

Article

Living with Water, and Learning from It: School Voices as a Way to Rebuild Socio-Territorial Capital in the Face of Disasters in the Lower Salado River Basin (Buenos Aires Province, Argentina): A Case Study

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RESUMEN

Los entornos rurales de la provincia de Buenos Aires se ven atravesados por procesos hidrosociales que transforman y dinamizan el territorio, como las sequías y las inundaciones. Este artículo hace foco en cómo los CEPT (Centros Educativos para la Producción Total), a través de herramientas pedagógicas específicas, permiten a los estudiantes documentar y reflexionar sobre los desastres desde sus propias trayectorias y las de su comunidad. Los CEPT incluyen dentro de su currícula herramientas de la educación de la alternancia tales como Cuadernos de Producción, Planes de Búsqueda y Tesis, las cuales motivan el abordaje específico de tales problemáticas. Mediante el análisis de las producciones escolares derivadas de estas herramientas, nos proponemos indagar cómo las voces estudiantiles, mediadas por el contexto institucional, contribuyen a reconstruir el capital socio-territorial de sus comunidades manifestando el impacto productivo y social de los excesos y déficits hídricos, junto a la existencia de saberes locales y prácticas generacionales de afrontamiento. La investigación toma como caso al CEPT N° 28 "La Unión", en el partido de General Guido, fundado en 2008 y destacado por su continuidad temática. Siguiendo el paradigma de las ciencias sociales en el abordaje de desastres, se tomará a la escuela como un ámbito central de la sociabilidad rural en pos de entender integralmente y en tanto procesos las sequías y las inundaciones. El diseño metodológico es cualitativo, basado en el análisis de contenido de producciones escolares, entrevistas al equipo docente y una instancia de observación participante.

Palavras-chave: educación rural; CEPT; desastres; sequías; inundaciones; Río Salado

ABSTRACT

Rural areas in the province of Buenos Aires are affected by hydrosocial processes that transform and revitalize the territory, such as droughts and floods. This article focuses on how CEPTs (Educational Centers for Total Production), through specific pedagogical tools, allow students to document and reflect on disasters from their own perspectives and those of their community. CEPTs include in their curriculum tools for alternating education such as Production Notebooks, Research Plans, and Theses, which encourage a specific approach to such issues. Through the analysis of school productions derived from these tools, we propose to investigate how student voices, mediated by the institutional context, contribute to rebuilding the socio-territorial capital of their communities by expressing the productive and social impact of water excesses and deficits, together with the existence of local knowledge and generational coping practices. The research takes as its case study CEPT No. 28 "La Unión," in the district of General Guido, founded in 2008 and noted for its thematic continuity. Following the social science paradigm in addressing disasters, the school will be taken as a central arena of rural sociability in order to understand droughts and floods comprehensively and as processes. The methodological design is qualitative, based on content analysis of school productions, interviews with the teaching team, and participant observation.

Keywords: Keywords: rural education; CEPT; disasters; droughts; floods; Salado River



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Introduction

In rural areas of the province of Buenos Aires, Argentina, water dynamics shape a hydrosocial cycle¹ in which both droughts and floods transform the territorial systems in which they occur. Disasters, as manifestations of development deficits (Pereyra, 2017), have a direct impact on local forms of organization and the circulation of knowledge, reconfiguring the socio-territorial capital of communities: that network of community ties, memories, and capacities for action anchored territorially around, in our case, water deficits and excesses. This is particularly noticeable in the lower basin of the Salado River, an area where water, whether in excess or deficit, has historically been a fundamental issue in the territorial configuration. In this context, the Educational Centers for Total Production (CEPT) emerge as key spaces from which to revisit the multiple ways in which their students and their families coexist with water. The young people who attend these agricultural schools in Buenos Aires, based on the pedagogy of alternation, echo the water issue through various instruments in their curriculum (the “alternation tools”), which encourage them to interrogate their own territorial realities. By working with three specific tools (Production Notebooks, Research Plans, and Theses, which form part of the collection of sources analyzed in this study), students in grades 1 through 4 at CEPT schools establish productive diagnoses, review coping practices, and review the impacts of droughts and floods, while also making proposals for improvement in the face of the problem. In this process, students contribute to the reconstruction of their communities' socio-territorial capital, understood not only as a network of social ties that articulate ways of acting during disasters, but also as a dynamic network of knowledge, practices, and memories surrounding the hydrodynamics of the territory. This point is fundamental to analyzing the construction of disaster-resilient communities from a local perspective, understanding resilience as the capacity of a system, community, or society exposed to threats to resist, absorb, and recover from the effects of a disaster (UNDRR 2015).

The relationship between schools and community resilience building has been addressed institutionally from the perspective of disaster risk management focused on children and youth (UNICEF 2016; UNDRR 2020). At the same time, some studies highlight the importance of actively including both groups in disaster risk management and call for taking advantage of the possibilities offered by everyday formal educational spaces (often ignored in disaster management practice) to involve children in the preparation and planning of resilient communities (Bell *et al.* 2024). The study by Bell *et al.* (2024) on the Peruvian case demonstrates how school curricula can serve as platforms for intergenerational storytelling about specific climate processes such as El Niño, challenging knowledge hierarchies and highlighting youth subjectivities around disasters. On the other hand, Ronan *et al.* (2016) mention that since the signing of the Sendai Framework for Disaster Risk Reduction 2015-2030, there have been key advances in disaster risk reduction with a focus on children and young people, including a significant increase in research articles and political agreements on the role of education in promoting a culture of prevention.

