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# Trainee Teachers' Perceptions of Socio-Environmental Problems for Curriculum Development

**Roberto García-Morís [1] and Ramón Martínez-Medina [2,*]**

[1] Department of Specific Teaching Training and Research and Diagnosis Methods in Education, University of A Coruña, 15008 A Coruña, Spain
[2] Department of Specific Didactics, University of Córdoba, 14071 Córdoba, Spain
* Correspondence: rmartinez@uco.es

**Abstract:** Socio-environmental problems are some of the major concerns of today's society, and education is an essential area to raise awareness and mould future citizens who will be committed to sustainability. The purpose of this paper is to ascertain how future primary and secondary education teachers in the area of social sciences perceive the socio-environmental problems that affect today's society, for their subsequent inclusion in the curriculum. To this end, a study was carried out by means of a questionnaire, which showed that trainee primary and secondary teachers have a high consideration of these environmental problems, with hardly any differences noted according to sex or type of degree studied. This perception is positive in terms of the subsequent inclusion of socio-environmental problems in the development of the curriculum by the participating trainee teachers, who largely prefer an autonomous model for curricular implementation.

**Keywords:** teacher training; socio-environmental problems; environment; sustainability; social sciences



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## 1. Introduction

In 2020, Spain approved a new educational law (Ministerio de Educación 2022) that proposes an important renewal of the curriculum towards a more competence-based model in line with European recommendations and the Sustainable Development Goals (Moya and Zubillaga del Río 2020). However, the success of the new curriculum framework will be determined by the issues raised during teacher training, since initial training is essential to generate competent teachers for curricular development that includes environmental problems also from a social perspective (Moya and Zubillaga del Río 2020; López 2021; López-Fernández and Oller 2019), as is proposed for the training of students from other fields of knowledge (Boca and Saraçlı 2019). Therefore, it is important to start from the perceptions of trainee primary and secondary school teachers regarding the SDGs in a broad sense, and particularly with regard to the environment and climate change that we are experiencing on a global scale, as well as the role of environmental education (Tahsin 2003; Boon 2010; Fuster et al. 2021; Ministerio de Educación 2022; Massip et al. 2021; Medina and Castro 2021; Mosothwane 2002).

The environment has a strong presence in Spain's new curricular framework, given that it is included as an interdisciplinary and cross-cutting component of the competence-based approach and school contents (Ministerio de Educación 2022). There is no doubt that for the environmental perspective to be successful in the development of the curriculum in schools, we must take action with regard to pre-service and in-service teacher training. Therefore, it is essential to understand the perceptions of trainee teachers regarding environmental problems in order to implement successful educational approaches (Morote et al. 2022; López 2021; Cucurachi et al. 2017). This study uses the concept of socio-environmental problems rooted in a holistic understanding of the concept: environmental problems are social, and most social problems also have an environmental perspective.

Subjects included within the area of Social Sciences—Social Sciences at primary school and Geography and History at secondary school—are paramount when addressing socio-environmental issues and promoting attitudes favourable to social change with an environmental perspective (Fuster et al. 2021). This global conception of the social and environmental components that characterise the environment cannot be alien to the curricular approach taken to social subjects, which is why this research was proposed, as it seeks to understand the perceptions of social and environmental problems held by future social science teachers, and to see whether there any differences between the views of future primary compared to future secondary school teachers.

The analysis of perceptions regarding the environment within the field of education has sparked interest for decades in different countries, analysing misconceptions held (Tahsin 2003), with recommendations on educational approaches in teacher training (Van Petegem et al. 2005), perceptions about Creative Thinking for environmental education (Daskolia et al. 2012) and environmental education it-self (Mosothwane 2002). Studies of the perceptions held by inservice teachers are also a constant thread running through the literature on the subject (Flogaitis and Agelidou 2003; Benavides-Lahnstein and Ryder 2020; Galvis-Riaño et al. 2020; Munoz et al. 2009).

With regard to Spain, the contributions of López-Fernández and Oller (2019) and López (2021) are particularly important, used as a reference here when selecting the social and environ-mental problems put forward in our research. These authors identified a good predisposition among trainee primary school teachers towards the inclusion of socio-environmental problems in school, although the proposals they design show little theoretical knowledge. Álvarez-García et al. (2015) presented a review of the existing literature in which they observed that research on Environmental Education has increased in recent years, highlighting the weak knowledge of trainee teachers on the subject (Tal 2010; Puk and Stibbards 2010; Kyridis et al. 2005) and suggesting its inclusion in learning and development plans for competence-based training as environmental educators (Boca and Saraçlı 2019; Yavetz et al. 2014).

