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Rethinking Teacher Training in Cantabria (Spain): Towards an Ecosocial and Sustainable Education in Response to Ecosocial Challenges

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ABSTRACT

Spain is currently in an initial phase of revision of teacher training curricula. Given the pressing ecosocial challenges of the present, the fundamental question arises as to what teachers should be like and the contribution that teacher education can make to this important collective challenge. In this context, this research, framed within a broader project, examines teacher education in the Faculty of Education of the University of Cantabria from an ecosocial perspective, employing a qualitative approach (this research is part of a project within the framework of the National R&D Plan (2019) entitled 'What are we forgetting in inclusive education? A participatory research project in Cantabria and the Basque Country' (PID2019-108775RB-C42). This is a coordinated project involving four teams, and the results presented here refer to the work carried out at the University of Cantabria). Through two focus groups and six semi-structured interviews involving 16 participants, including students and teachers, four priority areas for action are identified: the need to question the neoliberal influence on higher education and reaffirm its humanistic mission; the importance of integrating ecosocial contents in the curricula; the urgency of adopting collaborative and experimental approaches instead of traditional methodologies; and the need to consolidate collaborative networks among faculties and with the community environment.

1 | Introduction

In the coming years, teacher training faculties in the Spanish university context will be immersed in a process of changing their curricula following the approval of the new education law (LOMLOE 2020). This process represents an opportunity to review the structural and curricular elements of initial teacher training based on an updated idea of its meaning and purpose in the existing ecological and social context (Imbernón and Colén 2015; Martínez Bonafé 2013).

In current discourse, a burgeoning consensus characterises the present juncture as a global multisystemic crisis (Cantalapiedra 2023). This crisis is intricately woven with environmental challenges[1] stemming from climate change, biodiversity loss, and the depletion of energy resources (Fernández Durán 2022), which intertwine with other social crises[2] threatening human rights, social inclusion and democracy. Within this complex landscape, the ecosocial educational approach (Herrero 2017; Meadows et al. 2004) emerges as the singular viable solution to confront this shared challenge. This approach is rooted in anthropological principles of interdependence and ecodependence. Interdependence is conceived as the interconnectedness of all living beings, recognising our mutual reliance to fulfil basic needs for health, food and affection. Ecodependence acknowledges that our survival hinges on nature

for both resources and life-sustaining conditions, pledging a commitment to the sustainability of life. It posits that education, as a public service, should lead to social advancement, contributing to the construction of more democratic, equitable and sustainable societies (Rodríguez and Herrero 2017).

In this regard, we understand that the ecosocial education perspective can complement the broader framework of sustainability and degrowth (García 2022; Latouche 2014; Schmelzer and Vetter 2019; Vilches and Gil 2020), which has a more established tradition (Fischer et al. 2022). This approach questions the capitalist growth model (Harvey 2014) and proposes a rethinking of the economic and social principles that govern our societies, starting from the need to break with the current mode of production and consumption in order to move in the opposite direction, towards the sustainability of our planetary ecosystem and degrowth. Ecosocial education, based on its anthropological foundation of interdependence and ecodependence, aligns with this approach by advocating for a sustainable model of living that promotes more democratic, just and balanced societies, where interaction with nature and respect for human rights are non-negotiable principles.

In this context, initial teacher training is positioned as one of the most important catalysts for driving the educational transformation necessary to address the aforementioned ecosocial challenges (Fischer et al. 2022; Mulà and Tilbury 2023; Sperling et al. 2025). Along these lines, Sterling (2011) has already alerted us to the importance of transformative learning for higher education, raising the question of the extent to which conventional higher education can provide transformative learning experiences aligned with our ecosocial goals. Similarly, UNESCO and Education International (2021) emphasise the need to integrate education for sustainability into teacher training in order to achieve the sustainable development goals (SDSs), which means training teachers capable of contributing to an environmentally friendly, economically viable and socially inclusive future. This has led to teacher training being established as a priority in international policies, as reflected in the UNESCO 2030 Strategy on Education for Sustainable Development (UNGA 2020) and the EU Council Recommendation on learning for sustainable development and the green transition (Council of the EU 2022).

However, various studies show that the incorporation of these issues in higher education and, particularly, in initial teacher training, is still more of a discursive aspiration than a widespread practice and is fragmented and unsystematic. This highlights the urgent need to review and reformulate initial teacher training curricula to incorporate a comprehensive ecosocial perspective (Ajaps 2023; Mulà and Tilbury 2023). Thus, although the presence of development education and ecosocial content in schools has grown in recent years (Mulvik et al. 2021), it remains a non-mandatory component of teacher training in most cases (UNESCO 2014), and when it is mandatory, it tends to be offered superficially and relies on the individual discretion of teachers (Mulvik et al. 2021). In the specific case of Spain, ecosocial and sustainability training in education degrees remains in its infancy (Susinos et al. 2022).

Consequently, and despite growing regulatory and institutional support, a significant gap has been identified in the literature regarding how this transformation is being addressed in specific initial teacher training contexts, especially in Spanish universities. This article seeks to contribute to filling this gap through a case study focusing on the Faculty of Education at the University of Cantabria from an ecosocial perspective, identifying a number of barriers that are hindering our progress towards this objective, while also exploring some proposals that might help us address this challenging collective goal.

Within this framework, the study poses the following research questions:

- Research Question 1: How is the ecosocial perspective currently integrated into the initial teacher training curriculum in the Faculty of Education at the University of Cantabria?
- Research Question 2: What structural, pedagogical or ideological barriers hinder a more profound incorporation of this perspective?
- Research Question 3: What proposals and lines of action do the actors involved identify as priorities for moving towards ecosocial teacher training?

