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Open schooling to empower Brazilian teachers: Emancipatory fun in education for a sustainable innovation ecosystem

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Open schooling to empower Brazilian teachers:
Emancipatory fun in education for a sustainable innovation ecosystem

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Abstract

This chapter examines key issues in empowering less well-represented actors through open schooling. It explores the components of innovation ecosystems, underpinned by Global Citizenship Education (GCED) and Responsible Research and Innovation (RRI) for democracy, in a period of extreme adversity for students and educators. It presents a case study with 1,129 participants from Indigenous, rural, and remote schools in 184 municipalities in Ceará, a state in the semi-arid region of Brazil. The main challenges and drivers to open schooling in this adverse period are identified. These findings support the argument that democratic values must underpin grounded strategies to address local adversities that reflect global issues.

Keywords

CONNECT; Open Schooling; Innovation Ecosystems; Responsible Research and Innovation; Global Citizenship Education; Education for Democracy; Emancipatory Fun

1. Introduction

One of the main challenges for education around the world is to support the large number of less well-represented actors and territories towards a more scientific-literate society for sustainable development locally and globally. This challenge became even more difficult for countries affected by adversities aggravated by the COVID-19 pandemic. One key strategy is "Innovation Ecosystem", promoted by the European Union (2021–2024), that aims to support countries across the globe to create a sustainable world. This approach uses education to connect existing strengths at local, regional, national, and international levels as a means to promote green, digital, and social innovations for sustainable growth aligned with societal needs (EC, 2021). We argue that educators can play a key role in enhancing innovative ecosystems by empowering youth to take an active role through responsible research and innovation (RRI) and global citizenship education (GCED).

RRI refers to a transparent and interactive process for promoting science with and for society. It has six characteristics: open access, gender equality, science education, public engagement, ethics, and governance (EC, 2017; Owen, 2014; Von Schomberg, 2013). Innovation ecosystems under the lenses of RRI involve participatory learning approaches with five societal representatives: educational communities (schools and universities), research centres, industry, civil society organisations, and the public policy sector. It therefore has the potential for significant impact on innovation ecosystems. One way to enhance participatory education for responsible citizenship is through open schooling (EC, 2015). This aims to foster scientific literacy (an individual's scientific knowledge and use of this knowledge in daily practices helping youth develop competencies that they will need to solve real socio-scientific issues supported by experts and their communities) through the cooperation between students, teachers, professionals, and local communities (EC, 2018), helping youth develop competencies that they will need to solve real socio-scientific issues supported by experts and their communities.

GCED is UNESCO's response through education to global challenges including human rights violations, inequality, and poverty, which threaten peace, democracy, and sustainability. It uses education to empower learners of all ages to become active promoters of inclusive, secure,

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and sustainable societies collaboratively (UNESCO, 2018). Innovation ecosystems underpinned by GCED can foster values, attitudes, and behaviours that support creativity and commitment to peace, human rights, and sustainable development.

This chapter is part of a study conducted within the CONNECT Project (a European Union-funded project with the Global South – developing countries located in the southern region of the globe) which focuses on inclusive open schooling with engaging and future-oriented science. This project aims to create more opportunities into the school curriculum for students to interact with scientists, talk about science with their families, and enjoy taking science action for sustainability. The chapter investigates, for the first time, the intersection between open schooling, GCDE, and RRI (see Figure 20.1). It uses the lenses of less well-representative actors and territories to identify the key components of sustainability within the innovation ecosystem. It investigates these key elements for educators as they implement open schooling in the Brazilian semi-arid region in a context of adversity imposed by a pandemic. The research also identifies drivers and challenges to open schooling in this context based on the innovation ecosystems theory/concept.

Figure 20.1 Innovation ecosystems for sustainability.

This model (Figure 20.1) shows the connections of global citizenship education, responsible

research and innovation and open schooling to highlight the common intersection of these three components resulting in the innovation ecosystems for sustainability.

2.Principles of open schooling for innovation ecosystems

Open schooling is a novel concept to promote education. It is underpinned by RRI for young people learning to identify issues and solutions by interacting with researchers and local communities. In this way, it seeks to enhance the alignment of research and innovation with societal needs and facilitate the next generation of responsible citizens and innovative professionals, through twenty-first-century knowledge, skills, attitudes, and values. It utilises partnerships between education, research, economics, and policies that guide students to have positive effects on the environment, economy, and society.