Environmental Education is usually given a high level of consideration by future teachers, especially in the areas of Natural Sciences and Social Sciences, although knowledge of the subject is limited (Yavetz et al. 2014). In addition, it is developed more fully when addressing local environmental problems (Campo and García-Monteagudo 2020) and those influenced by the media (Tal 2010). Field trips are presented as favourable experiences (Tal 2010) for Environmental Education, whose introduction in teacher training plans is very useful for future curricular inclusion (Yates et al. 2019; Alcántara and Medina 2019).

The presence of Environmental Education in Spain's curricular framework has been gaining ground over the years. If we focus on the Primary curriculum, we see that issues related to Environmental Education were only broached very timidly until the enactment of the General Organic Law on the Education System (LOGSE) in 1990 (Ministerio de Educación 1990). The curricular development set out in this Law does not explicitly include any content related to the environment, although one of the objectives of the Law refers to the manifestations of human interventions, their scope, possible solutions, ecological balance, and the conservation of natural resources. In 2006, with the enactment of the new Organic Law on Education (LOE) (Ministerio de Educación 2006), other concepts related to the environment, such as sustainability and climate change, appear explicitly. In the recently repealed Law for the Improvement of Education Quality (LOMCE) (Ministerio de Educacíon 2013), environmental issues focus on the field of Social Sciences teaching. Sustainable development appears as a concept to be learned, and its teaching focuses on human intervention in the environment, environmental problems, and the sustainable use of resources (Martínez-Medina and Arrebola 2019).

The Organic Law amending Organic Law 2/2006, of 3 May, on Education (LOMLOE) of 2020 (Ministerio de Educación 2020) makes great strides towards facing the challenges of society in the 21st Century, focusing the whole process of teaching subjects on the achievement of the Sustainable Development Goals (SDGs) (Moya and Zubillaga del

Río 2020). In the new curriculum, the teaching of Natural and Social Sciences is unified once more in a single integrated area of knowledge in Primary Education. The subject is structured into specific competencies, evaluation criteria linked to these competencies, and core knowledge (Ministerio de Educación 2022).

Specific competency number 6 addresses all environmental issues. It aims to identify the causes and consequences of human intervention in the local and global environment, from various points of view (environmental, economic, social, etc.), seeking solutions and changes in the way we act to implement sustainable and respectful lifestyles to care for and protect people and planet.

Core knowledge is structured into three main blocks of contents: A. Scientific culture, B. Technology and digitisation and C. Societies and territories. The teaching of Social Sciences is integrated into this last block, which in turn is subdivided into four main sections (1. Challenges of today's world, 2. Societies in time, 3. Civic literacy and 4. Ecosocial awareness).

The Ecosocial awareness block proposes a gradation of learning according to the stages into which Primary Education is divided. Issues ranging from knowledge of the environment, landscapes, and human action on the environment to conservation actions, the responsible use of resources, and climate change are all tackled. Pupils progressively explore these issues in greater depth and breadth right through to the third stage, when they explore sustainable development, the SDGs, sustainable urban development, and the green economy.

As we can see, the curriculum change in Spain aims to build a society presided over by social justice and environmental sustainability, and education plays an important role in this, in terms of moulding citizens that are competent in this area. In other words, in line with the SDGs, the idea is that students gain knowledge and skills to promote sustainable development, SDG 4 Goal 7 (Moya and Zubillaga del Río 2020; Ministerio de Educación 2022). To achieve this goal, the new curriculum framework is not enough. Teachers must be trained and conscientiously in favour of Environmental Education. The purpose of this study is to ascertain the perceptions of future primary and secondary school teachers about socio-environmental problems and their curricular development.

## 2. Materials and Methods

### *2.1. Objectives*

The general objective of this paper is to ascertain the perceptions of future Social Sciences teachers in Spain regarding socio-environmental problems. To this end, an analysis questionnaire has been prepared based on the results obtained previously in other reference works of research (López-Fernández and Oller 2019; López 2021). This overarching aim is developed through the following specific objectives:

- To analyse the perception of trainee primary school teachers regarding environmental and social problems.
- To analyse the perception of trainee secondary school geography and history teachers regarding environmental and social issues.
- To identify how future social sciences teachers will address socio-environmental issues within the classroom.

### *2.2. Participants*

The study was carried out with students enrolled on the bachelors' degree in Primary Education and the master's degree in Secondary Education Teaching at the universities of Cordoba, A Coruña, and Murcia (Spain). Sampling was based on accessibility and convenience, as individuals were easily accessible by the authors.

The final study sample consisted of 168 students, of whom 36.9% (n = 62) were men and 61.3% (n = 106) were women, aged between 20 and 59 years with a mean age of 23.6 (SD = 5.2).

