

The peer teaching methodology of the university of and for waste pickers: how teaching is learning

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Introduction

Popular education is an approach to learning that prioritizes the experiences, knowledge, and perspectives of marginalized or disadvantaged groups. With strong historical roots in Latin America and in social justice, this educational framework aims to empower individuals and communities by promoting critical thinking, social awareness, and active participation in social and political change. Unlike traditional education models, which often emphasize a top-down, formalized transmission of knowledge, popular education focuses on dialogue, collective learning, and the recognition of learners as active subjects in the educational process. It has been widely applied, from adult literacy programs to political training initiatives, always seeking to raise awareness and transform communities. For Paulo Freire ([1970] 1996a) a Brazilian pedagogue, popular education is a political act aimed at unveiling and overcoming the conditions of structural oppression that perpetuates inequality. Therefore, the aim of popular education is to contribute to building a more just and equitable society, breaking with the hegemonic logic of exclusion and acting as a practice of freedom that challenges power structures by recognizing the oppressed as historical subjects, capable of transforming their reality (Freire [1970] 1996a).

In the Latin American context, marked by profound socio-economic disparities, popular education has been essential for the formation of social movements that seek the structural transformation of society (Zitkoski 2017). One example is the National Movement of Waste Pickers of Brazil (MNCR), created in 2001, which has promoted training for waste pickers based on popular education. This training has helped leaders stand out and promote the defense of waste pickers throughout Brazil, achieving important victories such as public policies and access to funding (Alves 2016). Despite this, access to resources depends very much on the political will and interest of the government in place. Waste pickers' main demand is for municipalities to contract out the provision of the service so that they can have adequate working conditions. This is why constant training and capacity-building for waste pickers is important, as it allows them to understand their rights, create cooperation networks and organize themselves to defend their agendas and transform their realities.

The University of and with waste pickers (UNICATA) was created in 2023 in São Paulo (Brazil) as a collaborative project between representatives from the national waste pickers movement (MNCR) and academics. UNICATA is a training proposal based on popular education and is founded on counter-hegemonic thinking and practice for critical action (Freire [1970] 1996a). UNICATA's general objective is to promote access to and sharing of academic and popular knowledge, providing opportunities for reflections for those who are often vulnerable and excluded. In addition, UNICATA seeks to prepare waste pickers to act as service providers in waste management, recycling and environmental education.

The design of the UNICATA course was supported by research carried out with waste pickers from 12 cooperatives in the metropolitan region of São Paulo, to define the topics of interest. Based on the results, the course was divided into 6 modules, each with 56 hours of in person classes. The modules are: 1. Introduction to the course; 2. History, political education and the waste picker as a social subject; 3. Administration and management of cooperatives; 4. Regulatory and legislative aspects; 5. Sustainability and health at work; 6. Research practices focused on waste management. During the final module students conduct a research project, like an Honours project. Throughout the other modules students are also encouraged to do research and to present their results at the end of each module. By 2024, four classes had graduated from module 1 and

two classes from module 2 in São Paulo and Brasília, 54 waste pickers have completed the module one, 32 women and 22 men. Of the total number of students, 70% come from cooperatives and associations, 28% are self-employed waste pickers and 2% work exclusively in social movements. Of the 37 students from São Paulo, 34 carry out their collections in the city, 23 of whom work in the districts classified as the poorest in the municipality.

Teaching at UNICATA is grounded in a hands-on, collaborative approach, where classes are co-facilitated by experienced waste pickers in partnership with academics or technicians. The methodology is inspired by the pedagogical principles of peer teaching (Rubin and Herbert 1989), an approach also applied by the National Movement of Waste Pickers through their method "from Catador to Catador". This approach emerged from a desire to promote the agency of waste pickers, to challenge the overabundance of technical interventions that have alienated them, and to foster deeper engagement and participation. It emphasizes the use of accessible, everyday language to facilitate understanding and inclusivity (Alves 2016). The practice is important because it reflects on the self-esteem of the students, since "it is another waste picker like them who is talking, who knows the difficult reality of their work and brings these experiences to the training environment" (IPESA 2013, 116).

Waste picker educators work independently or belong to a cooperative or may be representatives of the MNCR. Technical or academic educators can be faculty members or graduate students from any of the partner universities or technical professionals who work as consultants and have worked with waste pickers for many years. This methodology strengthens the bond between academics and waste pickers and is a powerful tool for hands-on training with the result of strengthening the waste pickers who are in the role of educators. Freire ([1970] 1996a) emphasizes that the act of teaching is intrinsically linked to the act of learning. When teaching, the educators reflect on their practice, confront their own understandings and opens themselves up to new learning, also becoming a learner in the process. This article analyzes UNICATA's paired teaching methodology and seeks to understand how waste picker educators develop when they take on the role of instructor.