2 | Theoretical Framework

The concept of ecosocial justice is in its infancy, emerging from a recent understanding of the interconnectedness of social and ecological issues and the need to address them in an integrated way. However, although it appears to be a relatively new approach, it draws on two traditions which have had a major impact on education for decades: education for social justice and inclusion, and education for ecological justice.

The notion of social justice encompasses a plurality of ideas and proposals that can sometimes dilute its recommendations (Cochran-Smith et al. 2009). However, as suggested by Boylan and Woolsey (2015), it is possible to identify three common elements in the different ways of understanding this concept: a distributive dimension (Cochran-Smith 2009; Nussbaum 2006; Rawls 1996; Sen 2010), which recognises that injustice and inequalities are rooted in the socio-economic structure of society; a relational dimension or one that recognises the diversity of identities, ways of life and cultures that coexist in a society (Fraser and Honneth 2003; Fraser 2008); and a participatory dimension (Young 1990; Fraser and Honneth 2003; Fraser 2012) that seeks active and critical citizen participation in the making of decisions that affect the life and well-being of the community. Based on these premises, teacher training for social justice seeks to connect these dimensions, promoting equity in educational opportunities, respect for differences and democratic participation in schools (Cochran-Smith 2009; Darling-Hammond 2004).

In this regard, the LOMLOE education law incorporates into its regulatory framework the need to guarantee inclusive, equitable and participatory education that addresses student diversity and promotes democratic values and human rights. However, the implementation of these principles in initial teacher training depends largely on the strategies developed in universities and schools, where the effective incorporation of

social justice remains limited and poorly structured (Susinos et al. 2022). Ecological justice, meanwhile, means recognition of the intrinsic values of nature and seeks to ensure the survival of species and ecosystems, adopting an ecocentric perspective. Unlike environmental and animal justice, it extends the boundaries of justice beyond humans, including soil, water, plants and animals as rights-holders in their own right (Boff 2001; Leopold 2017; Montalván 2020; Riechmann 2000). In this way, the most critical currents of education for ecological justice such as ecopedagogy (Flores 2013) go beyond promoting changes in habits and protecting the environment and focus, as a priority, on questioning the models of society that are at the root of environmental problems (Barba 2019). At the school level, ecological education is addressed in practice through the integration of curricular content related to the environment and the crisis caused by human beings, the development of sustainable projects and practices in school management (such as energy and water saving, waste management and the promotion of sustainable mobility), the promotion of learning experiences outside the classroom that connect with the surrounding area and with nature and the promotion of community action, encouraging student participation in environmental projects and actions in the community, such as the creation of school gardens, awareness-raising campaigns and collaboration with local organisations (Herrero 2017). In initial teacher training, these proposals continue to have a marginal presence and are poorly systematised in curricula.

Ecosocial justice thus becomes an essential framework for reorienting education and, particularly, teacher training, incorporating the traditions of both social and ecological justice in order to challenge the political and economic structures that jeopardise the sustainability of life on the planet. Based on an ethic that recognises eco-dependence and interdependence, an education is proposed that fosters values, attitudes and skills aligned with respect for all forms of life. Ecosocial justice therefore represents a condemnation of the current model of unsustainable development and promotes a profound transformation of our lifestyles, our economy and our social relations (González-Reyes and Gómez-Chuliá 2022; Lang 2024). Thus, its integration into teacher training is key to training educators capable of supporting new generations in building a society that guarantees collective well-being within the limits of the planet (Gutiérrez-Bastida 2019; González-Reyes 2018).

The search for ecosocial justice in primary and secondary education has attracted greater attention, both at the legislative and praxeological levels and has been conceptualised, for example, through ecosocial competencies (Carneros et al. 2018; Morán et al. 2021; Rodríguez and Herrero 2017), and in the terms proposed by FUHEM (González-Reyes and Gómez-Chuliá 2022). In higher education, these efforts remain in their early stages (Dardelet et al. 2021; The Shift Project 2019; Susinos et al. 2022), despite the social responsibility that universities should uphold in integrating these approaches (Díez-Gutiérrez and Palomo-Cermeño 2022; Wakkee et al. 2019). Universities are, in fact, the ideal setting to lead the creation of educational frameworks and scenarios that promote sustainability and ecosocial justice (Valderrama et al. 2020). In line with this, the Conference of Rectors of Spanish Universities approved guidelines in 2012 to incorporate sustainability into university curricula (Geli et al. 2019). Although ecosocial justice is not explicitly mentioned, these guidelines include social and ecological dimensions, promote the development of critical citizens committed to equity, solidarity and responsibility, and foster the development of skills to address complex challenges.

To understand the incorporation of these principles into teacher training, it is necessary to consider the current model of initial teacher training in Spain. This is divided into two stages: a bachelor's degree for Early Childhood and Primary Education, and a qualifying master's degree for Secondary Education. The bachelor's degree in Early Childhood and Primary Education, the subject of this study, lasts 4 years and carries 240 ECTS credits, combining disciplinary, didactic and practical training. The latter, known as a practicum, is an essential training experience where students apply and test the practicality of their knowledge in real schools, under the supervision of university tutors and practising professionals. The length of the practicum varies depending on the autonomous community, ranging from 12 to 18 ECTS credits (equivalent to approximately 400–600 h). It is carried out during periods when there is no in-person university teaching, although it is monitored by supervisors.

The incorporation of ecosocial justice into initial teacher training programmes remains limited and fragmented within this curricular structure. Although initiatives are emerging that aim for greater institutional involvement—for example, the inclusion of specific subjects in some teaching degrees, such as 'Ecosocial Education for Sustainable Development' at the Complutense University of Madrid[3]—these efforts are carried out in isolation, without structural integration into official curricula or systematic regulatory support. Meanwhile, on an international scale, Education for Sustainable Development is becoming established as the most widespread paradigm (Fischer et al. 2022; Palomino et al. 2022), and often appears linked to active methodologies such as project-based learning to foster ecosocial competencies in the future teachers. In any case, as we mentioned in the introduction, although its appearance in the literature and regulations has increased, ecosocial teacher training continues to be more of a programmatic objective than a consolidated curricular practice in many contexts, and its presence in initial training remains compartmentalised, weakly institutionalised and subject to the individual will of the teachers involved (Mulvik et al. 2021). This situation therefore represents an outstanding challenge that requires more decisive attention both in Spain and in other educational contexts.