Links between the experiences of educational communities and hydrosocial dynamics in Latin America have already been established in the academic literature. For example, the aforementioned work by Bell *et al.* (2024) analyzes the case of a digital curriculum that uses intergenerational storytelling about the El Niño phenomenon to investigate livelihood opportunities and climate change pressures on the northern coast of Peru. There, the authors evaluate the role of participatory virtual learning in facilitating knowledge of disasters and raising awareness of climate adaptation among students. In turn, the authors critically examine the youth subjectivities that are constructed from these processes. Along the same lines, Parham (2022) reconstructs the consequences of Tropical Storm Erika and Hurricane Maria in the Dominican Republic between 2015 and 2017, which significantly affected the education system at the local and national levels. Since Maria, the author mentions that national initiatives have been introduced to strengthen the resilience of educational communities. The (limited) success of these initiatives, the author comments, has improved community resilience, but the short-term implementation of the initiatives due to COVID-19 and the lack of a knowledge base among teachers have posed challenges for their long-term sustainability.

The existence of these works is an indicator of the progressive inclusion of children and young people in the construction of resilient communities from the school environment. However, this topic has not yet been addressed in the academic literature of our country. What has been widely addressed is the study of the origins and functioning of CEPTs. For example, Gutiérrez (2022) revisits the organization of alternating pedagogy in

¹ The concept of the hydrosocial cycle refers to how, in a given space, water flows are altered by combining physical and social realities in an inseparable and interdependent manner (Garnero 2018; Boelens *et al.* 2016; Linton 2014).



France in the 1930s and its arrival in Latin America around 1960, while Barsky, Dávila, and Busto Tarelli (2009) explore the relationships between rural development and education, focusing on the analysis of CEPTs in Buenos Aires. On the other hand, Medela's (2024) work is a valuable contribution, providing a review of the existing literature on CEPTs. His proposal consists of organizing academic production on these centers around four axes: local development, community participation, pedagogical approach, and the possibilities for youth engagement. The text refers to the work of Forni, Neïman, Roldán, and Sabatino (1998, in Medela, 2024), pioneers in the analysis of alternation as a trigger for rethinking education in peripheral contexts.

Focusing on CEPTs as rural secondary education institutions also means recovering the voices of their protagonists, that is, rural youth. In this sense, the works of Schmuck (2014), Kessler (2005), and Bruniard (2007) problematize the heterogeneous and complex situations of rural youth at the national and Latin American levels. These authors' work not only highlights the diverse realities and specific challenges associated with disasters faced by these communities, but also articulates the active agency of young people in replenishing the socio-territorial capital of their communities: young people are participants in the dynamics of the hydrosocial cycle of the territories they inhabit, and their voices should not be ignored.

In line with the above, this paper takes the case of the CEPT "La Unión" in the district of General Guido (province of Buenos Aires, Argentina) from 2008 to the present. Our hypothesis for this study is that, through the use of the tools provided by the Production Notebooks, Theses, and Research Plans, students report on coping practices, productive diagnoses, and the impacts of droughts and floods in and from their respective places of residence. In this way, young people rebuild the socio-territorial capital of their community, understood as network structures, social ties, social support received and perceived, community ties, roots, and community commitment (Norris *et al.*, 2008), all of which are historically produced and territorially anchored in the rural communities that are part of the CEPT "La Unión."

In this context, one of the main contributions of this article lies in the compilation of primary sources that have been little explored in academic literature, which offer a situated and everyday record of the ways in which young people experience, interpret, and deal with droughts and floods. We understand that through their analysis, it is possible to test an alternative way of studying disasters in rural environments through young people's school productions as devices for appropriating and re-signifying territorial and hydrosocial realities. To carry out the above, this work follows a qualitative methodological design in the form of a case study, a format suitable for understanding the uniqueness and complexity of a phenomenon or process within its specific context and thus being able to interpret the multiple perspectives of the actors involved (Stake 1995). The materials that serve as the basis for this research are the testimonies of two teachers and the institution's director, and two theses written by students between 2020 and 2024². To analyze the theses, we use the tools provided by content analysis. The testimonies of the teachers and the institution's director are essential for understanding the content of the Production Notebooks and Research Plans, which are not available for consultation in digital format, unlike the theses³. The interviews were conducted between November 2024 and March 2025 and were unstructured. Finally, we added our own experience as an external jury in the defense of fourth-year students' Theses in November 2024. In this work, adult mediation in the recovery of young people's experiences is both an indispensable tool for accessing them (since the researchers themselves cannot interview the students directly for legal reasons) and a methodological challenge. That is why this mediation will attempt to be nuanced in three ways: through content analysis of the students' written work (i.e., the two theses), participant observation, and teacher testimonials. In short, even though the students' direct testimonials are not present in this article, their experience is indirectly manifested in the sources analyzed. We recognize that this mediation conditions interpretations of youth agency, so we seek to problematize this limitation throughout the work to avoid, as far as possible, the overemphasis of teachers' voices.

The work is structured as follows. In the next section, we will introduce the alternating school model in rural education in Buenos Aires and its relationship with rural development and disasters understood as the

² One interview was conducted at the CEPT "La Unión" during participant observation and the other in the city of Dolores, as both the author and the teacher live there. On the other hand, although one of the theses analyzed was written by a student residing in the district of Dolores and focusing on that same district, the institution to which he belongs is still CEPT No. 28. It should be noted that Dolores is also part of the lower basin of the Salado River, as is General Guido.

³ Although the theses are available in schools and teachers also have them in digital format, access to them is not completely open. In practice, their availability as a source for this research depends largely on the willingness of the teaching staff to share them, making them semi-public sources.



materialization of development deficits (Pereyra 2017). Next, we will explore the uses of alternating education tools and how they contribute to the replenishment of socio-territorial capital by students. In the following section, we will explore the connections between socio-territorial capital and resilience, highlighting the trends toward the individualization of risk management that are constructed from the "resilient vision" (Sandoval-Díaz 2020). Next, we will explore each of the variables proposed in this study. We will conclude the paper by returning to the main findings (i.e., the main results of the study) in order to problematize its scope and limitations, highlighting both the specificity of the case analyzed and the possible lines of research that open up from it.

