

**Experimentation in Early Childhood Education**

Code: 102004  
ECTS Credits: 6

Degree	Type	Year	Semester
2500797 Early Childhood Education	OT	4	2

**Contact**

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**Use of Languages**

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: Yes  
Some groups entirely in Spanish: No

**Other comments on languages**

Experimentation in early years education

**Teachers**

Maria Balsach Solé

**Prerequisites**

Prior to entering this subject, it is recommended that students have passed two previous subjects titled Natural, social and cultural environment education: teaching and learning from natural and social sciences in primary education I and II.

**Objectives and Contextualisation**

Contextualization and global aim

*Experimentation in Early Childhood Education* is an elective subject offered within the fourth year of the Early Childhood Education Graduate Degree. At this point students have already taken the subjects whose content deals with the didactics of music, science, mathematics, social sciences and art. The global aim of this subject is to deepen systematically in the process of experimentation in early years education (0-6) engaged in STEAM educational contexts. There is a specific focus on students' competence in designing, implementing and evaluating educational proposals fostering experimentation within early years classrooms. These educational proposals aim at promoting children development, acknowledging cultural diversity, and fostering the development of caring values and attitudes towards the environment inspired by SDG. The classroom dynamics will promote small group work to integrate students' diversity, and will construct a non-competitive classroom climate to facilitate collective responsibility.

Objectives:

1. To reflect on expert voices and perspectives in relation to young children experimentation.

2. To know the background of scientific, mathematical, technological and artistic experimentation and to recognize their value in the development of children's knowledge on the natural and social phenomena.
3. To identify the different dimensions of experimentation (living beings, materials and movement) and their relationship with other curricular areas such as narrative, artwork, music, psychomotricity, nutrition and mathematics.
4. To gain first hand experience in experimenting with different objects and contexts from everyday life taking into account the values of caring for the environment inspired by SDG.
5. To know and analyze educational proposals on experimentation in early years education within STEAM educational contexts.
6. To design, implement and evaluate STEAM teaching sequences that prepare future teachers to promote experimentation in early years education

## Competences

- Acquire habits and skills for cooperative and autonomous learning and promote the same in pupils.
- Consider classroom practical work to innovate and improve teaching.
- Critically analyse personal work and use resources for professional development.
- Demonstrate knowledge and understanding of the aims, curricular contents and criteria of evaluation of Infant Education
- Develop educational proposals in relation to the interaction between science, technology, society and sustainable development.
- Maintain a respectful attitude for the environment (natural, social and cultural) to promote values, behaviours and practices that address gender equality, equity and respect for human rights.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Promote interest and respect for the natural, social and cultural environment through appropriate educational projects.
- Promoting experiences of initiation into information and communication technologies.
- Properly express oneself orally and in writing and master the use of different expression techniques.
- Systematically observe learning and coexistence contexts and learn to reflect on them.
- Understand scientific methodology and promote scientific thought and experimentation.
- Understand the scientific, mathematical and technological bases of the curriculum at this stage as well as theories on the acquisition and development of the corresponding learning.

## Learning Outcomes

1. Be able to analyse an educational situation focused on experimentation and make a diagnosis of its relevance based on the theoretical framework developed in the subject.
2. Be able to build instruments for observation of and reflection about experimental work in infant education.
3. Be able to develop proposals for experimentation in infant education to introduce autonomy development and cooperative work related goals.
4. Be able to develop teaching proposals for experimental work in the nursery and kindergarten that are of scientific, social, technological and environmental relevance.
5. Be able to identify scientifically, socially, technically and environmentally relevant educational situations in which to develop experimentation in infant education.
6. Be able to make oral presentations and with new technologies that include designs and reflections regarding experimental work in infant education.
7. Be able to participate in and design experimental activities in a socially and environmentally responsible manner.
8. Be able to select areas of experimentation aimed at developing values and attitudes that respect the environment in infant education.

9. Be able to self-assess and co-evaluate educational work, interventions and proposals regarding experimentation in infant education.
10. Be able to work responsibly both individually and in groups.
11. Be familiar with the infant education curriculum to understand the importance and place of experimentation during this educational stage.
12. Be familiar with the scientific method of experimentation and the main scientific models to give meaning to experimentation into such phenomena.
13. Propose new methods or well-founded alternative solutions.
14. Understand learning resources and experiences using new information and communication technologies in experimental work in infant education.
15. Understand theory on the development of the capacity for experimentation in children of these ages.

## Content

1. Foundations of experimentation in STEAM context and its role in the development of children's natural and social knowledge
2. Characterization of experimentation dimensions in STEAM contexts in early year schools: living beings (Food garden, seeds, forest), materials (cleaning, cooking), and movement (light, sound, energy, water and air etc..)
3. Analysis and design of educational proposals that promote experimentation in early years education taking into account the theoretical, curricular, social and environmental referents.
4. Documentation as a reflective process that promote quality teaching of experimentation in early years education

## Methodology

The teaching methodology is developed around three pillars:

(a) offering students the opportunity to develop wide direct experience with objects, materials, and natural phenomena which are powerful contexts to work on experimentation in early years education;

(b) offering students the opportunity to design, implement, and evaluate activities and teaching sequences on experimentation in early years education through the analysis of teaching materials, classroom videos, school visits, and leading experimentation workshops; and

(c) offering students the opportunity to reflect on the educational value of experimentation in early years education through participating in group readings and conversation with their classmates, early years teachers and other professionals from education.