In this context, more than ever, faculties of education play a fundamental role in training future teachers at all educational levels. Therefore, in this article we propose to adapt the framework proposed by FUHEM, an independent, nonprofit foundation that promotes social justice, the deepening of democracy and environmental sustainability through educational activities and work on ecosocial issues. It is recognised as one of the pioneering and leading organisations in ecosocial education in Spain. This framework is designed for primary and secondary education to the context of university teacher training, focusing on the elements that we summarise in Table 1, (González-Reyes 2018):

As we can see, this framework offers a comprehensive approach that seeks to overcome the current fragmentation and

TABLE 1 | Elements of ecosocial teacher training (own elaboration based on the proposal by González-Reyes 2018).

Culture	Humanistic approach aligned with urgent ecosocial needs, rather than prioritising the needs of production
Ecosocial content	Biocentric approach based on eco-dependence Climate change and unequal responsibilities and vulnerabilities Energy and raw material crises Agro-industrial vs. agro-ecological food Capitalist system and economic alternatives Care for life Feminism and gender inequality Citizenship and social movements Peaceful conflict management Intersectional inequalities Ecosocial competencies and values
Methodology	Participatory and experiential, bringing students into contact with the needs of and projects taking place in their local environment Promotion of coconstruction of knowledge Underpinned by the premise of care Use of service learning, cooperative groups, project-based learning, etc.
Evaluation	A tool for shared learning, not for control
Relationships	Promotion of horizontality and community connections Promotion of democratic coexistence Social and educational participation

lack of institutionalisation of ecosocial education through a proposal that offers key ecosocial content with a methodological and evaluation approach that is also consistent with ecosocial principles.

3 | Methodology

The purpose of this article is to analyse the initial teacher training provided at the Faculty of Education of the University of Cantabria (Spain) from an ecosocial perspective, identifying a number of barriers that are hindering our progress towards this goal, as well as the priorities for action. Given the exploratory and contextualised nature of the research objective, a qualitative case study approach was adopted (Denzin and Lincoln 2012; Flick 2018; Yin 2018). This methodological choice is based on the desire to utilise the narratives (Rapley 2014; Ruiz-Olabuénaga 2012) offered by teachers and students of the Degree in Early Childhood and Primary Education to explore which elements we need to incorporate in teacher training to achieve the ecosocial goal.

3.1 | Sample

In this study, we present the results obtained after analysing the data collected from focus groups (FGs) and semi-structured interviews. Participants were selected through purposive sampling, aiming to ensure a complete representation of the diverse experiences of the different actors involved in the teaching and learning processes in the teacher-training curricula of the University of Cantabria. To this end, teachers and students were selected from the only two-degree programmes offered at the faculty: the degree in Early Childhood Education and the degree in Primary Education.

More specifically, the FGs involved 10 student teachers and were led by two university professors. Each FG included 5 students (10 in total) from different courses and degree programmes. The student selection criteria were

- Two to three students from each of the second, third and fourth years.
- Students from both degree courses: Early Childhood and Primary.
- Students who have participated in a teaching innovation project with an ecosocial perspective.

The interviews (six in total) were carried out with teachers belonging to the Faculty of Education of the University of Cantabria. The teacher selection criteria were:

- Teachers who teach on the Early Childhood Education and Primary Education degree courses.
- Teachers representing the different areas of knowledge taught in the Early Childhood and Primary Education degree courses include didactics of social sciences, sociology, school didactics and organisation, psychology and experimental sciences.
- Teachers at different stages of their professional careers: permanent and temporary teaching staff.
- Teachers responsible for core or compulsory subjects in the curriculum who have the authority to define the content, methodology and assessment of the subjects.

3.2 | Techniques

In order to address the objective of the study, we conducted two group discussions with students and six semi-structured interviews with teachers.

The selection of different strategies according to the group was based on criteria of suitability for the participants and the most appropriate informational dynamics for each group. Thus, the use of semi-structured interviews with university professors reflects the potential of this technique for obtaining more detailed and appropriate information for the analysis that the professors could carry out within the framework of their subjects. In contrast, FGs with students were chosen for two reasons: first, because this strategy allows for access to

TABLE 2 | Thematic blocks for the interviews and focus groups.

Thematic blocks for the interviews and focus groups	Example interview questions	Example focus group questions
Concept of ecosocial justice	What role or relevance should ecosocial justice have in teacher training?	What does ecosocial justice mean to you?
Characteristics of an ecosocial university	In the case of the University of Cantabria, how do you rate the actions carried out within the framework of ecosocial training?	In the case the University of Cantabria, do you know of any actions that are carried out with an ecosocial perspective?
Ecosocial teacher training • Curriculum • Methodology • Evaluation • Relationships	To what extent are ecosocial issues present in your course? If they are present, what topics are addressed? If not, why not?	Within these courses identified as having ecosocial justice content, what types of relationships exist between students and teachers? And between the students themselves?

the interpretations of a larger number of participants at the same time. Second, because FGs allow for group conversational dynamics that are enriched by listening to and discussing different points of view, which do not occur in the case of interviews (Kamberelis et al. 2017).

