Efficacy Assessment of a Training Pilot Program on Gender Equality for Teachers

Evaluación de la Eficacia de un Programa Piloto de Formación en Igualdad de Género para Profesorado

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Abstract

Background. Gender equality education in schools is the most effective tool to combat inequality and gender-based violence (GBV). Teachers often lack the necessary equality knowledge and skills. **Objective.** The aim of this study was to develop, implement and evaluate the effectiveness of a pilot gender equality programme for prospective teachers. **Method.** Data was collected from a sample of 113 university students of Early Childhood Education (41.6%) and Primary Education (58.4%) degrees, aged between 21 and 40 years (M=22.46; SD=2.45). Through a longitudinal design, the effectiveness of the training programme was analysed in the following topics: coeducational attitudes, acceptability of GBV and knowledge about gender equality. The Wilcoxon contrast test, including significance and effect size, a Spearman Correlation and Linear Regression analyses were conducted. **Results.** Statistically significant changes between pre and post measures were obtained: an increase in socio-cultural and relational coeducational attitudes and also in equality knowledge, as well as a decrease in GBV acceptability. According to the findings from linear regression analysis, student teachers who scored higher in coeducational attitudes tended to show lower acceptability of GBV. **Conclusions.** The need for further designs of training programmes on gender equality is emphasised, and policy-makers and public authorities are called upon to raise awareness of the importance of Gender Equality Teaching (GET) and to develop clear guidelines for universities to address these issues.

Resumen

Antecedentes. La educación en igualdad de género en las escuelas es la medida más eficaz para combatir la desigualdad y la violencia de género (VdG). El profesorado frecuentemente carece de los conocimientos y competencias necesarios en materia de igualdad. **Objetivo.** El objetivo de este estudio era desarrollar, aplicar y evaluar la eficacia de un programa piloto de igualdad de género para futuro profesorado. **Método.** Los datos fueron recogidos de una muestra de 113 estudiantes universitarios de las titulaciones de Educación Infantil (41,6%) y Educación Primaria (58,4%), con edades comprendidas entre los 21 y los 40 años (M=22,46; DT=2,45). Mediante un diseño longitudinal, se analizó la eficacia del programa de formación en los siguientes temas: actitudes coeducativas, aceptabilidad de la violencia de género y conocimientos sobre igualdad de género. Los análisis incluyeron la prueba de contraste de Wilcoxon, pruebas de significación y de magnitud de cambio, Correlación de Spearman y Regresión lineal. **Resultados.** Se obtuvieron cambios estadísticamente significativos entre las medidas pre y post: un aumento de las actitudes coeducativas socioculturales y

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relacionales y también de los conocimientos sobre igualdad, así como una disminución de la aceptabilidad de la violencia de género. Según los resultados del análisis de regresión lineal, los estudiantes de educación que puntuaron más alto en actitudes coeducativas tendieron a mostrar una menor aceptabilidad de la violencia de género. **Conclusiones.** Se enfatiza la necesidad de seguir diseñando programas de formación sobre igualdad de género, así como la relevancia de que se formulen políticas y recomendaciones por parte de las autoridades educativas en relación a la coeducación junto con directrices claras para que las universidades puedan abordar estas cuestiones.

Palabras clave / Keywords

igualdad de género, enseñanza, educación, formación, violencia de género, proyecto piloto, eficacia.
gender equality, teaching, education, training, programme, gender-based violence, pilot, effectiveness.

1. Introduction

Although it is well known at the societal level that gender equality is important for the healthy development of girls and boys (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018b) different forms of gender discrimination nonetheless persist (European Institute for Gender Equality [EIGE], 2014; 2023). Specifically, the domain of violence towards women, which can take different forms (physical, sexual, psychological or economic), has been recognized as one of the most troubling manifestations of gender inequality (EIGE, 2023). This continuing disparity negatively affects girls' access to certain spheres, their participation in the community, and their social and professional development (Cin & Walker, 2016). Even at universities, female academics often miss opportunities because of longstanding patriarchal structures, distrust in women's professional expertise and unchanged systemic constraints (Hirsu et al., 2021).

According to UNESCO (2015), in order to meet the urgent need for teachers who can exercise their privileged position to enhance equality, it is important to ensure gender equity within teacher training institutions. University-based teacher training programmes have a responsibility to raise their students' awareness of gender issues and provide them with the training they need to confront gender challenges in the classroom. Considering that education is an authentic instrument of social transformation, teacher training in feminist theory and criticism is essential (Madruga, 2024).

In an attempt to bring about this much needed transformation of teacher training, the European Council of Ministers of Higher Education (European Higher Education Area [EHEA], 2003) urged member states to reorganize their degree programmes with an eye toward reducing inequality between men and women (González & Wagenaar, 2003). As part of the transition toward the EHEA, Spanish universities also took on an obligation to incorporate gender studies into teaching and research (Kortendiek, 2011). According to Prat Grau and Flintoff (2012), European universities' task of drafting equality policies offers an ideal opportunity to revisit the issue of gender in education. Classrooms and educational institutions represent a context of critical importance, because teachers' attitudes play a fundamental role in the reproduction or elimination of sexist stereotypes and in promoting change. Through the discourses they adopt and their interactions with students, teachers are in a unique position either to maintain and perpetuate inequality or, conversely, to educate for equality of opportunity. This equality, in turn, has been recognized as key to the eradication of gender-based violence (GBV) (Dlamini, 2021). This is because GBV has its roots in the idea of women being inferior and subordinate to men, a belief which is strengthened by gender stereotypes. Even though there are political and social measures in place calling for equality in education, there is still a lack of formally regulated gender education (Albury, 2014) and of measurement instruments capable of evaluating the process itself to show evidence of progress on mainstreaming gender implementation (DeJaeghere, 2015).