The first section of this article introduces the theoretical foundation upon which it is based, highlighting the concepts of Vygotsky's Zone of Proximal Development (1978) and Kolb's Experiential Learning Cycle

(1984). This is followed by a description of the methodology employed in the development of the article. Next the results and discussion of the empirical data collected on the paired methodology and the role of waste pickers as educators at UNICATA are presented. Finally, the article concludes with a set of final considerations.

Theoretical Review

Paulo Freire's [1970] 1996a) critique of traditional education, particularly his concept of "banking education", describes the traditional, top-down model of hierarchical education, of passive knowledge transmission by the teacher, which disregards the experiences and previous knowledge of the students. In its place, Freire proposes a dialogical and problematizing education, in which dialogue is the central axis, allowing educators and students to actively participate in the construction of knowledge. Educational practice in this context is oriented towards conscientization, a process that helps individuals recognize the structures of oppression in their lives and where they become agents of their own liberation (Freire [1970] 1996a). In summary, the principles of popular education are: (a) horizontality, which emphasizes equality between educators and learners, promoting the exchange of experiences and knowledge; (b) active participation, which implies the active involvement of participants in defining the themes and methods of learning; (c) contextualization, which considers the importance of relating the content to the local reality and the issues faced by the community and; (d) dialogicity, which encourages critical dialogue and collective reflection as a way of constructing knowledge (Feitosa 1999).

Authors such as Vygotsky (1978) and Kolb (1984) developed theories in dialog with popular education and that contribute to the pedagogical popular education framework. Vygotsky (1978) developed a socio-interactionist theory that highlights the central role of social interaction in cognitive development. One of the most influential concepts of this theory is the Zone of Proximal Development (ZPD), which refers to the distance between what an individual can achieve on their own and what they can achieve with the guidance of a mentor or through the collaboration of more experienced peers. For Vygotsky, learning takes place within this zone, through a process of scaffolding, in which the mediator offers temporary support to help the learner master new skills or knowledge, gradually withdrawing this support as they become more independent (1978).

The concept of ZPD allows educators to identify latent learning potential in their students, valuing the repertoire of knowledge acquired in everyday life and work. Furthermore, Vygotsky's emphasis on the mediating role of the educator resonates with collaborative and dialogical teaching practices, where the educator acts as a facilitator of learning, rather than simply transmitting knowledge.

In adult education, ZPD can be applied to support learning in areas where adults do not yet have complete mastery but can make significant progress with the right support. The idea is that the most effective learning occurs when the student is challenged with tasks that are beyond their immediate capacity, but within their ability to accomplish with the help of a guide or tutor (Brusilovsky 2007). This is particularly relevant in popular education, where participatory and collaborative methodologies are widely used to encourage critical development and autonomy. In addition, this approach challenges the traditional view of teaching centered only on independent performance, valuing social interaction. Vygotsky (1978) emphasizes the importance of social interaction mediated by cultural artifacts in the psychological development of individuals. These artifacts range from simple objects, such as a pen or a spoon, to more complex elements, such as language, beliefs, customs and cultural practices. These tools not only facilitate everyday activities but also play a fundamental role in the construction of knowledge and in the way, individuals interact with the world around them (Vygotsky 1978).

Kolb (1984) also believes that concrete experience and collaborative reflection are fundamental to meaningful learning. The author developed the theory of Experiential Learning, the core of which is the Experiential Learning Cycle (ELC), which describes learning as a dynamic process involving four interrelated stages: 1) concrete experience, in which the individual experiences a specific situation; 2) reflective observation, when the learner reflects on the experience, analyzing it and recognizing patterns; 3) abstract conceptualization, the learner transforms these reflections into concepts or theories that explain the experiences and; 4) active experimentation, when the learners apply these concepts in new situations, testing and improving what they have learned. This cycle is continuous and flexible, allowing learners to move between stages depending on situation and context. The reflection and conceptualization stages allow adults to integrate their previous knowledge with new learning, while active experimentation allows them to test their theories

in real situations, promoting meaningful and contextualized learning. These stages are interdependent and help create a continuous and dynamic learning environment. By following this cycle, the educator enables students to become autonomous learners, capable of applying what they have learned in an effective and reflective way (Yardley, Teunissen and Dornan 2012).

