Project Abstract

3C-LAB | Reunifying the Sciences for a Resilient and Adaptive Society: A Cognition–Communication–Cooperation Model for Higher Education

Abstract	**Challenge**: Societies are experiencing a paradoxical decline in trust in scientific knowledge precisely when it is most needed to address global challenges. This erosion of trust coincides with a weakening of critical and reflective capacities, shaped by the pervasive influence of digital technologies that mediate learning, information access and social interaction. Although these technologies enhance connectivity, they also intensify the fragmentation of knowledge and of the public sphere. The fragmentation of scientific knowledge undermines the capacity to engage with complex problems and is perceived by individuals as detached from their lived experience, generating alienation and hindering understanding. Reintegrating scientific knowledge is therefore essential for restoring trust and strengthening the critical capacities required for informed societal deliberation. Such reintegration is essential for strengthening societal resilience and adaptive capacity in a rapidly changing world, where prevailing global dynamics are clearly unsustainable and demand systemic change. **Our Solution:** *The 3C Framework.* This project proposes a transdisciplinary learning ecosystem—the 3C Framework (Cognition, Communication and Cooperation)—to reintegrate scientific knowledge through a critical, constructivist pedagogical approach. Rather than simply teaching scientific content, the framework restructures learning as an iterative loop of understanding, communication and problem-solving. **Implementation:** The project deploys three interconnected living laboratories supported by an in-operation open technological platform developed by the research team for the co-creation and analysis of transdisciplinary knowledge. The platform hosts a substantial legacy corpus in systems and information sciences, enables conceptual-clarification activities embedded within this corpus, and provides tools for mapping and examining knowledge structures. ● *CogniLAB (Cognition)* supports conceptual clarification and the collaborative construction of integrated knowledge across disciplines, generating knowledge maps and ontologies that capture epistemic diversity, coherence and integration. ● *ComLAB (Communication)* focuses on the communication and public dissemination of scientific knowledge, identifying barriers to intelligibility and promoting clear, accessible language to enhance societal trust and informed engagement. ● *CoopLAB (Cooperation)* provides a project-based environment where interdisciplinary teams address concrete societal challenges selected through biannual calls, applying integrated knowledge to produce meaningful learning and tangible community impact. **Expected Impact.** The project aims to cultivate citizens and professionals capable of systemic reasoning, clear communication and cooperative decision-making in complex environments, ultimately contributing to the reunification of scientific knowledge and strengthening societal agency and resilience. **Alignment with public policies**. This action aligns with EU and Spanish policy priorities that promote the integration of scientific knowledge, the strengthening of critical and digital competences, and the use of transdisciplinary approaches to address complex societal challenges. It supports the objectives of the European Research Area, the European Education Area and the Spanish Plan for Science, Technology and Innovation by fostering scientific literacy, trust in science and the capacity of society to respond to complexity.
General objective	To promote the integration of scientific knowledge in Higher Education and to develop key cognitive, communicative and cooperative competences that reinforce trust in science, enhance societal deliberation and strengthen resilience in the face of complex and interconnected challenges.
Specific objectives	1. Develop an integrated framework for the clarification, modelling and reintegration of scientific knowledge.

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<tr><td></td><td colspan="3">2. Implement and consolidate a technological platform to support the co-creation, representation and analysis of integrated knowledge.
3. Strengthen cognitive, communicative and cooperative competences through a transdisciplinary educational ecosystem (3C-LABs).
4. Assess the achievements of knowledge integration through a multidimensional perspective, including epistemic diversity, coherence, truthfulness, clarity and inclusiveness.
5. Ensure the usability, accessibility, inclusiveness and clarity of all designed and developed solutions.</td></tr>
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<tr><td>Duration:</td><td colspan="3">4 years</td></tr>
<tr><td>Call</td><td colspan="3">Programme: State Program to Promote Scientific-Technical Research and its Transfer (Spanish Ministry of Science and Innovation)
Subprogramme: State Subprogram for Knowledge Generation
Deadlines: Nov 20/2024 - Dec 16/2025
https://www.aei.gob.es/en/announcements/announcements-finder/proyectos-generacion-conocimiento-actuaciones-formacion-1</td></tr>
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