      Open schooling is a participatory approach to help schools engage students to develop real-world issues projects with multi-partners – teachers, researchers, families, professionals, and policymakers. This creates an opportunity for students to apply knowledge in real-world contexts and identify social and scientific issues that affect communities and the globe. It uses collaborative participatory science to consider four areas of GCED: human rights education, peace education, education for sustainable development, and education for global understanding. Students are empowered to become active members of more scientifically literate societies, who are able to make evidence-based decisions and research-informed practices by applying critical and creative thinking and reflexive and collaborative actions. Open schooling is aligned to the concept of "development education" (Khoo & McCloskey, 2015) and empowerment education whose theoretical principles lie in the pedagogy of Paulo Freire (1972). These principles highlight education as a socially transformative process to empower individuals and society. This transformative process, to enhance innovative ecosystems with open schooling, is based on empowering individuals, communities, and societies to "read" social and political issues of the world to "write" practical solutions based on science for a desirable future for all with emancipatory fun (Okada & Sheehy, 2020). In Emancipatory Education, the word emancipatory represents much more than its literal meaning, that is "giving people social or political freedom

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and rights" (Cambridge Dictionary, 2021). Viewed through Freire's theoretical lens, developed in the Pedagogy of Oppression (1972), emancipatory means empowering people with "consciousness for praxis". This is the capability to read, interpret, and understand social and political issues to write, intervene, and act responsibly to transform oppression into "freedom and rights".

Inclusive Open Schooling, under the lenses of GCED and RRI, is supported by a community-centred pedagogy that draws on fun participatory-action research methods. This helps by multi-partners to open up opportunities for less well-representative students to become protagonists. Critical engagement is essential to this process. As Andreotti (2006, p. 40) states, "understanding global issues often requires learners to examine a complex web of cultural and material processes and contexts on local and global levels". This understanding is facilitated by an enjoyable process that enables the "development of skills of critical engagement and reflexivity: the analysis and critique of the relationships among perspectives, language, power, social groups and social practices by the learners" (ibid., p. 49). By contrast, soft global education, lacking critical engagement, is more likely to tell learners what to think or do, perpetuate myths, and reproduce civilising "power relations" with the Global South (Dados & Connell, 2012); part of the pedagogy of the oppressed (Freire, 1972). Indeed, many school curricula are focused on content without context (Braund & Reiss, 2006). Consequently, students are prepared for exams without connections to their lives and future. In contrast, open schooling provides an opportunity for meaningful learning with real-life issues. Emancipatory fun (Okada & Sheehy, 2020) elicits the motivation for students to develop an ethos of curiosity, solidarity, critique, and shared responsibility with initiative and confidence. This aligns with the GCDE UNESCO's aims to:

- *encourage learners to analyse real-life issues critically and to identify possible solutions creatively and innovatively;*

- *support learners to revisit assumptions, world views, and power relations in mainstream discourses and consider people/groups that are systematically underrepresented/marginalised;*

- *focus on engagement in individual and collective action to bring about desired changes; and*

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- *involve multiple stakeholders, including those outside the learning environment, in the community and in wider society.*

(UNESCO, 2014, p. 16)

The majority of research literature about open schooling is focused on Europe, where most of the initiatives have occurred to date. This study is original in exploring Brazilian teachers' views regarding three aspects of open schooling:

- (Q1) Meaning (what are the most important problems to initiate open schooling projects? What are the best ways for students to interact with scientists?)
- (Q2) Implementation needs (what are the most important skills? What are the technological resources, pedagogical strategies, and materials used during the pandemic?)
- (Q3) Issues (what are the drivers and challenges during COVID-19?)

3. Exploring an innovation ecosystem in Brazil

Brazil was one of the countries most affected by the COVID-19 pandemic between 2020 and 2022. This has exposed the country to increased health, social and economic adversities, making it the second country in the world in terms of absolute deaths related to the pandemic (The World Bank, 2021). Besides these adversities, Brazil also faces many challenges concerning educational and environmental issues. According to OCDE (2019), over 34% of youth leave school before completing secondary education and only 18% of adults in Brazil have attained tertiary education. This occurs in a society that has the highest number of intentional homicides in the world (The World Bank, 2021). Moreover, in 2020, its Amazon rainforest and Pantanal, the world's largest tropical wetlands, suffered the worst fires in a decade (Reuters, 2021). Conversely, Brazil is one of the richest countries in the world in terms of natural resources and became one of the five major emerging economies (Brazil, Russia, India, China, and South Africa) that experienced rapid economic growth in the period of 2003–2013. However, the current recession has plunged an additional 6.3 million people into poverty. Large-scale

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defunding in public education by the current government has impacted on education's role as a catalyst for lifting people out of poverty (WEF, 2017), consequently reducing social mobility and increasing poverty in Brazil (Monroy, 2019).