Constructivism is not a method but a conception of knowledge. From this perspective, one can understand that there are similar principles between constructivism and popular education, such as the dialectical perspectives and the understanding that people are producers of culture and subjects who produce knowledge. In this way, it is understood that integrating the theories of Freire ([1970] 1996a), Vygotsky (1978) and Kolb (1984) provides a solid basis for promoting participatory, critical and transformative learning. The Freirean approach, centered on dialogue and problematization, emphasizes the role of the subjects in the collective construction of knowledge based on their concrete realities (Freire 2005). Added to this process is Vygotsky's concept of ZPD, which highlights the importance of social interaction in learning and cognitive development. By understanding the ZPD, educators and students can build knowledge together, respecting previous knowledge and exploring new possibilities for collaborative learning (Vygotsky 1978). Finally, Kolb's ELC makes it possible to think of the aspects presented above in stages, connected in a cycle that allows the learning experience to be constructed in a fluid and continuous way (Kolb 1984).

Methodology

This article is grounded in an experience report, a qualitative methodology that values subjectivity and the researchers' active engagement in the contexts under study (Gil 2008). According to (Freire [1970] 1996a), educational and social practices must be constantly revisited through critical reflection. In this regard, the experience report not only describes experiences, but promotes a critical reading of reality, providing opportunities for social and educational transformations. This perspective underscores the report's potential to move beyond mere description, engaging in interpretation and offering insightful propositions (Daltro and Faria 2019). Despite some criticism, the experience report has become a well-established methodology for knowledge production, especially in areas that value reflective practice and the analysis of individual and collective experiences (Daltro and Faria

2019). This approach allows for the articulation of theory and practice, shedding light on narratives that emerge from specific contexts—narratives often overlooked in conventional research paradigms. Therefore, the experience report, when based on consistent theoretical reflections, becomes a powerful methodology for narrating, analyzing and problematizing lived practices. It responds to the need for methodologies that integrate theory and practice, recognizing the subjects and their experiences as central agents in the construction of knowledge (Daltro and Faria 2019).

To achieve this, we employed the stages of participant observation (Spradley 1980). This method involves the researcher actively engaging with the environment or community under study, allowing data to be collected through direct interaction with the participants. Such an approach generates rich, contextually grounded insights that can be systematically organized and presented as an experience report. Participant observation values a close look at practices, discourses and social dynamics, bridging the gap between descriptive accounts and critical interpretation (Minayo 2010). When combined with experience reports, this methodology strengthens the reflexivity and legitimacy of the narratives, transforming lived experiences into structured, scientifically relevant knowledge.

As primary data, we analyzed records from UNICATA classes, including accounts of the waste pickers' experiences and reflections on the classroom documented in the field diary. This was complemented by data gathered through questionnaires, evaluations, notes and testimonies recorded during the meetings. In addition, classroom activities were captured through audio and visual recordings, enabling us to revisit the materials and validate the results. The primary data were organized in spreadsheets and then systematized and analyzed qualitatively. Two structured interviews were also conducted with waste pickers who served as educators.

Results and Discussion

UNICATA's paired methodology begins with a series of workshops designed to prepare the educators. Three workshops were conducted, each one prior to a module offered in São Paulo. These workshops focus on aligning the theoretical, pedagogical, didactic and methodological foundations, to ensuring that educators adopt a democratic, inclusive and

participatory approach in their classes. To this end, the workshops introduce tools to support lesson planning, alongside practical activities that promote participatory methodologies. Drawing on Paulo Freire's ([1970] 1996a) framework, it is believed that only through such hands-on experimentation can educators be fully engaged in adopting this pedagogical perspective in their classrooms and fostering student-centered learning.

During the workshop, educators select the classes they will teach, which also serves as the moment when educator pairs are formed. In the first module offered, all the waste picker educators were experienced, having either led other training programs, served as leaders within their cooperatives or the MNCR, or accumulated over fifteen years of experience in waste picking. Multiple student reports highlighted the profound impact of the waste picker educators' involvement, with one particularly emphasizing the value of the paired methodology: "I really enjoyed listening to G.C.'s story, I think there needs to be more experienced waste pickers talking and bringing their life story" (S.H, self-employed waste picker). "I experienced the same thing that M.M.S said, but I had never thought about it in the way she did" (A.S, cooperative waste picker).

I feel that UNICATA helps as a kind of training for debating because people speak and listen without any problems. For me it's the closest thing to an academic education because I don't have time to go to college and study, so in the time I have, UNICATA gives me that opportunity. It's a space that enriches me a lot, it's a school without walls that I think we must take to everyone, waste pickers and non-waste pickers alike. (V.C, cooperative waste picker).

