social research is applied in a participatory manner in order to support local communities [13].
 - The aim of this research was therefore to determine the following:
- The learnings of the transnational CBPR workshop on a group of doctoral students hereafter referred to as student-researchers;
- The impact of the lived realities of and collaboration with the communities on the student-researchers;
- What action plans could be developed through the CBPR process to support the local communities.

1.2. The Research Setting: Collaboration with a Local NGO/Civil Society

The setting for the CBPR workshop and research project was the Jagori Rural Charitable Trust (JRCT) campus in India. The collaboration with JRCT [14] is based on a long-term partnership with both the Frankfurt University of Applied Sciences and Tata Institute of Social Sciences. JRCT hosts interns of both universities on a regular basis and was the venue of consecutive international summer schools. JRCT has a long history in combining community work with research. It was therefore a "natural" cooperation partner when it came to applying social research in real-life settings.

JRCT engages directly with local communities in order to enhance participation and ownership by building understanding and leadership abilities and links these programs with state programs and policies for the benefit of the entitled communities and the most vulnerable groups. JRCT's area of focus includes nearly 250 villages and nearly 15,000 community members in the Kangra and Chamba districts of Himachal Pradesh, India. A sustainable environment and inclusive development are among its priority areas. JRCT mobilizes especially youth and women to engage in community development by building leadership and technical skills.

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2. Methodology and Workshop

This article describes a case study of CBPR training and experiential learning (EL) of students and community workers in the context of the local NGO (JRCT) to address waste and environmental issues in their mission to work with rural communities in Himachal Pradesh, India. Because villages do not yet receive support from the local government or private companies, they need to manage their own waste, which they do by burning, burying, or dumping it; reusing it if possible; or recycling it if services are accessible. However, the communities struggle to manage their waste and were in need of identifying their main issues with waste and waste management. The CBPR workshop was therefore used to collaborate with the communities.

2.1. Methodological Background

This section will start with a description of CBPR and EL, which were used as the research methodology as well as the synergic methodology to train the student-researchers.

2.2. Community-Based Participatory Research (CBPR)

CBPR is a collaborative scientific research approach that involves an active partner-ship between researchers and community members to address research questions and promote change within a community [15–21]. CBPR seeks to address issues that are relevant and meaningful to the community. In principle, CBPR provides an alternative to traditional positivistic research approaches, which separate research from its context or community [15].

In the 1940s, Kurt Lewin, a social scientist, developed what he then called "action research" to use research to enable planned social change for complex community issues. Using a constructivist paradigm, multiple participatory methods were then developed in diverse fields and settings [21,22]. This methodology is known by a variety of names, such as action research [23], participatory research [24], participatory action research [25], and appreciative inquiry [22,26,27]. For this study, we use community-based participatory research (CBPR) as it describes the intentional participatory relationships between researchers and community partners. Amauchi et al. emphasize that CBPR requires a relationship and trust-building with community members, which can be achieved through the increased and shared responsibility of both researchers and participants [19,28,29]. Amauchi et al. also acknowledge the different levels and ways of involvement, which can vary from community participation as informants to deep engagement, where the community participates and leads [19]. The deeper the engagement, the greater the opportunity for community members to be emancipated and become empowered and self-reliant [30] and develop the competence and confidence to contribute to the expected outcomes set out for the research [19,22,31].

To enable emancipation, CBPR is built on the following principles:

- Co-learning and mutual benefit for both the researchers and the community [19,22];
- Trust, respect, and partnership-building between researchers and community members [19,22,29,32];
- Planning-action-reflection cycles of learning [33,34];
- Ethical, culturally sensitive, and just approaches to research with and in communities [19];
- Relevant and appropriate interventions and the improved quality of data collection as the data are based on both the knowledge of researchers and the wisdom of the community [24–27].

Several researchers [15,35,36] emphasize the paradigm shift researchers must make in order to learn to be flexible, to "embrace error" [37], and to share authority, responsibility, and credit for success. Amauchi et al. emphasize the fact that, with its engaged and equitable partnership, CBPR contributes to decreasing local inequities, especially among disempowered communities, and helps build capacity for social change [19]. Participatory research methods include, for example, workshops, citizen science, focus groups, transect walks, mapping, photovoice, and participatory videos [19,35]. They do not ex-

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clude quantitative tools when the community takes part in the development of the data collection instrument.

2.3. Experiential Learning (EL)

To train the student-researchers and NGO staff in CBPR, a synergic EL process was implemented. EL is learner-centered and action-, process-, and experience-based. Active learning has been shown to be effective in promoting learning in students across disciplines [21]. The students learn through hands-on experience and reflections, which enables them to connect theories learned and knowledge gained in the classroom to real-world situations. Some scholars argue that active learning includes increased understanding, problem-solving skills, and critical thinking; the student being responsible for learning and interacting with and learning from peers; and increased and improved contact with faculty [21,38–41].