CEPT: between alternation and rural development

CEPT No. 28 Paraje "La Unión" in the district of General Guido was created in 2008 thanks to the initial impetus of teachers from Primary School No. 4, located just 600 meters away. Located in the lower basin of the Salado River (a region characterized by cyclical droughts and floods), the school has been closely linked to the vicissitudes of the hydro-meteorological regime since its inception. In particular, two significant floods (2015 and 2021) and two cycles of drought (2008-2009 and from 2022 onwards) stand out, the impacts of which were felt in local productive activity, directly affecting livestock producers and the daily lives of rural families.

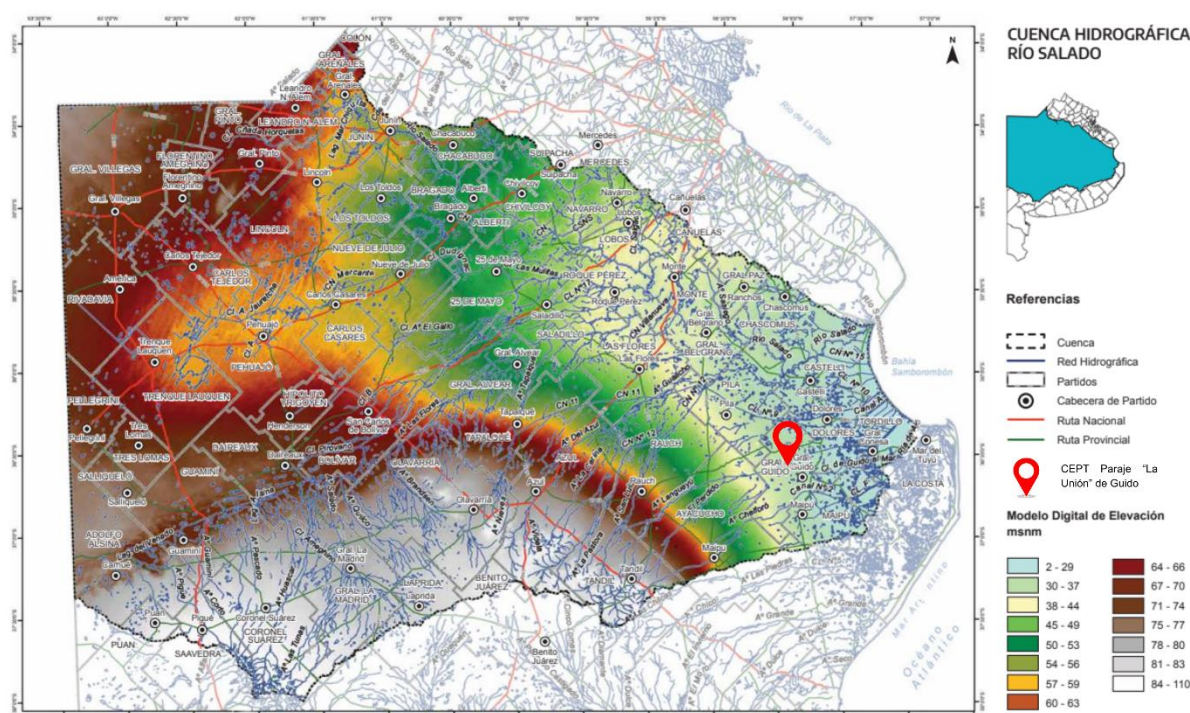


Figure 1. Location of CEPT No. 28 "La Unión" in the lower Salado River basin. Source (MIINFRA, 2020)

CEPTs have a basic cycle (first to third year of secondary school) and an upper cycle (fourth to seventh year), both of which are compulsory, and are managed jointly by the provincial government and civil society. ACEPT, the legal organization that oversees them, brings together representatives of family farming and livestock production, such as small producers and rural workers, who are also relatives of CEPT students. A second-level entity that includes the associations is the Federation of Associations of Educational Centers for Total Production, or FACEPT (Gutiérrez 2022). The management team at CEPT No. 28 includes the director, the work-study and production coordinator, and the secretary, plus four coordinators for the areas of production, environment, rural community, and culture and communication. Adding in support teachers and cleaning and kitchen staff, around 20 adults work at La Unión.

The work-study program at this educational institution works as follows: students stay at school for one week, from Monday to Friday, and then spend two weeks at home with their families. Time at the institution is measured in weeks of attendance. At CEPT "La Unión," first and second years attend during the first week, third and fourth years attend the following week, and fifth, sixth, and seventh years attend the week after that.



Currently, CEPT No. 28 has an enrollment of just over 100 students between the ages of 11 and 19, from first to seventh grade, for a total of 30 to 40 students who attend school weekly. In general, the students are the children of farm workers (rural laborers) and live with their families on farms in the countryside. The week they spend at school is practically the only time they socialize with their peers due to the distance between their homes and those of other children and the urban centers of the districts in which they live (interview with Cristian, director of CEPT No. 28, General Guido, November 2024). CEPT "La Unión" not only accommodates students from the district of General Guido, but also receives students from neighboring districts such as Dolores, Maipú, Mar Chiquita, General Madariaga, and Tordillo, among others. The same is true for teachers, who live mainly in the cities of Dolores, General Conesa (district of Tordillo), and General Guido.