During the classes, the exchange of experience and dialogue between the educators and the students are central, bringing the social and cultural realities of the waste pickers closer together, which is essential for the internalization of new knowledge and for transforming the student into an active agent in the educational process, as V.C. mentions, teaching them how to debate ideas. In this way, waste picker educators act as cultural and social mediators who not only share knowledge but also speak the "language of the waste pickers", breaking down communication barriers and creating a relationship of trust. This interaction allows students to approach their ZPD more quickly and learn new content (Vygotsky 1978).

In all the modules, multiple waste picker educators expressed interest in teaching, leading to several sessions being co-facilitated by two waste picker educators and a technician. This expanded dynamic of educator participation, which was not initially anticipated, proved to be highly effective. Experienced waste pickers, particularly those with skills such as public speaking, provided support to their peers – those with significant experience in waste picking but no prior teaching background. As a result, a process of mutual support, development, and learning unfolded organically among the waste picker educators themselves. For instance, more experienced waste pickers with strong public speaking abilities encouraged others to step into teaching roles, inviting them to co-deliver classes. This invitation offered reassurance and support to those who were initially uncertain about their ability to participate. One of the waste pickers mentioned: "I don't know how to speak in public, but I know I have to, if I want to do environmental education, I have to know how to speak, and if V.C. is going to help me, then I will [become an educator]" (M.A.R, self-employed waste picker).

Vygotsky (1978) points out that learning takes place more effectively when learners are supported by more experienced mediators who offer support within the PDZ, allowing them to carry out tasks initially beyond their individual capabilities. In the case of UNICATA, the more experienced waste pickers fulfill this role by encouraging and supporting peers who are still developing the skills to become educators. M.A.R.'s account clearly demonstrates the social and emotional mediation that the encouragement of the experienced waste picker had, allowing her to accept the challenge of becoming an educator because she had the support. During the planning and execution of the class, the more experienced waste picker continued to stimulate, teach and support, which led to the development of capacities within the ZPD of the waste picker learning to become an educator.

The technical educators, on the other hand, played a central role in conducting the lesson planning process, acting as a mediator so that the content of the lesson was defined, elaborated and shared jointly. Additionally, the technical educators suggested materials, activities, and information that the waste picker educators could incorporate into their lessons, facilitating in-depth research, content synthesis, and mastery. This process enabled the waste picker educators to effectively present the material in the classroom. Consequently, the waste picker educators

underwent a learning process before delivering the lessons, not only in terms of concepts and content that complemented their lived experience, but also in the development and planning of the lessons themselves. These forms of support illustrate how technical educators help to expand the Zone of Proximal Development (ZPD) of waste picker educators, enabling them to internalize new knowledge and skills in a collaborative, incremental manner.

Just as the technical educators contribute to the development of the waste picker educators, the reverse is also true. Waste picker educators teach technicians how to translate academic knowledge into accessible language, suggest more effective teaching strategies and introduce content, such as political developments, events and facts, that the technicians may not be familiar with. Thus, the process is understood as a simultaneous reciprocal development within four distinct Zones of Proximal Development (ZPD). In this framework, the novice waste picker educator learns from their more experienced peer; the waste picker educators gain insights from the technical educator; the technical educator learns from the waste picker educators; and, finally, the students benefit from the combined expertise of the educator pairs (Figure 1).

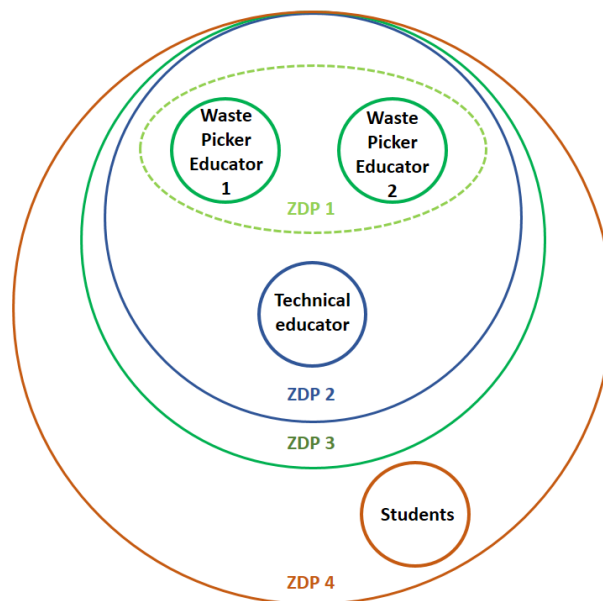


Figure 1. The ZPD in the relationship between waste picker educator, technical educator and UNICATA students. Source: prepared by the authors