Research suggests that teachers are often also lacking in the knowledge and skills they need to work with their students on issues related to gender equality (Anguita-Martínez, 2011) and that they tend to feel unprepared to deal with these topics in the classroom (Ministry for Equality, 2019). As noted, a number of studies point to a dearth of teacher training in gender equality as the underlying cause of limitations for the application of gender equality-oriented interventions in schools (Husso et al., 2012; Lahelma, 2014; Martino et al., 2005; Stanley et al., 2015). The project Educating Teachers for Gender Equality (EIGE, 2016) provided evidence that a significant percentage of teachers and instructors across countries have not been educated in how to mainstream gender equality in the educational processes (Cardona-Moltó & Miralles-Cardona, 2022). Indeed, various studies show that university students finish their training period without adequate competence when it comes to gender equity (Pendergast et al., 2011), and teachers report unrealistic perceptions of their

own abilities to implement sustainable gender equality practices (Miralles-Cardona et al., 2021). Despite these shortcomings, many studies have found that professional development programmes can offer teachers the support they need to explore and gain deeper insight into gender and gender-based issues (Jones, 2022).

As an example of an effective practice, the UN Women Training Centre's Annual Report (2016) observed that training can be a powerful strategy to move individually and collectively towards gender equality through raising awareness, empowering learning, building knowledge, and developing skills. The report stresses that preservice teachers must acquire the knowledge and resources they need to incorporate a gender perspective into their future teaching. Indeed, the need to boost the inclusion of gender perspectives in university education has been identified in studies in several countries (Kreitz-Sandberg, 2013; Langsten & Hassan, 2018; Lappalainen & Lahelma, 2016).

Research on effective Gender Equality Training (GET) is quite scarce on an international level. Among the few publications on the topic is a Taiwanese study that assessed the introduction of gender issues into the general curriculum of universities, finding that the most important concerns for students were gender awareness, awareness of gender equality and the creation of a teaching atmosphere of mutual respect (Shih & Wang, 2022). Elsewhere, observations of a gender equality course conducted at a Turkish university proved that perceptions of gender are still shaped by patriarchal and conservative patterns that will be transferred to future generations through education unless universities do more to train teachers (Toraman & Özen, 2019). Kollmayer et al. (2020) evaluate a training program for secondary school teachers, concluding that the gender stereotypes that influence the choice that adolescents make of their future profession can be reduced. In their conclusions, they advocate training teachers from previous educational stages on gender issues, a call that is in line with the approach of our study.

In the Spanish context, Gómez et al. (2016) conducted a critical analysis of the extent to which a gender perspective is included in teacher education. The study found that such training hardly exists in Spain, since only 11 out of the 44 existing teacher training programmes in our country examined in the study offered courses related to gender in their study plans, and they were generally elective subjects. More recent reviews have concluded that gender training is offered in 26.3% of primary education degrees at public universities (Resa, 2023) and in 22.4% of early childhood, primary and social education degrees, including public and private universities (Varela et al., 2024). These data corroborate the continuing lack of critical awareness of gender equality and the resistance to including it in teacher training (Fondón & Alzás, 2023; González-Pérez, 2018). Several investigations have come up with different findings with regards to this issue in Spain. For instance, one of the few existing studies found that students tend to express a desire for faculty members to take on greater responsibility to effectively and authentically integrate concerns related to equality between men and women into their teaching practices (López Francés et al., 2016). Another recent publication underscored students' perception that instances of discrimination by university faculty persist today, whether in the form of sexist stereotypes, the use of discriminatory language or preferential treatment driven by gender (Ruiz et al., 2018). It should also be noted that different programs have focused specifically on strengthening the knowledge of future early childhood and primary school teachers on education for equality or on familiarizing teachers with legislation on gender equality and GBV (Gavilán-Martín et al., 2023; Suberviola, 2023). Gavilán-Martín et al. (2023) specifically focus on increasing future primary school teachers' knowledge of legislation on gender equality and GBV. It is also worth highlighting that students tend to think that the curriculum does not offer them enough training on issues of gender (Monroe et al., 2008; Sanabrias-Moreno et al., 2022; Varela et al., 2024). It is especially critical, then, for university degree programmes to expand their curricula to foster gender equality competence development.

Gender equality education in schools is currently viewed as the most effective way to promote equality, starting in early childhood, and to reduce GBV. (Casanova & Roldán, 2016), and there is growing scientific evidence in favor of acting in the early stages of education to fight inequality and to promote a more feminist society (Aragonés & Sevillano, 2020; UNESCO, 2018a; World Health Organization [WHO], 2018). That is why teachers should feel equipped to address gender issues, and university programmes must provide the necessary training. According to Vanner et al. (2022), effective feminist pedagogy to fight GBV should utilize action-oriented strategies and curricula rooted in both the systemic contexts of GBV and the intersectional lived experiences of students and teachers. Gender equality programmes have been shown to help students overcome sexist attitudes, control their emotions and adopt attitudes oriented towards greater gender equality, in addition to increasing the motivation of teachers (Lameiras et al., 2006).

As has been shown, there is growing evidence for the importance of gender education at all levels. Therefore, the aim of this study is to implement and assess the effectiveness of a gender equality programme for fourth-year university students enrolled in Early Childhood and Primary Education programmes.

The specific objectives of the study are the following:

1) To assess the knowledge and attitudes with regard to gender equality held by the fourth-year university Early Childhood Education and Primary Education students before and after completing a gender equality pilot programme.
2) To analyze the changes in the sample of university students' views of the acceptability of GBV after completing the gender equality programme and their satisfaction.

2. Method

2.1. Equality training programme

The programme was designed for fourth-year university students of Early Childhood Education and Primary Education at the Faculty of Psychology, Educational and Sport Sciences. The training consisted of five sessions addressing core gender equality concepts in the school context, based on extensive bibliographical research conducted by the research team in the six months prior to the training sessions. The aim of the program was to promote GET at schools and the specific objectives were to raise awareness about the impact of gender stereotypes on children's development, to give knowledge about the issue of GBV, to address the key points of affective-sexual education and show the mechanisms that allow us to promote gender equality at schools. The "flipped classroom" methodology (Sergis et al., 2018) was used in the programme, meaning that prior to each session students watched and read materials that had been uploaded to a website created specifically for this purpose. Talbert (2012) notes that the flipped classroom method shows promise for making the university classroom experience more interactive, inclusive, and effective. In the case of gender equality teaching (GET), this method creates a good atmosphere that allows students to reflect and that helps promote attitudinal change with regard to relevant topics. The sessions were based on group discussion and case studies in order to promote reflective, critical and active learning. They were conducted in two separate groups, one of Early Childhood students and another of Primary students. The themes were selected based on group discussions in which the researchers and professors of the faculty with expertise on gender issues were involved and the results of the needs assessment with students (pre-measures) were also taken into account. The sequence of course contents was the following:

Session 1: *Lectures on pornography consumption and sexual-affective education* (5 hours - December). This session was carried out by four renowned experts on pornography consumption and its consequences for interpersonal relationships, as well as four school boards members with expertise with sexual-affective programmes.

