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Serrano, Rosario Merida & González, Elena (2024). **Science with gender perspective to develop coeducative skills in Early Childhood Education's teachers in Spain.** Paper presented on the 32nd Annual EECERA Conference, Brighton/United Kingdom, 4.9.2024.

INFACIENCIA is a coeducative programme, which is focused on reducing gender gap in science with children from two to six years. It is an interinstitutional programme which involves three educational institutions: early childhood education schools, teachers involved in service training center and universities. The aim of this work is to analyse teachers' perceptions about their development in terms of professional skills while they are involved in this project. Different authors have studied and researched on gender gap in science (Bian et al., 2017; Mérida et al, 2023). Nowadays there is an inequality situation between women and men in science. This gender gap is visible in indicators such as: Shortage of women in STEAM, science leadership positions and academy's high level role as professors (only 24%). This inequality in science between men and women has been shown in several reports edited by United Nations (2021-2022) and European Commission (She Figures, 2021). The theoretical framework of this research is the gender cultural learning through sociocultural theory, as well as Bronfenbrenner's ecological theory. This study belongs to a qualitative and interpretative paradigm, based on semistructured interviews, which are analysed by discourse analysis technique. Ethical considerations, such as anonymity of data and report consensus with participants, are respected. Teachers' perceptions about their development skills are: (1) Increased competence in developing a coeducational science curriculum in ECE; (2) Improvement of critical thought to identify and reduce stereotypes and bias gender in science. INFACIENCIA provides evidence to include science with gender perspective in teacher training.

### **Keywords**

*science with gender perspective, gender stereotypes, teacher training, gender gap in science, co-educative curriculum*

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**SCIENCE WITH GENDER  
PERSPECTIVE TO DEVELOP  
COEDUCATIVE SKILLS IN  
EARLY CHILDHOOD  
EDUCATION'S TEACHERS IN  
SPAIN**

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**CONTEXT**

**EVALUATION OF THE CO-EDUCATIONAL  
PROGRAMME INFACIENCIA.  
STEREOTYPES, ROLES AND VOCATIONAL  
EXPECTATIONS OF GIRLS FROM 3 TO 6  
YEARS OLD REGARDING SCIENCE**





# WHAT IS INFACIENCIA?



## INFACIENCIA 6 ADA LOVELACE



Instituto de las MUJERES



UNIVERSIDAD DE CÓRDOBA



Junta de Andalucía



CEP CÓRDOBA

# AXES OF INFACIENCIA

PBL

RBL

UDL

**1. Training**



**2. Intervention**



**3. Socialisation**



**4. Assessment**





# WHY A COEDUCATIVE PROGRAMME?



**THE GLOBAL GOALS**  
Sustainable Development



# JUSTIFICATION

## GENDER GAP IN SCIENCE

1. International documents
2. Scientific literature
3. Differentiated gender socialisation -estereotypes and bias-

The background features a diagonal line from the top-left to the bottom-right. The area above and to the left of this line is divided into several geometric sections: a dark purple triangle at the top-left containing a white dot; a blue square with concentric circles; a light grey semi-circle; a pink triangle with diagonal lines; a pink square with a white corner and a series of parallel lines; a blue square; a grey triangle; a dark purple triangle; and a pink triangle. The area below and to the right of the diagonal line is a solid blue background.

# METHOD



# QUALITATIVE RESEARCH

## 1. Participants

16 teachers of the second cycle (3-6 years old) of Childhood Education



## 2. Objectives

Analyse teachers' perceptions about their development professional skills while they are involved in this project

## 3. Instruments

Semi-structured interviews, whose questions script are:

1. Has participating in INFACIENCIA contributed to your professional development?
2. What level of satisfaction have you experienced by participating in INFACIENCIA?
3. What strengths and weaknesses have you detected?

# ANALYSIS DATA'S PROCEDURE

Discourse analyses technique

The procedure used has been the **Constant Comparison Method** (CCM, Boeije, 2002), which is associated to Grounded Theory.

This procedure includes 4 key steps:

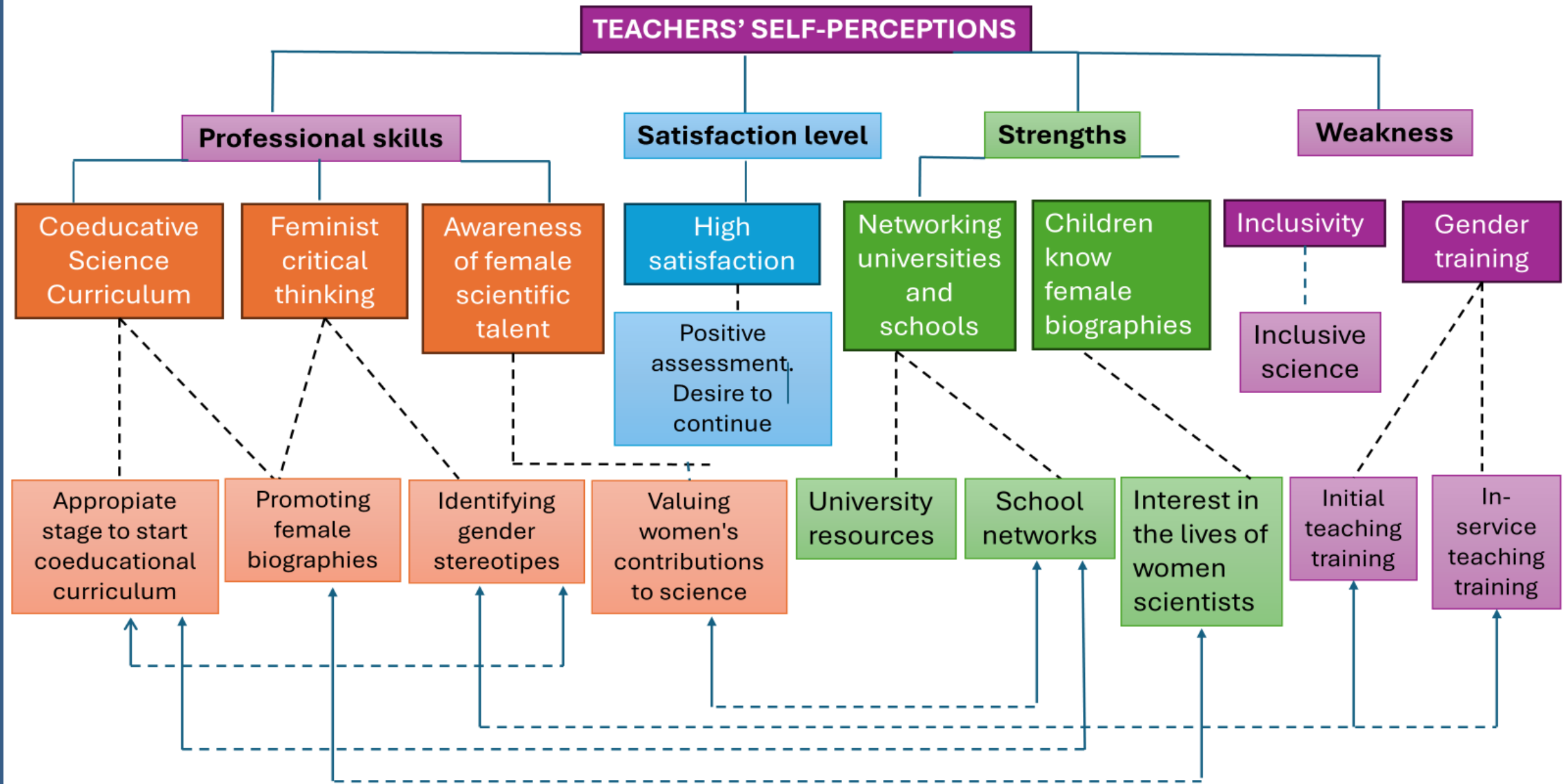
1. **Initial coding**, where data is segmented into discrete parts.
2. **Focused coding**, where codes are synthesized and narrowed down
3. **Axial coding**, where relationships between codes are established
4. **Selective coding**, which integrates the codes into a coherent framework that proposes a theory



# INITIAL AND FOCUSED CODING

<b>Initial coding</b>	<b>Focused coding</b>
<i>1. Professional skills</i>	1.1. Developing a coeducational science curriculum in ECE
	1.2. Improving critical thought to identify and reduce stereotypes and bias gender in science
	1.3. Raising awareness of female scientific talent
<i>2. Satisfaction level</i>	2.1. High satisfaction
<i>3. Strengths</i>	3.1. Networking with universities and other schools
	3.2. Children know interesting biographies of scientific women
<i>4. Weaknesses</i>	4.1. Low level of coeducational training
	4.2. Shortage of time

# AXIAL CODING





# TEACHERS' VOICES

# SELECTIVE CODING

## With regard to professional skills teachers say:

*"I have learnt with INFACIENCIA that the curriculum in this educational stage should include the gender perspective, because our pupils must learn to value the female talent in science" (T. 3)*

*"I realize that I wasn't including a feminist view in my classroom. I thought it was better to have a neutral position regarding science. Now, I aware that it's necessary to promote female biographies as a way to make women more visible in science" (T. 14)*

*"I believe that it's very important to develop a critical thought regarding to gender inequalities. We are educating people to be democratic, and it isn't possible a democracy without gender equality" (T. 10)*

*"I think now it's easier for me to identify gender estereotipes, because of I have had a good training of gender with this project" (T. 13)*

*"I had never sensed the gap gender science. I thought it was 'a tale' of radical women that always are vindicating their rights... I truly have been a bit blind to this issue" (T. 11)*

# SELECTIVE CODING

## **With regard to satisfaction level teachers say:**

*"For me, it has been an extraordinary experience. I would participate again without hesitation" (T. 2)*

*"I am very satisfied with my participation in INFACIENCIA. I've been involved for five years now and I plan to continue for a few more years (laughs)" (T. 6)*

## **With regard to strengths teachers say:**

*"One the best things of the project has been to work with the university and other schools" (T. 7)*

*"University resources were a wonderful and motivational way to start to work about Jane Goodall biography. Our pupils believed she was visiting our classroom" (T. 4)*

*"My children were fascinated, they were very interested in knowing Ada Lovelace life. They sensed that she was a wonderful and very clever woman" (T. 15)*

## **With regard to weakness teachers say:**


*"I need more training about gender equality in science. I might be more inclusive if I would have more knowledge" (T. 9)*

*"We should study coeducation in our initial training, during our degree. It isn't possible to teach those things that you don't know. It would be a good idea to have a mandatory ongoing gender training to be able to participate in the project" (T. 5)*




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# CONCLUSIONS



INFACIENCIA is an useful coeducative scientific programme to enhance the gender equality in Early Childhood Education. Teachers that have been interviewed express their high satisfaction level and they agree their desire to continue participating in the programme.



INFACIENCIA contributes to improve ECEC teachers' professional skills. They express three competences which have been developed: (1) Developing curriculum with gender perspective; (2) Improving critical thought to identify gender stereotypes and bias; y (3) Raising awareness of female scientific talent .

INFACIENCIA' s strengths are the networking with universities and schools and the feminist training it facilitates.



INFACIENCIA' s weaknesses are ECEC teachers and families' low level of coeducational scientific training and shortage of time is dedicated to this programme.

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**THANK YOU VERY MUCH**

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