Coombes et al. [20] and Gencel et al. [38] highlight the guiding principles of EL. According to them [20,38], they highlight the following regarding learning:

- It is more meaningful when participants are actively involved in real-world problems that require solutions;
- It is more effective when participants are engaged in activities that allow them to learn and then apply what they have learned;
- It is improved when people create plans to solve a problem and evaluate their choices;
- It is enhanced when people share and benefit from one another's knowledge;
- It is increased when people are actively participating in the process, knowledge, and behavior. Attitudes are more likely to change as well;
- It results in increased self-confidence and leadership skills.

Gencel et al. [38] further highlight that the facilitator's role in EL enables students to establish connections with their personal experiences and reflect on these, thereby revealing the students' interests, intrinsic motivations, and self-knowledge.

In the next section, the CBPR training and research process will be described in the order it was facilitated and the data collected.

2.4. The Workshop (Program)

In all, 10 students from the Tata Institute of Social Sciences, 1 student from South Africa, and 10 community workers from JRCT, the aforementioned local NGO, were a part of the CBPR training on the campus of JRCT. The CBPR was carried out from 14 to 18 November 2022 to facilitate the development of action plans to guide the local communities to manage their waste, as there are no waste management services in these areas.

JRCT regularly facilitates training and workshops at its campus, and the hall was used for this purpose. The materials needed for the workshop, such as pens, paper, and projectors, were provided by JRCT.

A note on language: The facilitator, the students, and the community workers from India were fluent in Hindi and could communicate with the community with ease. The other two facilitators, one from Germany and one from South Africa, and the student from South Africa needed translations and interpretations to understand the discussions and feedback from the community members. All students from India were fluent in English as well and helped with translations.

2.4.1. Background and Preparation for the Workshop

The facilitators (the authors of this article) drafted the broad CBPR workshop plan for the available week as described in Table 1.

Monday, Day 1: Introduction and overview of CBPR.

Monday morning started with an introduction of the participants to each other. As there were an equal number of students and community workers, the students and community workers were requested to pair up and ask each other the following as an introductory activity.

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Introduction of participants

- Who are you?
- Where do you study/work?
- What is your interest in the workshop, and what are your expectations of the workshop?

Table 1. Planning the activities for the research workshop.

Day	Program
Monday	Welcome and introduction of participants Training session: Introduction to CBPR Overview of the methodology Selection of the villages Development of data collection instruments
Tuesday	Travel of the teams to the communities Transect walk in the community area with the community Completion of the questionnaires Return of the teams to Jagori Reflection on data collection and observations Acquisition of data from the questionnaires
Wednesday	Travel of the teams to the communities Mapping of the village with the community Focus group discussion about waste Identification of recommendations/suggestions from the community for possible solutions Meeting with community leaders and other stakeholders
Thursday	Analysis of the results Preparation of PowerPoint presentations for the feedback workshop
Friday	Community conference Feedback to the community and planning of the way forward Student reflections

Each person then introduced the person they were paired with to the group, and the expectations for the workshop were recorded.

The theory of CBPR and the rationale behind it were then introduced, and the following principles of CBPR were discussed [15,29,42,43].

Principles of CBPR

- It rejects the alienation between researcher and community.
- It states that communities are unique.
- It addresses social and environmental justice.
- It values equality, respect, dignity, trust, mutuality, and reciprocity.
- It is based on appreciation of and building on knowledge that exists in the community.
- It is based on working with and not on people.
- It is based on working together as co-researchers.
- It values co-design/collective strategies.
- It is an action–reflection–planning process.

2.4.2. Selection of the Communities

Following the discussion of the theory, the villages were selected with the guidance of JRCT (author 4) and the community workers on the basis of easy accessibility, composition, and cooperation of the local governance bodies. Five villages were chosen and grouped together. The social group composition and livelihood details of the villages are presented in Table 2.

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Name of Community	Number of Households	Scheduled Caste (%)	Scheduled Tribe (%)	General Caste (%)	Livelihood (Main)
Majhetli (Village A)	78	21.30	0	78.7	Agriculture
Kot Kawal (Village B)	137	0	2.9	97.1	Agriculture
Lakha Mandal (Village C)	93	1.23	0.25	98.52	Agriculture
Nandehr (Village D)	248	12.26	0	87.74	Agriculture
Pathiar (Village E)	63	48.52	0	51.48	Agriculture

Table 2. Details of the selected villages (communities).

According to the Constitution of India [44], certain communities in the country who were suffering from extreme social, educational, and economic backwardness arising out of the age-old practices of untouchability and discrimination need special consideration for safeguarding their interests and accelerating their socio-economic development. These communities are notified as Scheduled Castes and Scheduled Tribes as per provisions contained in Clause 1 of Articles 341 and 342 of the Constitution, respectively. These communities are entitled to specific affirmative actions and policies in the country.

