

Another health is possible: food pedagogies and health education in continuous teacher education

ABSTRACT

The aim of this study is to describe, substantiate, and analyze the outcomes of a class on Food Pedagogies and Health Education (HE) conducted as part of a continuing teacher education program in Argentina. The course addressed, as the teaching object of the Food Pedagogies, Food and eating in its multidimensionality, complexity, and diversity, emphasizing social inequalities, production circuits, and food sovereignty. The experience was systematized from an interpretive-critical perspective. We reconstructed the class and analyzed 314 teaching proposals to identify conceptions of Food, models of HE, and positions regarding cultural diversity, using content analysis. We selected 25 proposals that fit the extended and/or critical-intercultural approach and examined their teaching strategies. Surveys and interviews with participants revealed their learning processes. Overall, 59.24% of the proposals aligned with a vertical paradigm, while 38.85% reflected a democratic one. Participants valued the renewal of their practices, the articulation between food, territory, and Indigenous peoples, and the pedagogical support provided. Designed strategies included critically reading the territory, investigating food practices, problematizing inequalities, analyzing food circuits, and promoting participation. The educational proposals constructed by teachers show progress toward a critical-participatory HE approach, though hegemonic models of Food and HE still prevail, and sociocultural diversity remains scarcely integrated. The articulation with Environmental Education strengthened the understanding of the relationship between health and the environment. Proposals that integrated scientific and popular knowledge, although still emerging, demonstrated potential to transform educational practices and contribute to the collective construction of alternative, equitable health models.

KEYWORDS: Health; Education; Teacher education; Complexity; Intercultural Education.

Raúl Esteban Ithuralde

esteban@ccpems.exactas.uba.ar

orcid.org/0000-0002-9757-0530

Universidad de Buenos Aires (UBA),

Buenos Aires, Argentina

Verónica Elizabeth Becerro

veroebc@gmail.com

orcid.org/0000-0002-8286-3912

Universidad Nacional de La Plata

(UNLP), La Plata, provincia de Buenos

Aires, Argentina

Silvina Cordero

scordero@fahce.unlp.edu.ar

orcid.org/0000-0002-0254-041X

Universidad Nacional de La Plata

(UNLP), La Plata, provincia de Buenos

Aires, Argentina

Otra salud es posible: alimentación y educación en salud en la formación docente continua en tiempos de pandemia

RESUMEN

El objetivo de este trabajo es describir, fundamentar y analizar los resultados de una clase sobre Alimentación y Educación en Salud (EeS) desarrollada en una formación docente continua en Argentina. El curso abordó la Alimentación desde su multidimensionalidad, complejidad y diversidad, destacando desigualdades sociales, circuitos productivos y procesos de soberanía alimentaria. Sistematizamos la experiencia desde un enfoque interpretativo-crítico. Reconstruimos la clase y analizamos 314 propuestas docentes para identificar concepciones sobre Alimentación, modelos de EeS y posicionamientos ante la diversidad cultural, mediante categorización abierta y espiralada. Seleccionamos 25 propuestas docentes enmarcadas en la interculturalidad crítica y/o extendida y caracterizamos sus estrategias de enseñanza. A través de encuestas y entrevistas a cursantxs, reconocimos sus aprendizajes. El 59,24% de las propuestas respondió al paradigma verticalista y el 38,85% al democrático. Lxs cursantes valoraron la renovación de sus prácticas, la articulación entre alimentación, territorio y pueblos originarios, y el acompañamiento pedagógico. Las estrategias que diseñaron incluyeron leer críticamente el territorio, indagar en prácticas alimentarias, problematizar desigualdades, analizar el circuito del alimento y promover la participación. En las propuestas identificamos avances hacia una EeS crítica-participativa, aunque prevalecen modelos hegemónicos sobre Alimentación y EeS y escasa incorporación de la diversidad sociocultural. La articulación con la Educación Ambiental fortaleció la comprensión del vínculo entre salud y ambiente; y las propuestas que integraron saberes científicos y populares, aunque incipientes, mostraron potencial para transformar las prácticas educativas y contribuir a la construcción colectiva de otra salud posible.

PALAVRAS-CHAVE: Saúde; Educação; Formação docente; Complexidade; Educação Intercultural.

INTRODUCTION

"Another health is possible" was the slogan proposed during the COVID-19 pandemic by some members of our inter-university and interdisciplinary group, the Science Education Group (Grupo Didáctica de las Ciencias, GDC), which we adopted as a guiding horizon for our interventions. For our group, this global emergency was an expression of the socio-environmental crisis that had been denounced since the 1970s (Dumrauf, Cordero and Mengascini, 2016), arising from a predatory and colonising relationship with nature. In the educational field, the pandemic brought about a mass shift towards "emergency remote teaching" (Dussel, Ferrante and Pulfer, 2020). It was within this context that we designed and implemented a nationwide formative experience in Argentina, drawing on more than twenty years of research, teacher education and community engagement in the field we refer to as Education in Natural Sciences, Environment and Health (hereafter NSEH, from the Spanish Educación en Ciencias Naturales, Ambiental y en Salud (Cordero et al., 2011).

The National Continuing Education Programme "Our School" (Nuestra Escuela), run by the National Institute of Teacher Education (Instituto Nacional de Formación Docente, INFoD), invited the GDC to design, coordinate and implement the proposal of this course. The course lasted for eight weeks in a tutored virtual format and it was addressed to primary school Natural Sciences teachers. It was delivered on two occasions during 2021, comprising four asynchronous sessions, each one having both optional and compulsory activities and discussion forums (Ithuralde et al, 2025). The three authors of this article, all members of the GDC, participated in the course as coordinators, tutorial supervisors, or tutors. Among the many themes addressed by the group throughout its history, Food and Nutrition has occupied a prominent place, both in teacher education processes and in work with community organisations. Drawing on the GDC's prior studies and experiences (Cordero et al., 2016; Cordero & Zucchi, 2019), the course dedicated one session to an approach that foregrounds the socio-cultural and political-economic dimensions of the process of eating, prioritising these over the biomedical perspective that predominates in educational materials and traditional teacher education proposals.

In continuity with our ongoing inquiries - and all the more so given the pandemic context - we set out to develop with the teachers who participated in the course a reflective itinerary that would contribute to the design of grounded, intercultural and transformative NSEH teaching proposals situated within their local territories. With specific regard to Health Education (HE), we sought to move beyond the biomedical perspective so widespread in everyday teaching practices, and to promote new and different ways of conceptualising health, articulating health-related aspects with cross-cutting perspectives such as Comprehensive Environmental Education, Comprehensive Sex Education and interculturality.