A distinctive feature of this educational proposal is the monitoring of students by teachers through visits: during the period of stay, teachers visit students in their homes and help them with their homework or assigned activities. This adds a layer of complexity to the teachers' testimony about the students' situation: they not only see them at school, but also visit them in their home and work environments. According to calculations made by the management team using Google Maps, the total area covered by teachers during their visits is slightly larger than the smallest Argentine province, Tucumán, which has an area of 22,592 km² (interview with Cristian, director of CEPT No. 28, General Guido, November 2024). This data illustrates the vastness of the territory and the density of the pedagogical-community bond that characterizes CEPT "La Unión."



Figure 2. Facade of CEPT "La Unión." Source: the institution's Instagram page.⁴

With this in mind, teachers do not limit themselves to transmitting curricular content but also take on the role of "community promoters," since rural development is a fundamental objective of the educational proposal in general. Thus, the alternating pedagogy prioritizes respect for the culture of the rural population and the strengthening of ties with the educational community, integrating education and work as pillars of its pedagogical-productive proposal (Gutiérrez 2022). If we understand disasters as the materialization of development deficits (Pereyra 2017) and if we take into account the CEPT's aspiration toward rural development, certain educational practices are strategic for addressing the problems associated with, in our case, water extremes. In this sense, rural youth at CEPT "La Unión" find themselves in a dual position when it comes to disasters: they suffer them and at the same time position themselves as active agents capable of perceiving, experiencing, and reinterpreting complex processes that, from our point of view, contribute to the reconstruction of socio-territorial capital and the strengthening of community resilience.

⁴ Link: <https://www.instagram.com/cept28launion/>



The reconstruction of socio-territorial capital from school: droughts and floods in the lower Salado River basin

Before delving into the analysis of the materials compiled for this study, it is worth explaining what we mean by socio-territorial capital. It is a notion that intertwines the concept of social capital (Bourdieu 1980; Putnam 1993) with that of territorial capital (Camagni and Capello 2013), to account for a dynamic network of social relations and knowledge anchored in the territory that is (re)activated in disaster contexts. With regard to the first concept, Pierre Bourdieu was one of the first authors to define social capital as the set of real or potential resources associated with belonging to and/or possessing a lasting network of institutionalized relationships of mutual knowledge or recognition (Portes 1999). On the other hand, the notion of territorial capital refers to the set of resources, both tangible and intangible, located in a given territory and which influence its development (Camagni and Capello 2013). Thus, socio-territorial capital is constituted as the set of community resources, intergenerational knowledge, support networks, and relationships of trust anchored in a specific territory that emerge, in our case, in the midst of critical processes such as droughts and floods.

In the context of this research, the concept of socio-territorial capital is not merely a theoretical combination of the two types of capital mentioned above, but rather emerges as a dynamic network of social and spatial resources that are activated in situations of crisis and territorial transformation, such as in the case of disasters. That is why in this work we choose to endorse the concept of territory over that of social capital, since it is often forgotten that the networks and relationships that support the individual and the community are anchored in ways of inhabiting and co-producing territories. In line with the above, the concept of socio-territorial capital in the rural educational context we study is not only a reservoir of territorially informed community knowledge and resources, but also dynamically structures the construction of resilient communities through educational means. To the extent that students actively participate in documenting, analyzing, and transmitting experiences related to floods and droughts, they become fundamental agents in reconstructing the collective memory of the territory and formulating strategies for coexisting with water and its particular hydrodynamics.

The notion of socio-territorial capital is linked to that of resilience. The International Federation of Red Cross and Red Crescent Societies defines resilience as "the capacity of individuals, communities, organizations, or countries exposed to disasters, crises, and underlying vulnerabilities to anticipate, reduce the impact of, and cope with the effects of adversity, and then recover without compromising their long-term prospects" (MINSEG 2022, p. 36). The flip side of resilience is vulnerability. The perspective we adopt in this work is indebted to the idea that disasters are the result of the progression of vulnerability at different spatial and temporal scales (Blaikie *et al.* 1996). By building resilient communities, their vulnerability to disasters can be significantly reduced. However, "resilient visions" (Sandoval-Díaz 2020) in the study of disasters are not without political implications. Cheshire, Pérez, and Shucksmith (2015) mention that there is a tendency to focus on the endogenous characteristics of communities that facilitate resilience (including the presence of networks of trust and reciprocity among their members, i.e., socio-territorial capital), which, combined with the awareness that vulnerability to disasters depends on space, has had a number of political consequences in the approach to community resilience. For example, by extolling the ability of disaster-affected sectors to find solutions to the problems they face on their own, the responsibility for coping and rebuilding is almost entirely shifted to the communities themselves, encouraging the withdrawal of the state from the scene. In this sense, "in the context of neoliberalism and fiscal reduction, resilience runs the risk of being seen as self-help without state support and, in fact, the creation of communities to take 'blow after blow'" (Cheshire, Pérez & Shucksmith 2015, p. 15).

The link between the replenishment of socio-territorial capital and the way in which this is reflected in the educational sphere takes on an interesting aspect in the CEPTs, where tools such as Production Notebooks, Research Plans, and Theses (developed from the first to the fourth year) allow students to identify, document, and address issues related to the territory's hydrosocial cycle. In the Notebooks and Plans, students note down issues related to the marketing of primary products, roots in the countryside, regulatory bodies, rainfall records, and the daily activities that students carry out when they are at home. The Notebooks serve as personal diaries in which students record their daily activities and are designed to improve writing skills and to question issues taken for granted, such as family organization and the distribution of work in the countryside. On the other hand, the Research Plans are developed through work on topics outlined by FACEPT and developed by teachers in class. Based on these topics, students develop a *set* of questions to be answered by their community and then shared in class (interview with Germán, teacher and member of the management team at CEPT No.



