Storytelling

Cortes Arevalo, Juliette; Adamson, Kathryn; Fantini, Emanuele; Verbrugge, Laura; Postma, Roland

DOI
10.14361/9783839463475-037

Publication date
2023

Document Version
Final published version

Published in
Handbook Transdisciplinary Learning

Citation (APA)
Cortes Arevalo, J., Adamson, K., Fantini, E., Verbrugge, L., & Postma, R. (2023). Storytelling. In *Handbook Transdisciplinary Learning* (pp. 359-369). Transcript Verlag. https://doi.org/10.14361/9783839463475-037

Important note
To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Storytelling

Juliette Cortes Arevalo, Kathryn Adamson, Emanuele Fantini, Laura Verbrugge, and Roland Postma

Definition

All animals and plants communicate in one way or another. However, creating and telling stories to make sense of the world and one's experiences are uniquely human traits (Boyd 2018). The etymology of the word story relates to the Greek εἶδος (eîdos), which means the idea, form, or shape of things (Martin and Miller 1988). Through stories, one makes sense of past events and creates new worlds and possibilities for ourselves and others (Boyd et al. 2020). Storytelling is a subjective and engaging way of referring to an event or series of events through multisensory mediums such as audial, verbal, non-verbal, visual, and textual communication (Anderson 2010).

One can narrate, interact with, and exchange stories in various ways and from at least three perspectives: (1) the perspective of the *storyteller(s)* who, through their accounts, share knowledge, meaning, and emotions so that others can care, remember, retell, and share their story; (2) the perspective of the *audience* that may or may not be present at the time of the performance but perceives and reacts to the story(tellers); (3) the wider perspective of the *context* in which the story takes place is interpreted and influenced by the exchanged stories (Murray and Sools 2015).

Collaborative storytelling refers to group efforts to create, tell, and share stories, including but not limited to the story audience (Goldstein et al. 2015). Moreover, digital storytelling incorporates the technology of various multimedia modes such as graphics, audio, texts, videos, and animations to enhance the power of storytelling and ensure that the story is accessible through multiple dissemination channels (Bee Choo et al. 2020). Many different types of communication or texts can be analyzed as narratives or stories, including facial expressions, gestures, dance, and sound effects related to cultural, art-based, and role-playing forms of storytelling such as films, theater, photography, music, and games (Blackburn Miller 2020; Wang et al. 2017).

A *story* typically refers to a collection of events with a beginning, a middle, and an end, where something happens and changes the protagonist. *Narratives* are the

means to describe such events, which as a whole, can also be referred to as a story. The narrative term also refers to the general argument about an issue and a text style (Moezzi et al. 2017). Narrative research analyzes the story's content, structure, and function (Murray and Sools 2015). In contrast, non-narrative styles refer to a collection of facts, typically told from an impersonal perspective, to build a position from referenced sources (Avraamidou and Osborne 2009). In both cases, stories and facts are not mutually exclusive categories. Stories are a form of data collection, analysis, and reporting that complement traditional sources and research methods (Rhodes and Brown 2005).

Any type of story includes the following six elements (Green et al. 2018): (1) characters and protagonist: usually humans, but possibly another animate actor, object, practice, or idea; (2) acts or events: typically performed by, or happening to, the protagonist through the story sequence; (3) setting: generic world, specific locality, or non-physical environment where the story takes place; (4) plot: sequence of events in which the protagonist pursues a goal that may include unexpected twists to help the audience experience the story's drama or emotion; (5) conflict: tension, problem, or urgent question that needs to be solved; and (6) outcome: the resolution of the protagonist's pursuit. In addition, storytelling's interactive,

Figure 1. Key questions to start with storytelling in research or education (Source: the authors).