Working within a classic continuing teacher education model (Bender, Duarte Bastos and Chitolina Schetinger, 2022), imposed by the conditions of preventive and mandatory social isolation and distancing, we nonetheless sought to offer a proposal that: valued teachers' knowledge and their capacity to construct theory from it; aimed to problematise the content under study and participants' relationship - as both teachers and learners - with that content; and addressed

NSEH topics characterised by complexity and multidimensionality (analysing their various dimensions, their dynamic nature and their conflictual character). The proposal also sought to situate the teaching of NSEH within their inhabited territory, in order to (re)think it, make visible its actors, interests, dialogues, conflicts and possible strategies for social change, with community organisational strengthening as an overarching horizon. Finally, it engaged with the Natural Sciences content prescribed in jurisdictional curricular documents, promoting the design of concrete educational situations.

Our aim is to describe, contextualise, present and analyse the outcomes of this continuing teacher education experience, focusing on the second session of the course -devoted to Eating and HE- with a view to deepening conceptualisations of the teaching of Eating from a critical, multidimensional and complex theoretical framework. Analysis of this session is of particular interest because addressing the topic of Eating from a non-traditional, multidimensional and complex perspective constituted a significant formative challenge: teaching practices and curricular documents in many Argentine jurisdictions restrict its treatment to the biomedical dimension. Within this political-theoretical framework, health tends to be conceptualised as an individual phenomenon identified by the absence of disease and regulated by a body of experts. Classroom proposals on Eating are generally inspired by nutritional programmes from international organisations, which provide information and advice on the quantity and composition of "healthy" food, weight regulation, disease prevention and the incorporation of "good habits". Teachers are also faced with a plethora of publishers and popular science materials offering information on the "physiological need" for nutrients, grounded in a unified and universal model of the human being. In this way, among other consequences, the knowledge and practices of children and their families are sidelined, proposals remain decontextualised, and the possibility of studying the topic in all its complexity is foreclosed. The questions guiding this paper are: From what perspectives, and in what ways, did the teaching proposal promote a critical approach to Eating? From what HE and cultural diversity perspectives do teachers in continuing education processes produce teaching proposals on Eating? And what teaching strategies for Eating prove most fruitful in sustaining an education grounded in democratic HE paradigms and in perspectives of critical and/or extended interculturality?

Thus, we consider that the systematisation and analysis carried out here constitute contributions not only to our own practice as teacher educators, but also to the broader field of teacher education in NSEH, and specifically in Health Education.

THEORETICAL FRAMEWORK

We concur with Bresolin Marinho and Da Silva (2018) about making evident that the field of health practices in school education needs to be conceived comprehensively; that is, we need to think from the actions that are being developed and problematise them, through to how to strengthen popular participation and value the knowledge of the population (Bresolin Marinho and Da Silva, 2018, p. 712).

For this reason, both in the elaboration of the teacher education proposal and in the analysis of its outcomes, and with regard to models of HE, we draw on the classification proposed by Garelli and Dumrauf (2021), summarised in Figure 1.

Figure 1.

Characterisation of paradigms and approaches in Health Education.

Paradigm	Approach	Ontological (conception of Education)	Dimension of Health and	Epistemological Dimension (knowledge s recognised as valid)	Dimension of Praxis (educational perspective)
Vertical	Hygienist / Normalist	Health: absence of disease. Focused on the normalisation of bodies. Education as auxiliary to medicine.		Biological and medical sciences	Transmission-reception model
	Comportamental	Health: Bio-psycho-social equilibrium. Focused on healthy life habits. Education as a privileged process for normalisation.		Biological and medical sciences	Transmission-reception model
	Socio-ecological	Health: multidimensional concept. Human right. Education as a process for individual and/or community promotion.		Biological, medical and social sciences	Constructive perspective
Democratic	Participatory-critical	Health: polysemic and complex object. Humman right. Education as a process for collective and individual empowerment.		Scientific knowledges (biological, medical and social) and other knowledges systems	Participatory perspectives (Critical Pedagogies, Popular Education)

Source: Garelli & Dumrauf (2021).

In order to develop this classification, the aforementioned authors drew on the paradigms and models proposed by Di Leo (2009), Fainsod and Busca (2016) and Martins et al. (2015), and integrated these with their own contributions. Drawing on ideas from Breilh (2013), they characterised each approach through the ontological dimension (how health and education are understood), the epistemological dimension (which sources of knowledge are recognised as valid) and the dimension of *praxis* (the educational perspective that is upheld). Garelli and Dumrauf (2021) thus identified a verticalist, moralistic and biomedical paradigm -historically hegemonic and aligned with the Hegemonic Medical Model (Menéndez, 2005)-. Within this paradigm, the educational perspective is grounded in a transmission-reception model in which only biomedical scientific knowledge is regarded as valid. This paradigm comprises two distinct approaches or models: (a) the normative or hygienist approach (in which health is conceived as the absence

of disease and education focuses on the normalisation of bodies) and (b) the behavioural or personalised approach (which regards health as bio-psycho-social equilibrium and promotes healthy lifestyles, while nonetheless maintaining education as a process which soughts to normalise). On the other hand, they identify a democratic paradigm, which also encompasses two approaches or models. The first, termed socio-ecological, broadens the conception of health as a human right, valuing knowledge from multiple disciplines (including the social sciences) and drawing on constructivist proposals in which the objectives of education are aligned with health promotion. The second is the participatory-critical approach, grounded in Latin American critical pedagogies and the Latin American Popular Education Movement. Here, health -in addition to being a human right- is conceived as polysemic and complex; and education aims for individual and collective empowerment, in which both scientific knowledge and knowledge produced within other knowledge systems are valued (Dumrauf and Garelli, 2021). For our part, we incorporate into the analysis a third model within the democratic paradigm, which we term critical, and whose distinction from the participatory-critical model lies in the fact that it does not presuppose genuine participation by the community and/or families in the teaching proposal.

The consideration of cultural diversity was addressed lying on the categorization produced by Díaz and Rodríguez de Anca (2014), who identify various perspectives on interculturality. These understandings range from approaches that promote the harmonisation of cultural relations from within a dominant matrix, to others that foreground the political, social and conflictual character of such relations, understanding culture as a field of ideological contestation. Within this framework, we draw on the five positions distinguished by the authors: Relational Interculturality (RI), Functional Interculturality (FI), Critical Interculturality (CI), Extended Interculturality (EI) and Critical and Extended Interculturality (CEI). RI proceeds from the recognition of contact between different cultures and the need to promote spaces of interaction and dialogue. However, this perspective tends to render invisible the underlying conflicts and the profound structural inequalities between cultural groups. FI proposes the formal incorporation of knowledge from indigenous or subaltern cultures, yet stripped of its political meaning and its connection to the life projects of those peoples, and frequently essentialising or stereotyping them. Consequently, in these first two perspectives the demands of subalternised groups are acknowledged only superficially, without producing substantive transformations in educational institutions, whilst FI reinforces the very structure of inequality. CI, for its part, proposes the deconstruction of the hegemonic discourses that shape notions of national identity, race, ethnicity, sexuality, gender, health, illness, normality, knowledge and ignorance, as well as the putative universality of Western thought. From this standpoint, it is argued that dominant discourses continue to construct stereotyped and decontextualised representations of otherness, conceiving cultures and identities as fixed and essential entities. It is further recognised that contemporary societies are traversed by deep inequalities that condition the legitimacy of diverse ways of life, languages and worldviews. Finally, EI extends the critical gaze by proposing the deconstruction of discourses on identity and culture through consideration of the intersections between race, ethnicity, gender, age, sexual orientation, nationality, religion and culture -dimensions that are structurally interwoven within the State and in society-. This approach is oriented

