IIIEPE - Design of a digital pedagogy ecosystem for active learning and hybrid teaching

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Introduction

This partial research report carried out by the IIIEPE aims to generate knowledge about the emerging 'Digital Pedagogy' through the study of its main conceptual frameworks, elements, tools, and modalities, to establish the bases for the design of a digital pedagogy ecosystem that strengthens hybrid teaching and active learning.

Key Concepts

Digital Pedagogy . The ability to incorporate digital technologies into teaching to enhance learning, teaching, assessment, and curriculum (Kivunja, 2013).

Active Learning. In this modality, didactic activities allow students to build knowledge and meaning to the situations they live in the educational process, and teachers facilitate learning mediated by a digital environment that allows students to share skills and interact with each other (Lewin & Lundie, 2016)

Hybrid teaching combines face-to-face teaching with technology, and its key idea is selecting the appropriate means for each educational need (Bartolomé, 2004)

Method

Research question:

What are the main elements to consider when initiating the design of a Digital Pedagogy Ecosystem that promotes hybrid teaching and active learning?

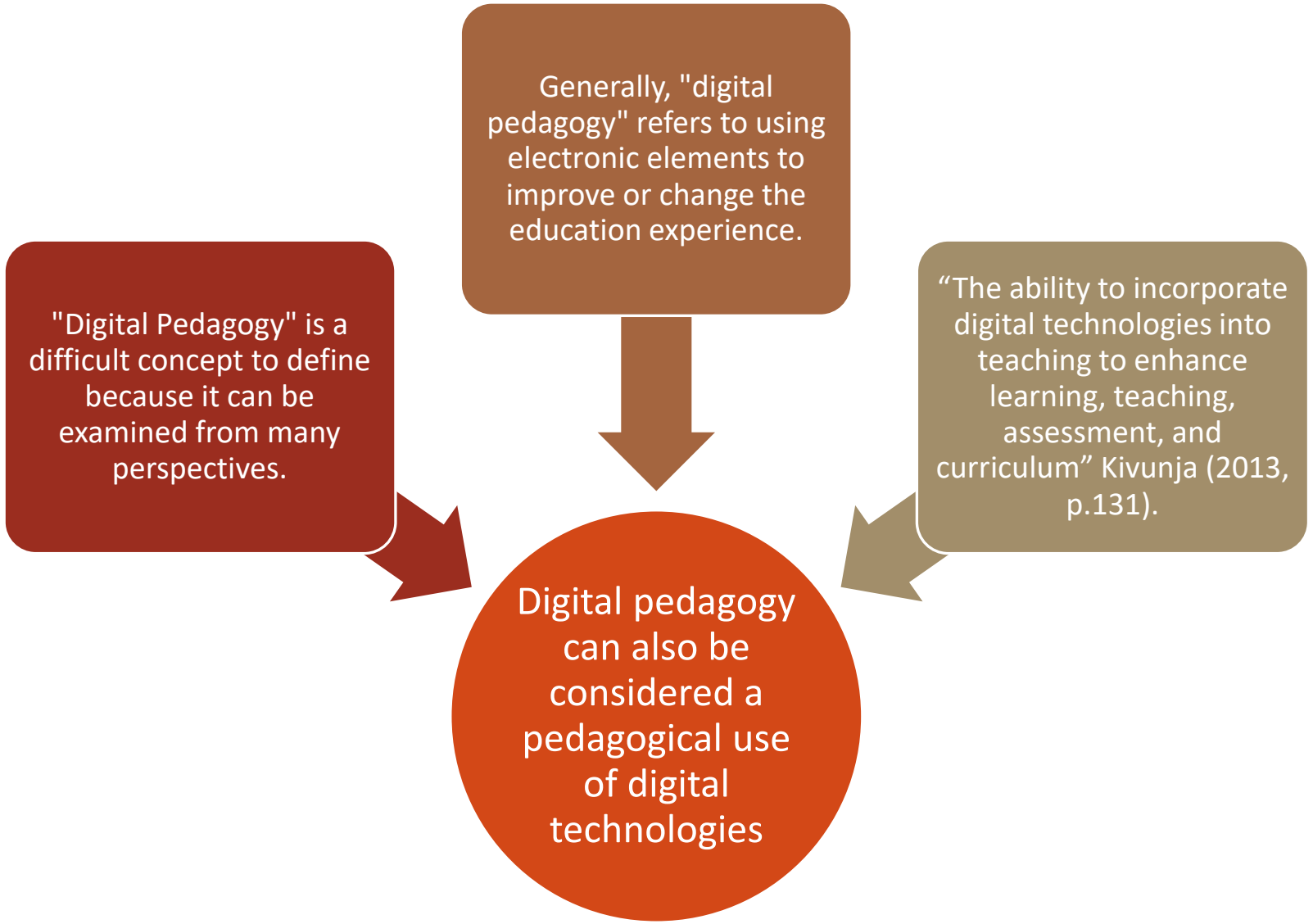
An exploratory study was adopted to make a first approach to this specific topic before addressing it in a more in-depth investigation (Hernandez-Sampieri, 2018).