28, Dolores, March 2025⁵). Using these first two tools, students begin to ask their relatives and neighbors about the main social and productive problems facing their community, identifying some preliminary productive diagnoses that they will have to deal with if they continue to live in rural areas. Thanks to these first two tools, students reach their fourth year with the research skills necessary to tackle the Thesis course, in which they are asked to choose an issue present in their community and research it throughout the year, finally defending it before a jury composed of two external professionals, a member of ACEPT⁶, and a municipal representative. These are documents of between 15 and 20 pages that include an introduction explaining the students' personal details and presenting the chosen issue. A hypothesis is then proposed, which will be accepted or rejected once the conclusions of the work are presented. This section is followed by the statement of objectives and the writing of a literature review on the topic to be addressed. The most informative section is the one that analyzes interviews with specialists, neighbors, and family members (virtual interview with Sebastián, teacher at CEPT No. 28, March 2025).



Figure 3: Thesis defense in November 2024 at CEPT No. 28, General Guido, Buenos Aires province, Argentina. Source: screenshot of a member of the CEPT management team

Students at CEPT "La Unión" have reported on disaster processes in the area where they live, using some tools from the pedagogy of alternation, such as Production Notebooks, Search Plans, and Theses. By working with these tools, students develop productive diagnoses, report on coping strategies, and point out the impacts of droughts and floods on their local and family realities. According to Schmuck (2014), young people, from their place in the social structure, marked by their family history and life trajectory, construct diverse perspectives on the place where they live and on themselves in relation to that environment. In many cases, students choose to do so by addressing the issue of disasters as recurring realities in their territories, thus replenishing the socio-territorial capital of their communities. The following subsections will take an in-depth look at the productive diagnoses made by the students, the coping strategies, and the impacts that droughts and floods have on the educational community of CEPT No. 28.

Productive diagnoses

By productive diagnoses, we mean the identification and evaluation by students of the conditions under which their rural community carries out its primary economic and productive activities. CEPT No. 28 is located in the lower basin of the Salado River, where the predominant primary production is cattle ranching, followed by sheep farming and agriculture, which is mainly complementary to animal husbandry (Cieza 2020; Maresca, Quiróz García & Plorutti 2011). In general, initial production diagnoses arise from the replacement of generational experiences within the students' immediate community (interview with Germán, teacher and

⁵ The interview was conducted in Dolores because both the author and the teacher are from there and were in the city at the time.



member of the management team at CEPT No. 28, Dolores, December 2024). In this sense, the testimony of the CEPT director sheds light on how tools from the alternating system encourage students to carry out productive diagnoses through Research Plans and Production Notebooks. In the first year, students conduct an investigation into the productive organization of their families, and then analyze that of the community and the area as they progress through their school career. The CEPT director mentions that

There is a Research Plan that investigates, for example, family organization in the first year. [The children] take notes on who makes the decisions, who works, who stays at home, and it becomes very clear: dad is at work and if he needs help, one of the children goes, and if not, mom goes instead. The whole family is present during visits. You arrive, sit down with the visiting teacher, and the father stays for a while and then leaves. The mother, who is in charge of the children's education, stays. When you see it in the workshops here, it also comes out. The children do not socialize with anyone else and repeat gender patterns. They marry young and start families at 18, and they also enter the rural labor market very quickly as farmhands, achieving emancipation from their families of origin sometimes before reaching the age of majority (interview with Cristian, director of CEPT No. 28, General Guido, November 2024).

It should be noted that teachers, as mediators of young people's representations, interpret students' experiences from their own frames of reference, thereby significantly influencing how young people's experiences in the countryside are described. This mediation poses a significant limitation for research: it is not always possible to clearly discern where the student's experience ends and the teacher's interpretation of it begins.

The "normal" family structure mentioned above is disrupted when flooding or drought occurs. The work doubles, and it is generally the father who is responsible for moving the livestock to non-flooded areas due to the dangerous nature of the task. According to another teacher interviewed, the problems diagnosed are directly or indirectly associated with droughts and floods, leading some of these students to choose the issue of water extremes as their thesis topic or, for example, to address how these affect rural roads (interview with Germán, teacher and member of the management team at CEPT No. 28, Dolores, December 2024). While the investigations in the basic cycle are carried out in limited family or group environments, in the upper cycle (and in the thesis in particular) students are asked to interview experts and neighbors who are a little further away from their daily sphere of influence.

From the perspective of the young people who devoted their theses to the study of disasters, these are not perceived as mere anomalies or interruptions of rural life, but as recurring processes that shape territorial identities. However, the inclusion of disasters as an inherent part of territorial reality and, based on this, the subsequent emphasis on building resilient communities should not lead us to fall into the trap of individualizing risk, ignoring the socioeconomic structures that reproduce vulnerable conditions (Gaillard 2010). For example, with regard to rural roads, a student in her thesis argued that, with her family,

We have a 13 km road to reach the highway, but when it rains it is very difficult to get out. The nearest town is to the south, 43 km away, General Juan Madariaga, and to the north, General Conesa, the same distance away. We assume that this situation [referring to the poor condition of the roads during floods] is due to the unsuitable soil, as the road is made of black earth (loam) and should be made of red earth (clay or loam-clay); or due to a lack of maintenance of the drains, which do not allow water to drain easily⁶.