Session 2: *Deconstructing gender stereotypes* (2 hours - February). This session was led by an associate professor from the university's Education department whose expertise is in gender equality and feminist theory. Using a structure of case studies and analysis of examples, the students held group discussions about presence and implications of gender roles, especially with regards children and adolescents.

Session 3: *Understanding GVB* (2 hours - March). This session was guided by an associate professor and a PhD student from the Psychology department, both experts in GBV. It addressed the phenomenon from a social and educational perspective and analysed various real cases in both stages (Early Childhood and Primary).

Session 4: *Programmes on sexual-affective education* (2 hours - April). This session was conducted by an associate professor and a PhD student from the university's Education and Psychology departments, both experts on sexual-affective programmes. Based on a gender equality perspective, various programmes were analysed in small groups, who then shared their work with the group as a whole.

Session 5: *School mechanisms to promote gender equality* (2 hours - May). This session was conducted by an associate professor from the Education department, expert in school organization and gender equality. The focus was on the most important mechanisms that school administrators and teaching staff should

consider adopting to promote gender equality in schools (equity plans, non-sexist language, space distribution, relationships with families, non-discrimination, among others).

2.2. Participants

All participants were selected through non-probabilistic intentional sampling (Hibberts et al., 2012). The inclusion criteria were as follows: age of majority and currently enrolled in Primary Education or the Early Childhood Education degrees. All university students who met these criteria were invited to participate in the study, thereby minimizing selection bias. The initial sample (pre-measurement) was made up of 148 university students (92.6% females and 7.4% males) enrolled in degree programmes in Early Childhood Education (44.6%) and Primary Education (55.4%), aged between 20 and 39 years (M=22.06; SD=2.26). The post-measurement sample consisted of 113 university students (93.8% females and 6.2% males) of Early Childhood Education (41.6%) and Primary Education (58.4%) degrees, aged between 21 and 40 years (M=22.46; SD=2.45). All participants in the post-sample had responded to the pre-measure. Also, it should be noted that the ages of the participants between the pre- and post-measures may have changed slightly due to the time lapse between the two measures. As can be seen in the Flow chart of the samples' recruitment (see Figure 1), the completion rate of the questionnaires in both pre (89.7%) and post measures (87.6%) were satisfactory.

Table 1
Sociodemographic characteristics of the sample (N = 73)

Variable	Level	Frequency	Percentage (%)
Degree	Early childhood education	33	45.2
	Primary education	40	54.8
Sexual orientation	Heterosexual	52	71.2
	Homosexual	4	5.5
	Bisexual	17	23.3
Sex	Man	3	4.1
	Woman	70	95.9

There were participants who only answered either the pre or the post measure. For this reason, through the anonymised identification code, the complete responses on both measures were matched, resulting in a sample of 73 participants (see Figure 1). Thus, the response rate on both measures was suboptimal (49.3%). Therefore, the final sample (pre-post study) consisted of 73 Early Childhood Education (45.2%) and Primary Education (54.8%) university students (95.9% females and 4.1% males), aged between 21 and 40 years (M=22.40; SD=2.43). Regarding the ethical considerations, all participants gave their informed consent and were informed about anonymity, confidentiality, voluntariness and the right to withdraw their participation at any point in the research process, in accordance with EU Regulation 2016/679 (General Data Protection Regulation). The right of withdrawal may explain the loss of responses in both measures. Also, the research project was approved by the Faculty of Psychology, Educational Sciences and Sports Blanquerna (URL) ethics committee [2021003P].

Figure 1
Flow chart of sample's study
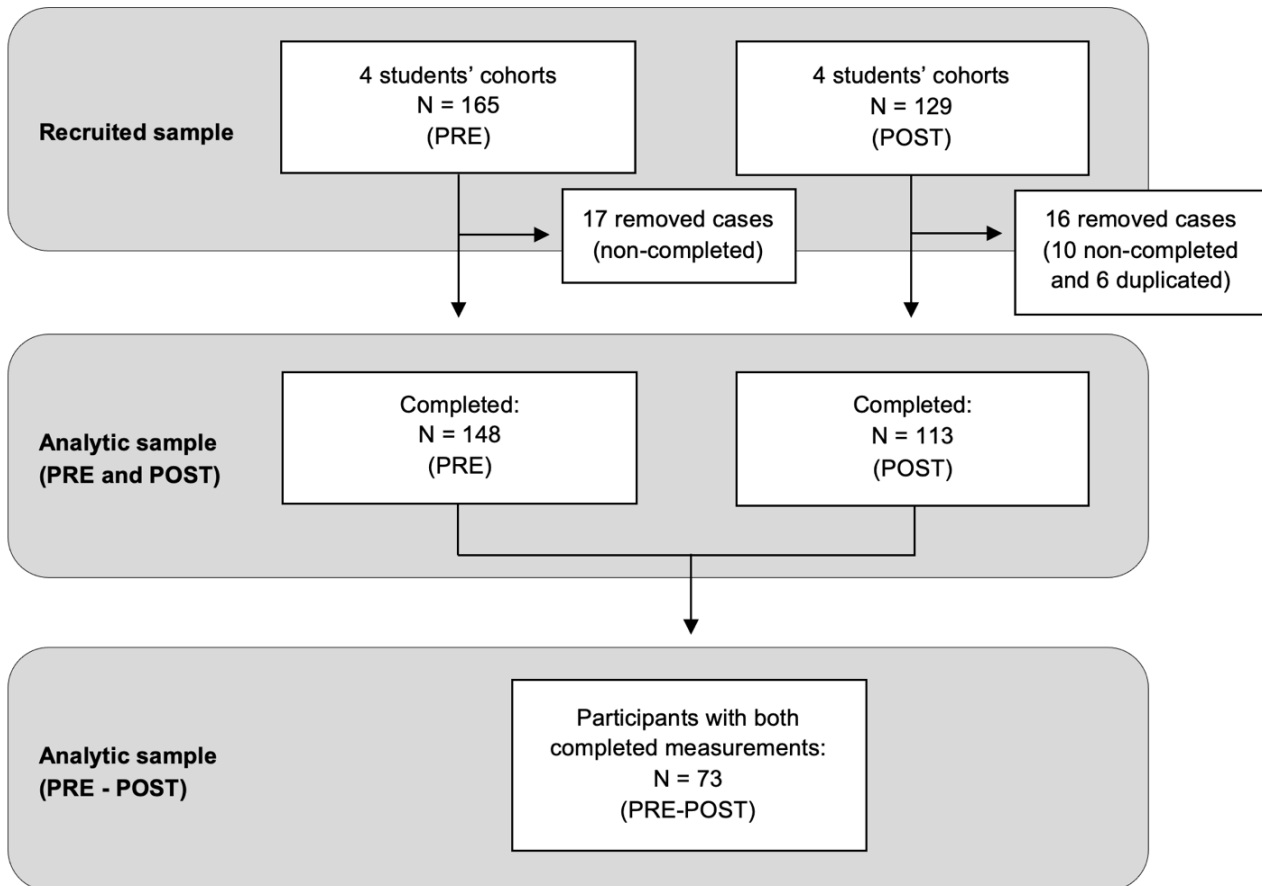
2.3. Measures