During the discussion regarding which of the communities would be selected, their size and livelihood practice, as well as the caste they belong to, were used as the criteria. The marginalization of certain oppressed communities has been an important issue, and JRCT prioritizes the constituency to work with these communities. This developed into a debate among the workshop participants as to why caste should be a criterion for selection [45].

One village consisting mainly of rag pickers or waste pickers was initially chosen but had to be discarded due to their highly vulnerable status as "untouchables" (the lowest caste in the community). They are mostly not available in the village as they leave early in the morning for waste picking.

2.4.3. Discussion on Entering Communities

Before the students and community workers went to the villages, how to enter communities respectfully was discussed in detail [22]. As the community workers working in the selected villages were part of the training group, there were already established relationships and the community workers could facilitate the access of the research teams to the communities. The students were paired with community workers and introduced to the villages.

Tuesday, Day 2: Data collection.

The participatory data collection methods and the activities for the week were then planned. Instructions were co-developed and consisted of the following data collection methods.

2.4.4. Transect Walk

A transect walk as a data collection tool entails a systematic walk through the community or project area where the researcher is joined by members of the community. Actions in the walk can include making observational notes, capturing photographs, and carrying out informal conversations with community members. Transect walks change the perspectives of the researchers as they result in a mutual interchange of knowledge between researchers and locals. The visual focus of the exercise inspires a deep understanding of the different concerns of the community [22,35,46].

The following instructions were co-developed to guide the research teams when visiting the villages during the transect walk in the morning.

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Instructions for the transect walk

One or more community members (preferably more than one) must walk with the researchers through the village.

- Ask community members to show where people are dumping, burning, or burying waste.
- Ask community members to point out any waste management infrastructure, such as street waste bins, skips, and drop-off points.
- Take photos and detailed notes. Always ask for permission to take photos.
- When photographing dumped waste, make a list of the specific waste types present at the dumpsite: diapers, plastic bags, glass bottles, tins, etc.

Divide the roles:

- All can take photos, but one person should be responsible for the photos.
- All can ask questions.
- All can take notes
- One person should be responsible for noting down the waste types at the dumpsites.

2.4.5. Household Questionnaires

CBPR can also involve the use of quantitative methods, such as structured interviews [32]. Two separate questionnaires were co-developed by the workshop participants (the student-researchers and community workers) to be completed after the transect walks.

The household questionnaire contained questions related to the type of waste generated in the household, the person responsible for managing the waste, and how they manage their waste (as they do not have any form of waste management services). Is the waste burned, buried, or dumped, or is any other method used? Lastly, the relationship with the waste pickers, who collect recyclables from the villages, was explored. The research teams aimed to interview an equal number of men and women to have the voices of both included.

A reflection session was held with the fieldworkers on their return from the villages, after which they began collating the data in the Excel spreadsheet.

Wednesday, Day 3: Data collection (continuation).

2.4.6. Mapping the Village

Participatory mapping is a method used to create a common map to integrate the perspectives of the community members [47,48]. For Laituri et al. [48], the value of participatory mapping is that it allows researchers to genuinely listen to the community. Mapping as a method was incorporated as the logical next step after the transect walk. Here, the aim was to gain an understanding of how community members perceive and experience how waste is managed in their village.

The research teams returned to the villages to facilitate a mapping exercise with a group of participants from each village.

Instructions for the mapping activity

Request that research participants draw a map of their community as THEY see it. Specifically request that participants indicate the following elements on the map:

- Locations of solid waste receptacles, such as skip bins and street waste bins;
- Locations where waste items are dumped/burned/buried;
- Receptacles used by households to contain waste.

Probe for possible solutions that the community can envisage (how can they work toward a cleaner environment?).

Ensure that participants include a map "legend" if necessary and that the name of the village and the date of the drawing are written on the map.

The mapping exercise was then followed by focus group discussions.

2.4.7. Focus Group Discussions (FGDs)

Focus group discussions (FGDs) form a part of qualitative data collection methods. The aim is to discuss the problem(s) experienced by the community in depth [49–52]. Community members were invited to join the FGDs. In our study, the researchers facilitated

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in-depth discussions around the waste and waste management problems and the aspects related to it.

Guide: FGD with key stakeholders in the village

Introduction

Thank you for coming to this discussion. We are from Jagori Grameen, Rakkar, and are conducting research on waste and waste management issues and challenges in the village. Yesterday, we talked to some of the household members individually and gathered some insight into the problems faced by the village people. One of us will ask you some questions on the topic, and we request each one of you to share your understanding with us. Do feel free to ask us any questions if you wish to during the discussion.