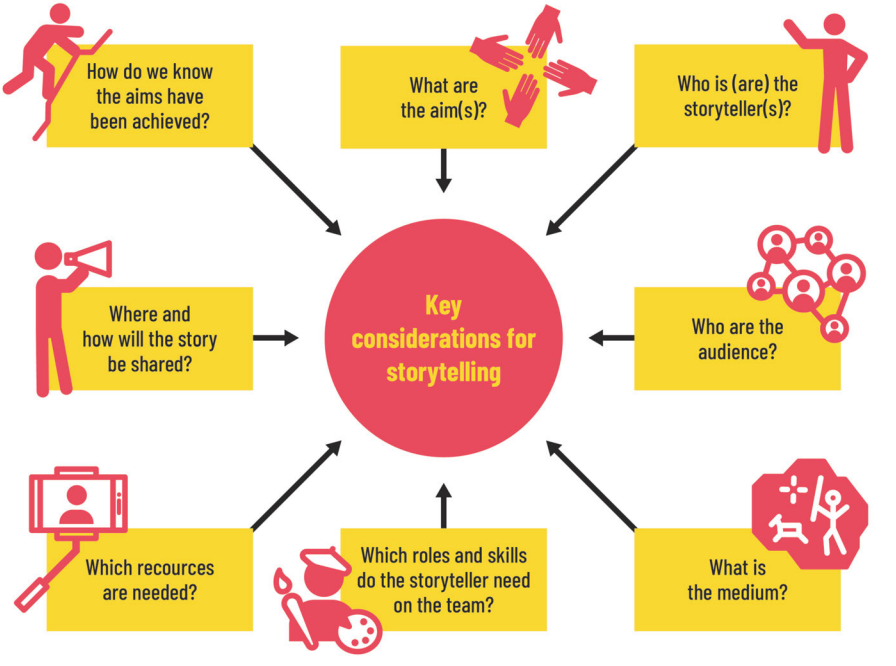

Table 1. Key example considerations based on experiences from education and research

Key questions	Examples	References
What are the aims?	Promote reflection, achieve empathy and identification, gather knowledge, change behavior, and challenge social constructs.	(Grimaldi et al. 2013; Rhodes and Brown 2005)
Who is (are) the storyteller(s)?	Perspective from which the story is told – the actual teller or intermediary who makes the performance.	(Moezzi et al. 2017; Murray and Sools 2015)
Who are the audience?	Individuals or groups for which the story is crafted include citizens, students, policymakers, academics, etc. Every audience group has its interest and knowledge levels concerning the story content.	(Reinermann et al. 2014; Stewart and Nield 2013)
What is the medium?	Storytelling mediums include discussion forums, digital media, books, podcasts, visual art, songs, movies, poetry, and theatre. Each medium has its characteristics and requirements regarding form, content, and length.	(Wang et al. 2017)
Which roles and skills does the storyteller need on the team?	Roles vary according to the influence of the team member on the storytelling, such as editor, advisor, designer, audience representative, etc. Relevant team member skills include imagination, improvisation, and creative and technical skills in writing, performing, or visual arts. Technical knowledge in the expertise domain of the story content. Knowledge about and relations with the intended audience.	(Blackburn Miller 2020; Goldstein et al. 2015)
Which resources are needed?	Multimedia equipment (cameras, microphones), editing software, online application, meeting space, art supplies, etc., according to the chosen medium.	(Wang and Zhan 2010)
Where and how will the story be shared?	Sometimes the storytelling medium and the channel of dissemination coincide, but not necessarily. Where and how the story will be shared limits the medium choices and story considerations.	(Blackburn Miller 2020)
How do we know the aims have been achieved?	Audience's feedback (expressions, responses, and actions). Effects such as enhanced knowledge, changed attitudes, preferences, and behavior are measured through audience questionnaires, surveys, observations, and tracking into short- or long-term studies.	(Wang et al. 2018)

persuasive, and living essence typically requires a strategic design to combine all elements into a "good story". Figure 1 includes key questions or considerations for effective storytelling, for which Table 1 gives some examples. To interact with the audience, the storyteller should have specific aims for which story elements are carefully chosen. Story creation is not linear, and choices may be revisited several times. Although often overlooked, the storytelling practice improves when measuring the extent to which the intended aims are achieved. Moreover, a responsible practice requires the critical and reflective recognition of the desired and undesired effects, either as a direct or indirect result of the storytelling.