towards the whole society, transcending analytical frameworks centred exclusively on indigenous peoples or subalternised sociocultural groups. The articulation of the Critical and Extended perspectives constitutes Critical and Extended Interculturality (CEI), which, in recognising the inherent cultural and social conflictuality, invites reflection on the forms of understanding and the practices of diverse cultural groups -both historical and contemporary- in dialogue with scientific knowledge. In the field of NSEH Education, CI (and CEI) seeks to problematise the epistemological exclusivity of scientific knowledge, historicising the practices that have presented it as the sole valid form of knowledge, and promoting the coexistence of and exchange between different ways of explaining and understanding natural and social phenomena.

METHODOLOGY

The course was led by a teaching team comprising four coordinators and eight tutors with diverse professional trajectories, ages, geographical locations and disciplinary backgrounds (Chemistry, Biology, Ecology, Physics, Anthropology, Educational Sciences and Communication Sciences). A total of 999 teachers enrolled in the course; however, only 488 participated in at least one activity, 301 submitted the Final Integrative Assignment and 236 passed it. The constantly shifting educational situation across different jurisdictions throughout the duration of the course -alternating between remote, hybrid and face-to-face education modalities- entailed a significant increase in teachers' workload, which contributed to the high dropout rate observed in continuing education initiatives such as this one. Teachers from all jurisdictions across the country enrolled, the majority of whom were between 20 and 50 years of age and worked in urban primary education (with a small percentage working in rural and special education modalities).

We rely on systematisation of experiences as an interpretive-critical research paradigm (Jara, 2013; Carr and Kemmis, 1986). For Jara (2013), systematising an experience means critically interpreting a lived practice with the aim of understanding it, learning from it and sharing its insights. It is not merely a description, but rather a process of reflection and reconstruction that enables knowledge to be generated from practice.

From this perspective, it is necessary to recover the lived process -reconstructing what happened, how and why, organizing results both chronologically and meaningfully- for which a plurality of records of the experience is required. In our case, the data corpus was constructed from the materials produced for the course and the exchanges that occurred throughout that process, which made it possible to reconstruct and contextualise the session as it developed. In addition, we included participants' written contributions to the course's virtual discussion forums, in order to identify within them the HE perspectives adopted and the consideration given to cultural diversity, and to (re)construct strategies for the teaching of Nutrition, Food Systems and Eating. Finally, we carried out interviews and surveys with course participants to gather around their evaluations and reflections on the course and to understand the ways in which they reinterpreted the course's approaches. Building on this reconstruction, we engaged in a process of critical reflection in which we analysed

outcomes, contradictions, learnings and changes, and interpreted events in the light of the systematisation axes. We then formulated conclusions, learnings and projections aimed at producing knowledge with the aim of transforming practice.

The participants' written contributions that we analysed correspond to the responses produced for the final accreditation forum of the session. This was a compulsory activity, in which we asked course participants to produce a teaching proposal for implementation in their primary school classrooms. The proposal required them to address "the topic of eating, food and nutrition in a manner situated within the sociocultural and institutional context, using the *dish route* as a resource" (Cordero et al, 2021, p. 21). This didactic resource proposes reconstructing of the circuit of production, distribution, consumption, and preparation of a dish, which had previously been introduced in the session as an optional activity. In this compulsory activity, participants were required to describe the activity to be carried out and its aims. They also had to indicate which concepts from the course they were drawing on and to what end. Additionally, they needed to explain how they related the proposal to the sociocultural and institutional context in which it would be implemented, and how they planned to make visible and value the diversity present in their classrooms. We carried out open and spiral categorisation (Saldaña, 2009) of 314 proposals submitted to the forums across the 16 virtual groups. Taking into account the instructions for this assignment, we began by classifying the proposals according to whether they fulfilled the requirement to mention and/or characterise their implementation context, their aims or intentions, the content addressed and the planned pedagogical strategies. Simultaneously, we generated initial criteria inspired by the theoretical framework presented above: the HE models (Dumrauf and Garelli, 2021) and the perspectives on interculturality (Díaz and Rodríguez de Anca, 2014). Both the descriptive and contextual data and the analytical dimensions were entered by the authors into a collaborative spreadsheet.

To ensure the validity of the process, we employed researcher triangulation (Denzin, 1978, cited in Sereno and Schenkel, 2024), understood as intersubjective validation through independent analysis and consensus-building. As an interdisciplinary team, each co-author analysed the data separately; we then compared, discussed and contrasted the findings recorded in the document in order to reach a collective interpretation that would minimise bias, with objectivity as a guiding horizon. When a proposal did not fit the existing categories, we generated new ones, agreed upon in team meetings. These meetings also allowed us to revisit previously analysed proposals, lending the process its spiral character. In the course of this process, we incorporated the critical HE model — which had not been present in the original theoretical framework — as it allowed us to encompass a set of proposals that engaged in structural problematisation of eating, food and nutrition but did not promote instances of genuine participation by pupils and/or the community, as the participatory-critical model requires (Garelli and Dumrauf, 2021; Fainsod and Busca, 2016).

Through this back-and-forth between theory, empirical data and discussion among the research team, we agreed on the following criteria for analysis:

Verticalist paradigm:

- Regardless of approach, proposals had to conceptualise health as an individual matter and value only biological and biomedical knowledge.
- Proposals with a normative approach had to transmit health guidelines from a moralistic standpoint and position themselves as auxiliary to medicine (Di Leo, 2009; Dumrauf and Garelli, 2021).
- Proposals with a personalised or behavioural approach had to aim, above all, at generating changes in individuals' habits in relation to health matters (Fainsod and Busca, 2016; Dumrauf and Garelli, 2021).

Democratic paradigm:

- In the case of the socio-ecological approach, proposals had to incorporate both biological and social dimensions of eating, food systems and nutrition, situating them in relation to the environment and conceptualising health as a right and as a collective process (Martins et al., 2015).
- To be assigned to the critical or participatory-critical approaches, proposals had to include some problematisation of structural social issues, stereotypes and/or forms of violence; and in the case of the participatory-critical approach, they additionally had to propose collective actions involving families and/or actors from outside the school (Fainsod and Busca, 2016; Dumrauf and Garelli, 2021).