Both the FGs and interviews were conducted in person in quiet, familiar settings (classrooms and offices within the faculty), where the interviewers maintained a neutral stance to minimise the researcher's influence on participants' responses. The sessions lasted between 60 and 75 min, were audio-recorded with prior consent, and transcribed verbatim, preserving relevant paralinguistic cues (pauses, emphasis and silences).

As part of the development of the research tools, a script was drawn up consisting of various topics and questions that were intended to structure the conversations. This script was designed by three researchers with experience in ecosocial education. Despite the predefined structure of the script, we opted for a flexible and open approach to its format, which allowed the emergence of other relevant issues that had not been considered initially (Fontana and Frey 2005; Kvale 2011). Although the questions varied, both scripts presented the same topics of inquiry (Table 2):

Three researchers from the University of Cantabria with specialist knowledge of the subject matter participated in the development of the script and the validity of the tool was established through a process of joint reflection.

3.3 | Analysis

Once the information had been produced through the application of the research techniques, it was transcribed and subsequently analysed. To carry out the data analysis, we opted to use a thematic coding approach, which involved the definition of analysis categories and codes (Huber 2002) using both inductive and deductive strategies given that, despite having an initial framework of questions to be analysed, the process of working with the data occasionally required the redefinition of a number of the categories and codes.

The coding process consisted of three phases:

1. Initial coding by a single researcher.
2. Cross-validation and discussion of codes and topics by the researchers involved.
3. The final coding was agreed upon to ensure consistency and reduce interpretive bias.

Software such as NVivo or Atlas.ti was not used. Instead, the data were manually handled and coded using Excel matrices, allowing for systematic comparison and triangulation between groups.

This coding and comparison process identified several recurring patterns and tensions. These were subsequently grouped into four broad thematic priorities through a process of inductive synthesis, which involved mapping relationships between codes and reinterpreting them in light of the research questions and the theoretical framework. The categories of analysis that emerged from this process were as follows (Table 3):

4 | Results and Discussion

In the process of analysing the data produced in the interviews and FGs, we have been able to uncover a number of barriers to teacher training from an ecosocial perspective, as well as examples of good practices that are being implemented or are planned with the aim of overcoming these barriers. This allows us to organise this section based on the four priorities in teacher training for ecosocial justice.

1. *Rethinking initial training based on social commitment, with a humanist and ecosocial project*

This priority, which provides an answer to Research Questions 1 and 2, implies a profound re-evaluation of the essential principles and purpose of initial teacher training in response to the contemporary demands of society and the environment. In doing so, it goes beyond mere rhetorical or superficial transformations (McDonald and Zeichner 2009), addressing embedded

TABLE 3 | Analysis categories and subcategories.

Thematic category	Dimensions of analysis	Subcategories
1. Ecosocial justice concepts and discourses	1.1 Ambivalences and contradictions in institutional and personal discourses	– Tension between ecosocial discourse and traditional practices – Presence of instrumental approaches serving neoliberalism – Lack of conceptual consensus – Reproduction of fragmentary models
	1.2 Positions of teachers and students	– Educational significance attributed to ecosocial justice – Degree of commitment and critical understanding – Expectations and resistance to these approaches
2. Curricular content linked to ecosocial justice	2.1 Inclusion and treatment of ecosocial content in the curriculum	– Subjects with an explicit ecosocial focus – Specific or cross-cutting nature of the content – Topics covered: environment, care, gender, inclusion, democracy
	2.2 Limitations to meaningful curricular integration	– Lack of real transversality – Dependence on teachers' personal interests – Lack of clear institutional guidelines
3. Teaching-learning methodologies	3.1 Pedagogical models used	– Predominance of transmissive methodologies – Experiences with inductive, dialogic and critical methodologies – Practices that promote reflection, participation and collaboration
	3.2 Structural and cultural obstacles	– High student–teacher ratios and classroom configuration – Hierarchical teacher–student relationships – Assessment culture focused on reproduction – Students' expectations of certainty
	3.3 Assessment as a transformative tool	– Continuous, participatory and critical assessment – Difficulties in implementing qualitative approaches – Perception of assessment as a driver or inhibitor of critical thinking
4. Connection with the environment and collaborative networks	4.1 Institutional culture and networking within the university	– Isolation between subjects and teachers – Need for shared spaces for pedagogical reflection – Initiatives to mainstream ecosocial approaches
	4.2 Community engagement and transformative experiences outside the classroom	– Service-learning experiences – Community and volunteer projects – Coordination with social organisations, schools and other territorial actors

cultural aspects (such as collective imaginaries, traditions and professional cultures) that shape and justify the practices that can be seen in teacher training.

In this regard, almost all the participating university professors draw attention to a fundamental emergency: the dangerous penetration of neoliberal ideology in universities that has promoted a culture of individualism, meritocracy and selection (Saura and Bolívar 2019), as reflected in the industry of publications, accountability processes (Cannizzo 2015; Jankowski and Provezis 2014), ranking policies and the vision of the university as a component of cognitive capitalism (De Angelis and Harvie 2009).

> The university has also been drawn into applying this logic of accumulation, that is, of productivity—of the more papers, the better—and of competitiveness, at the expense of moments of dialogue like this one that we are having. I would love it if we could talk openly about these issues among professionals at the University of Cantabria. (Interview_1)

In this way, by prioritising the number of publications, citation metrics and success indicators (Saura and Bolívar 2019), there is a risk of relegating research related to sustainability, social justice and ecological responsibility to a secondary role. Although these are crucial in a context of a civilisational crisis, they find no place in the current system of publication rankings, with its obsession with criteria of quantification rather than quality. In other words, although its main objective is the creation of knowledge, this shift that has occurred

in the university system operates by virtue of its contribution to the accumulation of capital and economic value, neglecting or underestimating essential aspects of the human and social condition, such as ethics, solidarity and general welfare. This tension has also been highlighted in UNESCO's global education reports, 'Reimagining our future together' (2022), which call for transformative education systems focused on sustainability, ethics and global solidarity. In this scenario, the university is trapped in a constant search for productivity and provides little opportunity for dialogue and the contemplation of ecosocial challenges.

