

The Futures Stories Lab

A Tool for Futures Literacy Pedagogy

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Summary

The Futures Stories Lab has been developed as a tool to foster futures literacy in educational contexts. As a central part of the futures literacy *Method Mosaic* compiled at the UNESCO Chair in Learning and Teaching Futures Literacy in the Anthropocene, it is an example of the manifold possibilities of teaching futures literacy in a structured, but flexible setting. Though the Futures Stories Lab defines five steps, or chapters, by using a craft-based and narrative approach, each of these chapters can emerge using a variety of creative practices. This paper describes the didactic concept that has been tested in the field of literature and media pedagogies and cultural education but offers a range of practical applications for classroom settings. The basic ideas for futures literacy pedagogy are introduced, to be implemented within the context of higher education, with a particular focus on teacher education.

Keywords: futures literacy, futures literacy pedagogy, teacher education

1 Learning future, teaching futures

Due to sociologist Gérard Delanty, “the future, now more than at any previous time in history, is a way of experiencing the world” (Delanty, 2022, p. 1). But how can we experience a world that exists in our imagination only, as a time yet to come? Stories told in literature, film, and the arts offer “a way of experiencing the world” through the aid of the imagination. They can inspire to “use the future” (Miller, 2018) to anticipate possible, probable, and desirable alternative futures, and thus become futures literate: “Being futures literate empowers the imagination, enhances our ability to prepare, recover and invent as changes occur.” (UNESCO, n.d.) The educational concept of futures literacy, promoted by UNESCO as an “essential competency for the 21st century”, wants to “empower everyone to use-the-future more effectively and efficiently” (ibid.), naming innovation, discovery, leadership, choice, strategy, agility, confidence, capability, knowing, and resilience as the “benefits of Futures Literacy”

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(ibid.). When interpreted within the framework of educational theory, and “based on the concept of learning as co-becoming with the world” (Peschl & Fundneider, 2023, p. 20), a futures literacy framework can inform learning and teaching methodologies that incorporate the three aspects of this “capability-based approach to futures”: “Using the Future to Rethink the Present”, “Fostering Diverse Futures”, and “Agency and Empowerment” (ibid.).

How can futures thinking be encouraged in children and young people? Which creative, cultural, artistic, media, and scientific practices promote ecological awareness and enable transformative learning experiences? Which didactic concepts support teachers in teaching futures literacy? These are the research questions that are explored at the UNESCO Chair in Learning and Teaching Futures Literacy in the Anthropocene at the University College of Teacher Education Lower Austria with the aim of establishing futures literacy pedagogy – or futures literacies pedagogies, emphasising the intended openness and diversity of the underlying ideas. Didactic concepts, methods, and tools are being developed to promote futures thinking in lecture theatres and classrooms.¹ A central tool of the Chair’s *Method Mosaic*² is the Futures Stories Lab. It was piloted at a primary school (Sippl et al., 2025/in print), with the topic “Soil futures”, and in seminars of teacher education (specialisation: cultural education, topics “School futures” and “Stone futures”) and teacher training (specialisation: literature pedagogy, topic “Future fiction”).³ The concept will be described in detail in chapter 3, in theory and practice, using an example from teacher education. Chapter 2 introduces the theoretical foundations of futures literacy pedagogy. The paper concludes with an outlook on the relevancy within the field of cultural sustainability.

2 Towards futures literacy pedagogy

2.1 Contextualising futures in education

Is ‘futures’ a subject which is rooted in the discipline of Futures Studies? When questioning the relationship between Futures Studies and education, Keri Facer and Terra Sprague rather advocate for a “craft-based approach” (2024, p. 163) to integrate futures in education. In contrast to “a disciplinary approach to Futures Studies” which would demand “fixed outcomes, standardised assessment, known behaviours”, teaching futures “must be understood as an unruly craft, concerned with cultivating situated, practical wisdom in action” instead of “standardised knowledge” (ibid., p. 164–165). They see this claim in line with “the ethical commitment to the cultivation of conditions for open futures, to inviting critical debate, to retaining a respect for uncertainty, novelty and emergence.” (ibid.)

Following this craft-based approach, futures literacy pedagogy provides didactic concepts, methods and tools for teaching futures literacy across the curriculum. In order to cultivate futures thinking in the classroom (Bol & de Wolf, 2023; Petrucci & Brunori, 2024), they synthesise creative, cultural, and scientific practises, in analogy to the transdisciplinary and holistic approach of process-oriented arts-based research (Chilton & Leavy, 2020; Leavy,

2021). A multifaceted methodology is used to “invite students to explore the unknown, the uncertain, the hypothetical, the future, and even the impossible” (Glăveanu & Beghetto, 2022, p. 984). In this way, futures literacy pedagogy shares with pedagogies of the possible the demand for creative experiences in education (ibid.). Defined “as an experience specific for those novel person–world encounters characterized by open-endedness, nonlinearity, pluri-perspectives, and future-orientation” (ibid., p. 985), creative experiences can ignite transformative learning.

A transformative learning experience usually consists of confronting learners with a disorienting dilemma situation to be analysed from a plurality of perspectives in an interplay between action and reflection (Singer-Brodowski & Taigel, 2020). Insofar as the “goal of this process is not only to increase awareness, but also to empower people to act and engage in change” (Castano Rodriguez et al., 2022, p. 301), this concept’s benefit for futures literacy pedagogy becomes apparent. It also connects subject-specific pedagogies in the context of science education with humanities-based approaches like literature or media pedagogy to inspire inter- and transdisciplinary transformative learning (Bartosch, 2021).