This case study focuses on Ceará, a state in the north-east of Brazil. Ceará has been investing in public education and continuous teacher education and, despite significant socioeconomic contrasts and adversities, is one of the states in Brazil with the highest position in the Basic Education Development Index (IDEB, 2019; HRW, 2020). There were 731 teaching units in Ceará in 2020, which included 277 full-time schools, 122 vocational education schools, and 155 full-time (more than 5 class hours) regular high schools. In 2020, Ceará's schools had a pass rate of 98.9 for basic education and 97 for high school.

4.The consensus conference

This study was approved by ethical committees in Europe and Brazil. It adopted the consensus conference method created within the CONNECT project for learners to experience open schooling through the cooperation between citizens, researchers, consultants, and policymakers to discuss real-life issues (Nerhaus & Bedsted, 2021). This deliberative and participatory democratic method to enhance fun participatory learning (Figure 20.2) was informed by the CARE KNOW DO framework (Okada & Sherborne, 2018). This approach targets three components of student scientific literacy – motivation, values (CARE), knowledge (KNOW), skills and attitude (DO) – for preparing students to engage with issues around emerging technologies and societal needs. This framework (Figure 20.2) was designed to inform and help teachers plan how learning concepts can be set within their social context.

Figure 20.2 refers to the Consensus Web Conference Method of CONNECT Open Schooling with eight categories: actors, steps, procedures, instruments, technology, emancipator and fun actions, emancipatory FUN – expected outcomes and data generated together. These categories are used to provide details of three stages: CARE, KNOW, DO. Its aim is to provide a method to support the study about open schooling in Ceará Brazil.

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The consensus web conference was live-streamed on 11 November 2020, with sign-language translation on Ceará's Education Secretary's YouTube channel as part of their course "Intervention Projects and Digital Competences for teachers". The controversial issue (how to make education more inclusive during COVID-19) brought the opportunity to reflect on new educational strategies using an open schooling approach to explore its components, challenges, and barriers to support a sustainable innovation ecosystem.

Framework	CARE		KNOW		DO
Actors-participants	1 consultant 1 researcher 1 policymaker 1 teacher 2 students		1129 teachers-respondents 716 teachers-attendees 369 teachers-collaborators 7771 teachers in professional-development		2 authors-actors 3 external authors 10 representative-actors
Steps	Framing	Questions	Knowledge	Deliberation	Recommendation
Procedures	Set the Agenda, tasks and guide	Identify questions and issues	Research Survey Panel Analysis	Discussion Cocreation consensus	Blog post OER Scientific article
Instruments	Oral, textual and sign-language dialogue		Survey-responses analysis Slides of speakers RRI, GCED Reports		Impact analytics Recommendations New Resources
Technology	Google meet		Qualtrics Google Meet MindMeister		YouTube Moodle CONNECT website
Emancipatory FUN – actions	Discuss real-life issues, select current practices, opine on new experiences		Reflect in and on action Propose Interventions, Identify challenge-driver		Commit to self/co-transform Practices & policies
Emancipatory FUN – expected outcomes	Develop group identity curiosity/creativity joy/fun		Support social bonding critical awareness joy/fun		Connect/transform search/discovery joy/fun
Data generated together	Transcript from google meet used to refine questionnaire		Qualitative data to expand indicators and quantitative data to sequence them		Policy brief

Figure 20.2 Consensus Conference Method of CONNECT Open Schooling for CEARÁ

Emancipatory fun principles were used to design the consensus web conference through three stages.

1. An online meeting focused on the consensus web conference plan led by a multi-actor panel: a policymaker who acted as the moderator, an educational-entrepreneur, two secondary students, a secondary teacher, an educational researcher who acted as a consultant and suggested the agenda, practices, principles, perspectives, and initial questions. The expected outcome was developing group identity with creative practices to engage a large group of educators with curiosity, awareness, and joy/fun.