Students were also divided by type of degree studied. In the case of Spain, this classification is relevant given that the training of primary school teachers is via the bachelor's degree in Primary Education (4 years) and the training of secondary teachers is via a postgraduate degree (master's degree in Compulsory Secondary Education Teaching) lasting one academic year. This postgraduate course is completed after the students receive their degree, which, in the case of Social Science teachers, is usually a degree in Geography, History or Art History (4 years). 50.6% of the participants were enrolled on the master's degree in Compulsory Secondary Education Teaching and 49.4% on the bachelor's degree in Primary Education (Table 1).

**Table 1.** Descriptive education variables.

| | n | % |
|---|---|---|
| **Type of degree studied** | | |
| Bachelor's degree in Primary Education | 83 | 49.4 |
| Master's degree in Secondary Education Teaching (Social Sciences, Geography and History) | 85 | 50.6 |
| **Previous degree studied by students on the master's course** | | |
| Geography and History | 21 | 24.71 |
| Geography, Geography and Spatial Planning, Geography and the Environment | 2 | 2.35 |
| History | 35 | 41.18 |
| History of Art | 14 | 16.47 |
| Humanities | 10 | 11.76 |
| Other | 3 | 3.53 |

### 2.3. Instrument

For the purposes of this research, a questionnaire was designed, the Survey to Evaluate Socio-Environmental Problems in the Initial Training of Social Sciences Teachers, which is based on the results of the study by López-Fernández and Oller (2019) and López (2021), on environmental problems in Primary Education Teacher Training. Beginning with the problems identified in this previous research, the study was extended to students enrolled on a master's degree in Secondary Education Teaching, with the intention of identifying differences both in the perception of socio-environmental problems and in their curricular inclusion.

The questionnaire contains a total of 31 questions organised into four analytical dimensions. Of the total number of questions, one is open ended, and the others are closed. In dimensions 1, 2 and 3, the closed questions were designed using a Likert scale ranging from 1 to 10, with 10 being the highest degree of importance and 1 being the lowest degree of importance.

The first dimension, which only contains three questions, seeks to ascertain whether future teachers attach greater importance to environmental or social problems, and their assessment of each one of them. The second dimension of the questionnaire tackles the participants' evaluation of environmental problems (climate change, pollution, greenhouse effect, etc.). The third dimension is structured in a similar way to the previous one and tackles social problems, their importance and assessment. In the last dimension, through an open-ended question, student teachers are asked about how they will address socio-environmental issues in the classroom. In order to establish comparisons in the assessment of the different problems, the social and environmental problems were presented separately, also asking about the greater importance of some over others. The separate analysis of socio-environmental problems is based on the results obtained in the research carried out by López-Fernández and Oller (2019). Although these problems are conceived in an integrated way as socio-environmental for their curricular development, it was decided to present them in this way for the comparative analysis of the perceptions of future teachers.

### 2.4. Data Analysis

For the descriptive statistical analysis of the sample, basic descriptive methods were used. For qualitative variables, absolute and relative frequencies were calculated; and for quantitative variables, minimum, maximum, mean and standard deviation values were calculated.

Groups of quantitative variables between two groups were compared using Student's *t*-test for independent samples, having first verified the assumptions of normality (Kolmogorov–Smirnov test) and homogeneity of variances (Levene test). The effect size was studied by means of Cohen's d, considering 0.2 to be a small effect, 0.5 to be medium, and 0.8 to be large.

Statistical analysis was carried out using SPSS 26.0 for Windows. Differences were considered statistically significant with $p < 0.05$.

In the open-ended question of the last dimension, responses were categorised according to the models of curricular development (Canals and González-Monfort 2011), making a descriptive analysis of that categorisation.

## 3. Results

### 3.1. Perception of Social and Environmental Problems

With regard to the participants' perception of the most important problems, when asking about social and environmental problems in a differentiated way, 75.6% (n = 127) of the future teachers participating in the study believe that the main problems are social, whereas 24.4% (n = 41) believe they are related to the environment. In addition, looking at the importance attached to each type of problem, environmental problems have an average importance of 8.87 points out of 10 (Min–Max: 5–10, SD = 1.12), while social problems reach more relevant values, with a mean of 9.45 points (Min–Max: 7–10, SD = 0.85).

The questionnaire asked students to assess, on a scale of 0 to 10, a number of environmental issues. The results show that there is strong concern for all environmental problems, with air pollution and climate change being the top priority, while problems related to the use of fossil fuels and noise pollution are given a lower score, below 9, with the latter receiving the lower of the two scores, although still above 7 (Table 2). In other words, all the problems were rated highly on the scale.