2.2 Imagining and narrating sustainable futures

Futures Studies—as “the art and science of taking responsibility for the long-term consequences of our decisions and actions today” (Gidley, 2017, p. 136)—encourages adopting a future-perfect-perspective in education. The future perfect is used to describe processes, actions or states that will be completed at a certain point in the future. This point in time is often specified. The future perfect is also employed to make assumptions about past events in the future. Such a practice challenges the imagination that “can stake claims well beyond the probable or even possible” (Gosetti-Ferencei, 2023, p. 2). Imagination enables us to move playfully in time and space for testing different perspectives so “we can creatively express new ideas and sometimes integrate them into reality” (ibid., p. 17). By “possibilizing reality” (ibid., p. 84) in creative expression the way to innovation is opened.

Narrating is one such creative expression, but foremost it is an “anthropological competence” (Meister, 2014, p. 734), insofar as narrating is the basic cognitive act of the human mind for creating meaning. Narrating is also “our most prominent and familiar way of constructing our experiential reality” (Schmidt, 2008, p. 17). For this reason, the narrative approach is of particular significance for futures literacy that seeks to empower the imagination of “peaceful, just, and sustainable futures for all” (UNESCO, 2021, p. III) and for the pedagogies that foster it. Narrative is of a specific agency in cultivating futures literacy:

[Narrative] does not merely reflect what happens; it explores and invents what can happen. It does not simply report events; it constitutes them and interprets them as meaningful parts of signifying wholes. It can thus illumine individual fate and group destiny, the unity of a self and the nature of a collectivity. By showing that heterogeneous events and situations can comprise one signifying

structure (and vice versa) and by presenting specific kinds of order and cohesion, it provides models for (re)describing or transforming reality and for reconciling what is and what might be. (Prince, 2019, p. 5)

In educational contexts this narrative agency can be used by practising, e.g., “Reading for the Future” (Sippl, 2024), “to evoke an experiential world” (Gosetti-Ferencei, 2023, p. 90), a space full of possibilities, in fictional as well as factual literature. However, it should also be employed through actively narrating imagined future worlds “with the help of language, but also with the help of pictures” (Schmidt, 2008, p. 19), utilising a diverse array of media and multiple modes of narrating. In futures literacy pedagogy, the term ‘literacy’ is thus applied in its basic meaning, but understanding reading and writing not merely as a matter of individual competence, but as a multifaceted form of social engagement.

As “narrative operates as a certain sort of knowledge” (Prince, 2019, p. 5), too, it is a valuable medium for climate change education (UNESCO, 2024) and science communication. The reading and the crafting of science comics or graphic novels can serve as an outstanding example for the combination of the craft-based and the narrative approach in futures literacy pedagogy because here “‘producing scientific knowledge’ and the ‘communication of science’ [...] are particularly closely linked” (Leinfelder et al., 2017, p. 8). Fiction and nonfiction resp. hybrid forms can thus become a research practice, for “the development of critical consciousness” (Leavy, 2020, p. 612) with regard to sustainable futures.

2.3 Futures in the Anthropocene

The scientific concept of the Anthropocene provides a significant framework for futures literacy pedagogy as it draws attention to the entanglements and interdependencies of humankind and nature, culture and technology, substantiated by empirical data and rigorous research findings of Earth-system science. They mark “beyond doubt that we are now in a time of transformed planetary functioning wrought by overwhelming human impacts” (Zalasiewicz et al., 2024, p. 984). *Reimagining our Futures Together* (UNESCO, 2021) does therefore need “pedagogies of cooperation and solidarity” (ibid., p. 50), not only in social interaction, but also on a planetary scale: Humankind as a geological force is “responsible for the future of the planet” (Dürbeck 2019a, 23).

Sociologist Gerard Delanty states that the “future is therefore also planetary in that it is intertwined with the planetary crisis of the earth” (Delanty, 2024, p. 1). The planetary perspective challenges a deep time understanding of future in its temporal and spatial dimensions (Probst, 2023). Futures literacy pedagogy shares with temporal pedagogy the demand to consider “the socially constitutive nature of time” when “educating the temporal imagination” (Facer, 2024) and teaching “timefulness” (Bjornerud, 2018).

The Anthropocene functions itself as a narrative, “as a story with protagonists, a plot with cause-effect relationships, a spatial and temporal structure that serves the purpose of the foundation of meaning. The protagonist is the entire human species” (Dürbeck, 2019b, p. 271).

Informed by Anthropocene Studies (Horn & Bergthaller, 2020; Wallenhorst & Wulf, 2024) and Environmental Humanities (Heise et al., 2017; Cohen & Foote, 2021), an econarratological approach analyzes “environmental narratives and their imaginary storyworlds”, to understand “how they engage the minds and bodies of readers” (Weik von Mossner, 2016, p. 547). Futures literacy pedagogy makes use of the narrative agency of the Anthropocene to foster the imagination of sustainable futures through aesthetic and sensory perception, embodiment and emotion in transformative learning experiences with the aim to experience the connection to the living (human, non-human, hybrid life forms) and the non-living, material world as a resonance process (Rosa, 2019).

In the field of education, the concept of the Anthropocene has led to a new way of understanding the environment (in German: ‘Umwelt’): not as “the world out-there”, but instead “make the shift from only ever learning *about* the world to learning *with* it” and understand it as a shared world or ‘co-world’ (in German: ‘Mitwelt’) (UNESCO, 2020, p. 7, emphasis in the original). To foster ecological consciousness and a holistic understanding of living nature, non-living matter, and humankind as a single and inseparable entity, geologist Reinhold Leinfelder uses the term ‘us-world’ (in German: ‘Unswelt’). From a pedagogical perspective, Erwin Rauscher has coined the term ‘we-world’ (in German: ‘Wirwelt’) that derives the ethical, social, and cognitive awareness of shared responsibility for life on Earth, and the subsequent ability and vocation to shape just and sustainable futures, from this understanding (Leinfelder & Rauscher, 2025/in print, with further references).