2. A consensus web conference was led by the panel and engaged 1,129 educators who reflected and discussed the components, challenges, and drivers for open schooling based on the panel's examples. The event was designed to support social bonding with collective awareness mediated by the panel's real-life issues/interventions during COVID-19 with joy/fun.

3. A co-production of a blog post in the format of OER (open educational resource) and a scientific article. These productions, including a policy brief, were designed to connect and transform practices, search/discovery of findings, connect and transform practices by enhancing capacity building and knowledge exchange with joy/fun.

Qualitative and quantitative data were generated through a semi-structured questionnaire. This collected participants' views related to their global and local challenges, needs, priorities, partnerships, and resources, as well as views about values, principles, and activities of open schooling and their participation in the consensus web conference. The questionnaire was answered by 1,129 participants: 716 of them were answered by participants who attended the web conference synchronously and provided qualitative data in the chat. More than 7,700 participants accessed the consensus conference asynchronously. The conference audio transcript and chat data were extracted to identify and analyse drivers and barriers to open schooling. Preliminary results from the questionnaire and key issues raised by participants in the chat were discussed in the web conference with the panel and participants.

4.1 Participants

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The participants were 1,129 participant educators from various state schools in 184 different municipalities, which represents the whole state of Ceará. The sample comprised 63.98% females and 35.84% males. Most participants worked as teachers (87.21%). Others stated working as coordinators (7.60%), as headteachers or managers (2.50%) or were students (0.18%). Twenty-one participants reported having a different occupation (1.88%).

Most participants worked in secondary education: 18.76% in first year, 9.52% in second year, and 33.21% in third year. Moreover, 429 participants (38.51%) worked in different educational fields, such as primary education, all years of secondary education, adult education, higher education (undergraduate and graduate courses), technical education, school management, or administration work. It is worth mentioning that due to teachers' low salaries in Brazil, many teachers have to work in more than one school or have a second occupation in order to increase their incomes.

The majority of participants worked at state schools, including diverse types of schools, target groups, and educational systems, such as indigenous, *quilombola* (Afro-Brazilian residents of quilombos – settlements first established by escaped slaves in Brazil), rural, technical, remote, youth-adults, professional, state, and federal. Participants reported being interested in intervention projects in different areas, such as human sciences (33.01%), science (20.96%), and exact sciences (17.93%). About 27% declared being interested in other areas and 0.80% stated not knowing. Among other areas cited, the greatest interest was in languages and technology.

4.2. Key components of innovation ecosystems

Based on the consensus web conference and the semi-structured questionnaire, insights were gained into the three research questions.

(Q1) The meaning of open schooling

The most important problems in Brazil that could attract students from various regions and countries to research with scientists were climate change and sustainable economies, followed by drought, fire, environmental destruction, risks, environment protection, hunger, food production,

biological and infectious plagues, species extinction, sanitation, water reuse, horticulture, and fish-farming. Other issues include social inequalities, gender and race prejudice, education precariousness and appreciation, violence and abuse, employability, sustainable development, health, and use of digital technologies. The best ways for students to interact with scientists were considered to be online debates between scientists and young people, collaborative data collection projects with students and scientists, online events with scientists and prizes to young people, video interviews organised by young people and scientists, and scientific production evaluated by scientists.

(Q2) Implementation needs (skills, resources, and pedagogy)

The most important skills during the pandemic were identified as knowing how to use research to make choices and decisions, using school content to identify community problems, developing solutions with experts at the school, and interacting with students from other states and countries to discuss 'glocal' - local and global - issues. Most participants used diverse digital contents as their main means for teaching and learning, such as videos and audio files on mobile devices, educational TV or radio programmes, and videoconferencing tools and instant messaging platforms, including WhatsApp, Google Meet, and Google Classroom. Some educators also mentioned using printed materials due to the difficulty to access digital devices and internet connection. The most commonly used virtual environment for teaching and learning during the pandemic was Google Meet, as it was recommended by the Secretary of Education in Ceará. Other tools used by educators were WhatsApp, YouTube, and Facebook.