Background

Stories have been part of everyday life for millennia via mainly oral and visual traditions. Through storytelling, individuals and communities have historically entertained, taught cultural norms, and built shared perspectives. Today's global communication happens via email, blogs, social networking, and video-sharing sites. Storytelling takes place in all cultures and a variety of forms. The storytelling research and practice include anthropology, philosophy, psychology, linguistics, history, library science, art, and media studies, among many others (Anderson 2010).

Modern storytelling has proliferated due to three important developments. After the invention of printing, printed stories became widely available. Subsequently, mass media such as the press, cinema, radio, and television have made stories accessible and marketable to many people. More recently, with computers and the internet, storytelling incorporated multiple media, including social media, so digital stories became easier to create and share, especially with more affordable technologies.

Storytelling has countless applications at the individual, community, and organizational levels and is used in the realms of education (Wang and Zhan 2010), research (Murray and Sools 2015), and innovation among many other applications (Sergeeva and Trifilova 2018). As a communication strategy, storytelling successfully leverages the intrinsic temporality, plurality, reflexivity, and subjectivity of stories for (Rhodes and Brown 2005): (1) sense-making, (2) communication, (3) identity and identification, (4) politics and power, and (5) learning and change. Stories are a means of recounting, interpreting, and making sense of events, individually or collectively, to position ourselves and others (McVee and Boyd 2015). Stories are effective by tapping into the emotions of personal experiences to mentally transport the audience into the storyteller's world (Morris et al. 2019). Thereby, stories help overcome the perceived abstract, often distant nature of knowledge, allowing people with different backgrounds to relate to each other's identity and understanding of the world (Bamberg and Georgakopoulou 2008).

The compelling characteristic of stories can also be used to grab attention and (political) support without much debate (Rhodes and Brown 2005). Concerning learning, story finding, telling, expanding, processing, and reconstructing encourage interactive learning about the actors, places, and events of an unfolding plot to reflect and decide on the role one wants to play. Importantly, imagination encourages creativity instead of merely tapping into preexisting stories to collaboratively (re)frame the past, present, and future (McDrury and Alterio 2003; van Hulst, 2012). In today's society, education and research increasingly require facilitating transformative and sustainability-oriented learning to counteract environmental problems and injustice (Lotz-Sisitka et al. 2015). Stories can elucidate desired futures (and fears) and help to analyze such scenarios to mobilize and empower transformation (Inayatullah 1998).

Transdisciplinary learning implies the inclusive, reflective, and active engagement and dialogue between multiple societal actors. These actors, as storytellers or audiences, are not limited to students, teachers, and researchers but include representatives of different types of knowledge. Stories can effectively promote dialogue and bridge across disciplines, societal demographics, and geographic scales and are, therefore, a powerful tool for transdisciplinary learning (Blackburn Miller 2020).

Debate and criticism

While storytelling can effectively communicate with, influence, and engage different audiences, ethical concerns are related to subjectivity, misuse, and responsibility. These concerns arise from moral principles that guide people in taking responsibility for their choices and actions based on how they may affect others (Rosenstand 2017).

First, stories are a subjective way to produce and shape reality. Especially when compared to scientific ways of working, storytelling uses literary and persuasive techniques rather than being limited to evidence-based claims and facts. Whether following a scientific method or not, stories and facts result from a simplification of the complexity of reality. This simplification could propagate stereotypes and preserve power imbalances by, for example, only considering the perspective of dominant or supportive groups (Solórzano and Yosso 2002). As a counterargument, storytelling can give voice to those who have previously been silenced and thus plays an important role in decolonization movements, among other movements to counteract power imbalances in research and education (Cunsolo Willox et al. 2013; Petheram et al. 2015; Zavala 2016).