The following instruments were used to assess the efficacy of the programme:

1. School Doing Gender / Teachers Scale (SDG/t) by Rebollo-Catalán et al. (2011), which measures teachers' attitudes with regard to gender equality in the school context. It is a self-report questionnaire made up of 30 items answered on a five-point Likert scale: 1=*strongly disagree*, 2=*disagree*, 3=*neither agree nor disagree*, 4=*agree* and 5=*strongly agree*. The scale is based on a three-factor model. The sociocultural factor (F1) has to do with equality policies and school organization. The relational factor (F2) deals with vertical links (between teachers and students) and horizontal ones (among teachers), as well as with types of discourse, language and teaching *praxis*. Finally, the personal factor (F3) covers personal beliefs and values related to equality. The instrument has been found to have a very good degree of reliability (α = 0.92), indicating that the items have a high level of internal consistency.

2. Acceptability of Intimate Partner Violence Against Women Scale (A-IPVAW) by Martín-Fernández et al. (2018), to measure beliefs as to the acceptability of violence against women. The questionnaire is made up of 20 items that assess attitudes toward three different types of violence: physical violence and coercion, and verbal violence and emotional violence (such as controlling behaviors). It is answered using a three-point Likert scale: 1=*not acceptable*, 2=*somewhat acceptable* and 3=*acceptable*. An IRT analysis of the scale shows that it has an adequate fit to measure and discriminate beliefs about acceptability (M_2 (150) = 560.87, p < .001). This model yields three indicators: a=discrimination, b_1=specific threshold parameter 1, b_2=specific threshold parameter 2. Indicators b_1 and b_2 offer a more specific measurement of the degree to which violence against women is viewed as acceptable.

3. Ad hoc pre-test questionnaire on prior knowledge of coeducation, which uses a dichotomous scale to assess students' perceptions and opinions with regard to the presence or absence of content related to coeducation in the current curriculum (e.g. "In previous years of the degree I have worked on themes of coeducation"), as well as their perception of their own readiness to work to include gender equality in their future teaching practice (e.g. "I know what a school Equality Plan is", "I would be able to design a school Equality Plan").

4. Ad hoc post-test questionnaire: including most of the questions posed in the ad hoc pre-test questionnaire (dichotomous scale) and additional questions designed to assess participants' opinions and their degree of satisfaction with the course (5 stars rating scale).

5. Sociodemographic variables: in the pre-test questionnaire, the following data were collected: identification code, age, sex, sexual orientation (heterosexual, homosexual or bisexual) and degree programme (Early Childhood Education or Primary Education).

2.4. Procedure

Following a longitudinal assessment design, the instruments were administered one month before the start of the training programme (T1: pre-test in November) and one month after finishing the training (T2: post-test in June) through an online survey. The web-based questionnaire was distributed by email to the students. All responses were tracked through an anonymized identification code in order to match pre- and post- data. No personal data was obtained.

2.5. Data collection and analysis

In order to collect data, a survey including all five of the questionnaires mentioned above was created using the platform *Survey-Monkey*. Thus, the instruments were administered online under the same conditions for all participants, as both pre- and post-responses were carried out during class time. The average response time was 15 minutes. Also, to ensure the replicability and external validity of this study, the instruments were administered following the same instructions, language and item order of both original psychometric validations. For the purposes of data analysis, participants who failed to complete the entire survey were eliminated, as were duplicate responses (see Figure 1). No atypical cases were eliminated. Pre- and post-test data was matched using an alphanumeric identification code (ID), identifying participants who had completed both measures. Data analysis was carried out on this final sample (N=73). The descriptive and correlational analyses of the quantitative data were carried out using the software programme *SPSS Statistics 28*. In the statistical analysis process, the normality of distribution of the quantitative variables was calculated. Due to the non-normal distribution obtained ($p < .05$), a non-parametric Wilcoxon's test was carried out to assess changes between T1 and T2 with regards the attitudes toward coeducation, the acceptance of GBV, the changes in the knowledge of equality and coeducation, and the satisfaction with the implemented programme. The result for Levene's test for homogeneity of variances was satisfactory ($p > .05$). The effect size of the pre-post differences was calculated using Cohen's d (Cohen, 1992). Also, linear regression analysis was applied to identify the factors affecting the acceptability of GBV or coeducational attitudes, respectively. However, prior to the regression analysis, Spearman Correlation analysis was performed to identify whether there was any multicollinearity–one of the main assumptions of analysis–between independent variables.