> Our teacher training students leave without having even slightly questioned the economic system and the consequences that it has on human beings themselves and on, well, our neighbouring species, our fellow species [...] It seems to me that most of them are leaving without doing that, but it's possible that we [the university teachers] haven't done it either. I'm only just beginning to realise it myself. (Interview_1)

These findings had already been noted by Díez-Gutiérrez and Palomo-Cermeño (2022), who, in analysing university lecturers' approaches to education for degrowth and sustainability, found that despite their critical intentions, they tended to reproduce the dominant neoliberal model.

In the light of these challenges, the participants in our study raise the need, in the initial training, to rethink 'the social commitment that the school must have as an institution which is also humanist, and I say humanist thinking of global citizenship'. (Interview_2).

This declaration resonates with UNESCO's (2014) call to develop global citizenship and planetary responsibility as core values in teacher training, integrating ecological literacy and human rights into all aspects of the curriculum. This entails giving greater emphasis in teaching and research to issues linked to the emancipation of the most vulnerable social classes and groups, as well as carefully considering the transition towards an ecological paradigm. As the participants clearly state, the guiding principle of the curriculum should be the universality of the right to education and educators should internalise an ethical commitment to this fundamental right (Interview_3). Similarly, human rights must permeate all academic programmes at the University of Cantabria, transcending the educational sphere. In addition, the participants underline the need to update our relationship with the planet and other species and to adopt a feminist perspective in teacher training. This means overcoming the current anthropocentric and capitalist approach that is still present even in globally accepted frameworks such as the SDGs. Despite representing the most ambitious international agenda to address the most pressing social and environmental challenges, some participants consider the SDGs to have limited transformative potential. One of the main concerns raised is their alignment with the imperatives of economic growth, particularly through their endorsement of free trade and private sector participation, often without requiring adherence to fundamental UN conventions, such as those relating to human rights (Gómez-Gil 2018). From this perspective, the SDGs risk reinforcing the very systems of exploitation and extractivism they seek to mitigate. In this context, the discourses of the majority of teachers interviewed are aligned with the idea of carrying out a more profound review of teacher training, based on what Braidotti (2013) proposes: a posthuman ethic of planetary sustainability, fostering a transformative vision that makes it possible to discuss alternative options for economic and social organisation.

> It seems narrow to me in the sense that, well, there is a debate within ecofeminism about the work being done to address the ecological crisis right now, between which type of thinking continues to be anthropocentric, which, in other words, still puts the human species at the centre of reflections and philosophy, and which tries to give a vision of us as one of the many species that inhabit the earth. (Interview_1)

In summary, the informants outline the need to promote a paradigm shift in teacher training that distances itself from individual initiatives and, in contrast, approaches training as a systemic issue in which the social and the ecological are intimately intertwined. This entails recognising and dismantling the hidden curriculum that perpetuates neoliberal rationalities, even in well-intentioned academic settings.

2. *The need for a comprehensive review of the degree curriculum*

This section also seeks to answer Research Questions 1 and 2 and reflects the concerns expressed by participants regarding the structural and epistemological foundations of the current teacher training curriculum. In particular, they question how curriculum design has responded more to disciplinary interests and accreditation demands of systems for the assessment of academic quality[4] (Saura and Bolívar 2019) than to the educational and ethical imperatives of a world in crisis. Those participating in the project offer their opinions on this issue while explaining the processes of designing teacher training curricula.

> [Talking about the configuration of the current curriculum] If you want to apply the principle of neoliberalism to the university, some people talk about cognitive capitalism. Well, this was a good example, each area having so many subjects, and that they are in this year and not in the other etc. [...] the sum of individual selfishness never produces general well-being. (Interview_5)

This view resonates with critiques of curriculum as a technique (Biesta 2023), where educational content becomes a mechanism for transmitting skills and indicators, rather than a reflective and ethical engagement with the world.

As a consequence of these choices, a highly fragmented curriculum was generated with little connection between subjects, which made it impossible to develop a curriculum that would address the global understanding of the type of human being,

society and education required to successfully address the current collective challenges.

> It's very difficult for the curricula [...] to allow us to imagine people who have thought and asked themselves big questions about the model of human being required and the society in which they will carry out their functions. (Interview_2)

Consequently, the informants, both teachers and students, highlight the fact that there is insufficient ecosocial content in teacher training curricula and that, where this does exist, it is addressed from superficial points of view without looking at what is known about the current ecological and social situation in any depth.

> I think we're still at the stage where we see the climate crisis from the point of view of 'we have to reduce pollution, we have to reduce oil, we have to, we have to ...' and so on. But what does that have to do with the inequalities that already exist in society? I don't think we've arrived at considering that approach yet. (Interview_5)

> That's it, the ... I mean, I do see that in schools they do more about the environment but here at university we do less, which is curious—it's a bit the wrong way round. (FG1)

We see that the dominant approach remains focused on isolated ecological aspects, disconnected from their links with structural social inequalities, thus limiting the potential for transformative ecosocial literacy (Gruenewald 2003).

> Furthermore, participants identify that the current course structure—organised into short modules with limited time periods—reinforces superficiality and reduces the capacity to address complex issues in depth. This restriction results not only from institutional inertia but also from implicit decisions about which knowledge is valued and which is considered marginal (Apple and Apple 2004; Biesta 2023). Due to lack of time, I suppose they have to make choices. So, in the end they say, well, although this is important, I can't teach it [...] (FG2)

> And now what I see is a [...] model, here I teach you a little bit of mathematics or didactics of mathematics, here a little bit of curriculum or didactics, and it seems that we never get an approach taking into account the complexity educational context. (Interview_1)

Ultimately, these judgements form part of a critique of the neoliberal and technocratic model prevailing in higher education (Apple and Apple 2004), which fosters curricular fragmentation and segmentation as a reflection of market logic.