The typology of activities include front teaching activities on different view points lead by the teachers responsible of the course, field trips to know the close environment, lab work to go deeper into the experimentation and observation of natural phenomena, and finally small group work reflecting on the readings and educational materials. One compulsory field trip to an Environmental Education Center will be offered to students within the course schedule. Students will implement experimentation activities designed within the course in a chosen school and outside the course schedule.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Coaching	22	0.88	

Face to face activity in whole group	45	1.8
Formative assessment	8	0.32
Type: Autonomous		
Autonomous work	75	3

## Assessment

The course assessment will be formative. The attendance to field trips is compulsory and students must attend a minimum of 80% of classes. Those who have been able to follow the course and have obtained a failing grade in some aspects will be given the opportunity to develop extra work or take an exam during the first week of July. To obtain a pass mark students need to get a minimum grade of 5 for each of the three assessment activities.

The assessment activities will be the following:

- Group work on the design and implementation of a workshop on experimentation in early years education (20% of the final grade). The design and implementation of the experimentation workshop will be conducted through the attendance at minimum two tutorials with the responsible professor, the writing of an outline for the workshop previous to its implementation, and the observation undertaken by the responsible professor during the experimentation workshop implementation. The outline of the workshop will be turned in one week before the implementation of the workshop.
- Group Final paper (20% of the final grade): The assessment criteria will include the meaningful integration of course content, the capacity of reflection, creativity in the use of languages, the inclusion of ideas taken from the course readings and from other readings from professional journals such as *Guix*, *Aula*, *Perspectiva Escolar* o *Infància*, and the capacity to reflect based on the evidences of the documentation collected during the implementation of the workshop. The paper will be turned in three weeks after the implementation of the workshop.
- Documentation of an early years education activity implemented in real classrooms by each individual student (10% final grade). A video will be elaborated that includes a communicative documentation of the implemented activity in real classrooms. The video will be turned in 15 days after the implementation of the activity.
- Individual portfolio (50% of the final grade). This document will include the following: (a) a theoretical and reflexive introduction on the meaning of experimentation in early years education; (b) some activities of course work such as the Experimentation Tables and the Co-evaluations; and (c) final conclusions on the value of course work. The assessment criteria will include the capacity to develop judgements supported by arguments, and the ability to introduce ideas from the course work and readings into the arguments. The individual portfolio will be turned in July 1st, 2023.

In order to get a pass mark in this course, students should prove, through their oral presentations and their written assignments, they have superior communicative skills and an excellent command of the vehicular language or languages listed in the course syllabus. Assessment of all course individual and group work tasks include criteria based on the quality, in terms of accuracy and fluency, of the assignments submitted by the learners. Learners are expected to display academic skills, which include the abilities of expressing themselves fluently and accurately and comprehending written academic texts.

Our teaching approach and assessment procedures may be altered if public health authorities impose new restrictions on public gatherings for COVID-19

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final paper done in small group	20%	0	0	1, 9, 2,

				10, 15, 11, 12
Group work on the design and implementation of an experimentation workshop for early years teachers	20%	0	0	7, 2, 3, 4, 6, 8, 10, 14, 13
Individual portfolio of the course work	50%	0	0	1, 6, 5, 15, 11, 12
Video production as documentation of the implementation in an early years school of and experimentation activity (Individual)	10%	0	0	7, 2, 4, 6, 5, 8

## Bibliography

Altimir, D. (2011). Conversa amb Maria Teresa Feu: La intel·ligència dels nens i nenes es troba a la punta dels dits. *Infància*, 179, 40-42.

Amorós, E. (2013) (Ed.). *44 Experiencias 0-3*. Barcelona: Graó.

Artero, M., & Calçada, P. (coord.). (2022). *Renaturalitzar els espais i els temps educatius. Dossier 7*. Barcelona: Graó.

Benlloch, M. (1992). *Ciencias en el parvulario*. Barcelona: Editorial Paidós.

Bonàs, M. (2006). L'art del pintor de paisatges: Algunes reflexions entorn de la documentació. *Infància*, 151, 24-28.

Couso, D., & Grimalt, C. (2020). STEAM per a la primera infància. *Guix d'Infantil*, 103, 9-13.

Escutia, M. (2009). *L'hort Escolar Ecològic*. Barcelona: Graó.

Feu, M. T. (2008). Fem ciències: el taller d'hort i jardí vist amb les "ulleres" de les ciències. *Infància*, 160, 29-33.

Galardini, A.L., Lozzelli, S., Davoli, M. & Tognetti, G. (2010). *Documentar: Afinar els ulls per captar moments*. Barcelona: Associació de Mestres Rosa Sensat.