**Table 2.** Relevance of environmental problems.

| Environmental Problems | Min–Max | Mean (SD) |
|---|---|---|
| Climate change | 3–10 | 9.36 (0.99) |
| Noise pollution | 2–10 | 7.87 (1.65) |
| Water pollution | 5–10 | 9.23 (1.11) |
| Air pollution | 5–10 | 9.37 (0.98) |
| Deforestation | 6–10 | 9.20 (1.01) |
| Greenhouse effect | 4–10 | 9.12 (1.15) |
| Water shortages/drought | 3–10 | 9.27 (1.21) |
| Overexploitation of resources | 5–10 | 9.27 (1.08) |
| Use of fossil fuels | 2–10 | 8.70 (1.34) |

With regard to perceived social problems, the participants once again rate them very high on the scale, above 7 (Table 3). Interestingly, gender-based violence is perceived as the most important social problem. The fact that gender-based violence receives the highest score as a social problem by future teachers is very positive, since education is one of the most important fields for acting against this blight.

The participants also have a strong perception of poverty and racism, but interestingly illegal immigration receives one of the lowest scores. Among the social problems included in the questionnaire, there were some that significantly affect the school population, both primary and secondary, and these were rated from highest to lowest as follows:

bullying, unemployment, eating disorders, drug addiction, youth emigration, alcoholism, consumerism, and overweight.

**Table 3.** Importance of social problems.

| Social Problems | Min–Max | Mean (SD) |
|---|---|---|
| Access to universal health care | 5–10 | 9.44 (1.10) |
| Bullying | 2–10 | 9.45 (1.04) |
| Alcoholism | 1–10 | 8.51 (1.62) |
| Consumerism | 1–10 | 8.37 (1.70) |
| Social inequality | 2–10 | 9.43 (1.07) |
| Drug addiction | 2–10 | 8.66 (1.48) |
| Youth emigration | 2–10 | 8.62 (1.53) |
| Lack of values | 2–10 | 9.18 (1.23) |
| Illegal immigration | 1–10 | 8.09 (2.01) |
| Gender violence | 5–10 | 9.72 (0.66) |
| Marginality | 2–10 | 9.01 (1.25) |
| Unemployment | 4–10 | 9.09 (1.09) |
| Poverty | 7–10 | 9.55 (0.77) |
| Racism | 2–10 | 9.52 (0.99) |
| Overweight | 2–10 | 8.14 (1.63) |
| Unclean streets | 2–10 | 8.18 (1.62) |
| Overpopulation (unchecked population growth) | 1–10 | 7.96 (1.74) |
| Eating disorders | 2–10 | 8.73 (1.47) |

It is likely that the main reason bullying is classed as one of the top four social problems is because the respondents are studying to become teachers. However, this is a social problem, not just an educational one, and it is perceived and rated as such by the students participating in the study. It is also striking that overpopulation, that is to say, the unchecked growth of the world's population, is the least valued social problem of all, since it scores lower than an 8 in quantitative terms, when it is a problem that is closely linked to other social and also environmental problems.

When analysing perceived social and environmental problems by sex (Table 4), with regard to environmental problems, the only difference observed is in relation to noise pollution, a problem that women consider to be more important than men, but in both cases this problem receives the lowest score.

With regard to social problems there are differences in relation to alcoholism, social inequality, drug addiction, lack of values, illegal immigration, marginality, unemployment, poverty, overpopulation and eating disorders, which women consider to be more important than men.

Gender-based violence is given a higher score by women, but one particularly positive finding is that the perception of men in the study is very close to that of women, with little difference between the two, and in both cases, it is the highest rated problem.

The lack of values is a problem that ties in very well with the teaching of Social Sciences, since one of the aims of this field is to provide an education in values. This lack of values as a social problem receives an average score of 9.38 among women and 8.85 among men, a more significant difference.

When analysing the data according to the degree course studied (Table 5), environmental problems only yield differences in their assessment in the case of deforestation, which students on the master's degree in secondary education teaching consider to be more important than students on the primary education degree. The former rank deforestation as the main environmental problem whereas the latter rank air pollution as the highest. Grouping responses by degree course studied, noise pollution is once again placed last.

In terms of social problems, there are no differences between undergraduate and master's degree students with regard to any of the problems. Gender-based violence is once again at the top of the leader board and receives a higher score among future primary

teachers than secondary teachers, as does bullying and a lack of values, although with unsignificant differences. While overpopulation continues to appear in both cases as one of the least relevant problems.

**Table 4.** Descriptive and comparative statistics of the importance given by men and women to environmental and social problems.