Table 1 shows a proposal how “approaching worldly relations as inherently pedagogical” (UNESCO, 2020, p. 10) can meet transversal learning objectives (translated from Leinfelder & Rauscher, 2025/in print). By connecting worldly relations to cognitive (What do I need to know, from the past, in the present? What future knowledge might emerge?), affective (How does it make me feel? How does it affect me?), imaginative (What does my imagination tell me?), and conative (What can I do, how can I contribute to realising a desirable, just, and sustainable future?) aspects of learning, teaching futures literacy becomes “about engaging in a process of co-becoming with an unfolding reality” (Peschl & Fundneider, 2023, p. 31) in future worlds of the Anthropocene.

Worldly relation	Cognitive aspect	Affective aspect	Imaginative aspect	Conative aspect
Recognising and learning about and with future environments	Recognise and understand complex systemic relationships between humans and nature, culture and technology in spatial and temporal dimensions	Be able to deal flexibly and resiliently with uncertainties in relation to transformations caused by global challenges	Develop an enquiring and curious attitude towards possible, probable, plausible, alternative, just, desirable futures	Recognise the steps for realising desirable futures, assess the consequences and plan implementation options

Experiencing and living future co-worlds	Analyse social and ecological systems in their complexity and recognise the effects of human activity on the environment	Feel empathy and compassion for people and nature as a common whole and develop appreciation and ecological consciousness	Envision alternative futures collaboratively, utilising intuition and creativity in open, respectful exchange with others	Develop creative problem solutions and strategies in a cooperative and collaborative manner, taking into account inter-/transdisciplinary approaches
Shaping and crafting future us-worlds	Reflect on ethical principles and values that underpin a planetary caring culture and evaluate them with a view to desirable futures	Wish a good future for all, respecting diversity, developing an emotional connection with the environment as us-world	Anticipate regenerative and solidarity-based futures, raising awareness of the importance of peace and the common good	Strengthen solidarity with courage and perseverance, living democracy in community projects, promoting the transition to sustainability
Taking responsibility and hoping for future we-worlds	Practise critical thinking with a view to technological innovations and culturally shaped assumptions, recognising own potentials and possibilities for shaping the future	Think openly and positively about adaptation options in uncertain, ambiguous, risky situations and developments, strengthen decision-making and experience self-efficacy	Develop stories and images that inspire others to imagine just and desirable futures; use perception with all senses to realise creative potentials and possibilities	Proactively take co-responsibility for shaping sustainable futures on a personal and a societal level, based on diversity and inclusion

Table 1: Future worlds in the Anthropocene: a framework for futures literacy pedagogy
(translated from Leinfelder & Rauscher, 2025/in print)

3 The Futures Stories Lab

The Futures Stories Lab is intended as a didactic setting in which participants, teachers as well as learners, share an experience of sensing the pluriversality of futures and one's possible own active role in them. It represents a progression from the Future Workshop designed by the Futures Researcher Robert Jungk (in collaboration with Norbert R. Müllert, Jungk & Müllert, 1981) that has since been trialled many times in a wide variety of formal and informal learning situations, with young and adult learners.⁴ The core area of the Future Workshop comprises three phases: the criticism phase, the imagination phase, and the realisation phase. They are framed by a preparation phase and a follow-up phase. This structure can be easily integrated into lessons and projects (Hamann et al., 2017; Sippl, 2023a).

UNESCO's Futures Literacy Laboratory also adopts three central phases, with the aim to reveal, reframe, and rethink the assumptions of participants' images of the future (Miller, 2018a). Rooted in the theory of anticipation (Poli, 2019), and based on experiences in more

than 115 Labs in 50 countries (UNESCO/PMU, 2023, p. 2), it might though be objected as a “standardised [...] three part process” which “outcomes [...] are framed within a technical, trans-local and colourblind language that encodes in advance what will be achieved” (Facer, 2021, p. 6).

3.1 The five chapters of the Futures Stories Lab

The Futures Stories Lab rather follows an open-ended, non-linear path and a polyphonic, pluriperspective principle. It proposes five chapters: explore – research – imagine – craft – share. Figure 1 shows the Futures Stories Lab as a designated, though open-ended path to follow:

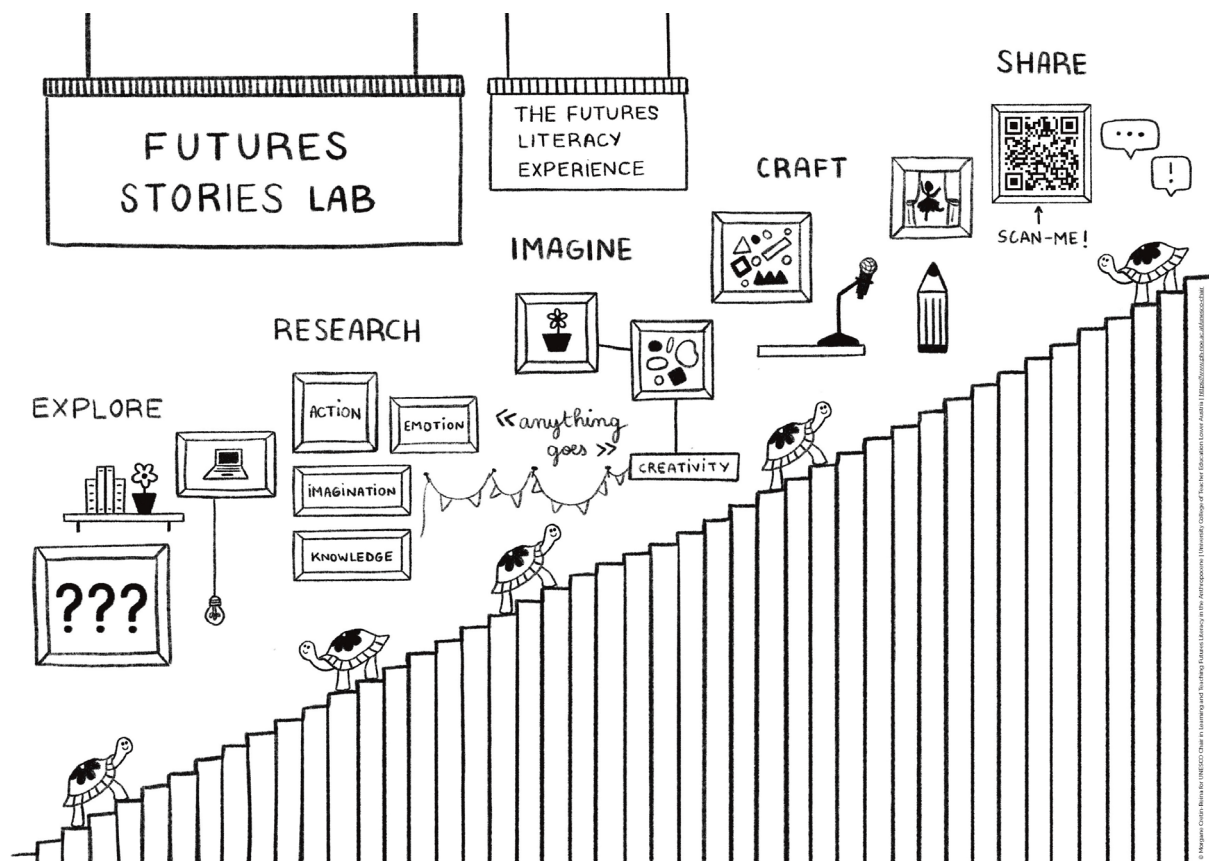


Figure 1: The five steps – or chapters – of the Futures Stories Lab offer a structured setting for a futures literacy experience in educational contexts. – Graphic design: Morgane Cretin-Reina

- **EXPLORE:** In educational contexts the teacher often specifies the future topic to be explored in a Futures Stories Lab in alignment with the curriculum resp. the subject. However, it can also be identified through a participatory search process. The chapter “Explore” opens up the imagination for probable, possible, plausible, preferable futures by offering (textual, audio, visual) impulses for futures thinking. It fosters anticipation and expectancy in regard to the future topic, while allowing for the expression of anxiety or

uncertainty. It can be used to explore tentatively what knowledge on the topic already exists among students and to reveal what assumptions this knowledge is based on. *Stories of exploring* might be the results of creating a word cloud, designing an association map, or 6-3-5 brainwriting as a brainstorming method.

- **RESEARCH:** To address a topic in a future-oriented manner, a factual basis is needed. The chapter “Research” is dedicated to researching, analysing, and critically reflecting on existing and not-yet existing knowledge about the future topic with the aim of achieving a comprehensive understanding of the subject matter. Basic theoretical concepts are skimmed and terminology is clarified, experiments, excursions, and talks with experts support the research process, at the same time scrutinizing the sociocultural, historical, and political situatedness of this knowledge. *Research stories* might be the documentation of this research process on a research board, in a research diary, a video or a concept map to visualize the achieved understanding of humans entangled in symbiotic networks with non-human life forms and non-living matter and the long-term consequences.
- **IMAGINE:** Knowledge is always in flux and is a snapshot in time. The chapter “Imagine” might start with collecting critical questions that arise from the research process. They can then be discussed in open, creative exchange with others, without any limitation, criticism or excuse, balancing potentials and possibilities, challenging dreams and desires with fantasy. To imagine desirable alternative futures asks for practising to even “believe impossible things” like Alice is doing in Wonderland (Carroll, 1872/2012, p. 175). *Stories of imagining* might be the draft of a picture, collage, storyboard, construction plan, or futurescape that depicts the vision of a desirable alternative future.
- **CRAFT:** What steps are needed to realise this vision of a desirable alternative future? In the chapter “Craft” these steps are recognised, problem solutions are developed, the consequences and advantages are assessed, ethical principles and values are evaluated, adaptation and implementation options are planned. The desirable alternative future is taking shape. Its story is told. *Stories of crafting* might be designed as a project outline, drawing, collage, sketchnote poster, photo story, role play, comic panel, sketch, dialogue, video, podcast, interview, boardgame, dance performance, song, theatre play, wimmel-picture, futurescape, science comic, or other creative media and modes of narrating.
- **SHARE:** Cooperation and collaboration are key to creating regenerative and solidarity-based futures. The visions of a desirable alternative future and the stories of its realisation have therefore preferably been crafted and narrated in participatory settings. Even if they have arisen individually, the chapter “Share” invites to present, discuss, and reflect the results, to inspire and to get inspired to proactively take co-responsibility for shaping sustainable futures. *Stories of sharing* might be the documentation of the presentation in a video or podcast, blog or vlog post, shared cloud or online platform.