It should be noted that the typologies employed in this study serve as an analytical tool for examining the proposals; the writing of those proposals, however, as well as the positions and practices of the educators themselves, are undoubtedly more complex and may involve intersections, overlaps and various combinations across these paradigms and approaches.

RESULTS

FOUNDATIONS AND ANALYSIS OF THE TEACHING PROPOSAL

In this section, we address the first question guiding our analysis: from what perspectives and in what ways did the teaching proposal developed promote a critical approach to food systems and eating? The systematisation of the teaching proposal allowed us, on the one hand, to reconstruct the logic, sources and foundations of each section of the material and the activities proposed in the class. On the other hand, it revealed the prior experiences, obstacles and needs that we took into account in its development and implementation.

We began by considering eating as a complex sociocultural practice (Aguirre, 2019), from a multireferential and interdisciplinary approach that takes into account the biological, geographical, sociocultural and political conditions in which it develops. Whilst valuing content from Natural Sciences, such as the nutritional value of foods and the physiology of digestion and excretion, we situated this within the social processes of food consumption in which nutrition occurs as a biological phenomenon. In doing so, we moved away from biomedical perspectives on teaching these contents, which are closely tied to verticalist paradigms of Health Education (Garelli & Dumrauf, 2021), particularly the personalised or

behavioural model of Health Education, which proposes that education should enable individuals to develop healthy habits. In Food Education, this translates into school constructs such as the food pyramid or food oval, which homogenise the ways in which healthy eating (in singular) can be developed. In contrast to this, we understand that cultures have historically given rise to multiple healthy forms of eating (in the plural). In the past, food production was mainly intended for local areas, more closely aligned with nearby environmental configurations, rather than current production, which is directed towards large-scale commercial trade and travels mostly long distances before reaching consumers.

To implement this perspective in distance-based educational practice, we first recovered, through a video, the experience of an in-service teacher regarding the teaching of Natural Sciences during the COVID-19 pandemic. Amongst the strategies deployed, this teacher proposed generating an agroecological vegetable garden and reflecting on the complexity of relationships between living beings, which cannot be adequately described through linear food chains. Thus, we proposed thinking about these relationships through interconnected networks, accessing their complexity.

In this way, the teacher education proposal was to explore jointly:

a) food systems and eating viewed from a complexity perspective; b) cultural diversity and social inequality surrounding food and eating practices; c) the possibilities of articulations between Natural Sciences Education, Health Education, Environmental Education and Comprehensive Sexual Education; and finally, d) the importance of relationships for educational practices. (Cordero et al, 2021, p. 3)

We continued by problematising the notion that food is primarily a biological matter, showing how in different cultures certain foods are preferred for consumption whilst others are considered inappropriate, even though from a biological point of view they are perfectly suitable (for example, beef, pork and dog meat, as proposed by anthropologist Marvin Harris, 1989). Following Aguirre (2019), we demonstrated how eating amongst human beings is shaped by commensality as a sociocultural practice. This practice distinguishes us from other species, but also amongst cultures. Based on photographs of families from different geographies and cultures, with the foods they consume in a week of similar monetary value, we invited reflection on the diversity of food and eating practices in our territories.

In light of what has been presented previously, we proposed thinking about what it means, how sociocultural diversity and social inequality are constructed, and how we can work towards the production of curricular justice (Connell, 1993) in Food Pedagogies.

We then addressed possible meanings of the concept of food through a record of a workshop with in-service teachers in 2014 and a word cloud generated there. On that occasion, the words that emerged were classified into the following dimensions: a) biological, b) medical, c) cultural, d) economic and/or political (with some words potentially spanning more than one dimension). Regarding this latter dimension, we problematised which foods it is possible to obtain according to what the market offers and according to the income of each social group, expressing that the choice of food is not free, but rather is conditioned politically and economically.

Based on what has already been presented, we proposed an optional activity entitled "The Route of the Dish", in which teachers were asked to describe a meal that formed part of a student's diet, choose two ingredients from it and reconstruct the circuit of production, distribution, acquisition, preparation and consumption of those two ingredients. One axis of reflection was the degree of control that communities possess in these different phases of food consumption. The routes of the dish made it possible to recognise both situations of domination by food, and alternatives to hegemony produced "from below". In a sense, we aligned here with the proposal by Lopes Pinhão, Marques Dorvillé and Kaplan (2025) regarding the importance of family farming for the valorisation of local resources, the production of quality food and the preservation of natural assets.

Thus, we sought to put forward the idea that there is no single "healthy diet" (singular, universal), but rather, in different social and geographical spaces and different historical moments, there have been multiple ways "of eating in accordance with context, conditions of inequality, cultural practices, the time of year, [to] articulate the care of health and food consumption" (Cordero et al, 2021, p. 11). Biology and Medicine offer guidelines for optimal nutritional values to be ingested daily or weekly, but these values can be achieved through multiple diets that draw on diverse ingredients and ways of preparing them in different geographies and historical moments, which demonstrates how culture is an essential part of our practices as human beings, even those most closely linked to meeting biomedical needs. In this way, resources such as the food pyramid or food oval are also problematised from within biomedicine, as they do not display this heterogeneity of forms of healthy eating (in the plural). The aim was thus to prompt reflection on the articulation between food consumption and the care of health. In that context, the concept of food sovereignty was introduced as the right of peoples to decide the foods they wish to consume and the forms in which they are produced, in accordance with their traditions, environments and cultures, which calls for prioritising foods produced locally and valorising the role of peasants, Indigenous peoples and family farmers in agricultural production and food consumption (Witman, 2023). It was therefore proposed to

promote, through renewed and strengthened links between school-families and school-communities (as demonstrated in the accounts of Lorena and Gabriela), activities in which families experience the possibility of moving towards food sovereignty in their own everyday lives (Cordero et al, 2021, p. 14).

To deepen the aforementioned, we shared experiences from different teachers regarding food routes, strategies for teaching food and eating with an intercultural perspective, and resources such as songs by an Argentine musical group for children called *Canticuénticos*.