| | Sex, Mean (SD) | | Difference of Means | Student's *t*-Test | | d |
|---|---|---|---|---|---|---|
| | Male | Female | | t(166) | *p*-Value | |
| **Environmental problems** | 8.66 (1.16) | 8.99 (1.09) | −0.33 | −1.85 | 0.067 | −0.29 |
| Climate change | 9.26 (0.92) | 9.42 (1.03) | −0.16 | −0.99 | 0.324 | −0.16 |
| Noise pollution | 7.53 (1.60) | 8.07 (1.65) | −0.54 | −2.05 | 0.042 | −0.33 |
| Water pollution | 9.08 (1.23) | 9.31 (1.03) | −0.23 | −1.30 | 0.194 | −0.21 |
| Air pollution | 9.26 (0.97) | 9.43 (0.98) | −0.17 | −1.13 | 0.261 | −0.18 |
| Deforestation | 9.06 (1.13) | 9.27 (0.92) | −0.21 | −1.30 | 0.194 | −0.21 |
| Greenhouse effect | 9.03 (1.13) | 9.17 (1.16) | −0.14 | −0.75 | 0.455 | −0.12 |
| Water shortages/drought | 9.15 (1.21) | 9.35 (1.21) | −0.2 | −1.05 | 0.294 | −0.17 |
| Overexploitation of resources | 9.11 (1.20) | 9.36 (1.00) | −0.25 | −1.43 | 0.156 | −0.23 |
| Use of fossil fuels | 8.45 (1.29) | 8.85 (1.36) | −0.4 | −1.87 | 0.064 | −0.30 |
| **Social problems** | 9.34 (0.94) | 9.51 (0.80) | −0.17 | −1.25 | 0.212 | −0.20 |
| Access to universal health care | 9.29 (1.29) | 9.53 (0.97) | −0.24 | −1.26 | 0.176 | −0.22 |
| Bullying | 9.27 (0.96) | 9.55 (1.07) | −0.28 | −1.66 | 0.1 | −0.26 |
| Alcoholism | 8.06 (1.74) | 8.76 (1.50) | −0.7 | −2.75 | 0.007 | −0.44 |
| Consumerism | 8.13 (1.59) | 8.51 (1.75) | −0.38 | −1.40 | 0.163 | −0.22 |
| Social inequality | 9.19 (1.30) | 9.58 (0.87) | −0.39 | −2.27 | 0.024 | −0.36 |
| Drug addiction | 8.34 (1.50) | 8.85 (1.45) | −0.51 | −2.18 | 0.031 | −0.35 |
| Youth emigration | 8.47 (1.30) | 8.71 (1.65) | −0.24 | −0.98 | 0.329 | −0.16 |
| Lack of values | 8.85 (1.48) | 9.38 (1.01) | −0.53 | −2.46 | 0.007 | −0.43 |
| Illegal immigration | 7.35 (2.21) | 8.52 (1.76) | −1.17 | −3.75 | <0.001 | −0.60 |
| Gender violence | 9.63 (0.68) | 9.77 (0.64) | −0.14 | −1.36 | 0.169 | −0.22 |
| Marginality | 8.60 (1.48) | 9.25 (1.03) | −0.65 | −3.05 | 0.001 | −0.53 |
| Unemployment | 8.76 (1.25) | 9.28 (0.93) | −0.52 | −2.87 | 0.002 | −0.49 |
| Poverty | 9.34 (0.92) | 9.67 (0.63) | −0.33 | −2.51 | 0.006 | −0.44 |
| Racism | 9.35 (1.27) | 9.61 (0.78) | −0.26 | −1.45 | 0.103 | −0.26 |
| Overweight | 7.89 (1.49) | 8.29 (1.69) | −0.4 | −1.56 | 0.12 | −0.25 |
| Unclean streets | 7.92 (1.66) | 8.34 (1.58) | −0.42 | −1.63 | 0.104 | −0.26 |
| Overpopulation | 7.58 (1.85) | 8.18 (1.64) | −0.6 | −2.18 | 0.031 | −0.35 |
| Eating disorders | 8.37 (1.54) | 8.94 (1.40) | −0.57 | −2.47 | 0.015 | −0.39 |

SD: Standard deviation. d: Cohen's d (effect size).

**Table 5.** Descriptive and comparative statistics regarding the importance given by students on the undergraduate and master's degree courses to environmental and social problems.

| | Degree Course Studied, Mean (SD) | | Difference of Means | Student's *t*-Test | | d |
|---|---|---|---|---|---|---|
| | Bachelor's Degree | Master's Degree | | t(166) | *p*-Value | |
| **Environmental problems** | 8.84 (1.11) | 8.89 (1.15) | −0.05 | −0.29 | 0.771 | −0.05 |
| Climate change | 9.37 (0.87) | 9.34 (1.11) | 0.03 | 0.21 | 0.834 | 0.03 |
| Noise pollution | 7.98 (1.41) | 7.76 (1.85) | 0.22 | 0.83 | 0.408 | 0.13 |
| Water pollution | 9.31 (0.88) | 9.14 (1.29) | 0.17 | 1.01 | 0.316 | 0.16 |
| Air pollution | 9.41 (0.90) | 9.33 (1.05) | 0.08 | 0.53 | 0.596 | 0.08 |
| Deforestation | 9.01 (1.05) | 9.38 (0.93) | −0.37 | −2.38 | 0.018 | −0.37 |
| Greenhouse effect | 9.13 (0.99) | 9.11 (1.29) | 0.02 | 0.15 | 0.881 | 0.02 |
| Water shortages/drought | 9.29 (1.19) | 9.26 (1.25) | 0.03 | 0.16 | 0.872 | 0.02 |
| Overexploitation of resources | 9.20 (1.08) | 9.33 (1.08) | −0.13 | −0.75 | 0.457 | −0.12 |
| Use of fossil fuels | 8.73 (1.20) | 8.67 (1.48) | 0.06 | 0.31 | 0.757 | 0.05 |