The following techniques were applied when conducting this study:

1) Document review
2) Consultation with experts (Delphi method).

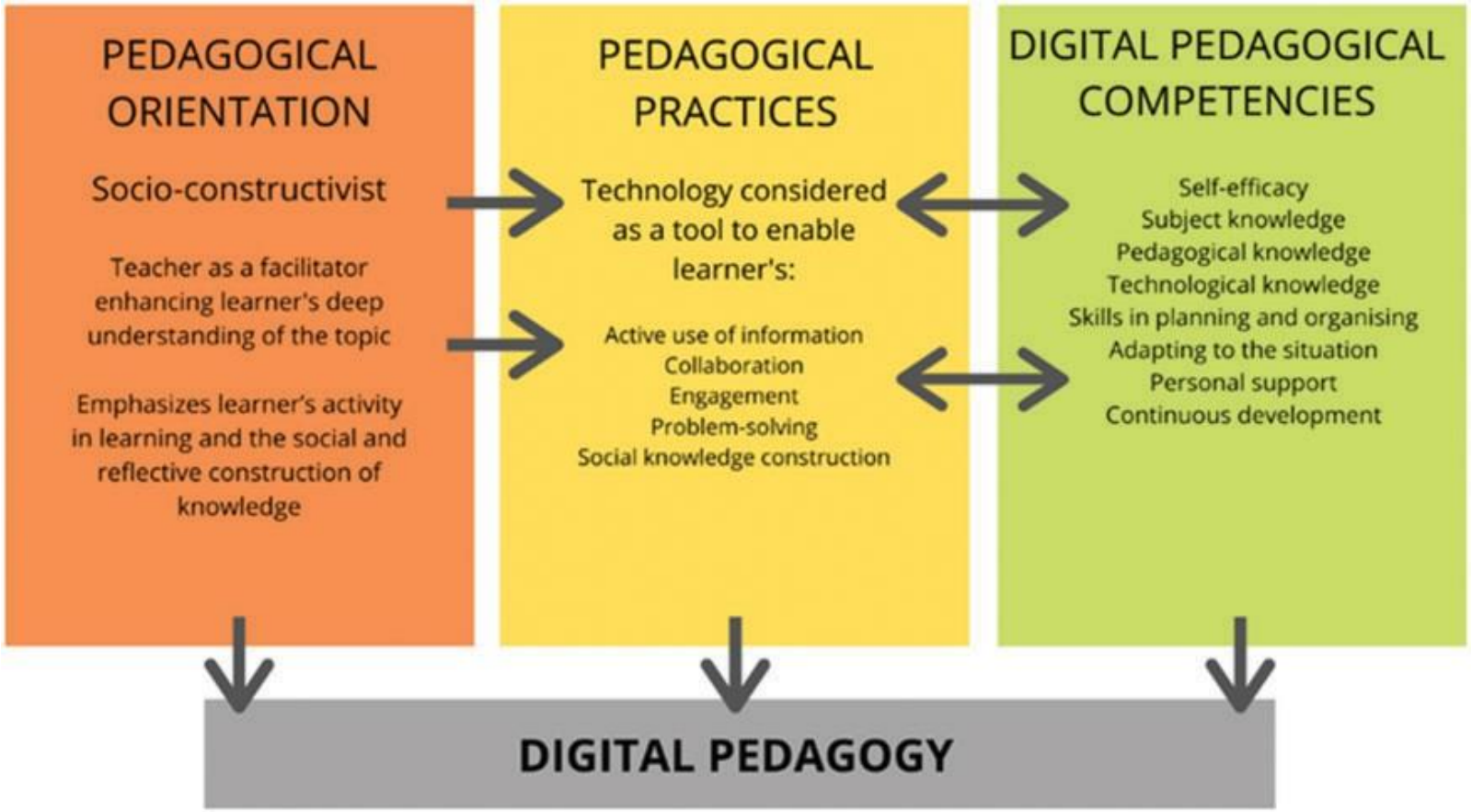
This research was carried out in the academic programs offered by IIIEPE, a higher education academic community comprised of education professionals: trainers, researchers, and technologists committed to improving educational quality