- Q.1: According to you, what are the major waste products that are troublesome for the village, and why? How is the waste disposed of by the village people at present?
- Q.2: What are the priority areas in waste management that the village wants to address, and how?
- Q.3: To address this problem, who should be involved in the planning? For example, women, men, waste pickers, gram panchayat, or mahila mandals?
- Q.4: Do you know what funds and schemes are available with the panchayat, and do you think it is possible to access and use existing funds, for example, in the upcoming year?
- Q.5: Do you think people around here would be prepared to pay if waste is collected? Can that create job opportunities, and for whom?
- Q.6: Are you aware of NGOs who are helping with waste disposal in your area? If so, how can you collaborate with them for waste management?
- Q.7: If you had to take care of the waste in your village, what would be the first three steps you would like to take?
- Q.8: Is there anything else that you may want to share with us?

Thank you very much for sharing your time and views, and we hope we can work together to find some solutions on waste management.

Source: Research teams.

Once the research teams returned with the maps and the notes from the FGDs, a reflection session was held with them.

Thursday, Day 4: Data analysis.

The research teams spent Thursday analyzing the data collected in each of the villages, first separately and then collectively. The quantitative data were collated in Excel spreadsheets, and the qualitative data were transcribed and analyzed thematically [53,54]. The student-researchers were then also introduced to prepare their results in the Japanese developed "Pecha Kucha" [55]-style power point presentation to enable lively, concise, and dynamic presentations. Pecha Kucha provides information through images rather than text and should be very brief. The presenter has to apply the 20×20 rule. The presentation can only consist of 20 slides and only 20 s may be spent on each slide. In total, the presentation may not be longer than 6 min and 40 s. The PowerPoint presentations were jointly prepared by the student-researchers and community workers for the Friday feedback or "member-checking" session, with the representatives from the villages and other key stakeholders in the waste space. Member checking is a method used in qualitative research to enhance the trustworthiness of the results [56].

Friday, Day 5: Presentation, discussion, and reflection.

The member-checking and planning workshop was facilitated on Friday, with representatives from the five participating communities and other stakeholders from the broader community, such as waste recycling companies and other interested parties, in attendance. After the presentation of the results, the students, community workers, and village members were divided into mixed groups with the following instructions:

Instructions for working groups

- Please divide into working groups by villages. Groups should include villagers, JRCT and waste warriors that operate in the village, and students.
- Please discuss five key actions to be taken for a cleaner environment in your village.
- Present the actions in the plenary session, after lunch (10 min each).

Each village presented action plans that could be taken forward by the community in collaboration with JRCT's community workers.

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2.5. Reflections of the Student-Researchers

The week ended with a reflection session for the student-researchers, the community workers, and facilitators. The student-researchers were also requested to provide written reflections.

3. Results

The data were collected using different methods: transect walks in the selected villages, household surveys, mapping of waste in the village, and FGDs.

3.1. Transect Walks

The transect walks revealed that different types of waste are disposed of differently by the villagers. The major waste types found littering the roads and in water channels, streams, and farmlands were not biodegradable. These included soft plastics, including shopping bags, bread bags, packets of chips (crisps), and any soft packaging. Absorbent Health Products (AHPs) such as diapers and sanitary pads were also observed.

3.2. Mapping

The JRCT team prepared the ground for the village mapping visit and to document the existing waste management system, if any. There was a very positive response from the village-level governance system (panchayat) for the mapping to be carried out.

The maps (see the example in Figures 1 and 2) were drawn by the village members and show the various areas where waste is dumped by the villagers. These maps helped the researchers to understand the community contexts and the villagers' perceptions about waste and waste management. Figures 1 and 2 is an example where the villagers show that waste is often dumped next to roads and in rivers, particularly those waste fractions that are not reusable, such as nappies and soft plastics.

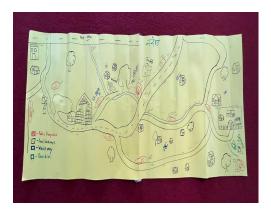


Figure 1. Map drawn with the help of villagers.



Figure 2. Mapping a village and its waste.

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3.3. Results from the Questionnaires

The researchers conducted a household survey using a structured interview form. The data collected from the survey were collated in Excel and analyzed, and the workshop participants (student-researchers and JRCT staff) created tables.

Table 3 shows the distribution of the men and women interviewed for the household survey and the size of the households.

Village	Number of Households	Number of Male Respondents	Number of Female Respondents	Both Men and Women	Household Size (No. Members)
Village A	11	3	8	-	1-13
Village B	11	5	4	2	2-8
Village C	19	3	16	-	2–7
Village D	4	2	2	-	4-10
Village E	5	2	3	-	3–15
Total	50	15	33	2	

The data indicate that in all the villages except one (Village B), the majority of the participants were women. In the case of Village C, the number of women was the highest, at 16. This was because the women were available for interviews during the daytime. Most of the men were out for work. Another factor was their willingness to participate and their concerns regarding waste disposal and management. In Village B, an equal number of women and men participated.