**Table 5.** *Cont.*

| | Degree Course Studied, Mean (SD) | | Difference of Means | Student's *t*-Test | | d |
|---|---|---|---|---|---|---|
| | Bachelor's Degree | Master's Degree | | t(166) | *p*-Value | |
| **Social problems** | 9.48 (0.82) | 9.41 (0.89) | 0.07 | 0.53 | 0.596 | 0.08 |
| Access to universal health care | 9.48 (1.09) | 9.40 (1.12) | 0.08 | 0.48 | 0.63 | 0.07 |
| Bullying | 9.55 (0.82) | 9.34 (1.21) | 0.21 | 1.34 | 0.184 | 0.21 |
| Alcoholism | 8.70 (1.44) | 8.32 (1.77) | 0.38 | 1.53 | 0.128 | 0.24 |
| Consumerism | 8.55 (1.56) | 8.19 (1.82) | 0.36 | 1.40 | 0.164 | 0.22 |
| Social inequality | 9.46 (0.85) | 9.41 (1.25) | 0.05 | 0.28 | 0.78 | 0.04 |
| Drug addiction | 8.81 (1.35) | 8.52 (1.60) | 0.29 | 1.27 | 0.207 | 0.20 |
| Youth emigration | 8.67 (1.53) | 8.56 (1.54) | 0.11 | 0.46 | 0.643 | 0.07 |
| Lack of values | 9.28 (1.09) | 9.09 (1.35) | 0.19 | 0.97 | 0.335 | 0.15 |
| Illegal immigration | 8.28 (1.72) | 7.91 (2.26) | 0.37 | 1.20 | 0.233 | 0.18 |
| Gender violence | 9.81 (0.45) | 9.64 (0.80) | 0.17 | 1.72 | 0.089 | 0.26 |
| Marginality | 9.12 (1.02) | 8.89 (1.44) | 0.23 | 1.18 | 0.242 | 0.18 |
| Unemployment | 8.98 (1.18) | 9.20 (0.99) | −0.22 | −1.34 | 0.183 | −0.21 |
| Poverty | 9.49 (0.80) | 9.60 (0.73) | −0.11 | −0.90 | 0.37 | −0.14 |
| Racism | 9.60 (0.80) | 9.44 (1.15) | 0.16 | 1.09 | 0.276 | 0.17 |
| Overweight | 8.25 (1.48) | 8.04 (1.76) | 0.21 | 0.87 | 0.388 | 0.13 |
| Unclean streets | 8.34 (1.34) | 8.04 (1.85) | 0.3 | 1.21 | 0.227 | 0.19 |
| Overpopulation | 7.94 (1.56) | 7.98 (1.90) | −0.04 | −0.14 | 0.892 | −0.02 |
| Eating disorders | 8.89 (1.41) | 8.58 (1.52) | 0.31 | 1.39 | 0.167 | 0.21 |

SD: Standard deviation. d: Cohen's d (effect size).

### *3.2. Curricular Approach to Social and Environmental Problems for Curricular Development*

Having analysed the perceptions of socio-environmental problems held by future primary and secondary social science teachers, the fourth and final dimension of the questionnaire dealt with how they would address these problems in their future teaching practice.

In the previous section, we found that, despite the differences in the degree courses studied by teachers for Primary and Secondary education, their perceptions of socio-environmental problems did not differ significantly. This is significant because the course required to become a primary school teacher is a 4-year honours degree that spans a very diverse curriculum of subjects, but all related to education. On the other hand, future secondary teachers take a teaching specialisation master's degree, following on from a four-year honours degree in History and Geography mainly devoted exclusively to these disciplines. Therefore, a priori, trainee primary school teachers would have less disciplinary training related to the environment than trainee secondary school teachers. Therefore, this last part of the investigation seeks to ascertain how the different problems will be addressed in the classroom, and whether there is a difference according to the degree studied by the participants.

Given that the question was open-ended, the responses were categorised by models of curricular development in Social Sciences, taking into account three models: traditional, autonomous, and critical (Canals and González-Monfort 2011). The traditional model is the positivistic model, which has been the prevailing model used in schools for the longest time, consisting of the reproduction of knowledge with pupils playing a fairly passive role. The autonomous or active teaching model gives greater prominence to pupils and their relationship with the environment, with procedural proposals predominating. Finally, the critical model introduces relevant social problems, thinking about the future and promoting social change (Canals and González-Monfort 2011; Cebrián et al. 2021; Massip et al. 2021) to foster "the formation of reflective, critical and creative thinking, the analysis of values and social practices, and learning about decision making and problem solving" (Canals and González-Monfort 2011, p. 53).