Despite the limitations indicated, a notable influence of the concepts of curricular justice, educational inclusion, collaboration in the professional skill of teaching, citizenship education and shared leadership is perceived in the discourses of the teachers and students, perhaps closer to the epistemological development of the subjects. However, there is clearly potential to address the concept of ecosocial justice in greater depth, so that it really inspires and guides the future professional practice of the educators being trained (Susinos et al. 2022).

Consequently, according to the informants, the priorities for action identified in this curricular dimension focus on changes in the curricula and also in the way contents are associated.

The need to address the inclusion of these contents is raised from two different and crucial perspectives. First, the incorporation of mandatory subjects in the curriculum, specifically designed to explore both the ecological and social aspects of the civilisational crisis that we currently face is proposed. Second, it is emphasised that content related to ecosocial justice should not be restricted to an isolated subject; rather, it is essential that teachers are encouraged to reflect on how to integrate ecosocial content and perspectives within their field of competence in a cross-cutting manner into all subjects of the curriculum. This is a challenge for individual teachers, but also for the institution as a whole.

> It seems to me that it is urgent that we establish it in a cross-cutting way in all subjects. Perhaps, as a start, it would be good to propose subjects, but in any case they should be compulsory (Interview_1)

This approach emphasises the need—already highlighted by scholars in the field (Calafell et al. 2024)—to move towards an integrated and systemic curriculum that enables future teachers to address ecosocial problems through a holistic, systemic and critically informed perspective.

3. *Moving towards participatory, inductive teaching methodologies connected to the local needs and possibilities of the social environment*

This section addresses Research Questions 2 and 3.

The content is important, but the organisational and methodological models are also carriers of educational messages. Thus, it would not be consistent to work on content such as democratic coexistence, ecosocial justice, care or equality, through transmissive and unidirectional methodologies where there is a complete absence of dialogue and collaboration. Nor does it seem reasonable to adhere to a competitive and standardised evaluation focused solely on the measurement of individual learning results. However, these approaches continue to predominate in teacher training, judging by the declarations of the interviewed informants.

> When you try to create a context in which knowledge is not simply reproduced, but reconstructed by everyone, in which things are produced, you obviously enter a terrain in which there are no certain answers or answers given beforehand, and that generates more ambiguity. [...] Nevertheless, many students ask me every year what my theory is—where is the theory. Well, that already says a lot about what idea they have about theory: theory is the notes. [...] But it has to do with this. In other words, when they demand the theory they are saying: Tell me exactly what I have to learn for the exam. Why? Because it's less ambiguous. (Interview_6)

This excerpt illustrates an important discursive contradiction: on the one hand, the need for a collective and critical construction of knowledge is recognised, but on the other, assessment culture and student expectations seem to demand certainties and rigid content. This paradox makes the implementation of inductive and participatory methodologies difficult.

The participants also emphasise the problem of the excessive size of the groups in the classrooms, the physical configuration of the spaces and the hierarchy of relationships, which hinders the establishment of meaningful links and an approach to more dialogical methodologies or in which there is a more genuine encounter between teachers and students and among the students themselves.

> Pupil 1: We're a very big group to have a ... I think that to have a lot of relationship between students—I'm talking about just in class, not outside—the problem is that in class there are too many students ... (FG1)

> I'd like to shake up the hierarchy more, but sometimes I think that yes, they don't dare to ... The idea that you can't contradict the teacher is still very persistent. (Interview_5)

These spatial and relational limitations, in turn, reflect an institutional structure that reproduces hierarchical and centralised models, far removed from the collaborative pedagogies recommended in the specialist literature (Cruz et al. 2022). Thus, the lack of spaces conducive to interaction limits the development of social and collaborative skills that are essential for ecosocial education.

Even with what we've just said, both teachers and students have shared experiences related to some subjects, which try to promote teaching spaces based on dialogue, reflection and trust.

Within this spectrum, a diverse range of approaches emerge that seek to strengthen the connection between teacher training in the field of ecosocial justice and the reality of the classroom. For example, the students mention the review or inclusion of case studies or outings into the environment carried out in an ecosocial way (FG_2). Also, among the methodologies presented as vehicles for implementing these principles of action in the future, service learning emerges as an approach with a great deal of potential. By combining academic learning with participation in projects that address community needs, service learning not only enables the acquisition of knowledge in real contexts, but also promotes citizen engagement and fosters greater awareness of social justice (Baldwin et al. 2007), contributing to the training of professionals who possess the skills to listen, reflect collaboratively, document challenges, advocate for improvements and mediate in conflict situations (Susinos et al. 2022).

> You have to help or teach to participate. That's also part of citizenship education, and teaching how to participate. Well, I haven't done it enough, or I've done it little, and it's something I still have to do. In other words, to use more service-learning type strategies, so that this is not just something that is useful for my term teaching the subject, but that has a more far-reaching impact, etc. (Interview_1)

These proposals are consistent with the literature, which emphasises the need to connect students with real-world problems and foster a critical understanding of the impact that different types of action can have on the community (Mulà and Tilbury 2023), as it has been shown that teaching approaches focused exclusively on raising awareness about sustainable development are insufficient to achieve active student engagement (Scott and Gough 2003).

In addition, cooperative work, research projects and debates are seen as strategies that favour the development of key collaborative skills in future teachers. Teamwork not only reflects real school dynamics but also promotes the collective generation of knowledge. Research projects and debates, meanwhile, encourage students to critically analyse information, to argue coherently and to cultivate listening and the consideration of diverse perspectives.