The pedagogical strategy that participants missed the most (during the pandemic) was face-to-face teacher–student interaction to solve doubts, group projects to develop skills, interaction with specialists to develop competencies, materials to acquire knowledge, and current activities for increasing students' interests in future careers. Key teaching and learning needs for lessons during the pandemic were related to support, interaction, motivation, skills, and wellbeing. Other factors such as time management, creating enough time for continuous professional development, equity of access to virtual environments, and technological tools, among others, were also mentioned. The materials used by most educators were described as

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engaging materials whose aim was to enhance skills and challenges and collaborative materials that enable sharing and commenting. There were also "informative" materials to prompt reflection and self-assessment and research materials to identify and solve problems.

(Q3) Issues (challenges and drivers)

Thematic analysis was used to analyse participants' conference discourses in the YouTube chat tool. Their discussion supported by "in and on action-reflection" (Schön, 2009) enabled us to identify the main challenges to, and drivers of, the pandemic to open schooling in the context of Ceará. The four challenges mentioned by participants were (1) equality and diversity issues; (2) digital exclusion; (3) lack of educational support; and (4) scientific illiteracy. Participants' voices were added to the description to illustrate each challenge.

The first barrier, "Equality and diversity issues", included two components "Human survival needs" in the semi-arid, such as lack of water, and "Prejudice with violence". Participants' views on these issues can be noted in:

> *People don't have water, which is a human right (Teacher); LGBT*
> *people being murdered, violence against women, child abuse, racism*
>
> *(Educational researcher)*

The second challenge, "Digital exclusion", included different types of exclusion, such as students' lack or limited access to technology (either digital devices or internet connection). This challenge can be noted in the following extracts:

> *"We have been delivering printed activities at the homes of students"*
> *(Teacher);*
>
> *"Most students can't attend synchronous classes" due to "lack of*
> *internet connection" (Teacher);*
>
> *"I consider it vital to discuss the lack of resources and equipment for*
> *students" (Teacher);*

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> *"There's a digital divide. This reality is limiting."*
>
> *(Educational Researcher)*

The third barrier, "Lack of educational support", included two types: "Students' lack of support from families at home" and "Students' lack of support from teachers". This can be noted in:

> *"What can we do to reach the students who don't have technologies nor family support"? (Teacher);*
>
> *"How can we guarantee that students are learning when we deliver printed activities without (our) teacher support?" (Teacher).*

The fourth barrier, "Scientific illiteracy", was considered as relevant as the other challenges but not as visible/explicit as the previous ones. Four reasons were identified:

1. "Devaluation of sciences by policymakers", perceived in

> *"What's the role of Human Sciences in this delicate political-ideological scenario?" (Teacher).*
>
> *"with budget cuts in Humanities" (Educational researcher).*

2. "Science depreciation with increased educational and social inequalities" as cited:

> *"We're in a country in which science is undervalued, in an unequal system" (Student).*

3. "Lack of capabilities and critical conscientisation", as complemented:

> *"People don't know how to use technologies to their own benefit or to the benefit of others" (Teacher).*

4. "Threat of mass illiteracy", as added:

> *"Functional illiteracy is a big problem for students when they get to university" (Policymaker).*

On the other hand, participants also identified four drivers that could diminish the aforementioned barriers, which are: (D1) developing projects with partnerships for sustainability; (D2) new approaches to empowering students; (D3) cooperation with all societal actors; and (D4) open schooling.

For the first driver, "Developing projects with partnerships for sustainability"; teachers, students and policymakers indicated that "*Educational projects for sustainability are important for education*". A reason is that it creates "Courage to share issues and scientific partnership to intervene effectively". Teachers and educational researchers stated: "*we need courage to share the problems*".

The second driver, "New approaches to empowering students", includes four categories:

1. "Solidarity, support and solution": participants commented that during the pandemic

    "solidarity gestures were microchip distribution, recycling smartphones, cyclists for text distribution" (Teacher).

2. "Resilience, transformation, and new digital solutions: Students mentioned an offline solution with mobile-phones, for example,

    "We revised Maths and Natural Sciences with the use of podcasts" (Student).

3. "Governance, competence-based learning, learn-to-learn": participants highlighted

    "We should discuss how to develop competences and abilities" (Teacher).

4. "Interactive Students as protagonists": participants added

    "Protagonist students build knowledge through partnerships" (Teacher).

The third driver, "Cooperation of all societal actors", includes "RRI Partnerships teachers". Participants highlighted that

    "Partnerships are needed among teachers, students, researchers, managers, and consultants" (Teacher).