The five chapters of the Futures Stories Lab can be created consecutively, individually or overlapping. The craft-based and narrative approach that is central for futures literacy peda-

gogy leads to a combination of creative, cultural, and scientific practices when engaging students with future imaginaries in the structured, but flexible setting of the Futures Stories Lab. These practices are not allocated to strictly separate and scheduled phases, but overlap, flow together and merge into one another, in this way meeting the demand for open-endedness, nonlinearity, and pluri-perspectives in creative experiences (Glăveanu & Beghetto, 2022, p. 985). Figure 2 emphasises the searching and trying out of multiple modes of exploring, researching, imagining, crafting, and sharing desirable alternative futures in a flexible structure:

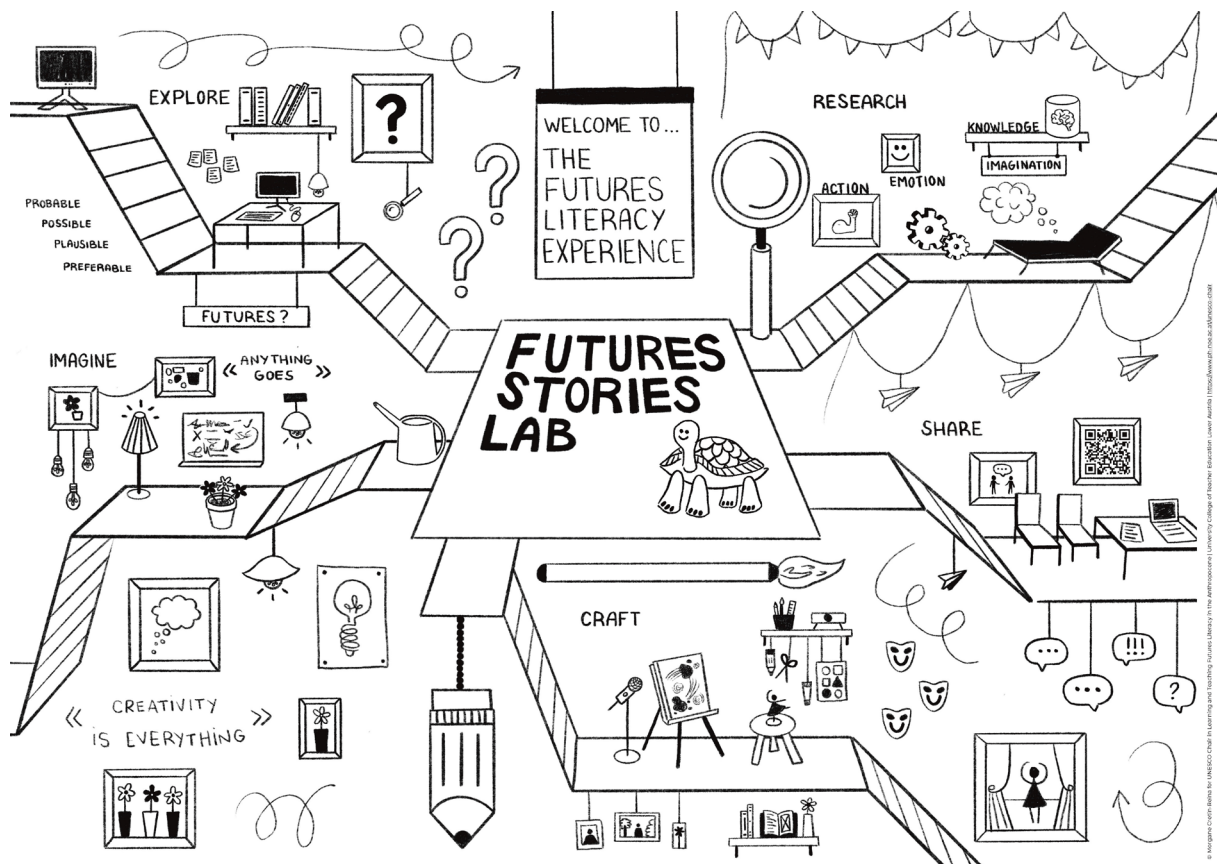


Figure 2: Each chapter of the Futures Stories Lab offers diverse possibilities for creative expression. – Graphic design: Morgane Cretin-Reina

3.2 The Futures Stories Lab in action

“A Stone’s Diary Entry” is the title of one of the stories written by the Austrian author Melanie Laibl for the Erasmus+ project “CultureNature Literacy”⁵. CultureNature literacy (CNL) has been defined in this project as Anthropocene competence that includes futures literacy: taking care of planet and people in a co-responsible, future-oriented way, using innovative forms of science communication in education to make factual research data comprehensible and tangible, informed by concepts of the environmental humanities like Animal, Plant, Blue, and Material Studies. They use the Anthropocene as a meta-narrative that “gives rise to new ethical perspectives beyond anthropocentric thinking” (Wanning & Sippl, 2023, p. 250).

“A Stone’s Diary Entry” (like “Contemplations of a Seed”, “Mushroom Tinder”, and other stories collected in the CNL reader) invites a change of perspective in a deep time experience: In a diary entry a stone reflects on its childhood, which was torn between pressure and relaxation “in my first ages on this planet” until finally “I had found my size, my shape, my place”. Then, one day, it is picked up by a human hand and tries to describe its feelings of excitement, followed by disappointment when it is dropped again, landing in exactly the same place – but the other way round. The stone comforts itself with this “fresh perspective” (Laibl, in Sippl & Capatu, 2025, pp. 116–119).

The story “A Stone’s Diary Entry” was used in a seminar in teacher education (specialisation: primary school cultural education) as impulse for a futures literacy experience in the setting of the Futures Stories Lab over the course of a semester.

Explore: In the starting session all students brought a stone to the class and told the story of their stone in groups. For example, they talked about where they had found it and how it had come into their possession, and what it means to them. In the plenary, we reflected upon the origin and the age of the stones, asked about the before and after, thus challenging the temporal imagination and connecting emotionally to non-living matter. – The *stories of exploring* were represented by the oral narratives and reflections.