In the villages surveyed, the size of the households varied from 2 to 15 members. In Village A, one participant was a single woman who lived alone.

Table 4 provides data on who manages the household waste generated. In all five villages, it is largely women who manage and clear the household waste. In 33 households, women reported that they are the primary waste managers. Only in seven households did men report that they manage the household waste. In the case of villages A, B, D, and E, a total of 11 households indicated that both women and men manage the household waste. Studies such as Mukhter and Chowdary [57] and Amoah et al. [58] found that waste management is more often the responsibility of women.

Table 4. Waste managers at the household level (women and men).

Village	Women	Men	Both Men and Women
Village A	9	3	1
Village B	6	1	4
Village C	15	3	-
Village D	-	-	4
Village E	3	-	2
Total	33	7	11

Source: Research data.

The data on the types of waste generated by the households are shown in Table 5. It is important to note that during the member-checking session, the villagers confirmed a consensus of the results from Tables 5 and 6.

Table 5. Types of major waste material in the five villages.

No.	Village A	Village B	Village C	Village D	Village E
1	Soft plastics *	Soft plastics	Soft plastics	Soft plastics	Soft plastics
2	Food waste	Food waste	Food waste	Organic waste	Food waste
3	Sanitary pads	Hard plastic #	Hard plastics	Paper and packaging	Hard plastics
4	Organic waste	Glass items	Organic waste	-	Paper and packaging
5	Paper and	Paper and	Medical waste	-	Organic waste

^{*} Soft plastics include shopping bags, bags of bread and chips, and any soft packaging. # Hard plastics include soft drink bottles and detergent bottles. Source: Research data.

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Waste Management Practice	Village A	Village B	Village C	Village D	Village E
	Food waste	Food waste	Food waste	Food waste	Food waste
Reuse	Organic waste	Hard plastics	Textiles	Organic waste	Textiles
	Animal waste	Packaging material	Organic waste	Textiles	Organic waste
	Soft plastics	Soft plastics	Soft plastics	Soft plastics	Soft plastics
Burn	Hard plastics	Textiles	Sanitary pads	Textiles	Hard plastics
	Sanitary pads	Sanitary pads	Textiles	Organic waste	Sanitary pads
Bury	Animal carcasses	Sanitary pads Medical waste	Animal carcasses Food waste Medical waste	Sanitary pads	Hard plastics Sanitary pads
Throw away (dump)	Glass	Glass	Paper	Soft plastics Diapers	Soft plastics Hard plastics
	E-waste	Soft plastics	Soft plastics		
	Diapers	Sanitary pads	Hard plastics		
Sell/Recycle	Paper Bulky waste Cardboard	Paper Hard plastics Textiles	Glass Metal E-waste	Glass Hard plastics Cardboard Metal	Hard plastics Paper

Table 6. Waste management practices at the household level.

Source: Research data.

In all the villages, the major form of waste reported was soft plastics, and all the households felt that this was very hard to dispose of. In one village, the participants of the FGD highlighted the following:

The waste generated in the upper mountain areas by the villagers and tourists flows down through the rivers into the streams that are used to irrigate the fields. Further, with rains, even surgical waste, like used sponges, cotton, syringes, and needles, dirty the farmlands and make them unusable. (Narrative of an elected representative from Village C)

Table 6 contains the data on the waste management practices by the villagers.

Assuah [59] highlighted the value of exploring the indigenous waste management practices of communities, as many indigenous communities have developed beliefs and practices that have sustained them throughout generations. Assuah [59] argues that the exploration of indigenous cultural practices can help to connect the people to the land and their traditional way of life and, in turn, to a greater appreciation for the environment and a desire to protect it. Furthermore, the inclusion of indigenous cultural waste management practices can assist to promote waste prevention, minimization, reuse, and recycling. While collating these data, the researchers discovered the kind of adaptive indigenous management practices that the villagers have developed. The data also revealed which kinds of waste the villagers have difficulty disposing of. One common aspect in all five villages was that there are no external services or government programs to ensure safe and clean waste disposal. In all five villages, food waste, organic waste (largely vegetable peels and other biodegradable material), animal waste, textiles, and even packaging material are all reused by households. Materials that are hard to dispose of, such as soft plastics, sanitary pads, diapers, and end-of-life textiles, are either burned or dumped outside in open public spaces. Due to the lack of knowledge of ecologically friendly ways of waste disposal, the villagers have no option but to dump, burn, or in some cases bury the waste.