> I think that, with debates, because in some subjects we have done debates, with one group or another, and perhaps one group talks about the benefits of ... I don't know ... this subject, for example, and another says why it's not taught, or the disadvantages or something like that. So, some explain the benefits, then the roles are exchanged, and in the end things come out of it, but I think it's more difficult for volunteers to participate like that. (FG1)

> If we could organise research seminars where student dialogue each other t in smallgroups, but of course, with more time. Maybe it would be, well, in this cross-cutting way that could be tried, like American universities do, research seminars and when they defend their work themselves in front of other students. I think that would be a useful pedagogical technique and, above all, involving as much dialogue as possible with them. (Interview_1)

As far as assessment is concerned, a suggestion is made to design processes that involve a deeper level of reflection, where students not only memorice information, but also demonstrate a critical understanding and a capacity for analysis of complex and interdependent realities.

> An assessment that encourages that: critical thinking. There would also be many other issues, cooperative work, let's see, of course, the research work we do ourselves ... which is done in groups, so group work is encouraged, cooperative work, that's true, but ... for me, critical thinking is at the heart of everything and ... [...] Of course, carrying out an assessment that encourages critical thinking takes a lot of time, because it's not the same to correct 150 multiple-choice tests as it is to correct 150 essays. There's no comparison. (Interview_5)

The following make up a set of strategies that are already being used and are, as the words above show, aligned with this perspective: debates and discussions; collaborative projects; critical analysis of texts and case studies; problem solving; oral presentations, self-assessment and co-assessment. These strategies, intrinsically linked to the methodological approaches mentioned above, allow assessment to become a shared learning tool.

> I've learned more in the subjects where there was no exam. And I feel that subjects have been more useful to me when I've worked more throughout the course and I've stopped more to be able to do the things than when there are exams too, because there's coursework and stuff like that, but it's not the same, you know, it's not at all the same to have to ... I have to learn this for the exam, and I have to learn that for the exam, and that's it. To go little by little within the course ... in inclusive schools there were some subjects with more sustained work, but not in the sense that it was too arduous, for example because it was continuous and also in class there was ... they tried to do a lot of debate [...] I've learned more doing that sort of thing. If there was a lot of syllabus to study for the exam I could tell you everything perfectly the next day, but later on ... oops! (FG2)

4. *Creating and strengthening collaborative networks both within the faculty of education and between faculties, as well as establishing alliances with community associations*

This final section relates to the third research question.

The complexity of the current ecological and social situation requires coordinated action that connects knowledge, actors and processes at multiple scales, within and outside the university. Various studies underline the fact that this transformation requires forms of distributed leadership and institutional cultures that foster collaborative work, community engagement and openness to ecosocial issues as an organising principle (Avissar et al. 2018). Consequently, the participants emphasise the need to promote the creation of cultures that favour a relational institutional culture, transcending the isolation of subjects and individualistic dynamics and fostering the creation of meeting spaces that act as instruments for reflection and collective construction among teachers, students and social agents.

> Sitting down to talk and discuss would also serve to start talking about and discussing major programmatic principles around which to build initial teacher training. Because if you ask us, we might all be more or less satisfied with what we do, we could say that, well, it's reasonable, but if you ask about the overall picture, I'm sure that we all perceive some insufficiency. So, let's start talking. (Interview_7)

These ideas are consistent with the reflections on social justice by McDonald and Zeichner (2009), who argue that any process of curriculum reform must involve all stakeholders in order to ensure that these inclusive and democratic deliberations give rise to socially just and ecologically engaged decisions that offer responses to the emerging reality.

Another emerging pattern in the informants' discourses is the need for openness to what is happening outside the faculty, a movement of institutional overflow that allows teacher training to be connected with real-life experiences of community transformation, intersectoral collaboration and citizen action, and which is aligned with current proposals where the university is committed to the local area (Leal Filho et al. 2023), and in which learning is understood as a form of situated and ecologically conscious action.

> Linking much more what happens in the faculty with what happens outside it, and I'm not just talking about school [...], but also other spheres of public life, from non-governmental organisations to citizen and civic movements and institutions that help them to broaden their perspective a little. (Interview_2)

Even from more practical student perspectives, specific experiences such as volunteer groups are mentioned that, although limited, allow for the generation of critical awareness through direct action and an emotional connection with the environment:

> Yes, maybe it's silly to go and pick up rubbish because you don't achieve anything, but [...] In the end, a group of volunteers, you meet people, you help, so it's not only that ...' (FG1)

5 | Conclusions

We are currently in the initial stage of a review and reformulation of initial teacher training curricula in Spain. In view of the pressing ecosocial challenges we are currently facing, the fundamental question of what kind of teachers we need arises,

together with the contribution that teacher training could make to address this important collective challenge. This need has been acknowledged at the university level, where the Conference of Rectors of Spanish Universities has expanded and ratified the guidelines of the Sectoral Commission of the Conference of Rectors for Sustainable Development (CADEP) to integrate sustainability and the 2030 Agenda into university curricula (Díez-Gutiérrez and Palomo-Cermeño 2022).

However, a key finding of our study, in line with the observations of authors such as Díez-Gutiérrez and Palomo-Cermeño (2022) and Valderrama et al. (2020), reveals that both curricula and pedagogical approaches within courses have yet to systematically and comprehensively incorporate ecosocial issues and sustainability.

Building on this insight, this article contributes to outlining an itinerary that points out the possible directions that initial teacher training could explore, illuminated by the lighthouse of ecosocial justice. In this regard, we have identified four priority areas for action that we believe are imperative.