Vygotsky does not explicitly discuss the idea that ZPD mediation works in a bidirectional way, meaning that the educator also learns and develops their skills through the process of mediation with the student. However, his theory emphasizes the role of social interaction and dialogue in the construction of knowledge, which indicates that both the educator and the student can benefit from this process, although in different ways. From Paulo Freire's perspective ([1970] 1996a), learning is dialogical: "Those who teach learn by teaching, and those who learn teach by learning" (Freire 1996b, 23). Freire argues that the educator must respect the students' previous knowledge and be willing to learn from their experiences and worldviews. This process is fundamental for an emancipatory education, as it creates a space for collective learning where both educator and student become active subjects in the construction of knowledge (Freire 1996b). In this sense, it is understood that the technical educator learns not only through the act of teaching, but also through a process in which the waste picker educator becomes a mediator of knowledge. By acting consciously, the waste picker educator helps develop the technical educator's ZPD, as they introduce practices, languages and information that the technical educator is unfamiliar with - knowledge that only waste pickers possess.

An example of this can be seen in the comment made by L.H, a waste picker leader: "You're a good educator, you spoke in a way that everyone understood, but you have to give the waste pickers more space to speak. I thought M.A.R. could have said more". This statement indicates the waste pickers' attentiveness to the process of conducting the classes and their representativeness. It also highlights the challenge of the methodology, as some waste pickers, who are still learning to be educators, often prefer to speak less. Mediating the participation and protagonism of waste pickers, while respecting their development time, requires attention, respect and dialog. For this reason, clear and open communication between educator pairs is crucial, enabling them to collaboratively make informed decisions about how to conduct the classes most effectively. By establishing an environment of dialog and respect, the technicians can learn how to improve their role as mediators to strengthen the role of waste pickers, and the educator pairs can learn together how to overcome the challenges of the process. This is essential to ensure that the core principles of the paired methodology are preserved. It also reflects the idea that social interaction, when well mediated, promotes cognitive and social development (Vygotsky 1978).

Continuous evaluation of the pedagogical process is a core principle of UNICATA, as it enables critical reflection that identifies key areas for improvement and offers insight into the waste pickers' perspectives on their learning process. The evaluation allows for reflection on various aspects of class planning and delivery, such as the selection of activities, their appropriateness, the time allocated to each task, and the effectiveness of the teaching approach. Additionally, it provides participants with the opportunity to offer open-ended feedback. The evaluation also encourages waste pickers to reflect on how they might approach the class if they were the educators themselves. This process serves as a form of sensitization, helping them to imagine themselves in teaching roles and, ultimately, motivating them to consider taking on that role in the future. Educators, in turn, record their impressions of the class, offering an opportunity for self-reflection and the identification of potential adjustments for subsequent sessions. At the conclusion of each module, a final evaluation workshop brings all educators together for a collective reflection on the challenges encountered and the potential for future improvement in the classes taught.

UNICATA encourages students to become educators, which is why active methodologies also functions as a public speaking exercise, helping students build confidence in public speaking and, ultimately, preparing them to step into teaching roles. In this context, the final research project of the course plays a crucial role, requiring students not only to conduct research on a specific topic, but also to present their findings publicly. Through this process, even waste pickers who are early in their careers, but who have completed the classes and acquired knowledge and skills, evolve into experienced practitioners. They become capable of taking on the role of educators themselves.

A notable transformation is observed in the way students express themselves: those who initially refrained from participating in debates or did so hesitantly gradually gained confidence throughout the process. By the end, they presented their research with enthusiasm and engagement, and many went on to take on educator roles in subsequent modules. One MNCR leader said: "I was delighted with our classes. I was very surprised by E.C. who said she was shy, and it was incredible, it was chilling to see E.C. teaching" (M.M.S, waste picker leader). The waste pickers also reflected on their own transformation:

My achievement as an educator is a process that continues, overcoming inhibition. (E.C, artisan waste picker).

My greatest achievement as an educator has been to lose the shame of speaking in public, today being able to speak in any environment without fear, carrying the waste picker's voice in some positive way, showing that we are qualified and can provide environmental services in various ways, because we also have the knowledge of the practice. I want to continue being an educator because I believe I can contribute to my category. (L.A.S, self-employed waste picker).