We burn the waste. But, often, others throw it. We must clean up what they usually throw in the streams. We find diapers the most difficult to manage because they are wet and also dirty. These cannot be burned or thrown away just like that. We usually collect them in a big sack and throw them far away from our houses, in the bushes. (A female villager from Village A)

The findings show similarity to reports by Kordecki et al. [60] and Schenck et al. [61] that residents in unserved areas struggle to manage waste, such as diapers. Separating diapers from the household waste and dumping in rivers is one way of managing it as disposable diapers cannot be burned, due to their composition, and are not suitable to be buried, due to the fact that they take up to 500 years to disintegrate [61].

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When asked in the FGD whether they are bothered by the smoke that comes from burning waste, the villagers mentioned three issues: (1) the bad smell, (2) aggravation of heart problems, and (3) cause for heavy breathing.

3.4. Development of Joint Action Plans

On the last day of the workshop, the data, which had been collated and put together into a presentation, were shared with the villagers, JRCT's community workers, and other NGOs working on waste management in the area (Nistha and Waste Warriors), as well as with elected representatives of the local governance system (panchayat). This presentation also served as a member-checking activity to verify the results with all the stakeholders. During the FGDs, possible action plans were developed, and the following were suggested as possible ways forward:

- Waste bins should be set up in strategic parts of the villages to enable people to throw away non-biodegradable waste.
- This waste should be picked up regularly from each village by vans for waste disposal.
- In case vans are not able to reach the village or are not available, one person in the village willing to carry out the door-to-door waste collection can be paid wages to do so.
- The villagers are willing to pay for the wages and the van.
- Discussions with the villagers in the upper reaches of the mountains must take place
 to ensure that they do not throw waste into the rivers or litter common areas of
 their villages.
- Organizations like Nistha and Waste Warriors can help develop an effective plan for the appropriate disposal of different types of waste.
- The participants were asked whether waste pickers could also be involved in their plan. They responded in the affirmative but said that the pickers should be paid for their services as, otherwise, they would not collect non-recyclable materials. The participants mentioned that they would be willing to contribute a small amount (INR 50–100 per month) toward waste collection.

3.5. Student-Researchers' Reflections and Learnings

The student-researchers of the CBPR workshop came away with considerable learnings. Their reflections include learning about the CBPR process (Theme 1) and learnings resulting from the community processes (Themes 2–9).

Theme 1: Learnings about the participatory nature of CBPR.

The participatory nature of the research process with the JRCT community workers, facilitators, and community members made the biggest impression on the student-researchers. They learned how CBPR informs action in communities through engagement with villagers, co-researchers, activists, local governance bodies, and civil society organizations. They were able to contextualize the findings from the study within a larger body of research on waste and society.

We learned how to take the findings outside the research setting and into the communities for their well-being (student-researcher).

The student-researchers further indicated that they learned several skills related to carrying out CBPR, such as the transect walk, mapping, and interviewing. In addition, they developed the ability to collate quantitative and qualitative data into a coherent and comprehensive presentation like the Pecha Kucha model [55], which they would not have learned and practiced in a classroom. One of the student-researchers explained the following:

It helped us prepare concise and precise slides in MS PowerPoint. We conveyed the information collected using fewer words and more pictures, figures, and tables.

The workshop provided the opportunity to learn how to incorporate field-learning strategies into research and also to conduct similar workshops for participatory researchers

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on context-specific issues. The component of undertaking field visits, transect walks, and FGDs, led by the partner organization, JCRT, which has been actively working in the area, helped the student-researchers to gain more insights into the CBPR process and the value of the insider perspectives from the insider community researchers from JCRT [62,63]. Most significantly, it taught the researchers the process and skills of bringing together key stakeholders (that is, the people impacted by the issues), including governance representatives, non-profit personnel, research experts and scholars, and people of similar fields. This would lead to the development of a joint action plan for effective waste disposal in the research villages.

Theme 2: Gender and caste inequalities.

One of the major learnings was the insight into caste and gender inequalities and the ways in which these structures operate in the lives of the villagers, often serving to deprive, in particular, the "untouchables" of access to basic amenities.

The research process highlighted several dilemmatic moments, such as when one group of villagers felt that the waste pickers' work and livelihoods need to be supported, while others felt that because it is caste-based work, such livelihoods should not be reinforced and supported.

Similarly, waste disposal and management were found to be primarily carried out by women, which presented the researchers with the dilemma that limiting gender roles will be reinforced if these existing waste management roles remain unchanged. However, it seems that women might be more concerned about the waste disposal process as they were the ones generally more impacted by the presence of waste in and outside the household, but we could not confirm this as more women than men participated in the research, which could skew the results. Researchers such as Nagisetty et al. [64], however, confirm the role demographics play in environmental concerns and therefore confirm this as a possibility.