Second, because the power of storytelling is so great, stories can easily be misused, for example to spread misinformation. Stories could mislead people when

they believe the content without scrutiny. The spread of misinformation to mislead people is becoming more common in the current political and digital media environment, leading to distrust and misperceptions of scientific knowledge in society (Iyengar and Massey 2019). When used appropriately, fictive stories can assist in envisioning possible futures and establishing community engagement (Riedlinger et al. 2019). However, there are also words of caution as researchers, policymakers, and other audiences may fail to acknowledge the assumptions and simplifications underpinning their storytelling (Twyman et al. 2011). Misuse and misinformation require researchers to proactively develop strategies in their practice and communication to restore societal trust in science (Cardew 2020).

A critical stance is thus needed to engage in ethical storytelling as a storyteller or audience. When evaluating what makes a "good story", one should reflect on the intended purpose or outcome and consider how it may affect others. With this in mind, carefully plan and facilitate the storytelling process and consider the skills required of the storytelling team and the audience. While communication is indispensable in almost every profession, storytelling skills have received little attention in higher education. Developing such a skillset comes with its share of discomfort, as it takes time for researchers to "unlearn" trades of using jargon or focusing on methods (Green et al. 2018). Instead, more attention to critical thinking skills in education can aid the identification of effective characteristics of ethical storytelling and scientific practice (Glisson 2019).

Current forms of implementation in higher education

The following examples from around the globe are selected from a growing body of literature to illustrate the many forms of storytelling focusing on environmental applications. Many other relevant examples exist online or in community spaces but are not frequently documented.

In South Africa, Loots (2021) explores the decolonization of higher education dance curricula to transcend prescribed "western/northern" teaching models and incorporate locally situated dance styles. By combining verbal and physical dialogue, students can effectively express and explore personal narratives of race, gender, and health issues using culturally anchored dance styles. Similarly, visual and oral storytelling has been noted as a powerful, cost-effective tool for curriculum decolonization in the African higher education system by integrating global perspectives and local indigenous narratives to interrogate social injustice and marginalization and address existing social hierarchies (Mampane et al. 2018). Working across disciplines, visual storytelling was used to unite Australian indigenous communities and researchers to co-create scientific knowledge to inform policymaking. During workshops and interviews, photographs, videos, diagrams,

and oral accounts were collated in order to better understand local perspectives on marine food dependence, climate change, and coastal adaptation (Petheram et al. 2015). Moreover, collaborative storytelling and theatrical practice helped researchers and local communities to co-explore and reimagine the effects on the lives of people in the USA and the United Kingdom of the projected results of climate change (Liguori et al. 2021; Shenk and Gutowski 2022) and to explore the understanding of air pollution in Kenya (West et al. 2021).

Adamson et al. (2021) use storytelling across generations to facilitate communication between researchers and schoolchildren from varied cultural and socioeconomic backgrounds in the United Kingdom. Follow-up evaluation showed that personal narratives and imaginative stories proved highly effective for (1) putting a "human face" to abstract or complex scientific ideas; (2) developing common ground between researchers and audiences via shared language and experience; and (3) using co-creation to remove perceived power imbalances. Two examples from the Netherlands use storytelling across geographical, disciplinary, and professional boundaries. The first teaches video storytelling to masters students worldwide (Fantini 2019), and the second develops StoryMaps collaboratively to communicate research outputs to practice (Cortes Arevalo et al. 2020; Kok et al. 2022). Both projects demonstrate that storytelling enhances transdisciplinary learning when students/researchers increase their understanding: (1) how to structure and illustrate a story using the most appropriate resources (style, characters, images, sounds, etc.); (2) storytelling as universal but not uniform practice. Clear consideration of the audience, message, and format ensures a balance between local requirements while drawing inspiration from global, mainstream communication platforms; (3) visual storytelling as an iterative process and collaborative craft. The storytelling team takes responsibility for their role (as editor, narrator, cameraperson, audio, sound engineer, etc.) while simultaneously negotiating their choices with team members and audiences with different backgrounds, understandings, and preferences.

While short-term storytelling effects, such as improving the engagement of the variety of actors relevant to transdisciplinary learning, are more frequently studied (Smeda et al. 2014), a key challenge for research and education is to measure how stories are directly or indirectly used by the audience and their long-term efficacy for behavioral change (Wang et al. 2018). One of the few long-term studies is Cordero et al. (2020), who surveyed pro-environmental decisions of university graduates in the USA after they completed a university sustainability course. The use of personal narratives embedded in the course highlights the relevance of environmental issues, meaning that students considerably reduced their carbon emissions long after course completion.