UNICATA's methodology is also in line with Kolb's Experiential Learning Cycle (ELC), especially because it values practice and critical reflection as part of learning. Kolb (1984) proposes a practical model for structuring dynamic and participatory educational processes. For his part, Paulo Freire ([1970] 1996a) values critical reflection as a political and emancipatory act, emphasizing that learning must be rooted in the students' reality and geared towards transforming that reality. Thus, UNICATA seeks to reconcile these approaches and structure the moments of critical reflection and practical action, which promote the protagonism of the students and social transformation as a continuous process. You can see the moments of engagement of the waste picker educators with the phases of the ELC, as shown in the image (Figure 2):

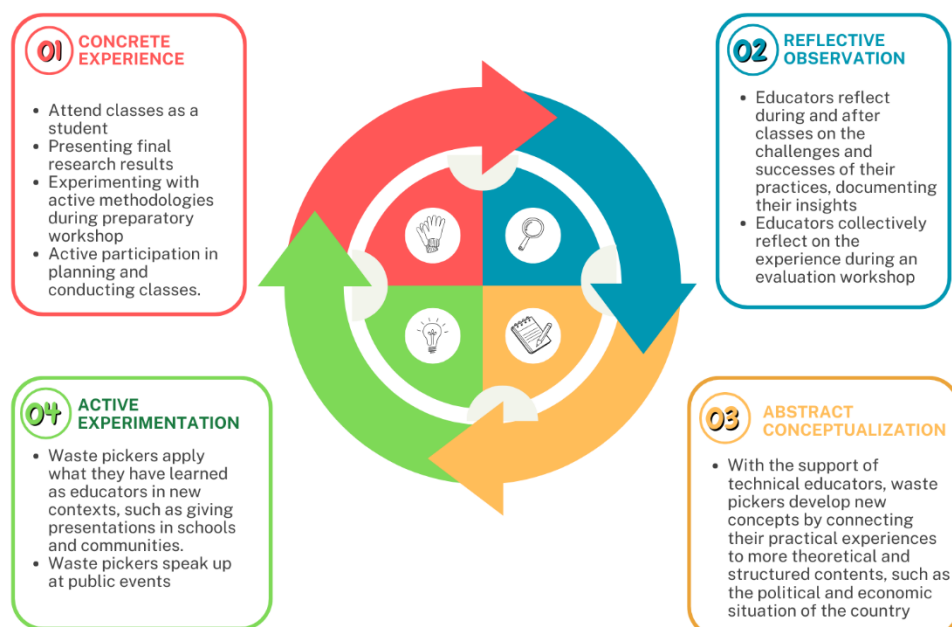


Figure 2: The phases of Kolb's Experiential Learning Cycle in the learning process of UNICATA's waste picker educators. Source: prepared by the authors.

The accounts of two waste pickers further exemplify several stages of the ELC, as demonstrated in the following statements:

At first, I started teaching [at UNICATA] to get other waste picker students interested in handicrafts, then I got involved in the subject, which is intrinsically linked to the country's political situation. And this has given me more pleasure in staying and being able to transform the vision of preserving nature, given that we are going backwards with the process of destroying the planet. There is a force opposing the progress that was being made. And that motivates me. (E.C, artisan waste picker).

After UNICATA, I started giving talks in various places, especially schools. I showed my diploma to a principal, and she invited me to talk to the children. (M.A.R, self- employed waste picker).

The comments reveal how the waste pickers have experienced the different stages of the learning cycle. An example of the abstract conceptualization phase is given by a waste picker who was able to connect her work with the political and environmental context of the topic she presented in class. This not only broadened her understanding of the subject but also became a source of motivation for her to continue as an educator. The active experimentation phase is reflected in the experience of a second waste picker, who, after her time at UNICATA, began applying her learning in new contexts, such as giving talks in schools. She translated her reflections and insights into concrete actions, thereby expanding her role as an educator.

In summary, the students' stories highlight how experiential learning, structured by Kolb's Experiential Learning Cycle (1984), intersects with the dialogical and emancipatory principles of Freire's popular education (1970). Together, these frameworks contribute to a pedagogical process where educators not only internalize new knowledge but also become agents of change within their communities. This integration reinforces the idea that education — when rooted in practice, reflection, and action — can profoundly transform both individuals and social contexts. As demonstrated here, the act of teaching itself is also a transformative process for those who teach.