Theme 3: Perceptions about waste.

The importance of the difference between the perspectives of the "insiders" (community members) and the "outsiders" (student-researchers) was highlighted [22,65–67]. An important learning was that what the student-researchers, as "outsiders", perceived as waste was not always considered waste by the villagers. For example, all along the rivers, objects were found where religious activities were practiced. These objects and other identified objects were not regarded as waste objects. To quote one of the student-researchers:

The interesting part of the discussion is understanding the various thoughts on waste, like waste from religious activities is not called waste, and cosmetic things and political banners and flags are not waste. Various types of waste and the related beliefs of the villagers are very interesting.

Theme 4: Perceptions of waste and reuse practices.

The student-researchers mentioned that it was interesting to find that the perception of waste is also different among the villagers. As in a study by Viljoen et al. [68], organic waste and some textiles and packaging were not considered as waste by some of the villagers, because these could be safely reused and recycled. The process of participatory research enabled the researchers to understand that the social—ecological contexts describe what is waste and what is not waste and how it is managed.

One of the student-researchers mentioned that, while conducting interviews, she realized that people have their own methods of managing waste:

So, they have their own system about using the food waste and the kitchen waste as fertilizer. They use some of it for fodder for the animals and fertilizers for land instead of throwing this waste away. They do not have options for the soft plastics... So, mainly, they burn it or throw the garbage in the water bodies, including river and nala (streams)... Mostly, hard plastics are re-used for planting any plants, old clothes are used for doorstep mats, and other stuff...

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Theme 5: Awareness of consumer behavior.

The significance of waste generation, waste management, and who generates and manages waste was one of the most important learnings from the workshop.

The student-researchers became aware of consumer choices. Considering the poor waste management systems, their buying practices should be driven by a commitment to making purchasing decisions that have a positive social, economic, and environmental impact.

Theme 6: Taking responsibility for waste and waste management.

According to the student-researchers, the CBPR exercises helped villagers and stake-holders to acknowledge their roles and responsibilities in waste management and to become aware of their own agency regarding waste and waste management [69,70]. The villagers started to think afresh about waste management and the need to take initiative in order to make changes which, according to Janmaimool and Denpaiboon, are signs of the pro-environmental behavior needed for taking responsibility for waste management [69].

Theme 7: Language in research.

Squires et al. [71] and Fryer [72] regard language and comprehension as fundamental for in-depth research interviews. So did some of the student-researchers, who felt that the use of the local language played a significant role in the CBPR process. Therefore, to ensure an inclusive approach with a team that was both national and transnational, the use of the local language, with the assistance of the community workers and the Hindi-speaking students, was important and respectful. Translations for the foreign students added another dimension to the process.

Theme 8: Students' reflection on belief systems.

CBPR, according to Yan et al. [73], invites researchers to interrogate what assumptions, beliefs, and questions they brought to research, and it challenges researchers to position themselves. The participatory research process of this study opened new vistas for the student-researchers to delve deep into their assumed knowledge systems and ideas. The forays into the field revealed certain social realities to the student-researchers and caused them to question several domains of their own hard-held beliefs, especially for those who had never interrogated social stratifications like caste and gender relations before.

Theme 9: The impact of inequality in waste management services.

The role of official waste disposal and management actors and their absence in these villages were highlighted throughout the research. The student-researchers understood that all services are not equitably distributed among all villages, and while some villages have waste-collection vehicles that come to pick up the waste, the villages in this study do not receive the same services. There is thus a clear need for equal service delivery.

The student-researchers reflected on the impact of the lack of waste management and how it is a critical issue regarding not only SDG 10 but also other SDGs. According to the student-researchers, major problems have been created by the lack of waste management services; increased waste generation, mainly due to new non-biodegradable substances alien to rural waste management practices; and the increasing use of these non-biodegradable substances by villagers and tourists alike, as one stated:

Waste management is a burning issue that needs to be addressed because it affects society; the economy; the environment, for example, climate change; human health; food and resource security; and sustainable production and consumption.

The diversity and potential consequences of soil and groundwater pollution impacts and the limited capacity in developing countries, such as India, for addressing such impacts make establishing an advanced waste management system a key cross-cutting issue for achieving SDGs.

In line with Kalina's [74,75] findings, the student-researchers came to the conclusion that good and equal waste management realized human rights and most of the SDGs.

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3.6. Impact of JRCT's Work in the Communities

According to Krishnan et al. [76], CBPR is best learned when carried out in partnership with those affected. The learnings are not only for the student-researchers but also for those affected and to effect social change. CBPR should create knowledge of change.

According to the narrative reports to donors, JRCT's work reaches nearly 15,000 community members. JRCT's team works in collaboration with local governing bodies and local state authorities [14].