3. Results

3.1. Knowledge and attitudes with regard to gender equality (SDG/t)

In terms of the participants' knowledge before taking the course, 74.3% of the sample at the time of the pre-test believed that they did not know enough about either coeducation or equality, meaning that only 26.7% felt they did have the knowledge they needed about these topics. There was a statistically significant improvement at the time of the post-test, as 65.5% believed they had sufficient knowledge of gender equality issues (W=-4.536; p≤.001). Additionally, prior to the training course only 28.4% said they felt capable of defining an equality plan, while after completing the course 67.2% expressed confidence in this ability (W=-3.683; p≤.001). Finally, in pre-test, 24.3% of the participants said they believed that true equality would never be achieved in the school system, while the number expressing a lack of hope dropped in the post-test to 15.9% (W=-1,225; p=.221; p>.05). These descriptive results point to higher levels of knowledge in the post-test of coeducation, equality and school equality plans.

Regarding to attitudes toward coeducation, the Wilcoxon test showed that there was a significant difference between the pre- and post-tests, with the participants scoring higher for coeducational attitudes after completing the training course (Z=-2.583; p=.010; p≤.01). Thus, coeducational attitudes increased after the training. There was also a significant change in the sociocultural factor (Z=-3.269; p≤.001) and the relational factor (Z=-3.715; p≤.001), with significantly higher values recorded for the post-test in both cases (see Figure 2). However, no significant differences were found between the pre- and post-test scores for the personal factor (Z=-1.629; p=.103; p>.05). The item analysis showed that there were significant improvements in the following specific coeducational beliefs and attitudes (see Appendix, Table A1): "Equality laws benefit women over men" "Equality laws disadvantage boys", "Educational materials can be good even if they contain sexist elements", "Gender laws can benefit men as well as women", "In class, I use the masculine general for economy of language and because it is correct", "Gender is not something I work on in my academic programme", "I try to use non-sexist language in my work documents", "I am ashamed of sexist jokes that ridicule women", "I like to work more with girls because they are more studious", "I like to work more with boys because they are more dynamic", "It is excessive to create the figure of a person responsible for coeducation at a school", "Filling out surveys on sexism is useless", "I do not know why the position of the person responsible for coeducation has been created". The outcomes of the effect size (Cohen's d) indicated low levels of practical significance in the variables for which statistical significance was recorded. It is worth highlighting that the item "It is excessive to create the figure of a person responsible for coeducation at a school", Cohen's d indicates a huge effect size, which is evidence of a strong degree of practical significance of the change in this belief.

Figure 2
Pre- and post-test comparison of attitudes toward coeducation (SDG/t) factors and total score
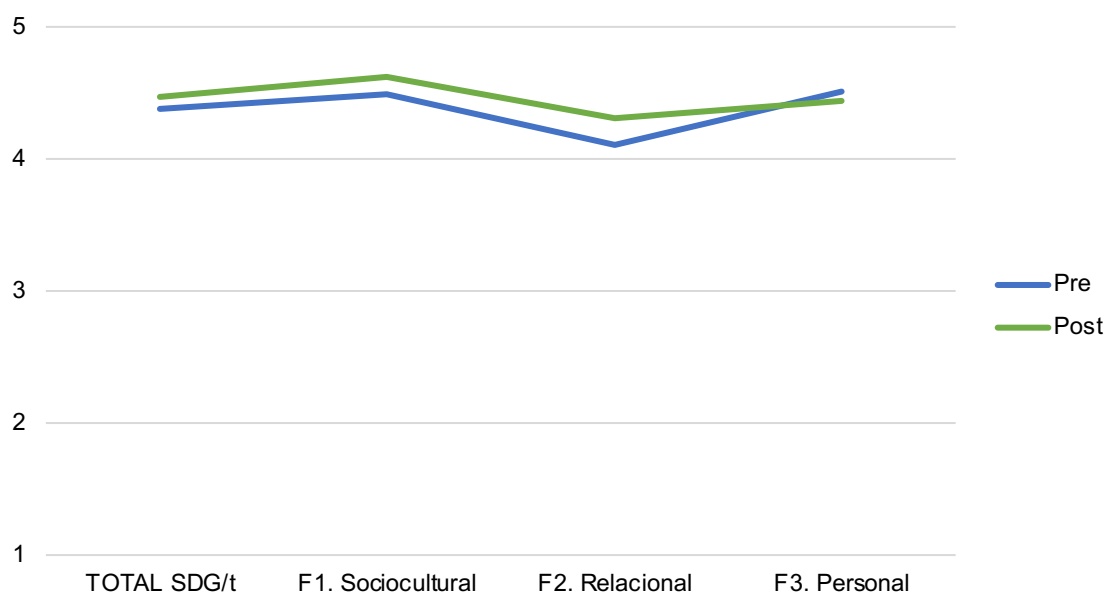
Note. School Doing Gender / Teachers Scale [SDG/t].

3.2. Acceptability of GBV (A-IPVAW) and training's satisfaction

The Wilcoxon test also showed a significant difference between the pre- and post-tests for the general measurement of GBV acceptability (Z=-4.199; p≤.001), as well as for the specific indicator of acceptability b1 (Z=-4.458; p≤.001). The participants' acceptance of GBV decreased in the post-test (see Appendix, Table A2). The item-by-item analysis made it possible to identify the specific areas in which this decrease in acceptance occurred. The items that saw the biggest changes asked about whether it was acceptable for someone to shout at his partner if she is not treating him with respect (Z=-3.0; p=.003; p<.01); to set limits on how his partner dresses (Z=-2.0; p=.046; p<.05); to send messages or images of his partner without her permission (Z=-2.0; p=.046; p<.05); to constantly reproach his partner for the mistakes she has made during an argument (Z=-3.153; p=.002; p<.01). In terms of effect size (Cohen's d), there were low levels of practical significance

for the variables that showed statistical significance, with the exception of the item "to send messages or images of his partner without her permission". Therefore, the GBV acceptability decreased after the training.