Final Considerations

The analysis of the paired teaching methodology developed by UNICATA illustrates how pedagogical practices grounded in dialog and shared experience can transform both teaching and learning processes. Rooted in the principles of popular education and recognizing the pivotal role of waste pickers, this methodology transcends the transmission of technical knowledge. It fosters the collective construction of knowledge, deeply respecting the lived experiences and realities of students. The analysis of the teaching evaluations reveals that waste picker educators not only share their expertise but also engage in reciprocal learning, enhancing their own knowledge in the process.

UNICATA's methodology serves as a compelling example of how pedagogical practices, informed by constructivist theories, can address the transformative demands of popular education. The pedagogical framework employed by UNICATA aligns with the theories of Vygotsky and Kolb, demonstrating how learning can be mediated through peer interactions (Rubin and Herbert 1989) and organized into a cycle of concrete experiences, critical reflection, theoretical abstraction, and practical application. Vygotsky's concept of the Zone of Proximal Development provides a valuable lens for understanding how the interaction between more experienced waste pickers and their novice counterparts fosters mutual learning. In parallel, Kolb's Experiential Learning Cycle conceptualizes pedagogy as a dynamic process of continuous practical and conceptual transformation.

The findings indicate that the paired methodology not only contributes to the professional development of waste picker educators but also strengthens their identities as social and political agents capable of effecting community-wide transformation through education. By bridging theory and practice, this pedagogical approach enhances the potential for collective and emancipatory learning, underscoring the importance of educational practices that engage with the social and cultural contexts of students. Ultimately, the UNICATA experience reaffirms the potential of popular education as a tool for social change, while offering a pedagogical model that can inspire similar initiatives in other popular education contexts.

References

- Alves, A. S. (2016), *Formação "de catador para catador": o movimento nacional dos catadores na construção de sua autonomia político pedagógica. (Training "from waste picker to waste picker": the national movement of waste pickers in the construction of their political-pedagogical autonomy)*. MA Dissertation. Brasília: University of Brasília.
- Brusilovsky, P. Kobsa, A. and Nejdl, W. (2007), *The adaptive web: Methods and strategies of web personalization*. Berlin: Springer-Verlag.
- Daltro, M. R. and Faria, A. A. de. (2019), "Relato de experiência: Uma narrativa científica na pós-modernidade" ("Experience report: A scientific narrative in postmodernity"), *Studies and Research in Psychology*, 19(1): 223-237.
- Feitosa, S. C. S. (1999), *Método Paulo Freire: princípios e práticas de uma concepção popular de educação (Paulo Freire Method: principles and practices of a popular conception of education)*. MA Dissertation. São Paulo: University of São Paulo.
- Freire, P. (1996a), *Pedagogy of the oppressed (revised)*. New York: Continuum. [1970]. *Pedagogia do oprimido*. 1st Ed., Rio de Janeiro: Paz e Terra.
- Freire, P. (1996b), *Pedagogia da autonomia: Saberes Necessários à Prática educativa (Pedagogy of autonomy: Knowledge necessary for educational practice)*. 30th Ed., São Paulo: Paz e Terra. (Coleção Leitura).
- Freire, P. (2005), *Pedagogia do Oprimido. (Pedagogy of the oppressed)*. 42th Ed., Rio de Janeiro: Paz e Terra.
- Gil, A. C. (2008), *Métodos e técnicas de pesquisa social. (Methods and techniques of social research)*. 6th Ed., São Paulo: Atlas.
- Pinhel, J. R. (Org) (2013), *Do lixo à cidadania: Guia para a formação de cooperativas de catadores de materiais recicláveis. (From waste to citizenship: Guide for the formation of cooperatives for collectors of recyclable materials)*. Instituto de Projetos e Pesquisas Socioambientais (IPESA). Petrópolis: Petrópolis
- Kolb, D. A. (1984), *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs: Prentice Hall.
- Minayo, M. C. de S. (2010), *O desafio do conhecimento: pesquisa qualitativa em saúde (The challenge of knowledge: Qualitative research in health)*, 12th Ed., São Paulo: Hucitec.
- Rubin, L. and Hebert, C. (1998), "Model for active learning: Collaborative peer teaching". *College Teaching*, 46(1): 26-30.