Finally, the gender dimension in food systems and eating was problematised, revealing the overwhelming presence of the feminine in everyday food practices and highlighting the strong association of the feminine with care practices (Arnaiz & Menasche, 2024). This involves "not only the act of cooking, but also buying, forecasting, planning, storing, cutting, chopping, cleaning, organising, serving, and also attending to tastes, needs, budgets, schedules and activities" (Cordero et al, 2021, p. 16), where men "help" or "collaborate". Whilst many women, even well-known ones, propose elaborate dishes that they prepare at different times, in

Argentina, the "asado" [barbecue] holds the status of a privileged dish in the national imaginary, which is generally prepared by men. In the same vein, it was also raised that there are dishes (and tastes) traversed by gender: whilst women are expected to consume light meals, a ritual amongst men is the "chori" [chorizo sandwich] at the football stadium. Thus, by asking who prepared the plate,

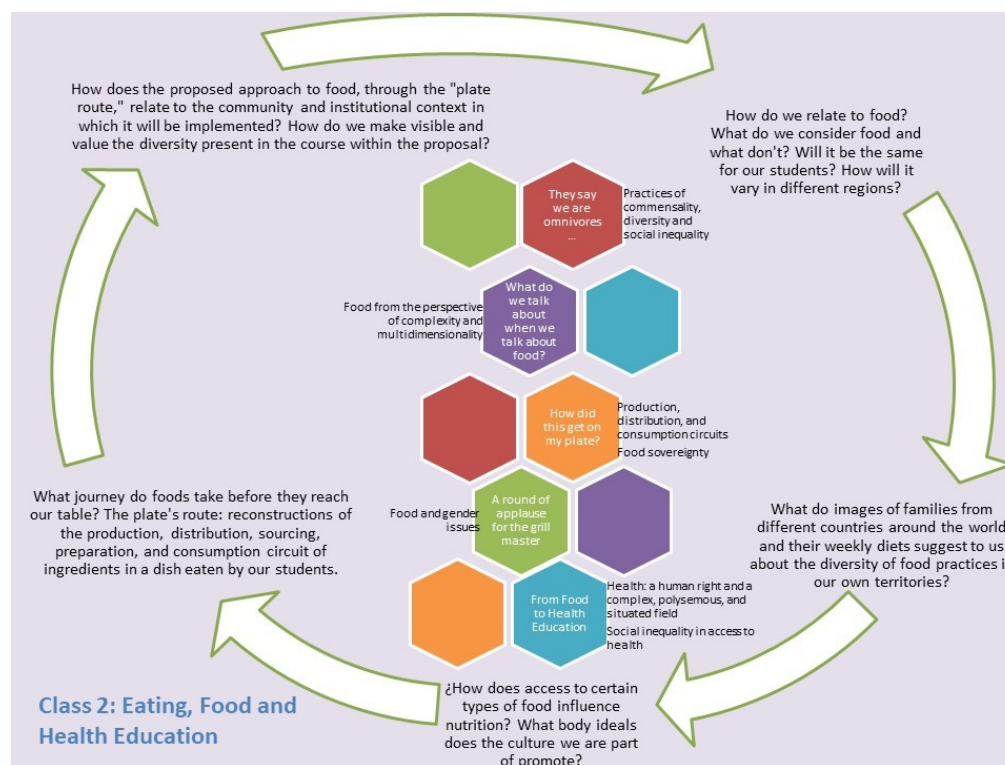
a realm of everyday life is opened up for problematising, reflecting on and debating both the ways of "being a woman" and "being a man". In this manner, combined with the inter-curricular perspective, elements linked to Comprehensive Sexual Education would be woven throughout all our Food and Eating Education proposal (Cordero et al, 2021, p. 17).

In this way, this perspective on Food Pedagogies attended to its complexity, without reducing food consumption to nutrition and physiology (and matters such as nutritional value, food digestion, excretion, etc.), whilst still taking them as relevant content areas in Natural Sciences and Health Education. Thus, Food Pedagogies integrated the cross-cutting perspectives of Comprehensive Sexual Education, Integral Environmental Education and Interculturality, as well as the complexity of food consumption, which allowed us to situate teaching practices with a problematising orientation. In this way, we brought Food Pedagogies closer to the democratic paradigm of Health Education (Garelli & Dumrauf, 2021), incorporating elements of the critical model by problematising the route of the dish, which allowed us to bring the perspective of critical interculturality closer to teaching practices.

In Figure 2, we synthesise the perspectives included in the approach to the topic of Food in the class, as well as the questions posed as thought-provoking prompts or as optional and mandatory activities for accreditation of completion of the module corresponding to the class.

Figure 2.

Synthesis of the class.



Source: Author's own elaboration (2021)

The reconstruction exercise undertaken is complemented by attending to the analysis of the teaching outputs produced in the course.

ANALYSIS OF PRODUCTIONS MADE BY PARTICIPANTS OF THE COURSE

Our second research question aimed to identify the perspectives of HE and with respect to cultural diversity that teachers present in the works on Food Education produced in continuous teacher education processes. Based on the analysis of the proposals presented by students in the accreditation forum of this course, we developed Table 1, which shows the underlying HE models inferred (classified according to Dumrauf and Garelli, 2021, as mentioned above) and the teaching positioning regarding cultural diversity, drawing on the ideas about interculturality raised by Díaz and Rodríguez de Anca (2014), also presented above.

Table 1

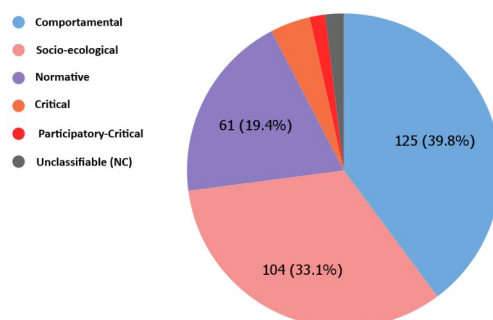
Models of Health Education and teaching positions regarding cultural diversity inferred from food-based teaching approaches

Positioning towards diversity	No consideration of diversity	IR	FI	CI	EI	CEI	Total
Health Education Approach							
Normative Approach	54	2	5	0	0	0	61
Comportamental Approach	111	7	7	0	0	0	125
Socio-ecological Approach	54	35	1	9	3	2	104
Critical Approach	4	2	0	6	0	1	13
Participatory-critical Approach	0	1	0	1	0	3	5
Unclassifiable (NC)	6	0	0	0	0	0	6
Total	229	47	13	16	3	6	314

Source: Author's own elaboration (2021).

Figure 3

Proportion of responses according to Health Education models identified in the proposals analyzed



Source: Author's own elaboration (2021).

In general terms, we classified 59.24% of the analysed proposals within the verticalist paradigm of Health Education, and 38.85% within the democratic paradigm. As shown in Figure 3, we identified 19.43% of the works as following a normative or hygienist model, and 39.81% as following a behavioural or personalised model, which was the most prevalent among the responses obtained. With respect to the democratic paradigm, we found 33.12% of productions with a socio-ecological model and 5.73% of papers with critical and critical-participatory models.

In order to make explicit the elements we took as references for the characterisation of each model, we next describe the strategies, contents and intentionalities included in each type of proposal.