The critical model has an important presence (30.49%), the autonomous model is the dominant one (57.32%), and the traditional model is proposed in 12.19% of cases (Table 6).

This model has a token presence in the case of trainee primary school teachers (3.66%) and more important in the case of trainee secondary school teachers (20.73%). In part, it is understandable that students who have spent less time focusing on education-related studies would have a more traditional view of curricular approaches, probably due to their previous experiences, because of the disciplinary training they have received over the course of their studies.

**Table 6.** Educational proposals by curricular models and by type of degree studied.

| Curricular Models | Degree Primary Ed. | % | Master's Degree Secondary | % | Total | % |
|---|---|---|---|---|---|---|
| Traditional model | 3 | 3.66 | 17 | 20.7 | 20 | 12.19 |
| Autonomous model | 55 | 67.07 | 39 | 47.6 | 94 | 57.32 |
| Critical Model | 24 | 29.27 | 26 | 31.7 | 50 | 30.49 |
| Total | 82 | 100 | 82 | 100 | 164 | 100 |

Proposals to address these topics categorised under the traditional model link socio-environmental problems with the other contents in the curriculum for a better understanding of them. As we can see in the following narratives, socio-environmental problems are not at the heart of the didactic proposal itself but are linked to the conclusions of the topics or so as to highlight them throughout history, but always related to the subject contents themselves or to improve the assimilation thereof, never as the central elements of the didactic proposal, and always through a transmissive approach to socio-environmental problems.

> Trying to relate them to the subject contents covered in class, with activities that help them to understand the subject contents and socio-environmental problems. (Cod. 16, Secondary, Male)

> Correlating these problems with the Social Sciences content covered in class. Especially when we design activities for students to highlight the relationships between theoretical contents. (Cod. 35, Secondary, Male)

> Based on a thorough analysis of the causes and consequences of any historical or geographical issue, conclusions can be drawn that affect the present day at all levels. (Cod. 96, Secondary, female)

> Explaining in class the evolution of ecosystems throughout history, [ . . . ] up to the present day. [ . . . ] In Geography class, working in class on factors that pollute rivers, what a drainage basin is, etc. (Cod. 103, Secondary, female)

When considering how to approach these issues in school through the subjects of Social Sciences, we observe a tendency to follow the autonomous curricular model, that is, focusing interventions more on students and methodological aspects rather than from the critical approach, which focuses on decision-making and problem solving. This model is more present in primary (67.07%) than secondary school (47.56%) and mainly emphasises practical training and student motivation.

> I would develop them in a fun way, such as making models, school trips, etc. so that students learn about the importance of these problems in a didactic and visual way. (Cod. 55, Secondary, female)

> With a programme based on experiences and visual explanations, and a lot of support material, such as documentaries or films, experiences told by first-hand by those affected . . . (Cod. 164, Primary, male)

In addition to the examples focused on methodological strategies and motivating resources, special importance is given to field trips around the local area, which is very characteristic of the autonomous model. Although some of the responses categorised in this model might approximate the critical model, inclusion in the autonomous model was

chosen when the main argument of the proposal focused on methodological issues more than the problematisation of content, the search for solutions, and the promotion of social participation.

> Asking them questions to find out the children's point of view and knowledge and then taking a trip to a recycling centre. (Cod. 84, Primary, female)

> Through activities and field trips related to the local area where they can directly see how these issues affect their daily lives, to achieve greater awareness. (Cod. 32, Secondary, male)

The critical model is present in 30.49% of the proposals made by students, which is very positive. The representativeness of this model is found in a fairly balanced proportion between primary (29.27%) and secondary (31.71%) teachers. In other words, despite the greater presence of the traditional model among future secondary school teachers, the critical model also has an important representation at this stage.

> Through activities that will develop critical thinking in these areas so that students can begin to play an active role in their resolution or, at least, in more sustainable maintenance. (Cod. 93, Secondary, female)

> Through issues that affect their closest environment and foster real student involvement. Taking advantage of something that is happening in the city in order to be able to work from within the problem, going on trips, analysing, proposing solutions, putting them into practice . . . (Cod. 107, Primary, female)

> Through environmental awareness activities (recycling, sustainability) as well as social activities that foster values, respect, make the students aware of social differences, as well as present-day socio-environmental problems; working with them on possible solutions to diminish their influence. (Cod. 152, Primary, female)

In this model, responses that focused on the active role of the student were included, prioritising awareness and social intervention, although an important part focused on environmental issues. In other words, the important thing is for students to be aware of their own system of values, of what they think and of the search for possible alternatives, emphasising educational aims such as education in democracy, participation, and the formation of critical citizens who are involved in the management of space and institutions (Morales et al. 2015; Fuster et al. 2021; Cebrián et al. 2021; Benejam 1997; Oller 2011).