- Spradley, J. P. (1980), *Participant observation*. New York: Holt, Rinehart and Winston.
- Vygotsky, L. S. (1978), *Mind in society: The development of higher psychological processes.*, in Cole, M., John-Steiner, V., Scribner, S. and Souberman, E. (Eds.), Cambridge: Harvard University Press.
- Yardley S., Teunissen P. W. and Dornan T. (2012), "Experiential learning: AMEE guide No. 63", *Medical Teacher*, 34(2): e102–e115.
- Zitkoski, J. (2017), "Educação popular e movimentos sociais na América Latina: o desafio da participação cidadã" ("Popular education and social movements in Latin America: the challenge of citizen participation"), *Educação (Santa Maria. Online)*, 42(1): 73-84.
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The peer teaching methodology of the university of and for waste pickers: how teaching is learning

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Abstract. This article examines the paired teaching methodology employed by the University of and for Waste Pickers, a notable example of popular education in Brazil. It focuses on the learning processes that emerge through the pedagogical practice between educators. The methodology emphasizes the role of waste pickers, fostering the collective construction of knowledge rooted in their lived experiences. The practice of 'learning by teaching' is central to this model, showing that waste picker educators share knowledge and develop new skills and understandings. Vygotsky's Zone of Proximal Development illuminates how educators act as mediators, supporting the development and knowledge of other educators. Additionally, the pedagogical practices are structured around the stages of Kolb's Experiential Learning Cycle, which in conjunction with Paulo Freire's theory, operationalizes the educational experience in a critical and continuous way. The findings show that this methodology strengthens waste pickers' identities as social and political agents while reaffirming the transformative potential of popular education as an instrument for emancipation and social change.

Keywords: Popular Education, Paired Teaching Methodology, Zone of Proximal Development, Experiential Learning Cycle, Waste Pickers.

La méthodologie d'enseignement par les pairs de l'université de et pour les ramasseurs de déchets : comment l'enseignement est l'apprentissage

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Résumé. Cet article examine la méthodologie de l'enseignement pairé employée par l'Université des et pour les récupérateurs de déchets, un exemple notable de l'éducation populaire au Brésil. Il se concentre sur les processus d'apprentissage qui émergent à travers la pratique pédagogique entre les éducateurs. Cette méthodologie met l'accent sur le rôle des récupérateurs de déchets, favorisant la construction collective du savoir ancrée dans leurs expériences vécues. La pratique de "l'apprentissage par l'enseignement" est centrale dans ce modèle, montrant que les éducateurs récupérateurs de déchets partagent des connaissances et développent de nouvelles compétences et compréhensions. La Zone de Développement Proximal de Vygotsky éclaire comment les éducateurs agissent en tant que médiateurs, soutenant le développement et l'acquisition de savoirs chez d'autres éducateurs. De plus, les pratiques pédagogiques sont structurées autour des étapes du Cycle d'Apprentissage Expérientiel de Kolb, qui, en combinaison avec la théorie de Paulo Freire, opérationnalise l'expérience éducative de manière critique et continue. Les résultats montrent que cette méthodologie renforce l'identité des récupérateurs de déchets en tant qu'agents sociaux et politiques, tout en réaffirmant le potentiel transformateur de l'éducation populaire comme outil d'émancipation et de changement social.

Mots clés: éducation populaire, méthodologie en binôme, zone de développement proximal, cycle d'apprentissage expérientiel, récupérateurs de déchets.

La metodología de enseñanza entre iguales de la universidad de y para recicladores: cómo enseñar es aprender

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Resumen. Este artículo examina la metodología de enseñanza en pareja empleada por la Universidad de y para los Recicladores de Residuos, un ejemplo destacado de educación popular en Brasil. Se centra en los procesos de aprendizaje que emergen a través de la práctica pedagógica entre educadores. La metodología enfatiza el papel de los recicladores, fomentando la construcción colectiva del conocimiento basada en sus experiencias vividas. La práctica de ‘aprender enseñando’ es central en este modelo, demostrando que los educadores recicladores comparten conocimientos y desarrollan nuevas habilidades y comprensiones. La Zona de Desarrollo Proximal de Vygotsky ilumina cómo los educadores actúan como mediadores, apoyando el desarrollo y el conocimiento de otros educadores. Además, las prácticas pedagógicas están estructuradas en torno a las etapas del Ciclo de Aprendizaje Experiencial de Kolb, que, junto con la teoría de Paulo Freire, operacionaliza la experiencia educativa de manera crítica y continua. Los resultados muestran que esta metodología refuerza la identidad de los recicladores como agentes sociales y políticos, al mismo tiempo que reafirma el potencial transformador de la educación popular como un instrumento de emancipación y cambio social.

Palabras clave: Educación Popular, Metodología de Enseñanza en Pares, Zona de Desarrollo Próximo, Ciclo de Aprendizaje Experiencial, Recicladores.

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