This same student emphasizes that roads are more than relevant for rural residents, since "the poor condition of roads impacts the consumer's economy, social welfare, and even soil conservation"⁷. Here, the poor condition of the roads is presented as a recurring obstacle that affects the productive and social dynamics

⁶ Thesis "Poor condition of the roads in the Santa Elvira area"

⁷ Thesis "Poor condition..."



of her community, shedding light on the ways in which road infrastructure compromised by flooding disrupts the logistics chains for livestock and the movement of people and essential goods. In turn, this student recognizes that loam (the main component of the rural roads she frequents) is unsuitable for traffic because it is characterized by its high water adhesion and slow recovery after rainfall. In our view, this is a concise example of how CEPT "La Unión" students identify the environmental conditions of their territory and articulate their analysis around the detection of their own vulnerability.

Among the diagnoses made in this same thesis, the misuse of roads by residents stands out, as they do not wait for the 72-hour traffic ban when roads are flooded to prevent them from breaking. The student's findings reveal an appropriation of the tools of alternation that help to account for the social, productive, and environmental realities in which young people are immersed together with their families, highlighting a fundamental aspect of life in rural communities: roads. According to the student, the lack of maintenance by residents and authorities affects the ability of the area's inhabitants to access services and markets, which has an impact on their quality of life. The fact that schools emphasize the importance of maintaining roads is part of what Schmuck (2021) calls the transformative role of rural education, which can raise students' awareness of the need for responsible use of road infrastructure in adverse weather conditions.

Other recurring productive diagnoses that teachers receive from students regarding droughts and floods are: the difficulty of marketing certain products (due to the low weight of livestock or the poor condition of roads), pressure from regulatory bodies even during declared emergencies, lack of or excess water in the fields, poor road conditions for traveling and shopping or running errands in the city, and lack of maintenance of water infrastructure, among others. For example, in the thesis "Floods in the district of Dolores and urban area," the author highlights that "floods are due to the geographical location of the district of Dolores and the poor maintenance of infrastructure, which aggravates their consequences"⁸. Thus, the scarcity and lack of maintenance of hydraulic infrastructure (such as floodgates, canals, and embankments) and the organizational weakness of local institutions are perceived as issues that exacerbate the region's exposure to flooding since, by not individualizing the response capacity of those affected, the problem is placed in a broader sociopolitical context that exceeds the community's mere capacity to overcome water extremes.

The same thesis quotes the testimony of an agricultural engineer, who mentions that water extremes compromise the transport of livestock and animal feed, forcing producers to evacuate their livestock (especially calves) to other fields or reduce their animal load. Bearing in mind that the students are mainly the children of farmhands, i.e., the heads of households do not own either the livestock or the land, families often depend on how attentive "the boss" is to their living conditions. Although decisions regarding livestock management are made by the boss, the institution's director highlights the inequality of farmhands in relation to them. This inequality leads to unequal exposure to risk, since "(...) the children often say that the boss ignores their needs and it is the neighbors who come to their aid" (interview with Cristian, director of CEPT No. 28, General Guido, November 2024).

Finally, the director of CEPT mentions that, based on the students' production assessments, the school organizes training sessions in conjunction with institutions such as the National Institute of Agricultural Technology (INTA) or the National Service for Agrifood Health and Quality (SENASA) on common problems in times of drought and flooding. One of the most recent was in coordination with INTA in Dolores, where multiple families received training on herd management in the context of the current drought affecting the area (interview with Cristian, director of CEPT No. 28, General Guido, November 2024).

In summary, the replenishment of socio-territorial capital in this case can be seen when students, through their Production Notebooks, Research Plans, and Theses, carry out productive diagnoses that recover the economic and social practices of their environment at different levels (first family, then community, and finally regional). The analysis of local knowledge captured in interviews with teaching staff and in the Theses allows for a nuanced expert account of disasters, as it gives rise to a situated and relational reading of risk by young people, challenging the existing hierarchy between expert knowledge and local diagnoses of the territory. Finally, such diagnoses also reveal the interdependence between economic and natural systems and between tangible resources (infrastructure) and intangible resources (family experiences, training within the CEPT) within the inhabited space.

⁸ Dolores is a municipality in the lower Salado River basin, next to General Guido. As explained above, CEPT No. 28 accepts students from neighboring municipalities, not just General Guido. Although the thesis is about Dolores (since the author lives there), the institutional affiliation remains CEPT No. 28.



Disaster coping strategies

The replacement of strategies for coping with extreme weather events by students is initially associated with the role of neighborhood assistance in times of flooding and the way in which their relatives mobilized their families and livestock when the fields were flooded. From neighbors who lend their land to move livestock to neighborhood maintenance work on rural roads, the repertoire of actions collected by the students (especially in their theses) has to do with highlighting solidarity among rural neighbors and criticizing the lack of maintenance and hydraulic and/or road works by the provincial and local governments. In one thesis, a student points out that it is the neighbors who collaborate most with local authorities to repair rural roads that have become impassable due to water: "when they see the machine operators, they show them the most affected areas and they try to fix them"⁹. In turn, the same student points out that it is necessary to undertake a community strategy, bearing in mind that "it is up to each of us to take care of the roads we use regularly or occasionally, as we do not know when we will need them"¹⁰, alluding to their lack of maintenance by the authorities or their neglect by the residents. The student also proposes "talking to neighbors to form a committee to represent us at meetings held at the municipality when the issue of rural roads is discussed"¹¹. Based on her research, the young woman outlines both individual and collective coping strategies, such as neighborhood collaboration with tractors and shovels, cleaning sewers, or digging ditches to drain water. She also suggests creating a neighborhood committee to manage complaints to the municipality and ensure compliance with the post-rain traffic ban to protect the integrity of the roads, with the aim of strengthening collective action in the face of structural limitations. The latter is part of a strategic repertoire of coping strategies that CEPT students document in their schoolwork.