Proposals with verticalist paradigm, normative and behavioural models:

These proposals predominantly sought to teach matters such as the food pyramid or food oval and/or healthy eating habits (in relation to hegemonic patterns). In some cases, referential frameworks, concepts and critical foundations recovered from the class (critiques of the productive system, concepts of food sovereignty, diversities and inequalities in eating practices, among others) were incorporated, but with activities linked to the modification of healthy eating habits. We also found instances in which activities proposed by the course, such as the establishment of vegetable gardens, were adapted but with the purpose of differentiating healthy from unhealthy foods and incorporating them as habits into everyday life, characteristic of Health Education with a normative and behavioural vision. The inclusion of the idea of self-produced food was mainly grounded in the socially and economically vulnerable condition of students and their families. Something similar occurred with the activity proposed by the course on food circuits, "the route of the dish", which was combined with other activities, such as the creation of food ovals or nutritional pyramids, for the normative purpose of identifying what healthy eating should look like.

Regarding positioning on cultural diversity, work framed within this model overwhelmingly disregarded the cultural diversity present in their classrooms. Only 12 cases included a relational interculturality approach, and 9 included a functional interculturality approach.

We understand this strong adherence to the verticalist paradigm as stemming from its historical hegemony, documented by various studies (Di Leo, 2009; Fainsod and Busca, 2016; Bresolin Marinho and Da Silva, 2018), which is, moreover, predominant in initial teacher education. We consider that a single short asynchronous class is insufficient to achieve in-depth appropriation of other educational approaches to the topic, although participants may have taken elements and/or strategies from more critical perspectives addressed in the course, blending them with already-known dominant paradigms.

Proposals with democratic paradigm:

- Socio-ecological Model

Proposals classified within the socio-ecological model recovered a social and complex vision of food systems and eating, that is, beyond nutrition, and were able to take up production, distribution, consumption and food preparation circuits, often successfully revaluing and making visible the food knowledge of children, families and local food producers. However, the vast majority did not mention the inequalities present in these food circuits or in the sociocultural contexts of students in which this diversity is constructed.

These proposals could likewise be mainly linked with a disregard for cultural diversity, although a significant percentage assumed the position of relational interculturality. In some cases, proposals emerged based on a critical interculturality perspective.

- Critical Model

The strategies proposed that we classified within the critical model included: problematising social and cultural conditions in the production of typical local dishes, school canteen menus, children's everyday meals, and/or foods offered at children's parties; identifying and denaturalising gender stereotypes present in eating practices; surveying current and ancestral uses of medicinal plants present in the community; questioning the existence of a single healthy diet. We observed that these strategies, which would account for the multidimensionality and complexity of food systems and eating, recovered community and ancestral knowledge, put them in dialogue with one another and with school science knowledge, and problematised class, gender and cultural inequalities in relation to eating practices.

It is noteworthy that, within the democratic paradigm and the critical approach, the majority of proposals were analysed as aligned with critical interculturality, although some did not position themselves with respect to diversity and social inequality. We understand that the problematisation of inequalities, from a consideration of the multidimensionality of food systems and eating, opens the way for working with sociocultural diversity from a critical perspective.

- Critical-Participatory Model

A few participants, in addition to the types of strategies mentioned as characteristic of the critical model, proposed generating collective action aimed at transforming reality (including, among others, requests to the municipal government to guarantee affordable food supply, community fairs where food preparation methods were socialised, or community school gardens). Regarding positioning on cultural diversity, the works framed within this model overwhelmingly included critical positionings from interculturality, consistent with its transformative educational purpose of social reality.

We hypothesise that individuals who positioned themselves within the democratic paradigm, particularly in the critical and participatory-critical approaches, had, prior to the course, a sensitivity and openness towards the problematisation of the social reality that contextualises food systems and eating and, therefore, a pursuit that would more easily distance itself from biological and/or biomedical perspectives on the topic, which is evident in the interviews conducted with course participants (Interview participants 1 and 2).

Even though a low proportion of proposals were developed from the democratic paradigm of Health Education and most did not consider cultural diversity, the work carried out on the latter during the course was an aspect valued by its participants. As this was a central issue in the course proposal as a whole, it was taken up again in subsequent classes, with more encouraging results, as a higher proportion of participant work recovered the sociocultural diversity of students (Authors, 2023). As one teacher noted in the end-of-course survey:

The course activities and support, exchanges in forums and guidance from the tutor enabled reflection on disciplinary knowledge and its connection with student knowledge, in the current context of bimodal education. Working with other areas,

interculturality, allows us to think about and enrich didactic proposals that weave diversity from emotions, experiences and knowledge in the discipline (End-of-course survey)

Several teachers expressed in the surveys that the strategies provided, such as the journey of the plate, helped them renew their practices and to link Natural Science topics with "other related aspects of social, political and economic life that concern us" (End-of-course survey). An interviewed teacher noted that she found the "journey of the plate" proposal meaningful and that the course enabled her to establish connections between food and eating and Ranquel culture (an indigenous people of her province). Furthermore, she stated:

I have not always worked in my locality, but have had the opportunity to travel and work in rural schools within my province. In the city, due to space constraints, sometimes families have vegetable gardens in their residential areas. In rural areas, they do have more land for producing vegetables. In my city I work with the children and we seek to make these connections with other institutions, to achieve better nutrition. In the city, consumption comes mainly from what is purchased in supermarkets, and what arrives is not of the best quality (it has different chemicals, is or was frozen, processed foods). Fresh food tastes better. We are trying to start working generating vegetable gardens, with our own production. The course also addressed the use of pesticides and insecticides in agricultural production (Interview Participant 1).

Furthermore, a teacher interviewed several months after the experience stated:

Working on the food oval and how to analyse a dish of food seemed very important to us, thinking how to territorialise the dish: what dish arrives at our table, where does our food come from, whether we ourselves can give origin to that food, whether we can produce it [...] and relate it to indigenous peoples. We tried to establish connections here with a school representative of the Toba people, from the Qom community, but did not receive a response. We were pleased to be able to relate to it. And what nutrients it contains and what it doesn't, what each dish provides to us. I also very much liked the concept of food sovereignty. Although I had heard about it frequently, the course made it clear (Interview Participant 2).

In this way, we can see that, even in this proposal for short-term virtual continuous teacher education, amid the additional work effort that Emergency Remote Education meant during the pandemic, there has been significant appropriation of the proposed approach among some course participants. In the next section, we seek to (re)construct strategies for teaching food systems and eating from the perspectives of critical, extended and critical and extended interculturality, drawing on and valuing the analysis of teaching proposals elaborated by course participants, thereby honouring their teaching knowledge and the ways in which they have reinterpreted it in dialogue with the course.