Research: The students’ research was twofold: First they conducted a technical clarification of rock as matter, regarding its nature and characteristics, and looked for subject-specific links in the primary school curriculum. – These *research stories* were presented in the form of a profile (in analogue and digital drawings, using templates, or collage technique), a common form of knowledge memorisation at primary school level, and a description of learning objectives. – Then the students analysed the story “A Stone’s Diary Entry” in an Anthropocene reading that asks about the relationships of texts and/or images and the Earth system and examines the Anthropocene as a narrative (Probst, 2024). For the futures image/narrative analysis they used the following guiding questions: To what extent does the image/text thematise human-nature relations in the Anthropocene? Do non-human beings have agency in the story? How is the material, non-living environment inscribed in the story? (Sippl & Wanning, 2025, for detailed description and differentiated questions) – These *research stories* were presented in a table containing notes on the depiction of human and non-human characters, natural and non-natural objects, places/spaces, and future times, as well as information about the narrator, narrative perspective, and visual design. In the plenary, the challenges and irritations were discussed that a story from the perspective of a non-living matter, such as a stone, poses to the human reader.

Imagine: The students were given the task of writing, collaboratively or individually, their own story about a stone as the title character, like a kind of future sequel to “A Stone’s Diary Entry”. – The *stories of imagining* were presented in the form of storyboards.

Craft: The stone stories were translated into different media: a stop-motion video, a story cube, a digital kamishibai, an interactive picturebook, a radio play, a picture card story, a picturebook cinema.⁶ – The *stories of crafting* were represented by the documentation of the

project process and the discussion of the conditions for successful implementation in a primary classroom (such as tasks aligned with the curriculum, time intervals, and differentiation) in a reflection paper.

Share: The results were presented in an online setting to which critical friends were invited (here: the Erasmus+ project partners from five different European countries and the writer Melanie Laibl) for discussion and feedback.⁷ – The *stories of sharing* are represented by the permanent, open access presentation of stone stories and learning scenarios on the project website, which serve as next-practice examples for teaching futures literacy.⁸

4 Conclusion

“I can’t believe that!” said Alice.

“Can’t you?” the Queen said in a pitying tone. “Try again: draw a long breath, and shut your eyes.”

Alice laughed. “There’s no use trying,” she said: “one can’t believe impossible things.”

“I daresay you haven’t had much practice,” said the Queen. “When I was your age, I always did it for half-an-hour a day. Why, sometimes I’ve believed as many as six impossible things before breakfast.” (Carroll, 1872/2012, p. 175)

Futures literacy pedagogy creates transformative learning experiences for practicing futures thinking, for imagining and narrating sustainable futures. The understanding of sustainability as a cultural phenomenon points to the “transformative role of imaginative texts within cultural systems and discourses” (Zapf, 2016, p. 7). Education is a pivotal cultural system involved in the global process of transformation. Pedagogies, like literature and media pedagogy and other, can make use of the transformative force of literature as cultural ecology, thus demonstrating an active commitment to cultural sustainability (Meireis & Rippl, 2019; Sippl, 2023b). In the structured, but flexible setting of the Futures Stories Lab, multimodal storytelling is used as a “sustainable cultural practice” (ibid., p. 20) to foster the imagination of a future that “should be seen in terms of potentiality and possibility” (Delanty, 2024, p. 1), instead of limitations and restrictions. Futures literacy pedagogy aims to help realise the vision of a pedagogy that is characterised by “uncertainty, wonder, liminality, hope, and possibility” (Glăveanu & Beghetto, 2020, p. 983). Like Alice in Wonderland, we just need to practice for half-an-hour a day.

Literature

Bartosch, Roman (ed.) (2021). *Towards Transformative Literature Pedagogy*. WVT. (Diversitätsorientierte Literatur-, Kultur- und Sprachdidaktik, 3)

- Bjornerud, Marcia (2018). *Timefulness. How Thinking Like a Geologist Can Help Saving the World*. Princeton University Press.
- Bol, Erica & de Wolf, Martin (2023). Developing futures literacy in the classroom. *Futures* 146 (2023) 103082. <https://doi.org/10.1016/j.futures.2022.103082>
- Carroll, Lewis (1865/1872/2012). *Alice's Adventures in Wonderland and Through the Looking Glass*. Penguin English Library.
- Castano Rodriguez, Carolina, Quinn, Molly & Alsop, Steve (2022). Curricular Experiments for Peace in Colombia: Re-imagining Science Education in Post-conflict Societies. In Maria F.G. Wallace et al. (eds.), *Reimagining Science Education in the Anthropocene* (pp. 293–306). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-79622-8_18
- Chilton, Gioia & Leavy, Patricia (2020). Arts-Based Research: Merging Social Research and the Creative Arts. In Patricia Leavy (ed.), *The Oxford Handbook of Qualitative Research* (2nd ed., pp. 601–632). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190847388.013.27>
- Cohen, Jeffrey Jerome & Foote, Stephanie (eds.) (2021). *The Cambridge Companion to Environmental Humanities*. Cambridge University Press.
- Delanty, Gerard (2024). *Senses of the Future. Conflicting Ideas of the Future in the World Today*. De Gruyter.
- Dürbeck, Gabriele (2019a). Narratives of the Anthropocene in Interdisciplinary Perspective. In Gina Comos & Caroline Rosenthal (eds.), *Anglophone Literature and Culture in the Anthropocene* (pp. 23–45). Cambridge Scholars Publishing.
- Dürbeck, Gabriele (2019b). Narratives of the Anthropocene. From the perspective of postcolonial ecocriticism and environmental humanities. In Monika Albrecht (Ed.), *Postcolonialism Cross-Examined: Multidirectional Perspectives on Imperial and Colonial Pasts and the Neocolonial Present* (pp. 271–288). Routledge. <https://doi.org/10.4324/9780367222543-19>
- Facer, Keri (2024). Educating the temporal imagination: Teaching time for justice in a warming world. *Educational Philosophy and Theory*. <https://doi.org/10.1080/00131857.2024.2378086>
- Facer, Keri & Sprague, Terra (2024). Education's futures and futures in education. In Roberto Poli (ed.), *Handbook of Futures Studies* (pp. 157–169). Edward Elgar Publishing.
- Facer, Keri & Sriprakash, Arathi (2021). Provincialising Futures Literacy: A Caution against Codification. *Futures*, vol. 133, 102807. <https://doi.org/10.1016/j.futures.2021.102807>
- Gidley, Jennifer (2017). *The Future. A Very Short Introduction*. Oxford University Press.
- Glăveanu, Vlad P. & Beghetto, Ronald A. (2022). Pedagogies of the Possible. In V.P. Glăveanu (ed.), *The Palgrave Encyclopedia of the Possible* (pp. 982–988). Palgrave Macmillan.
- Hamann, Alexandra et al. (2017). *Mehlwurmburger oder vegane Eier? Essen im Anthropozän. Jahrgangsstufen 9 und 10 und Sekundarstufe II. Lehrerhandreichung zum Sachcomic Die Anthropozän-Küche. Matooke, Bienenstich und eine Prise Phosphor – in zehn Speisen um die Welt. mint wissen*. <http://anthropocene-kitchen.com/teachers-handout-lehrerhandreichung/>
- Heise, Ursula K., Christensen, Jon & Niemann, Michelle (eds.) (2017). *The Routledge Companion to the Environmental Humanities*.
- Horn, Eva & Berghaller, Hannes (2020). *The Anthropocene. Key Issues for the Humanities*. Routledge.
- Jungk, Robert & Müllert, Norbert R. (1981). *Zukunftswerkstätten*. Hoffmann u. Campe.
- Leavy, Patricia (2021). *Method Meets Art: Arts-Based Research Practice*. Third Edition. Guilford Press.