In connection with the above, part of the strategies proposed by both students in the two theses analyzed has to do with an explicit recognition of the importance of road and water infrastructure. In this context, community resilience emerges from a complex network of family and community knowledge, neighborhood solidarity, and locally based educational processes, which enables young people to contribute practical solutions such as addressing historical deficits in the management of extreme weather events.

The families of students attending CEPT No. 28 have depended almost exclusively on the help provided by neighbors in the event of flooding and, in extreme cases, on the assistance provided by municipal authorities. It is at this point that it is interesting to return to a critique of the resilience approach. Although strengthening social networks and trust enhances the production of community resilience (since it is these same networks that enable better performance in coping with water extremes at the family, neighborhood, and/or collective levels), this conception focuses on small-scale individual community capacities, thus obscuring the structural and historical processes that create vulnerability. In this same movement, disasters are naturalized and presented as inevitable, causing the state to withdraw so that non-state actors can fulfill public security functions (Bell *et al.* 2024).

Search Plans commonly identify strategies to sustain livestock production during periods of water scarcity, while in Production Diaries, students share how livestock work is organized in times of crisis. For example, during the recent floods, teachers received information from their students about the doubling of work in the fields and the need to resort to alternative means of transportation when the posts were flooded. The school principal comments on what one family had to do to maintain their children's education during the 2015 flood:

The mother went in a boat with the children and their backpacks, and the father went on horseback when it was still possible, and otherwise on the tractor. The boat was tied with a long rope so that the tractor would not pull it so much. They took them to dry land where they had the truck, and there the children transferred to the school bus. Often it is the neighbors who alert authorities that families are stranded and cut off from communication (interview with Cristian, director of CEPT No. 28, General Guido, November 2024).

Thus, the coping strategies that students document and analyze in the alternating tools reveal the importance of neighborhood assistance and the educational community itself in disaster processes. However, as these records come to us through the institutional filter, we are obliged to qualify the teachers' ideas about the students' experience. The director himself acknowledged this in the interview when he mentioned that "(...)

⁹ Thesis "Poor condition..."

¹⁰ Thesis "Poor condition..."

¹¹ Thesis "Poor condition..."



what can one say about this when we live in places where the streets are paved ?" (interview with Cristian, director of CEPT No. 28, General Guido, November 2024), highlighting the difference between himself as a resident of the urban center of Dolores and his students, who live in rural areas.

The stories and subsequent records of how animals are moved, how neighboring fields are used, and how new forms of transportation are emerging highlight the importance of neighborhood support networks, especially when the families of students have their closest neighbor 20 kilometers away. However, by focusing attention on the ability of populations to adapt and resist disasters, there is a possibility of reproducing logics of individual or group responsibility that place the burden of overcoming structural deficiencies on communities. At the same time, it should be noted that the former teacher's account not only recalls the most extreme experiences of his youth, but does so from an adult perspective, mediated by his surprise at the situation and mentioning that he cannot imagine what it must have been like, as he lives in the urban center of a town in the area. Recognizing these interpretive dimensions makes it possible to avoid assuming a mechanical correspondence between what the teacher said and the students' direct experience.

Finally, none of the students at CEPT No. 28 have experienced the two major floods remembered by their relatives, namely those of April and May 1980 and November 1985. However, these two are revisited in the theses and in the comments that teachers receive on the subject. The students reappropriate these experiences, which acquire meaning through relational networks that occur inter- and intragenerationally and that place the history of physical and social territorial realities at the center of the scene.

The strategies recovered above not only reveal the practical repertoire of families and the educational community in the midst of a disaster, but also highlight the tensions between local and community solutions and government responses, which are characterized as fragmented and reactive. Thus, the educational context in question functions as a space in which experiences related to droughts and floods are collected, systematized, and reinterpreted, taking into account a variety of actors, not only from the community but also from the government, if only to highlight their inefficient actions.

Impacts of droughts and floods

Droughts and floods have a different impact on the CEPT educational community. First, it is floods, not droughts, that disrupt normal educational activities.

Some of the things that were recorded [in the Search Plans] were that [some families] could not leave the countryside for a whole month and had to make do with what they had because in some cases their employers were unaware of the situation. There were families who [in 2015] were unable to leave the village for a month until a neighbor found out and got them a boat so they could go shopping. They will not lack meat, but they lacked other things (interview with Cristian, director of CEPT No. 28, General Guido, November 2024).

Adding to the above testimony is the comment made by a student in her thesis, who highlights that the increasing deterioration of rural road networks affects family life since "you can't leave [the countryside] to take [your] children to school, or leave for an emergency"¹². When the roads are flooded, young people are unable to attend classes, thus affecting their education and limiting their already scarce opportunities for social interaction with their peers. Thus, the impact of flooding "is not restricted to the productive sphere, but has a direct impact on social welfare and food security"¹³. These effects, which are discussed in the thesis, are echoed in the testimonies of the teachers interviewed at CEPT No. 28, to whom families comment on the prolonged isolation they often suffer during periods of heavy rain and flooding of nearby waterways, or due to the impassability of the rural roads mentioned above (interview with Cristian, director of CEPT No. 28, General Guido, November 2024). As mentioned above, although the teachers' testimonies provide valuable information on the impact of flooding on educational continuity, these accounts are not neutral, but are permeated by an adult perspective that is institutionally embedded, since once it has been established that everyone is safe, the focus of concern is school attendance.

¹² Thesis "Poor condition of the roads in the Santa Elvira area"

¹³ Thesis "Poor condition..."



In addition to the issue of the total isolation of rural families when the fields are flooded, the CEPT educational community was shaken by a tragedy during the 2015 flood, following the death of the father of a student and member of the institution's Board of Directors, who was swept away by the current while trying to move animals from one field to another. The tragedy was deeply felt by the educational community and the teaching staff in general, among other things because his children studied at the institution and because the person accompanying him was the former director of the school.