Results of the Documentary Research

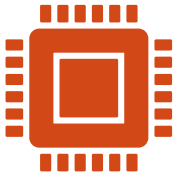


This study introduces a model of digital pedagogy that aims to explain the pedagogical use of digital technologies.

This model of digital pedagogy comprises three dimensions.



Three main structural components of digital pedagogy-driven design stand out (Lampere et al., 2014).



Architecture

Elements of Hardware and Software, relationships between them, and their properties.

Functionalities

Functionalities and process models designed in the user's navigation, invoking certain user activities.

Interfaces

Metaphors and vocabulary concepts implemented in the interface.

	Architecture	Functionality	Interfaces
Self-directed learning	Students control, adapt, and expand their blog based on PLE.	Self-directed goal setting, planning, documentation of learning roads, and scaffolding.	Learning outcomes, learning path, scaffolding, goals, context.
Competency management	Institutional repository of competency definitions, learning analysis module.	Performance-based assessment, linking artifacts to domain concepts, presentation of evidence.	Portfolio, competence, competence profile, evidence, competency register, level, badge.
Collaborative knowledge creation	Semantic layer, mechanism of evolution of the domain ontology.	Co-construction, Remix, Social tagged, Recommendation, Peer scaffolding.	Knowledge object, artifact, sharing, annotation, thinking types, remix, project, product.
Task-focused instructional design models		Task linking, resources with learning outcomes. Integrated scaffolding.	Course design, strategy, task types, learning activity flow, and pattern.