To conclude, by acting as storytellers, the researchers or students can acknowledge the subjectivity of their stories and reflect on the stereotypes and dominant

narratives they can reproduce. They can identify how to better care for and communicate trustingly with audiences in multiple societal groups. As a universal but not uniform phenomenon, storytelling can facilitate communication across boundaries of knowledge, power, and identities. At the same time, storytelling remains situated in specific cultural contexts and traditions, making it relevant and suitable to address local specificities. More and better documentation of current and future storytelling applications within higher education and research is needed to study the effects of storytelling. Finally, responsibly exploring different storytelling methods and types help to value both the process and the output of transdisciplinary learning.

References

Adamson, Kathryn, Timothy Lane, Kris De Meyer, Matthew Carney, Leonora Oppenheim, Sina Panitz, Hannah Price, Emma Smith, and Gregory Watson. 2021. Enhancing Physical geography schools outreach: Insights from co-production and storytelling narratives. *Progress in Physical Geography: Earth and Environment* 45 (6): 907–30.

Anderson, Katie Elson. 2010. Chapter 28. Storytelling. In *21st century anthropology: A reference handbook*, ed. James Birx, 277–86. Thousand Oaks: Sage.

Avraamidou, Lucy, and Jonathan Osborne. 2009. The role of narrative in communicating science. *International Journal of Science Education* 31 (12): 1683–707.

Bamberg, Michael, and Alexandra Georgakopoulou. 2008. Small stories as a new perspective in narrative and identity analysis. *Text & Talk* 28 (3): 377–96.

Bee Choo, Yee, Tina Abdullah, and Abdullah Mohd Nawi. 2020. Digital storytelling vs. oral storytelling: An analysis of the art of telling stories now and then. *Universal Journal of Educational Research* 8 (May): 46–50.

Blackburn Miller, Jennifer. 2020. Transformative learning and the arts: A literature review. *Journal of Transformative Education* 18 (4): 338–55.

Boyd, Brian. 2018. The evolution of stories: From mimesis to language, from fact to fiction. *WIREs Cognitive Science* 9 (1): e1444.

Boyd, Ryan L., Kate G. Blackburn, and James W. Pennebaker. 2020. The narrative arc: Revealing core narrative structures through text analysis. *Science Advances* 6 (32): eaba2196.

Cardew, Gail. 2020. People will not trust unkind science. *Nature* 578 (7793): 9.

Cordero, Eugene, Diana Centeno, and Anne Marie Todd. 2020. The role of climate change education on individual lifetime carbon emissions. *PLOS ONE* 15 (2): e0206266.

Cortes Arevalo, Juliette, Laura Verbrugge, Anneke Sools, Marcela Brugnach, Rik Wolterink, Pepijn van Denderen, Jasper Candel, and Suzanne Hulscher. 2020.

Storylines for practice: A visual storytelling approach to strengthen the science–practice interface. *Sustainability Science* 15: 1013–32.

Cunsolo Willox, Ashlee, Sherilee Harper, and Victoria Edge. 2013. Storytelling in a digital age: Digital storytelling as an emerging narrative method for preserving and promoting indigenous oral wisdom. *Qualitative Research* 13 (2): 127–47.

Fantini, Emanuele. 2019. Just like a movie: Teaching visual storytelling on water. *J-READING Journal of Research and Didactics in Geography* 2: 63-70.

Glisson, Lane. 2019. Breaking the spin cycle: Teaching complexity in the age of fake news. P*ortal: Libraries and the Academy* 19 (3): 461–84.

Goldstein, Bruce Evan, Anne Taufen Wessells, Raul Lejano, and William Butler. 2015. Narrating resilience: Transforming urban systems through collaborative storytelling. *Urban Studies* 52 (7): 1285–303.