STRATEGIES FOR APPROACHING EATING AND NUTRITION FROM A CRITICAL AND PARTICIPATORY HEALTH EDUCATION

As we have already stated, among the proposals analysed we found a series of productions that, although constitute a minority, allow us to begin conceptualising teaching strategies on eating practices from the critical or critical-participatory Health Education models and from critical interculturality. We thus respond to the final question we set ourselves in our analysis. To this end, we characterised 25 teaching proposals developed from critical interculturality (CI),

extended interculturality (EI) and critical and extended interculturality (CEI) and generated a classification of the types of teaching strategies proposed, their relationship with sociocultural diversity and Health Education models.

a) Strategies that rely upon inquiry and reconstruction of everyday eating practices

Examples: Recording preferred dishes, weekly consumption patterns and ways of accessing food / Requesting family recipes and reflection on possible "healthier" transformations / Surveys of families and the community about fruit and vegetable consumption.

These are strategies that value the diversity of knowledge and eating practices that coexist in the school environment, acknowledging that each family or cultural group organises its food consumption and eating according to historical, material and symbolic conditions. When they problematise how that organisation responds to issues of social class, limited supply of food products in the market, or questions of power relations between cultures, they approach critical and extended interculturality; if not, they are framed within relational interculturality. As for Health Education, they are positioned between the behavioural/personalised model and the socio-ecological model. Although they include a participatory and contextual dimension (characteristic of the democratic paradigm), they may still retain the idea of "improving habits" or "making recipes healthier", which partially links them to the behavioural model, where scientific knowledge guides the correction of "inadequate" practices.

b) Strategies for problematising social, gender and power inequalities

Examples: Analysis of who cooks at home, who prepares food in festive contexts / Debate about body stereotypes, advertising and hegemonic models of beauty / Reflection on inequalities in access to water or healthy food.

These strategies are framed within critical interculturality, as they denaturalise hegemonic discourses and practices surrounding food systems, eating, gender and health. They recognise that ways of eating and caring for the body are cultural constructions situated within relations of power, and that dominant modes exclude or subalternise Other knowledge and aesthetics. In Health Education, they correspond to the critical model of the democratic paradigm. Health is conceived as a complex phenomenon, traversed by cultural, social and political dimensions, and education as a space for reflection and empowerment that brings scientific and popular knowledge into dialogue. The problematisation of stereotypes and bodily inequalities challenges the moralistic logic of the normativist model.

c) Strategies for reconstructing the "food route" and productive circuit

Examples: Analysis of the "path of rice" or the "route of asado" / Comparison between foods produced in vegetable gardens and those obtained in industrial circuits / Study of cooperatives, agroecological fairs and market prices.

These strategies link the teaching of Natural Sciences with a sociocultural and territorial perspective, acknowledging that foods embody relationships between science, technology, labour and culture. The notion of "food route" enables us to address epistemic diversity (peasant knowledge, family farming, scientific,

popular) and to question the hegemony of a single food production model and a single way of eating healthily. They approach extended interculturality insofar as they are not directed only at subalternised populations. Depending on the degree of problematisation of social reality, they may be considered from the perspective of critical and extended interculturality. In Health Education, these proposals articulate with the socio-ecological model, as they understand health in a multidimensional way as a right and as a phenomenon linked to environmental sustainability, working conditions and social justice. Furthermore, some incorporate features of the critical and/or critical-participatory models, including analysis of power relations and/or collective agency in relation to problems such as the use of agro-toxins and/or industrial food production.

d) Strategies for community participation and collective action

Examples: Food fairs with productions from family vegetable gardens / Requests to the local municipality to guarantee the sale of fruits and vegetables at affordable prices / Joint projects with families, food vendors or organisations of family, peasant and indigenous farming.

These strategies entail critical or critical and extended interculturality, positioning cultural diversity as a principle of collective construction and social transformation. They promote community participation and dialogue between peasant, school and scientific knowledge, with a strong political dimension surrounding territory and food sovereignty. Education is conceived as a transformative practice that enables social participation and the exercise of rights, and health as the outcome of economic, political and ecological relations. The classroom becomes a space of community praxis, not merely of conceptual learning. This latter aspect brings them close to the critical-participatory model of Health Education.

e) Comparative strategies

Examples: Comparison of local and exotic dishes (“puchero”, a local stew, vs sushi) / Contrast between current consumption and that of indigenous peoples (Ranquel, Mapuche) / Reflection on festivities, traditions and their cultural transformations.

These responses problematise the existence of a single legitimate way of eating or conceiving health, proposing, amongst other strategies, the recovery of ancestral knowledge and the resignification of eating practices from a historical and territorial perspective. They are inscribed within critical and extended interculturality, as they question the universality of biomedical discourses on food and are not directed mainly towards subalternised populations. Their approach approximates the critical model of Health Education, as they do not necessarily promote direct community participation, but rather encourage deep reflection on the historicity and plurality of conceptions of health and wellbeing. They recognise the coexistence of multiple knowledge systems (scientific, indigenous, popular) and challenge the epistemic hierarchies of the biomedical model.

f) Interdisciplinary strategies and critical reading of territory

Examples: Analysis of environmental problems in relation to food systems issues (spraying of crops, water contamination, use of industrial preservatives

and/or flavourings) / Reflection on food sovereignty and the right to a healthy environment.

These proposals address cultural diversity as a structural dimension of sustainability, incorporating the voices (not necessarily local) of producers, social movements and indigenous communities. In this sense, they configure practices of critical interculturality. As for Health Education, they correspond to the critical model, as they recognise the interdependence between health, environment and social justice. Scientific knowledge is integrated in dialogue with other forms of knowledge, and education is oriented towards problematisation of social reality, although not necessarily towards transformative collective action.

As is evident from the foregoing classification, the strategies devised by course participants demonstrate multiple points of entry into the subject matter and different pathways and articulations. Teaching about food systems and eating in the proposals presented, framed within the models we identified as critical or critical-participatory, not only allows for the problematisation of diversity and inequality (and their interlinkages), but also enables connections with interculturality by proposing dialogues of knowledge and ways of living (Merçon et al., 2014), a gender perspective and Comprehensive Environmental Education. Though scarce, the pathways proposed highlight the need, when teaching about food systems and eating, to understand the diversity present in society and in each classroom -that is, how the Other constructs their eating practices- and to reflect on and imagine alternative courses of action in the face of the multiple inequalities that traverse this complex human act of nourishing ourselves.