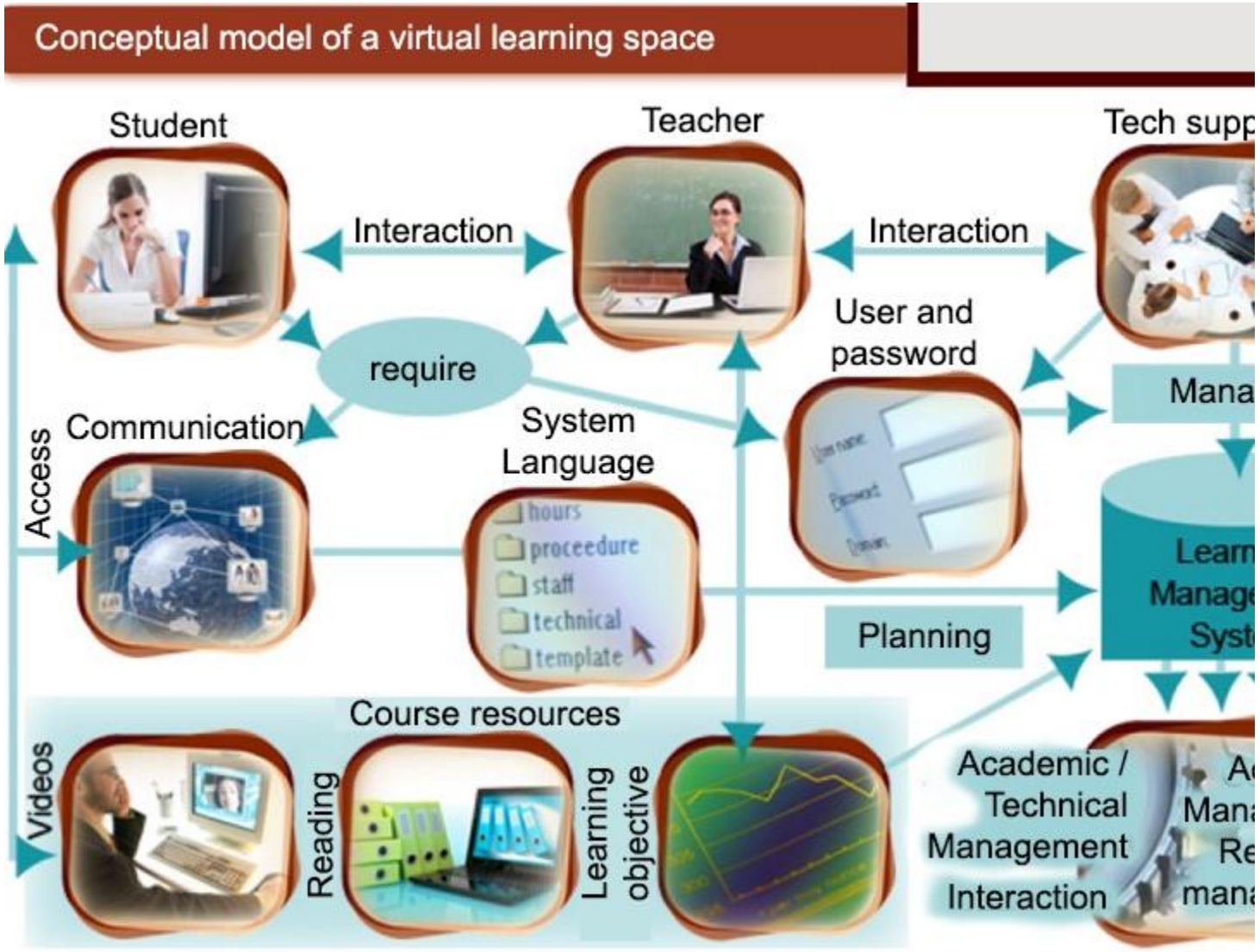
Elements to be considered when assessing the selection and integration of the three components in designing a digital pedagogical ecosystem for hybrid teaching and active learning.

Results of the Delphi Method

Dimensions	Characteristics
Pedagogical guidance	Constructivist and student-centered Teacher as facilitator
	Traditional, teacher-centered Constructivist, student-centered Sociocultural approach
	The constructivist approach helps integrate digital technologies into teaching
Pedagogical practices	Student Engagement Problem-Based
	Students as creators of knowledge
	Collaboration
Digital pedagogical competences	Efficacy
	Knowledge, skills, attitudes, and approaches concerning digital technology
	Technological knowledge Pedagogical knowledge Personal support

Outstanding characteristics of b-learning

- It allows face-to-face meetings to socialize, explain and resolve doubts with the tutor.
- Synchronous and asynchronous communication.
- Combines traditional and online teaching.
- Resources can be digital, analog, or printed.
- Guided instruction, but at the same time autonomous.
- The roles of the teacher and student are modified considering the face-to-face principles and those of online education.
- Flexibility in the teaching and learning process.
- Educational activities in the face-to-face modality but also the virtual one.
- The evaluation can be done in person or at a distance.
- It allows the application of artificial intelligence to strengthen teaching.



IIIEPE experts also recommend using the conceptual model of a virtual learning space, proposed by Gómez-Zermeño and Alemán (20211) (figure 1).

IIIEPE experts emphasized the importance of using open educational resources while designing the digital pedagogical ecosystem to promote the generation of open, accessible, efficient, transparent, and beneficial science for all (UNESCO, 2012)..

Adopting open access culture in higher education could represent a challenge to achieving ethical sustainability, social justice, and human rights that can guarantee quality access to learning opportunities for all.