Spearman's correlation showed significant and negative correlations between acceptability of GBV and coeducational attitudes ($r=-.192$; $p=.042$; $p<.05$) and also with personal factor of SDG/t ($r=-.204$; $p=.030$; $p<.05$). On the one hand, linear regression models showed that acceptability of GBV (A-IPVAW scores) at T2 had a significant predictive value for coeducational attitudes at T2 (SDG/t scores) in both males and females (Model, adjusted $R^2=.116$, $F=15.661$, $p\leq.001$). Also, results obtained showed that A-IPVAW scores predict significantly the scores of the SDG/t factors, specifically: sociocultural (Model, adjusted $R^2=.052$, $F=7.179$, $p=.008$; $p<.01$); relational (Model, adjusted $R^2=.068$, $F=9.119$, $p=.003$; $p<.01$) and personal (Model, adjusted $R2=.088$, $F=11.824$, $p=.003$; $p<.01$). On the other hand, linear regression models were also carried out to analyze the prediction power of coeducational attitudes for acceptability of GBV. Again, outcomes showed that SDG/t scores had a significant predictive value for A-IPVAW scores (Model, adjusted $R^2=.116$, $F=15.661$, $p\leq.001$), as same as sociocultural (Model, adjusted $R^2=.052$, $F=7.179$, $p=.008$; $p<.01$), relational (Model, adjusted $R2=.068$, $F=9.119$, $p=.003$; $p<.01$) and personal (Model, adjusted $R^2=.088$, $F=11.824$, $p=.003$; $p<.01$) factors. Thus, high scores of acceptability of GBV are a predictor of less coeducational attitudes, in both total scale and factor scores. However, non-significant regression models were found between T1 and T2 data, due to low values of GBV acceptability obtained at baseline. Therefore, a linear association between GBV acceptability and coeducational attitudes was demonstrated. Conversely, coeducational attitudes also showed a significant linear association with lower GBV acceptability. Thus, the relationship between these two variables has been proven to be bidirectional.

With regards to the training's satisfaction degree, data obtained in post-measure ($n=113$) showed an excellent satisfaction degree with the training in general (4.3 out of 5 stars). Specifically, session 2 (Deconstructing gender stereotypes) was the best assessed (4.4 stars). Furthermore, 83.2% of the post-mediation participants indicated that there is no need to include anything else in the coeducational training programme. In terms of aspects for improvement, the qualitative information from the final feedback indicated that it would be necessary to explain the most common gender roles in the teaching staff, gender diversity (non-binary perspective) and more specific tools on how to deal with coeducation in tutoring sessions with parents, as well as the inclusion of more specific information on how to design teaching interventions based on coeducation.

4. Discussion

4.1. Knowledge and attitudes with regard to gender equality (SDG/t)

The first objective of this study was to assess any changes in the participants' attitudes toward coeducation. The results show an improvement in these attitudes that is both statistically and practically significant. Specifically, there was an increase in the subscales measuring sociocultural and relational attitudes. The former subscale assesses knowledge related to organizational measures schools can take to promote gender equality, while the latter deals with personal relations between teachers and students that strive for equality between men and women. It stands to reason that changes in these areas would be easier and faster to achieve than changes to factors such as beliefs and values, whose transformation requires a greater amount of time and impact. The personal subscale that measures these more deeply rooted factors did not yield any statistically significant changes, but it is likely that longer periods of training would be effective at making changes in these areas as well.

These results lend support to the idea that the main reason teachers have difficulties in applying gender equality competence development in schools is the paucity of teacher training (Husso et al., 2012; Lahelma, 2014; Martino et al., 2005; Stanley et al., 2015) due a resistance to including gender issues in teacher training programs (Fondón & Alzás, 2023; González-Pérez, 2018). Therefore, teachers' ability to work on these issues could be fostered by university programmes like this one. In this sense, as the UN Women Training Centre's Annual Report (2016) stated, training is the most powerful strategy to move towards gender equality.

The results also show that the pilot programme improved the participants' knowledge of coeducation, gender equality and equality plans. Much as Rands (2009) observed, we truly believe that the implementation of good gender equality practices requires a systematic teaching process through which consciousness moves from stereotyped to committed gender conceptualization modes, the very kind of change that this programme has facilitated. According to relevant international organizations as UNESCO (2018a) and the World Health

Organization [WHO] (2018), it is crucial to act at the early stages of education to fight inequality and to promote a more feminist society, and the best way to accomplish this by is empowering teachers by providing them with accurate knowledge and good practices.

4.2. Acceptability of GBV (A-IPVAW) and training's satisfaction

The results for the second objective show a decrease in the participants' acceptance of GBV after completing the coeducation programme and a high level of satisfaction. Echoing an earlier study by Casanova and Roldan (2016), these results suggest that gender equality education is the most effective way to promote healthy relationships between men and women and to reduce GBV.

The programme has shown itself to be effective. In light of this, it is clear that there is a need to develop and assess training programmes of this type in order to improve teaching practices and to help teachers feel more prepared to deal with everyday challenges. For instance, programs like the one carried out by Gavilán-Martín et al. (2023) that specifically focus on increasing future primary school teachers' knowledge of legislation on GBV would also be useful in this purpose.

4.3. Practical implications

With regard to the practical implications of the study, it has been demonstrated that gender equality programmes can be an effective way for future (or current) teachers to gain the competences they need to work on gender perspective with their students, both from an attitudinal and conceptual perspective. This would lead to a relevant change in students' perception that the curriculum does not them enough training on gender issues (Sanabrias-Moreno et al., 2022; Varela et al., 2024). Thanks to these personal and professional competences, teachers are better able to create an environment of gender equality in their classrooms and foster critical thinking in their pupils. This critical thinking ability will lead students to better understand the roots of inequality and help equip them to change their environment and fight for a society based on gender equality principles. As Ruiz and Vidal (2024) suggest, reflecting on men's and women's socialization with children and adolescents in the school context is the best way to defy gender mandates.