In addition, "Pedagogical and Technological Strategies" are necessary, as complemented:

> *"The Ceará state governor has launched a program to support students to buy microchips."* (Policymaker).

For the fourth driver, "Open Schooling" to promote students' scientific thinking with scientists and communities, students, teachers, and researchers, three factors were highlighted:

1. "Social science is as relevant as natural science", that means

   > *"Social science is vital for critical/ creative thinking useful in natural science sociology and philosophy, these are key to teach students to see with human soul"* (Teacher);

2. "Students protagonists creating opportunities to reduce inequalities and expand scientific literacy", participants complemented

   > *"Congratulations students protagonists with commitment to reduce inequalities"* (Teacher);

3. "Scientific capital to help students to go beyond" participants suggested

   > *"Science capital will greatly help the student"* (Teacher).

5. Implications for the innovation ecosystem for sustainability

This study has identified key components of innovation ecosystems for sustainability supported by RRI, GCED, and open schooling. Figure 20.3 presents the model with these components to help educators plan, implement, and enhance transformative education. It presents four categories: actors, artefacts, actions, and open schooling. It contains ten components: partners, resources, technologies, materials, challenges, needs and drivers and barriers, activities, principles, and values. Its objective is to show the elements of innovation ecosystem.

The model provides teachers with key components to initiate open schooling so that they can implement pedagogical practices considering global challenges, local needs, barriers, and

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drivers to empower students. For policymakers in education responsible for teachers' education programmes, the model provides theoretical and empirical principles of GCED and RRI to support the development of new pedagogical practices. For educational researchers, the model offers the consensus method with data generation instruments, theoretical frameworks, and analytical tools to inform actors aiming at research-based interventions. For students, the model can help understand the components of the innovation ecosystem to support their critical reflections, discussions, co-creation of learning resources, and projects of co-entrepreneurship for sustainability. The model can assist other participants in the awareness of their roles to support new open schooling initiatives among schools in different municipalities. This method can be used to co-create new models in other regions and in other contexts of adversity beyond COVID-19. Further studies will be necessary to investigate how the model can enhance partnerships and practices.
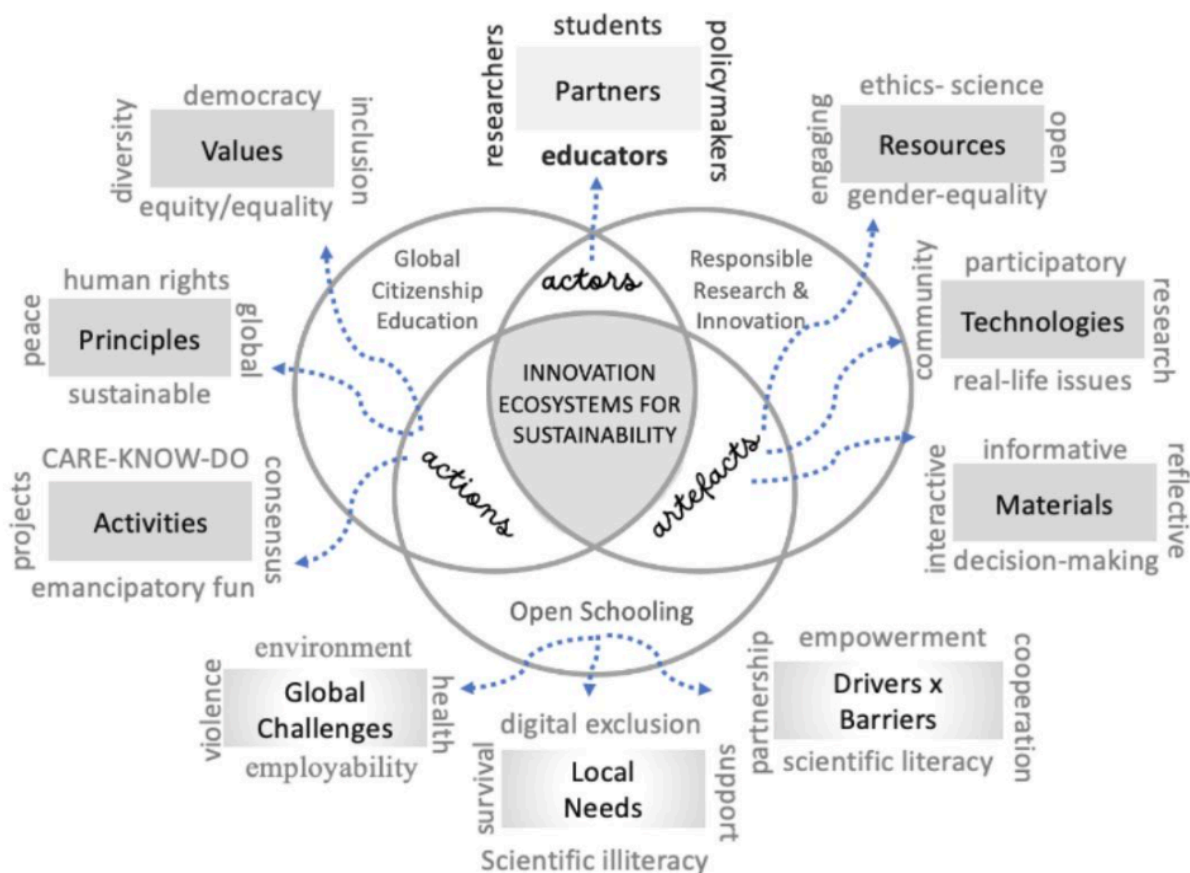