- Leinfelder, Reinhold et al. (2017). Introduction to the Symposiums Proceedings. In Eadem (eds.), *Science meets Comics. Proceedings of the Symposium on Communicating and Designing the Future of Food in the Anthropocene* (pp. 5–8). Christian A. Bachmann Verlag.
<https://mintwissen.com/science-meets-comics>
- Meireis, Torsten & Rippl, Gabriele (2019). *Cultural Sustainability. Perspectives from the Humanities and Social Sciences*. Routledge. (Routledge Environmental Humanities)
- Meister, Jan Christoph (2014). Narratology. In Peter Hühn et al. (eds.), *Handbook of Narratology* (2nd ed., pp. 725–749). De Gruyter.
- Miller, Riel (2018). Futures Literacy Laboratories (FLL) in practice: an overview of key design and implementation issues. In Riel Miller (ed.), *Transforming the Future. Anticipation in the 21st Century* (pp. 95–109). Routledge/UNESCO.
- Peschl, Markus F. & Fundneider, Thomas (2023). Co-Becoming: How to Shape Desirable Futures in Highly Uncertain Times. On learning and the role of futures literacy in a VUCA world. In Christian Kohlert (Hrsg./ed.), *Die menschliche (Hoch)schule – Human(e) Education* (pp. 19–50). Springer.
- Petrucci, Elena & Brunori, Francesco (2024). The future as an educational instrument: FutLabs in the classroom. In Roberto Poli (ed.), *Handbook of Futures Studies* (pp. 170–183). Edward Elgar Publishing.
- Poli, Roberto (ed.). (2019). *Handbook of Anticipation. Theoretical and applied aspects of the use of future in decision making*. Springer International Publishing.
- Prince, Gerald (2019). Narratology. In *Oxford Research Encyclopedia of Literature*. Retrieved 9 July 2025, from <https://oxfordre-com.uaccess.univie.ac.at/literature/view/10.1093/acrefore/9780190201098.001.0001/acrefore-9780190201098-e-996>
- Probst, Simon (2023). Planetarischer Möglichkeitssinn. *Futures Literacy* für das Leben auf einer sich verwandelnden Erde. In Carmen Sippl, Erwin Rauscher & Gerhard Brandhofer (Hrsg.), *Futures Literacy. Zukunft lernen und lehren* (S. 369–377). Studienverlag. (Pädagogik für Niederösterreich, 13) <https://doi.org/10.53349/oa.2022.a2.170>
- Probst, Simon (2024). *Sinn in der Klimakrise. Über eine planetare Literaturtheorie*. Transcript. (Literary Ecologies) <https://doi.org/10.14361/9783839474259>
- Rosa, Hartmut (2019). *Resonance. A Sociology of Our Relationship to the World*. Translated by James C. Wagner. Polity Press.
- Schmidt, Siegfried J. (2008). Telling Stories about Storytelling. In Yvonne Gächter et al. (eds.), *Erzählen – Reflexionen im Zeitalter der Digitalisierung | Storytelling – Reflections in the Age of Digitalization* (pp. 17–28). Innsbruck university press.
- Singer-Brodowski, Mandy & Taigel, Janina (2020). Transformatives Lernen im Zeitalter des Anthropozäns. In Carmen Sippl, Erwin Rauscher & Martin Scheuch (eds.), *Das Anthropozän lernen und lehren* (S. 357–368). Studienverlag. (Pädagogik für Niederösterreich, 9) <https://doi.org/10.53349/oa.2022.a2.130>
- Sippl, Carmen (2023a). Anthropozän – zwischen Antizipation und Apokalypse. Zukünftebildung in der Primarstufe mit dem Bilderbuch. In Carmen Sippl, Erwin Rauscher & Gerhard Brandhofer (Hrsg.), *Futures Literacy. Zukunft lernen und lehren* (S. 207–223). Studienverlag. (Pädagogik für Niederösterreich, 13) <https://doi.org/10.53349/oa.2022.a2.170>