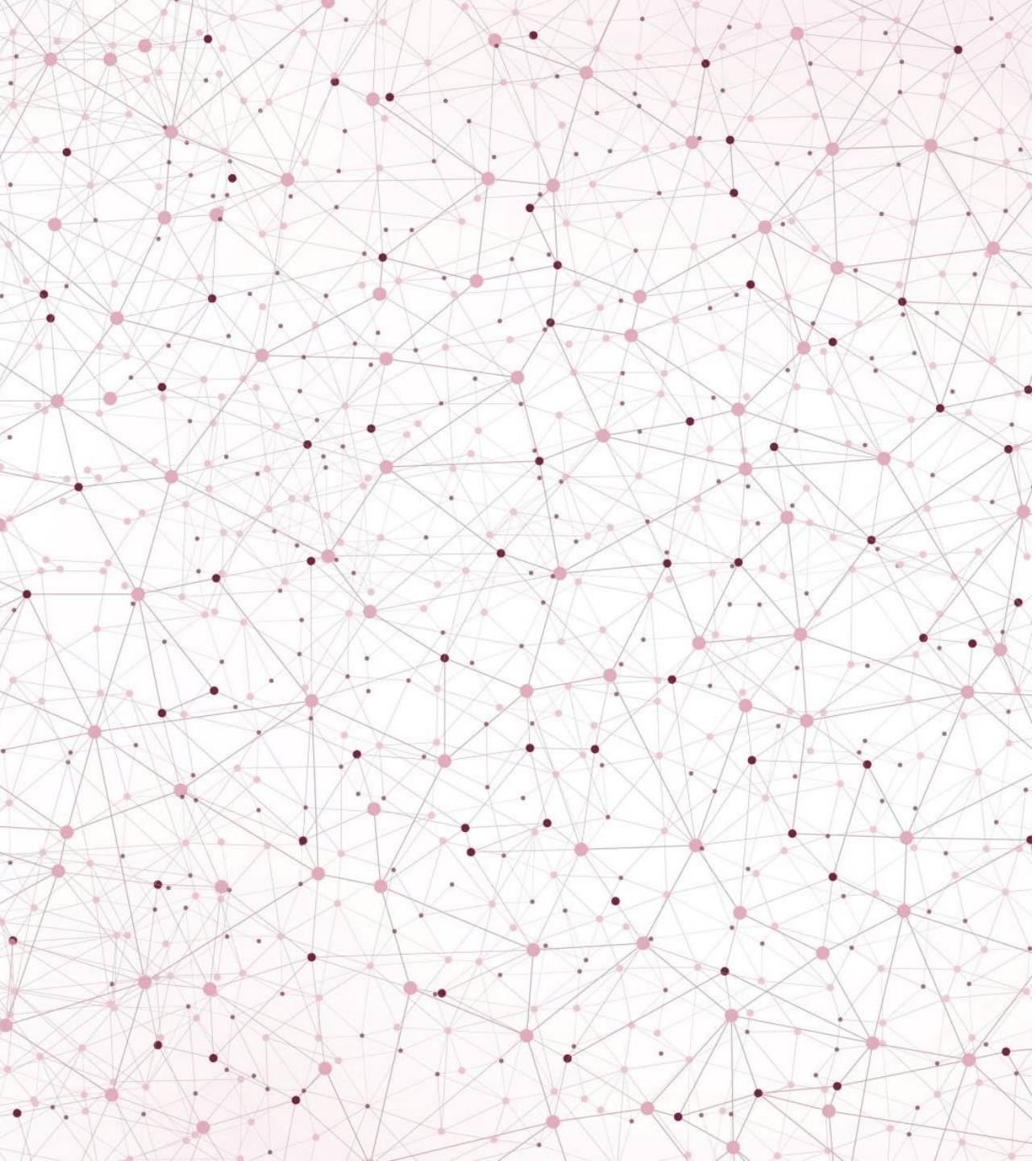
An open access ecosystem is composed of various procedural, legal, technological, operational, and service elements, among others, that interact with each other, to make it possible for education to reach the greatest number of people in the various spaces of the world: we are talking about the democratization of open knowledge in all its forms (UNESCO, 2022).

Conclusion

This study explored conceptual models of digital pedagogy to establish the essential foundations of an ecosystem that provides tools to integrate technologies in teaching-learning processes.

There is an encounter between educators, learners, and objects of knowledge in all educational processes. When applying digital pedagogy, educational resources, media, and technologies are important in knowledge construction.

Digital education media and resources, if carefully designed and implemented, have a significant potential to be mobilized on a massive scale to support transformative learning for building sustainable, flourishing societies.



Thank you!