## 4. Discussion

The student teachers who took part in this research rated social problems as being more important than environmental problems, although high scores were given to both types of problems: 9.45 points (Min–Max: 7–10, SD = 0.85) for social problems and 8.87 points out of 10 (Min–Max: 5–10, SD = 1.12) in the case of environmental ones. This assessment coincides with the role that trainee teachers give to environmental issues (Moya and Zubillaga del Río 2020; López 2021; Yavetz et al. 2014; Yates et al. 2019) which they consider a current and future social challenge, although they have little grounding in these topics (Ghosn-Chelala and Akar 2021; Miles et al. 2006) especially among those who have studied disciplines that are not closely linked to the environment (Yavetz et al. 2014).

In this research, we set two goals aimed at ascertaining the perceptions of future teachers based on their studies, but we did not find any significant differences based on this. In other words, the assessment of social and environmental problems did not differ greatly between future primary and secondary teachers despite differences in their initial training.

One of the most significant elements mentioned above was that, among future primary and secondary teachers, gender-based violence was rated the most important social problem. Given that we are working with future teachers, this assessment is important, because of the role education plays in combating gender violence, especially bearing in mind that

recent Spanish studies have shown how the percentage of young men (15 to 29 years) who deny gender violence or diminish its importance has increased recently (Rodríguez et al. 2021), and that this is a problem that nonetheless affects the younger population (Instituto de la Juventud 2022). If we analyse the data by sex, although the assessment of gender violence is a little lower in the case of the male future teachers interviewed, the difference is not significant compared to female teachers.

Following the analysis of perceptions based on a list of social and environmental problems (López-Fernández and Oller 2019; López 2021), concluding that most of the problems received a high score, the future teachers were asked about how they would address these problems in their future teaching work. The model that was found to be the most prevalent was the autonomous curriculum development model, centred on students, on experiences in their immediate environment, and on practical activities, although there is difficulty in identifying environmental problems in the immediate environment (López 2021). Among the proposed activities, good environmental practices related to good recycling and waste management habits are strongly present, which also coincides with educational experiences in more degraded environments (Ghosn-Chelala and Akar 2021).

The fact that many of the proposals in this model focus on experiences with students in the surrounding environment is significant. Other research, such as Yavetz et al. (2014), finds that, despite their area of specialism, most students recognise the importance of the environment for their future work as teachers. Addressing local socio-environmental problems yields good results (Tal 2010; Oller 2011) and helps to identify global problems (Ghosn-Chelala and Akar 2021).

In the critical curriculum, content takes centre stage. It is enriched and diversified. It is no longer exclusively factual content as in the traditional model, or content subordinate to the interest of the students who have to discover it, as in the autonomous curriculum model (Pagès 1994). Although content is at the heart of this model, the responses of the participating students focus not so much on the identification of topics, but on how they are approached, making references to awareness, to the problematisation of contents or with activities for the development of critical thinking.

Students whose response can be classed within the critical model show, as in the study by, that socio-environmental problems are part of their ethical responsibilities as future teachers to foster social and environmental change. The cross-cutting nature of socio-environmental problems, which can be addressed globally or through different subjects, is repeatedly highlighted (Álvarez-García et al. 2015), as is the use of media and news for the development of critical thinking and the promotion of participation (Tal 2010). Civic engagement within the community and school is also partly present in curriculum inclusion proposals pertaining to the critical model (Yates et al. 2019; Medina and Castro 2021; Torres-Porras and Martínez-Medina 2021; López 2004).

## 5. Conclusions

Knowing the perceptions of future teachers in both primary and secondary education is useful for the development of Environmental Education and for the implementation of the new Spanish curriculum framework. The training about sustainable development that student teachers have received throughout the education system is important, but the role given to socio-environmental problems and their curricular inclusion in teacher training studies is also vital.

Knowing the perceptions of future teachers about social and environmental problems is necessary to subsequently analyse how these teachers will integrate socio-environmental problems into their curriculum in the future, because it is essential for teachers to be aware in this regard. The new curriculum framework, in line with European recommendations and the SDGs, opens up new possibilities for teaching and learning about socio-environmental problems, which must undoubtedly be exploited within teacher training, as teachers are important agents of change.

The participating students give more importance to social problems than environmental ones, but with a high assessment of all of them. This aspect is positive to include socio-environmental problems in the initial training of future Primary and Secondary teachers, so that they are competent in a critical curricular development that incorporates environmental issues in a holistic way, aligned with the SDGs and with the new Spanish curricular framework.

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