Harlen, W. (2010). *Principios y grandes ideas de la educación en ciencias*. Association for Science education. <http://innovec.org.mx/home/images/Grandes%20Ideas%20de%20la%20Ciencia%20Español%2020112.pdf>

Hoyuelos, A. (2007). Documentació com a narració i argumentació. *Guix d'Infantil*, 39, 5-9.

Izquierdo, M. (coord.) (2011). *Amb una altra mirada!: Química a infantil i primària*. Barcelona: Editorial Graó.

Kamii, C. & Devries, R. (1978). *El conocimiento físico en la educación preescolar*. Madrid: Siglo XXI Editores.

Lemkow-Tovias, G. (coord.) (2022). Parlem de.....Educació científica inclusiva desde la primera infància. *Guix d'Infantil*, 114, 9-27.

Mediavilla, S. (coord) (2019). Materials: intencionalitat, criteris, concepcions educatives. *Guix d'infantil*, 101, 9-27.

Padern, M. (2008). Sonido, silencio, ruido: conocerlos, medirlos, controlarlo. *Aula de Infantil*, 44, 13-16.

Pedreira, M. (2006). Dialogar con la realidad. Dins: M. Antón I B. Moll (ords.). *Educación Infantil. Orientaciones y Recursos*. (pp. 23-69) Barcelona: Ciss-Praxis.

<https://blocs>

[.umanresa.cat/educaciofub/2013/11/15/experimentar-quin-repte/que-entendemos-por-experimentacion/](https://blocs.umanresa.cat/educaciofub/2013/11/15/experimentar-quin-repte/que-entendemos-por-experimentacion/)

Pedreira, M. (2019). *Ciència des del néixer*. Barcelona: Editorial Graó.

Pedreira, M. (coord.). (2020). STEAM per a la infància. *Guix d'Infantil*, 103, 9-27.

Pedreira, M. (2022). Escola 3-6. *Ciència des del néixer*. *Infància* 246.

<https://www.rosasensat.org/revista/infancia-246/escola-3-6-ciencia-des-del-neixer/>

Rozas, B.; Garí, M.; & Benlloch, M. (2007). Tot el que entra torna a sortir? Joc, experimentació i recerca amb tubs. *Infància*, 158, 10-16.

Solé, J., Weissmann, H., Abril, M., Montés, G., Castelltort, A., & Capdevila, L. (2020). L'Hort escolar: Guia pràctica d'horticultura i jardineria ecològica. Barcelona: Ajuntament de Barcelona.

<https://www.barcelona.cat/barcelonasostenible/sites/default/files/documents-i-mes/document/4165/guiahortescol>

Vega, S. (2006). *Ciència 0-3*. Barcelona: Editorial Graó.

Vega, S. (2012). *Ciència 3-6*. Barcelona: Editorial Graó.

Weissmann, H. (1999). El juego exploratorio en la educación infantil. A *Jornades d'Innovació en l'Etapa d'Educació Infantil*. Bellaterra: ICE, Universitat Autònoma de Barcelona, 153-159.

Xarxa Territorial d'Educació Infantil de Catalunya (2009). *Documentar: Una mirada nova*. Barcelona: Associació de Mestres Rosa Sensat.

## Currículum

Departament d'Ensenyament (2008) *Currículum, Decret 181/ 2008, de 9 de setembre. Educació Infantil*. Generalitat de Catalunya. Es pot consultar a [http://www.xtec.es/estudis/primaria/curriculum\\_infantil.htm](http://www.xtec.es/estudis/primaria/curriculum_infantil.htm)

Normativa del primer i segon cicle d'educació infantil, referent a l'ordenació i l'avaluació.

<http://www.xtec.cat/web/curriculum/infantil/normativa>

Departament d'Ensenyament. LLEI 12/2009, del 10 de juliol, d'educació. Llei d'Educació de Catalunya (LEC)

<http://www.gencat.cat/diari/5422/09190005.htm>

Nou currículum: <https://projectes.xtec.cat/nou-curriculum/educacio-infantil/> (pàgina web amb tota la informació del nou currículum d'infantil)

## Webs

Centre de Documentació i Experimentació en Ciències i Tecnologia (Dept. d'Ensenyament):

<http://www.xtec.cat/web/innovacio/cesire>

El safareig: educació infantil i natura ( AAMM Rosa Sensat ): [www.elsafareig.org/](http://www.elsafareig.org/)

ASSOCIATION INTERNATIONALE PIKLER (LÓCZY)<http://www.pikler.fr/pikler.php>

<http://www.dirayaexpresion.es/>

Senderi-Educació en Valors: <http://www.senderi.org/>

Comunitat catalana de Webquest: <http://webquestcat.net/>

Xtec-Xarxa Telemàtica Educativa de Catalunya: <http://www.xtec.es>

Revistes d'educació infantil:

*Aula d'infantil.* Revista de l'editorial Graó.

*Guix d'Infantil.* Revista de l'editorial Graó.

*Infància.* Revista de l'Associació de Mestres Rosa Sensat

*Infància-Europa.* Revista de l'Associació de Mestres Rosa Sensat

## **Software**

No special digital tool is necessary