First, we have identified a priority that relates to the cultural and political frameworks in which university education takes place, which inexorably influence the configuration and legitimisation of the practices that we observe in teacher training. In connection with this, the participants, particularly the teachers, highlight the marked influence of neoliberal ideology, which has promoted the commodification of higher education, and which is reflected in the publishing industry and the processes of accountability in which the university teacher assumes what Saura and Bolívar (2019) conceptualise as the role of the 'neoliberal academic subject'. The priority that stands out in this context is the need to dismantle and challenge this predominant neoliberal mentality or, as Díez-Gutiérrez and Palomo-Cermeño (2022) put it, to 'decolonise the dominant imaginary' (243), and consciously reconfigure the focus of higher education, reaffirming its humanistic mission and its contribution to the development of societies founded on justice, centred around shared assets and committed to the ecological regulation of life (Díaz-Salazar 2016).

Rethinking initial training based on social commitment, with a humanist and ecosocial approach involves reviewing existing curricula, methodologies and pedagogical practices to ensure that they are aligned with these principles. In this context, a fundamental priority involves introducing ecosocial contents into the degree curricula, both through the incorporation of compulsory subjects specially designed to explore the ecosocial dimension, delving into the challenges and solutions needed to address the current civilisational crisis, and through the cross-cutting integration of ecosocial aspects in all the subjects in the programme, according to their field of competence.

Similarly, the prevalence of transmissive methodologies and traditional approaches to evaluation that prioritise the repetition of information with a view to examination, together with teacher–student relationships based on a marked asymmetry, are factors that contribute to restricting opportunities to work from perspectives based on enquiry, dialogical exchange and participation and sacrifice the opportunity to experiment and generate solutions in a collaborative manner.

It is precisely this kind of experimentation, tentative trials that we undertake collectively, that have a crucial role in initial teacher training (Susinos et al. 2022), as the challenges ahead will be complex and will require novel approaches to solve them (Assadourian 2017). Along these same lines, participants express the need to incorporate experiences in real environments linked to the life and needs of the local context. Among the methodologies presented as means to implement these principles in the future, service learning stands out as a robust approach, along with collaborative work, research projects and debates. These methodological choices prevent assessment from simply being a stereotypical measurement of rote learning in order to make it a tool for shared learning, where students can practice their critical understanding and analytical skills.

In turn, for this transformation to take place, various studies highlight the need to strengthen teacher educators' training in areas such as ecosocial justice, degrowth and sustainability (Aznar et al. 2017; Oscar 2020; Vilches and Gil 2020) in order to foster a critical reflection on curricular priorities, assessment approaches and teaching methodologies. Thus, these reflections underline the importance of establishing teacher training that is reflective and more experiential (Gorski and Dalton 2020; Schön 1998; Sorensen 2014), that effectively harmonises theoretical and practical training and that understands teaching as a collaborative enterprise undertaken with both peers and students (Korthagen 2010; Susinos and Saiz 2016).

Finally, a last priority emerges: on the one hand, the need for institutional backing and resources, an issue already evidenced in previous research (Mínguez and Pedreño 2021); and on the other, the urgency of developing and consolidating collaborative networks both within the faculty of education and between faculties, as well as establishing alliances with community associations, strengthening the democratic culture in university environments and recovering the social, cultural and political functions of higher education institutions (Romero and Luis 2007).

To conclude, although this study offers an in-depth and contextualised view of initial teacher training from an ecosocial perspective, it is important to acknowledge certain limitations. First, as this is a case study conducted at a single university, the results may not be directly generalisable to other contexts or institutions with different characteristics. However, the detailed analysis allows for a rich and meaningful understanding that can serve as a reference for similar research and curriculum reform processes in similar contexts. Furthermore, the sample, although diverse in terms of roles and perspectives, is relatively small, and in this sense, it may limit the possibility of capturing all the possible different voices within the educational community. However, the depth of the interviews and FGs compensates for this limitation, providing valuable qualitative data that allows for the identification of relevant trends and structural problems. Thus, the value of this study is to inspire other research that delves deeper into these aspects and to continue to fuel the academic and political debate on the effective integration of ecosocial justice into initial teacher training.

Ethics Statement

With regard to the ethical considerations, we ensured that the participants became involved voluntarily after understanding the intentions and implications of the research, achieving this through informed consent. In addition, we have guaranteed the confidentiality of the information and respected the protection of privacy and anonymity of the participants. It is worth mentioning that the project has received the approval of the Ethics Committee for Research Projects of the University of Cantabria, an entity that adheres to the Spanish Science Law and strives to establish a Code of Good Practice in research equivalent to the systems used in other European universities.

Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

[1] Ecologically speaking, we have exceeded eight of the nine physical limits of the planet, such as those related to climate change, biodiversity loss and changes in the global nitrogen cycle, as reported in the famous study by Rockström et al. (2023). In addition, this report, which is a revision of a 2009 report, has introduced a new idea: the notion that the security of the "Earth system" cannot be separated from justice.

[2] The 2021 IPCC (Intergovernmental Panel on Climate Change) report warns of the impacts of climate change on vulnerable communities, including coastal zones, agricultural areas, and populations in tropical regions and with extreme climates. These communities face threats such as the rising sea level, changes in precipitation, ocean acidification, droughts, floods and landslides. Marginalised ethnic and cultural groups are also particularly affected due to their lack of access to resources and decision-making (Pajares-Alonso 2023). According to the World Bank, 1 billion people live in extreme poverty, 2.5 billion lack access to bank accounts and 1.4 billion have no electricity. In addition, 795 million people do not have enough to eat and 13% of the population in developing countries suffers from malnutrition. In Spain, the Foessa report reveals that 8.5 million people are in a situation of social exclusion and 4.1 million suffer severe social exclusion, with homelessness and job insecurity (Foessa 2019).

[3] The course syllabus can be found here https://educacion.ucm.es/estudios/grado-educacioninfantil-plan-800319.

[4] University curricula in Spain are governed and must be approved by the national evaluation agency.

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