DISCUSSION AND CONCLUSIONS

The analysis of this continuous teacher education experience enabled us to share an approach to teaching a subject matter commonly addressed at school level, such as food systems and eating, from critical Health Education models and critical and extended intercultural perspectives, building articulations between Health Education, Environmental Education and the gender perspective. We also presented concrete strategies, implemented in practice in the course offered, for teaching from these perspectives, thereby configuring original contributions to the fields of teacher education and Health Education. Such contributions reveal pathways that are often proclaimed but rarely implemented in the reality of teacher education and primary school classrooms. As shown by the study of Bresolin Marinho and Da Silva (2018), there are three modes of structuring identified in the treatment of Health Education in Brazilian elementary education classrooms (and probably in many other countries): 1) through *practical action*, with a notion of health as the absence of disease, sporadic hygienist and welfarist practices, calling upon health professionals; 2) the *biological approach*, which considers health as the wellbeing of the biological body, educational practices emphasise work on parts of the human body and functions of body systems in Natural Sciences lessons; and 3) the *approach that points towards an understanding* and conceives health as the wellbeing of a whole, which includes the physical and the mental, and considers the varied factors necessary to maintain an individual's state of health (physical, biological, emotional, intellectual, social, mental, psychological, cultural, political, economic and affective). The latter

approach proposes an interdisciplinary way to address health, involving cooperation between teachers and health professionals and from a constructivist perspective, bringing scientific knowledge into interaction with knowledge originating from students' primary culture.

From the approach developed in the course, food consumption and eating was conceived as complex and situated sociocultural practices (Aguirre, 2019), which enabled us to situate the teaching of Natural Sciences in dialogue with other areas of knowledge and with community knowledge, recognising the multiplicity of possible forms of "healthy eating". We promoted course participants' valuing of the work involved in identifying community interests and needs in relation to the topic, problematising the inequalities that intersect in eating practices (of social class, gender, environmental, cultural, amongst others) and the ways in which schools have historically approached this matter (in classrooms and school dining halls). The theoretical foundations and methodological designs of our proposal and the strategies described are coherent with theoretical reflections present in the literature (such as those by Hernández Páramo (2022) and Fuentes & Estrada (2023)), although there are few studies on how to put these pedagogical perspectives into practice.

Among the teaching proposals generated by course participants, the most transformative ones managed to shift the focus from the prescription of individual behaviours towards the analysis of food production, distribution and consumption circuits, incorporating issues such as food sovereignty, social and gender inequalities, and power relations in food systems. This perspective entails teaching Natural Sciences from the perspective of complexity, articulating physiological processes with the socio-territorial contexts that shape them, so that teaching is oriented towards understanding the links between food, environment and health as a dynamic and conflictive network. Thus, Food Pedagogies become a fertile field for promoting situated education about natural sciences, environment and health, which connects school knowledge with the experiences, problems and/or everyday struggles of communities regarding the right to healthy, sustainable and culturally situated ways of eating. As evidenced by the analysis of these proposals elaborated by course participant teachers, there is still a long road to travel in order to overcome normative and behavioural Health Education models. This situation was foreseeable, as we have stated, given the usual disregard of diversity and social inequality characteristics in the treatment of Food Education in schools. And also given the great hegemony held by the verticalist paradigm of Health Education in the education system, even in its oldest version, such as the hygienist or normative model (Fainsod and Busca, 2016). Beyond the activities usually used to approach food consumption and eating from a moralistic or behavioural model (food ovals or pyramids), an emergent finding of this work was the use of strategies offered by the course, from a critical and participatory model, such as the journey of the plate or the development of community vegetable gardens, but reformulated with normative purposes and behaviour change.

However, the adoption of the democratic paradigm, specifically through the socio-ecological model (assimilable in most of its characteristics to the third mode described by the aforementioned authors), as well as the critical and critical-participatory models in more than one third of the proposals, allows us to read these results with greater optimism. And the pathways imagined by teachers in the

productions classified as critical show reflection, creativity and knowledge of their students and territories, from which we can learn in the academic sphere to generate conceptualisations and proposals for the teaching of food systems and eating. The analytical reconstruction of teaching strategies produced from these critical approaches to Health Education and interculturality is a central contribution of this work, both to teaching practice and to the academic field.

The analysis of the course proposal and those developed by participants shows that the articulation between Health Education and Environmental Education emerged as a powerful axis of the continuous education process. The use of the "route of the dish" as a central strategy in teachers' proposals enabled them to make visible the interdependence between human health and the health of territories, understanding food as a privileged point of entry for thinking about sustainability and environmental justice. In the practices of course participants, we identified bridges between the origin of foods, modes of production and the living conditions of rural and urban communities, integrating ecological, political and cultural dimensions. This convergence enabled the displacement of Health Education from the normative or behavioural perspective towards socio-ecological and critical models (Garelli and Dumrauf, 2021), in which health is conceived as a collective right and a relational process. Furthermore, Environmental Education was reinterpreted beyond the conservationist paradigm, understood as a political practice oriented towards the transformation of modes of production and consumption, thus approaching its critical and/or ethnographic perspectives (Sauvé, 2004). We observed that teaching plans which linked school, family and/or community vegetable gardens, agroecological fairs and reflection on food sovereignty demonstrate that the intersections between Health Education and Environmental Education make it possible to think critically about environment and health as interwoven dimensions, a convergence that represents a long-standing debate and debt in both fields (Sauvé, 2004). In this work we show how food systems and eating can constitute itself as an integrating object that enables teaching Natural Sciences from a horizon of environmental and social justice, where scientific knowledge dialogues with community knowledge and everyday practices of caring. We hypothesise that the caring of life, thought through the articulation of critical perspectives (such as Collective Health, Latin American Environmental Thought and Latin American communitarian feminisms) may emerge as a perspective that articulates in theory and practice Health Education, Environmental Education and Comprehensive Sexual Education.

Sociocultural diversity was a central aspect for promoting a reconfiguration of food systems and eating teaching practices, although its effective incorporation remained incipient in most of the analysed proposals. The results show that only a minority of participants positioned themselves from perspectives of critical and/or extended interculturality (Díaz and Rodríguez de Anca, 2014), whilst the majority oscillated between relational or functional approaches which, whilst recognising the existence of cultural differences, do not problematise the structural inequalities that cut across them (and may even reinforce them). Nonetheless, the most significant experiences revealed the pedagogical potential of working with food systems and eating from the perspective of diversity, recovering family recipes, ancestral knowledge and local practices of production and consumption as expressions of cultural identities and resistances. These proposals enabled a dialogue between scientific knowledge and other knowledge systems -popular,

peasant, indigenous- destabilising the epistemic hegemony of biomedicine. Food Pedagogies, in this framework, is configured as a space for the construction of curricular justice (Connell, 2009), where multiple ways of understanding the relationship between body, nature and culture are valued. Considering sociocultural diversity does not simply mean recognising the plurality of eating practices, but understanding the historical, economic and political conditions in which they develop and are unequally legitimised.

In sum, our results show that teaching food systems and eating from a critical interculturality entails a decolonial educational practice, capable of articulating the scientific dimension with lived experience and the knowledge of peoples, oriented towards social transformation and the exercise of the right to difference, to the valorisation and construction of that another possible health.

NOTES

This article was translated into English by Raul Esteban Ithuralde.

Mailing address: esteban@ccpems.exactas.uba.ar

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