The CBPR process was carried out in collaboration with the local heads of the village councils and the participating village members. This workshop, according to the student-researchers, has added to the existing capacities of the JRCT team. Subsequent to the workshop, the mapping of other villages and the Clean the Village Campaign continue in other villages. It also will allow JRCT to conduct CBPR for other issues, including how to gather information and process it to develop an action plan.

In addition, working with students of an academic institution has created future possibilities of learning together.

4. Discussion

The international workshop on CBPR methods and techniques was initiated with three clear objectives:

- First, that all participants learn the method, relevance, and process of CBPR;
- Second, that the local lived realities of communities are brought squarely into the
 agendas of the SDGs where the discussions on inequalities, climate, migration, and
 other issues are not limited to generalized quantitative indicators only (the necessity
 of bringing the local realities into the analysis of SDGs and their progress is a major
 mandate of this project and, therefore, also of the CBPR workshop);
- Third, that social research is applied in a participatory manner in order to support local communities.

Theme 1 of the reflections of the student-researchers showed that the participants learned the value and the methods, relevance, and process of CBPR. They have all actively participated in the data collection, analysis, presentations of the results, and co-creation of action plans.

Themes 2–9 of the results are evidence of the fact that the student-researchers learned even more from engaging with the local lived realities of the villagers. They have learned that understanding local contexts and realities from the point of view of the villagers is essential in order to measure the progress in the achievement of SDG 10. It became a key driver for learning that social inequalities are many and diverse, depending on the local contexts, and thus researchers need to highlight them. How the villagers perceive waste (including which types of waste the villagers consider harmful and which they do not), their inability to handle certain types of waste, their ideas for possible disposal, the impact on and knowledge of the villagers, the agency (or lack thereof) to dispose of waste, and the ecology of the region provide context and clarity to the researchers.

The student-researchers also developed the capacity to work alongside the JRCT community workers and to learn from them in a transnational process, as the researchers came from different parts of the country (India) and the world. Their understanding of the village contexts, the villagers, and what the villagers thought about the waste generated; their relationship with the villagers; the politics of waste and waste management; local governance roles; and NGO interventions and possibilities were all rich learning during the workshop.

The student-researchers understood the core values of reflective learning and conducting participatory research and of acknowledging assumptions about social, ecological, and political contexts. They learned that, sometimes, what seems like a small issue, in this case waste and waste management, actually impacts everyone, and all involved are accountable and need to take action to address the problem.

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Lastly, the student-researchers participated in developing implementable action plans with the villagers, which will be taken forward by the villagers with the support from JRCT and other stakeholders.

5. Conclusions

An experiential learning workshop for student-researchers to learn the basic steps of CBPR was conducted in conjunction with a rural NGO in India. The workshop included researchers from three countries, staff members, and community members. The topic, "Waste Management", was chosen by the local NGO and integrated with the multinational university research program through a CBPR methodology workshop. CBPR as a research methodology ensures the inclusion of local contexts and realities that enrich the process of "localisation" of the SDGs. This workshop enabled researchers to bring in the "voice" of the locals and the possibilities of action plans for waste management. This article describes the background, learning process, and results of the CBPR workshop and focuses on the collaboration of students, staff, and community members as well as the application of research for action.

CBPR is about the co-creation of knowledge for change [19,28,29,42,43,76]. This article describes the CBPR process of co-creation for change between the student-researchers, JRCT, and the villagers. Where CBPR processes are usually slow and aligned with the pace of the community, this CBPR training session was rapid, having been applied within one week. The trusting relationships between JRCT and the villagers that already existed made it possible for this CBPR process to be so rapid. It was also possible to make rapid assessments [6] of the major waste issues with the community, which resulted in good and implementable action plans that can be taken forward by the community workers and villagers after the researchers have left. It was insightful that the exposure to the real-life context of the villagers yielded more learnings for the student-researchers than the learning from the theoretical CBPR process.

This research confirms the assertions of Coombes et al. [20] and Gencel et al. [38] that the guiding principles of EL are more meaningful when the following occur for participants:

- They are actively involved in real-world problems that require solutions;
- They are engaged in activities that allow them to learn and then apply what they have learned;
- They create plans to solve a problem and evaluate their choices;
- They share and benefit from one another's knowledge;
- They are actively participating in the process, knowledge, and behavior. Attitudes are more likely to change as well.

EL also results in increased self-confidence and leadership skills [29,30]. The research workshop enabled the student-researchers to learn to develop and conduct CBPR. It also developed participants' insight into how local communities think of and act to address critical issues, such as waste management. Finally, the major outcome of this research has been the development of an action plan by the communities engaged in the research to address the critical problem of waste and its management. The implementation of the plans will be taken forward by the community workers and community members, under the guidance and with the support from the JRCT management (author 4) who were part of the training and the development of the plans.

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