Figure 20.3 Innovation ecosystem for sustainability model

An important aspect for understanding innovation ecosystems for sustainability Figure 20.3) is understanding the dynamic and cyclical relationships between three main components: actors, actions, artefacts, which occur within a context/society; as well as the factors (adversities) that threaten them and require transformation/evolution.

According to Vygotsky (1978), artefacts can transform the way we experience the construction of knowledge through language in the social context and act on internal psychological processes, changing our behaviour and improving attitudes through consciousness. According to Freire (1969), conscientisation with joy occurs in the process of achieving results and also experiencing the search with teaching–learning. The consensus web conference helped actors identify the joy in the "emancipatory fun" that emerged from their speeches indicating engagement and satisfaction with "courage", "solidarity", "students' protagonism" present in "learning with the eyes of the soul", with "persistence and dedication" and "partnerships" supported by artefacts that made this study possible.

6. Conclusions

Inspired by the dynamics of natural/biological ecosystems, where species compete with limited resources and look for replacement when some of them become scarce, Granstrand and Holgersson (2020) also reinforced the concept of evolution of species for better understanding the component relations in innovation ecosystems. Additionally, Engeström (1987) emphasises the importance of contradictions in understanding how an activity system works and evolves, as it helps identify external threats to transform the external environment conditions.
The innovation ecosystem described here considered contradictions and adversities based on the diverse subjects' living and learning conditions, viewpoints, interests, and positions in and beyond their ecosystem. Therefore, it is important to focus on global challenges, local needs, and priorities pointed out by participants of the innovation ecosystem under study. These issues may be overcome through actions that combine values, principles, and activities supported by artefacts that include resources, technologies, and materials. Consequently, innovation ecosystems based on RRI and GCED with open schooling may contribute to greater students'

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and teachers' agency for democracy, diversity, equality/equity, and inclusion, which are critical aspects to transform an unequal society such as Brazil.

Acknowledgements

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Authors Contributions

AO wrote the abstract and prepared the first draft the manuscript. AO and KS planned and implemented the activities including data generation. MS provided feedback of the full manuscript and contributed with the conclusion. AO was responsible for the survey implementation in Qualtrics and data analysis through mixed methods. CR contributed to the thematic analysis supported by KS and LR who collaborated with AO in the reflection of the discussion and consensual feedback. Additionally, AO created the figures, graphs, and tables. All authors contributed to manuscript revision, read, and approved the submitted version. KS and LR supported the Portuguese version translation and AO and CR revised the English Version of the final manuscript.

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Data Availability

This study is based on open science and supports the recognition of the co-authorship of participants. Datasets were generated in Portuguese under the participants' informed consent. Detailed information is available at.

https://ordo.open.ac.uk/account/articles/21217607

Ethics

This study part of CONNECT project and has received Ethics approval by The Open University, HREC – Human Research and Ethics Committee.

Note

To access the published final version of this Chapter 20, please search for the Book: A. Holliman, & K. Sheehy (Eds.), Overcoming Adversity in Education Routledge, Taylor and Francis Group

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