Comparatively, it is the Search Plan tool that most addresses the issue of flooding due to the existence of a plan called "Climate Extremes," which investigates the history of droughts and floods, their frequency, and their impact on the productive and community activities of families (interview with Cristian, director of CEPT No. 28, General Guido, November 2024). However, the theses analyzed also touch on the topic of the impacts of droughts and floods, although not as extensively as in the aforementioned Search Plan. In this regard, one student in a thesis revisits the impact of floods in the district where he lives with his family.

Floods are the most significant natural events in the province of Buenos Aires and the Salado basin, destroying everything in their path, whether crops, pastures, animals, etc. These events are almost impossible to avoid unless the land is higher¹⁴

Floods, according to the previous quote, are inevitable because the land in the area is low-lying. They are understood to be part of life in rural communities due to their frequency: having experienced floods is part of the primary productive reality of the Salado River basin, which means that students' identities are shaped by a series of social relationships and lived experiences that reflect both the adversity of living conditions in times of disaster and the adaptation of communities to these same conditions. The thesis "Floods in the Dolores district" reviews the impacts of flooding in rural areas, highlighting the loss of pastures, the death of animals, and the deterioration of animal health. The same thesis draws on the testimony of a former employee of the Provincial Water Authority, which is used to analyze certain patterns of peri-urban occupation in low-lying and flood-prone areas, thus providing a spatial analysis that shows how different the impacts of a disaster can be for certain exposed social groups. In this way, the impacts highlighted by the young man reflect the territorial transformations caused by disasters in the region. From the above, it is possible to recognize the dynamic and varied constitution of youth identities as something spatially anchored and shaped by networks of relationships and experiences within specific social, economic, political, and historical contexts (Bell *et al.* 2024), in which water and its hydrosocial dynamics play a significant role.

On the other hand, the two theses analyzed mention that producers and the Rural Society have played a relevant role in the discussion on the impacts of water excesses, while emphasizing that there are no organizations with sufficient weight to make decisions and solve the problem. In this mapping of actors involved in the problem of droughts and floods in the lower Salado River basin, the students are far from producing merely descriptive material on the impacts of the problem addressed. On the contrary, their position is critical, as they not only point out the impacts of the disasters, but also highlight the consequences of the inaction of the State at its multiple levels.

As we mentioned earlier, by reviewing the students' production journals, the teachers noticed how the students referred to the impact on the increase in work during the flood season. In the case of droughts, the impact is reflected in high animal mortality and landscape degradation. So much so that students and teachers emphasize the shocking sight of yellow fields without vegetation or animals (comment by a student during the thesis defense at CEPT No. 28, General Guido, November 2024).

The differentiated impacts of droughts and floods are rethought in the school environment as catalysts for socio-territorial transformations. By recording the degradation of the landscape or the death of animals, students not only expose the vulnerabilities that exist within their own communities, but also highlight the capacity for community reorganization that is activated in critical contexts. This observation, combined with inquiries into the strategies of their families and neighbors, produces a wealth of information that, far from focusing solely on the losses caused by disasters, is reoriented toward the inclusion of disaster processes as part of rural life. Finally, at CEPT "La Unión," by promoting spaces in which experiences during droughts and floods are recovered (linking students with experts, for example), a strategic environment is created to convey demands, challenge knowledge, and articulate proposals for improvement that are in constant dialogue with the realities of the territory produced and inhabited.

¹⁴ Thesis "Flooding in the Dolores district and urban area"



Final reflections

Although we cannot say that droughts and floods are a constant issue in all school communities in the different CEPTs, the case analyzed allows us to argue that they are part of the recurring experiences in certain specific areas of the lower Salado River basin. In this work, we attempt to recover the sustained commitment of the educational community of CEPT "La Unión" to the issue of disasters. Community resilience is built more robustly when educational institutions address traditional ways of coexisting with water extremes and include them in the curriculum using alternating tools.

Some possible directions for further research on the subject could be to expand the population under study to include other CEPTs to determine whether, for example, the issue of disasters is recurrent in these other institutions. The possibility of the intersection between rural youth, school, and other types of disasters, such as fires in other parts of the country, could also be considered.

In this work, we attempt to demonstrate that, through the use of alternating tools, the students of No. 28 contribute to the analysis of water issues in their territories, reconstructing the socio-territorial capital of their communities through the collection of quantitative and testimonial information and the formulation of diagnoses on droughts and floods. However, most of the testimonies collected come from teachers and administrators, so in this case, the voices of young people are mediated by institutionally framed representations. Although this responds to limitations in access to other testimonies, it must be taken into account when weighing the youth agency analyzed. Nevertheless, in this work we attempt to observe how these interpretations are articulated with the texts produced by the students, incorporating a hybrid form of experiential narrative into the analysis. This is territorially anchored and mediated by the teachers' own experiences.

We understand that approaches focused on youth participation in disaster risk management not only strengthen community resilience, but also promote a sense of collective responsibility and long-term preparedness, generating lasting effects in both disaster risk management and the building of resilient communities, without losing sight of the dangers of romanticizing resilience, individualizing risk, and naturalizing vulnerability.

In closing, we believe that the case of CEPT No. 28 in General Guido illustrates the ways in which alternating tools allow schools to address hydrosocial issues such as droughts and floods, while enabling ways to systematize local knowledge and foster the strengthening of community disaster response capacities. However, this potential does not exempt the State from its responsibility for the structural management of the conditions that generate vulnerability and exposure to water extremes. Rather, educational initiatives such as the one analyzed highlight the need for effective coordination between local, provincial, and national levels in building resilient communities around disasters.

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