Our results showed significant and negative correlations between acceptability of GBV and coeducational attitudes. It proves that gender equality education skills are related with attitudes towards violence against women; a high level of acceptability of GBV is incompatible with developing coeducational attitudes. Although the coeducational model has proven effective at various levels of the education system, many teachers continue to instill one set of cultural and social models in boys and another in girls (Subirats, 2017), and it is due to beliefs and acceptability of stereotypes that they have interiorized about the nature of men and women. An important implication of these results is to promote healthy relationships between girls and boys and eradicate sexist stereotypes at schools when teaching children, due to the difficulty to change these beliefs in adulthood (Fernández et al., 2016; Lappalainen & Lahelma, 2016).

4.4. Limitations and future research

Among the limitations of the study, it has to be acknowledged that the size of the sample is small, so the results, even though they are statistically and practically significant, cannot be extrapolated. In terms of the gender distribution of the sample, there were only 4.1% male participants. This result is in line with gender patterns in primary education (Heinz et al., 2023) and highlights the need for greater inclusion of males in primary education, as prospective male and female teachers have very similar motivational factors, such as intrinsic, altruistic and child-centred care. Another limitation is the low level of participation by men in the programme and in the study, but this a reflection of the still feminized profession of teaching, especially in the first key stages of the educational system. While it is true that the sample is too small, this was intended as a pilot programme that will be further replicated with a bigger sample. Thus, the sample size and the non-probabilistic intentional sampling method followed in this study could limit the representativeness of the sample and the generalizability of the results. It is also important to mention that the social background of most students is middle-upper class and that most of the participants have families with university studies as well. This can also have an influence on the results that should be acknowledged.

As future lines of research, it would be of great interest to conduct qualitative research as it would be essential to know the participants' thoughts and perceptions about their training in gender equality and the programme. Furthermore, the evidence from this study expands our understanding of how prospective teachers perceive coeducation and gender-based violence. These findings could be explored in future

research by asking specific questions. It would also be desirable to design GET programs that address other relevant issues, like educating children in joint responsibility in domestic and family work, and assess their efficacy so that this field can develop further and overcome the current resistance. Specific interventions for vulnerable populations, for instance in contexts at risk of social exclusion, are also needed and should be developed and assessed.

5. Conclusions

Due to the promising results of the programme, it will be implemented again in the next academic years for students in all four years of the Early Childhood Education and Primary Education degree programmes at the Faculty of Psychology and Educational and Sports Science Blanquerna (Ramon Llull University). The cooperative design of the program among gender-issues experts, its focus on relevant themes and its active and reflective methodology contributes for the adequacy of the program in different educational contexts. The methodology of *flipped classroom* has been shown to be a suitable methodology to work on GET, as long as the materials and tasks are relevant and meaningful for students and are properly selected. The following sequence of the core contents has been effective: 1) the negative consequences of gender stereotypes, 2) the connection between stereotypes and GBV, 3) how gender inequality can interfere in the development of healthy sexuality, 4) which mechanisms can be used in school to foster equality between boys and girls (future men and women). With regards to this last point, the priority aspects that must be addressed are: the occupation and use of space by boys and girls, avoiding sexist language in school settings, the reference knowledge that is transmitted, avoiding differential interactions with boys and girls and the design of equality plans (Aznar-Martínez & Ahufinger, 2024).

GET is the most relevant tool to promote freedom and equality, and it is an essential way to prevent GBV. It is important to take into account that persistent inequality is sometimes due to the fact that the implementation of gender equality-oriented programmes in schools are inevitably influenced by the socio-cultural, political, economic and family contexts (Raza et al., 2019). For instance, the decrease in gender inequality in access to higher education is greater in elite than non-elite higher education (Wu et al., 2020).

These are aspects that should be taken into account by GET programmes, and they point to a need for further research on equality issues to inform the work of both policy-makers and teachers (Moreau & Brownhill, 2017). We truly believe that GET programs are relevant to the overall purpose of gender equality. Despite of this, the coeducational perspective should go beyond and should permeate the mental framework of all teachers, subjects, spaces and methodological decisions. In this vein, EIGE (2016) states that effective GET requires not only the development of specific gender competence, but also institutional commitment and organizational strategies, all in order to design a well-defined framework to embed gender competence development in study plans. That is why it is imperative that policy-makers and public authorities in the field of education and teacher training raise awareness on the importance of GET and develop clear guidelines for universities to address these topics.

Contribución de los autores

Berta Aznar-Martínez: conceptualización, administración del proyecto, adquisición de financiación, escritura del borrador original, metodología, supervisión, validación, visualización. **Jaume Grané-Morcillo**: metodología, recopilación y gestión de datos, análisis de datos, escritura del borrador original. **Judith Lorente-De-Sanz**: recopilación y gestión de datos, recursos, software, escritura del borrador original. **Carles Pérez-Testor**: escritura (revisión y edición), supervisión, validación. **José A. Castillo-Garayoa**: escritura (revisión y edición), supervisión, validación.

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Appendix

Table A1
Wilcoxon's test pre-post comparison for coeducational attitudes (SDG/t)