- Sippl, Carmen (2023b). CNL & Cultural Sustainability. In Carmen Sippl & Berbeli Wanning (Hrsg./Eds.), *CultureNature Literacy (CNL). Schlüsselkompetenzen für Zukunftsgestaltung im Anthropozän. Ein Handbuch für den Theorie-Praxis-Transfer in Schule und Hochschule. / Key competences for shaping the future in the Anthropocene. A manual for theory-practice transfer in schools and universities* (pp. 23-32). Pädagogische Hochschule Niederösterreich/University College of Teacher Education Lower Austria. <https://doi.org/10.53349/oa.2023.a1.210>
- Sippl, Carmen (2024). Reading for the Future. In *Method mosaic of the UNESCO Chair in Learning and Teaching Futures Literacy in the Anthropocene*, <https://www.ph-noe.ac.at/unesco-chair>
- Sippl, Carmen & Capatu, Ioana (Hrsg./eds.) (2025). *CultureNature Literacy (CNL). Literarische Impulstexte zur Reflexion der Mensch-Natur-Beziehungen in Schule und Hochschule. // Literary reader for reflecting on the humankind-nature relationship in schools and universities*. Baden: Pädagogische Hochschule Niederösterreich/University College of Teacher Education Lower Austria. <https://doi.org/10.53349/oa.2025.a2.190>
- Sippl, Carmen, Tengler, Karin, Capatu, Ioana, Krebs, Rita & Wittmann, Astrid (2025, in print). Die Zukunfts des Bodens. Eine Pilotstudie zur Förderung von Zukünftedenken in der Primarstufe im methodischen Format der Zukunftswerkstatt. R&E-Source 12, 4 (this volume). (S. 93–116). <https://doi.org/10.53349/re-source.32025.i4.a1485>
- Sippl, Carmen & Wanning, Berbeli (2025). Lesen für *CultureNature Literacy*. Leitfaden für die anthropozäne Lektüre von CNL-Narrationen. In *CultureNature Literacy für den Unterricht. Next-Practice-Beispiele für Schule und Hochschule*, <https://cnl.ph-noe.ac.at/projektvorhaben/lernszenarien> resp. <https://cnl.ph-noe.ac.at/cnl-narrationen>
- UNESCO (n.d). *Futures literacy & foresight*. <https://www.unesco.org/en/futures-literacy/about>
- UNESCO/Common Worlds Research Collective (2020). *Learning to become with the world: Education for future survival*. UNESCO. (Background paper for the Futures of Education initiative, 26). <https://unesdoc.unesco.org/ark:/48223/pf0000374032.locale=en>
- UNESCO (2021). *Reimagining our Futures Together. A new social contract for education. Report from the International Commission on the Futures of Education*. UNESCO. <https://doi.org/10.54675/ASRB4722>
- UNESCO (2024). *Education and Climate Change. Learning to Act for People and Planet. Global Education Monitoring Report*. UNESCO. <https://doi.org/10.54676/GVXA4765>
- UNESCO/PMU (2023). *Futures literacy laboratory playbook: an essentials guide for co-designing a lab to explore how and why we anticipate*. <https://doi.org/10.54678/KSWO4445>
- Wanning, Berbeli & Sippl, Carmen (2023). Conclusion. *CultureNature Literacy: Key competences for shaping the future in the Anthropocene*. In Carmen Sippl & Berbeli Wanning (Hrsg./Eds.), *CultureNature Literacy (CNL). Schlüsselkompetenzen für Zukunftsgestaltung im Anthropozän. Ein Handbuch für den Theorie-Praxis-Transfer in Schule und Hochschule. / Key competences for shaping the future in the Anthropocene. A manual for theory-practice transfer in schools and universities* (pp. 247–253). Pädagogische Hochschule Niederösterreich/University College of Teacher Education Lower Austria. <https://doi.org/10.53349/oa.2023.a1.210>
- Weik von Mossner, Alexa (2018). Environmental Narrative, Embodiment, and Emotion. In Hubert Zapf (ed.), *Handbook of Ecocriticism and Cultural Ecology* (pp. 534–550). De Gruyter.
- Wallenhorst, Nathanaël & Wulf, Christoph (eds.) (2024). *Handbook of the Anthropocene. Humans between Heritage and Future*. Springer. <https://doi.org/10.1007/978-3-031-25910-4>

Zalasiewicz, Jan et al. (2024). The meaning of the Anthropocene: why it matters even without a formal geological definition. *Nature* 632, 980–984. <https://doi.org/10.1038/d41586-024-02712-y>

Zapf, Hubert (2016). *Literature as Cultural Ecology. Sustainable Texts*. Bloomsbury.

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² <https://www.ph-noe.ac.at/unesco-chair>

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⁴ For a summary of the development of the Future Workshop and a training programme, see the website of the Robert Jungk Library in Salzburg/Austria: <https://jungk-bibliothek.org/future-workshops/>

⁵ <https://cnl.ph-noe.ac.at/> – All CNL narrations (in English, Estonian, German, Hungarian, Rumanian, Russian, Slovenian, Ukrainian languages) are available in open access in the *CNL reader* (Sippl & Capatu, 2025) on <https://cnl.ph-noe.ac.at/cnl-narrationen>.

⁶ In another class (led by Ioana Capatu) performances were created on the basis of other CNL stories by Melanie Laibl, a television talkshow and the meeting of an animal self-help group.

⁷ The critical friend's feedback was given in alignment with the CNL project's quality criteria: sustainability, inclusion, digitality, target group correspondance, and consideration of SDGs. Each of the CNL learning scenarios (available in open access on <https://cnl.ph-noe.ac.at/en/cnl-for-teaching>) is designed in compliance with the project's quality criteria.

⁸ All examples and CNL learning scenarios are available in open access on <https://cnl.ph-noe.ac.at/cnl-narrationen>