Factors/items	Pre M_{Pre} (SD_{Pre})	Post M_{Post} (SD_{Post})	p^a	d^b
F1. Socio-cultural factor	4.52 (0.32)	4.65 (0.32)	.001***	-0.291
Equality laws benefit women over men (-)	4.14 (0.89)	4.38 (0.78)	.038*	-0.204
Equality laws disadvantage boys (-)	4.45 (0.75)	4.66 (0.63)	.046*	-0.215
Educational materials can be good even if they contain sexist elements (-)	4.29 (0.79)	4.52 (0.69)	.042*	-0.219
Equality laws have been needed for a long time now	4.74 (0.62)	4.77 (0.72)	.532	-0.032
Gender laws can benefit men as well as women	4.04 (0.87)	4.40 (0.80)	.001***	-0.305
Gender laws address a non-existent problem in schools (-)	4.44 (0.73)	4.52 (0.97)	.488	-0.066
It makes no difference whether a teacher is homosexual or heterosexual	4.84 (0.44)	4.86 (0.61)	.516	-0.027
When schools switched to coeducational schooling, discipline problems began (-)	4.62 (0.76)	4.60 (0.78)	.750	0.018
Mixed schooling generates more problems than it solves (-)	4.70 (0.78)	4.77 (0.59)	.395	-0.072
It seems logical that science should be the responsibility of male teachers (-)	4.90 (0.38)	4.97 (0.16)	.096	-0.170
F2. Relational factor	4.15 (0.40)	4.35 (0.41)	.001***	-0.357
I use non-sexist language as a criterion for the selection of teaching materials	4.01 (1.16)	4.19 (1.10)	.274	-0.112
In class, I use the masculine general for economy of language and because it is correct (-)	3.44 (1.00)	3.86 (1.02)	.002**	-0.294
I inform the management team of the use of sexist language in a school document	3.68 (0.96)	3.81 (1.06)	.340	-0.091
I only notice if a text contains sexist language when someone calls my attention to it (-)	3.82 (0.96)	4.11 (0.92)	.057	-0.218
I avoid using traditional images/stereotypes of men and women in my explanations	4.04 (0.87)	4.19 (0.91)	.260	-0.119
Gender is not something I work with in my academic programme (-)	3.84 (0.94)	4.19 (0.86)	.003**	-0.274
I try to use non-sexist language in my work documents	4.41 (0.72)	4.62 (0.54)	.042*	-0.232
It takes me longer to explain a concept to girls than to boys (-)	4.79 (0.47)	4.79 (0.53)	.976	0.000
I don't relate well with lesbian teachers because they are more aggressive (-)	4.95 (0.23)	4.99 (0.12)	.083	-0.156
I am ashamed of sexist jokes that ridicule women	4.47 (1.03)	4.75 (0.72)	.015*	-0.218
F3. Personal factor	4.54 (0.34)	4.46 (0.24)	.103	0.192
Boys solve practical problems/activities before girls do (-)	4.73 (0.69)	4.84 (0.44)	.241	-0.134
I like to work more with girls because they are more studious (-)	4.33 (0.88)	4.62 (0.79)	.026*	-0.244
I like to work more with boys because they are more dynamic (-)	4.51 (0.71)	4.75 (0.57)	.017*	-0.263
It is excessive to create the figure of a person responsible for coeducation at a school (-)	3.97 (0.97)	1.45 (0.85)	.001***	1.952
Men are more capable of working in management positions (-)	4.96 (0.20)	4.95 (0.23)	.705	0.033
Boys are more prepared for some subjects than girls (-)	4.82 (0.42)	4.92 (0.27)	.052	-0.020
Filling out surveys on sexism is useless (-)	4.10 (0.96)	4.45 (0.83)	.002**	-0.275
Management and leadership are innate in boys (-)	4.85 (0.46)	4.93 (0.25)	.225	-0.152
Working with girls is more complicated because they are easily distracted (-)	4.93 (0.30)	4.93 (0.30)	1.000	0.000
I do not know why the position of the person responsible for coeducation has been created (-)	4.18 (1.02)	4.74 (0.55)	.001***	-0.483
Coeducational attitudes (SDG/t)	4.40 (0.28)	4.484 (0.23)	.010**	-0.232

Note. School Doing Gender / Teachers Scale (SDG/t), [a] Significance level (p): ≤.05*; ≤.01**; ≤.001***, [b] Cohen's effect size (d): >.20 small; >.50 medium; >.80 large; >1.40 huge.

Table A2

Wilcoxon's test pre-post comparison for GBV acceptability (A-IPVAW)

Items	Pre M$_{Pre}$ (SD$_{Pre}$)	Post M$_{Post}$ (SD$_{Post}$)	p[a]	d[b]
to shout at his partner if she is constantly nagging/arguing	1.08 (0.28)	1.03 (0.16)	.102	0.155
to shout at his partner if she is not treating him with respect	1.30 (0.55)	1.14 (0.35)	.003**	0.248
to set limits on how his partner dresses	1.05 (0.23)	1.00 (0.00)	.046*	0.218
to set limits on where his partner goes	1.04 (0.20)	1.00 (0.00)	.083	0.200
to push someone into having sex if she has been flirting with him all night	1.03 (0.23)	1.00 (0.00)	.317	0.128
to monitor his partner's mobile phone	1.01 (0.12)	1.00 (0.00)	.317	0.085
to push someone into having sex if she has been dating him	1.03 (0.16)	1.00 (0.00)	.157	0.183
to threaten to leave his partner in order to get something he wants	1.00 (0.00)	1.01 (0.12)	.317	-0.085
to hit his partner if she has been unfaithful	1.00 (0.00)	1.00 (0.00)	1.000	0.000
to hit his partner if she is constantly nagging/arguing	1.00 (0.00)	1.00 (0.00)	1.000	0.000
to push someone into having sex if he has spent a lot of money on her	1.00 (0.00)	1.00 (0.00)	1.000	0.000
to hit his partner if she is not treating him with respect	1.01 (0.12)	1.00 (0.00)	.317	0.085
to prevent his partner from seeing family and friends	1.00 (0.00)	1.00 (0.00)	1.000	0.000
not to allow his partner to work or study	1.00 (0.00)	1.00 (0.00)	1.000	0.000
to tell his partner what she can or cannot do	1.00 (0.00)	1.00 (0.00)	1.000	0.000
to throw/smash objects during an argument	1.03 (0.16)	1.01 (0.12)	.317	0.099
to record his partner with a mobile phone or video camera. or take pictures of her without her knowledge	1.07 (0.30)	1.04 (0.20)	.414	0.082
to send messages or images of his partner without her permission	1.08 (0.28)	1.03 (0.16)	.046*	0.155
to threaten to hurt his partner or others if she leaves him	1.00 (0.00)	1.00 (0.00)	1.000	0.000
to constantly reproach his partner for the mistakes she has made during an argument	1.21 (0.44)	1.03 (0.16)	.002**	0.383
Acceptability (A-IPVAW)	17.00 (1.18)	16.49 (0.51)	.001***	0.396

Note. Acceptability of Intimate Partner Violence Against Women Scale (A-IPVAW), [a] Significance level (p): ≤.05*; ≤.01**; ≤.001***, [b] Cohen's effect size (d): >.20 small; >.50 medium; >.80 large; >1.40 huge.