Green, Stephanie, Kirsten Grorud-Colvert, and Heather Mannix. 2018. Uniting science and stories: Perspectives on the value of storytelling for communicating science. *FACETS*, 3(1): 164-173..

Grimaldi, Silvia, Steven Fokkinga, and Ioana Ocnarescu. 2013. Narratives in design: A study of the types, applications, and functions of narratives in design practice. In *Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces* – DPPI '13, 201. Newcastle upon Tyne: ACM.

Inayatullah, Sohail. 1998. Causal layered analysis: Poststructuralism as method. *Futures* 30 (8): 815–29.

Iyengar, Shanto, and Douglas Massey. 2019. Scientific communication in a post-truth society. *Proceedings of the National Academy of Sciences* 116 (16): 7656–61.

Kok, Matthijs, Juliette Cortes Arevalo, and Martijn Vos. 2022. *Towards improved flood defences*. Delft: TU Delft OPEN Books.

Liguori, Antonia, Lindsey McEwen, James Blake, and Michael Wilson. 2021. Towards "creative participatory science": Exploring future scenarios through specialist drought science and community storytelling. *Frontiers in Environmental Science* 8 (February): 589856.

Loots, Lliane. 2021. Decolonising dance pedagogy? Ruminations on contemporary dance training and teaching in South Africa set against the specters of colonisation and apartheid. *Theatre, Dance and Performance Training* 12 (2): 184–97.

Lotz-Sisitka, Heila, Arjen Wals, David Kronlid, and Dylan McGarry. 2015. Transformative, transgressive social learning: Rethinking higher education pedagogy in times of systemic global dysfunction. *Current Opinion in Environmental Sustainability, Sustainability Science*, 16 (October): 73–80.

Mampane, Ruth, Margaret Omidire, and Folake Ruth Aluko. 2018. Decolonising higher education in Africa: Arriving at a glocal solution. *South African Journal of Education* 38 (4):1-9.

Martin, Kathleen, and Etta Miller. 1988. Storytelling and science. *Language Arts* 65 (3): 255–59.

McDrury, Janice, and Maxine Alterio. 2003. Chapter 7. Expanding stories through reflection. In *Learning through Storytelling Higher Education: Using Reflection & Experience to Improve Learning*, 1st edition. London: Routledge, 105–120.

McVee, Mary, and Fenice Boyd. 2015. *Exploring diversity through multimodality, narrative, and dialogue: A framework for teacher reflection*. New York: Routledge.

Moezzi, Mithra, Kathryn Janda, and Sea Rotmann. 2017. Using stories, narratives, and storytelling in energy and climate change research. *Energy Research & Social Science* 31 (September): 1–10.

Morris, Brandi, Polymeros Chrysochou, Jacob Dalgaard Christensen, Jacob Orquin, Jorge Barraza, Paul Zak, and Panagiotis Mitkidis. 2019. Stories vs. facts: Triggering emotion and action-taking on climate change. *Climatic Change* 154 (1): 19–36.

Murray, Michael, and Anneke Sools. 2015. Chapter 9. Narrative research. In *Qualitative research in clinical and health psychology*, eds. Poul. Rohleder and Antonia Lyons, 133–54. London: Palgrave Macmillan.

Petheram, Lisa, Natasha Stacey, and Ann Fleming. 2015. Future sea changes: Indigenous women's preferences for adaptation to climate change on South Goulburn Island, Northern Territory (Australia). *Climate and Development* 7 (4): 339–52.

Reinermann, Julia-Lena, Sarah Lubjuhn, Martine Bouman, and Arvind Singhal. 2014. Entertainment-education: Storytelling for the greater, greener good. *International Journal of Sustainable Development* 17 (2): 176–91.

Rhodes, Carl, and Andrew Brown. 2005. Narrative, organizations, and research. *International Journal of Management Reviews* 7 (3): 167–88.

Riedlinger, Michelle, Luisa Massarani, Marina Joubert, Ayelet Baram-Tsabari, Marta Entradas, and Jennifer Metcalfe. 2019. Telling stories in science communication: Case studies of scholar-practitioner collaboration. *Journal of Science Communication* 18 (5): N01.

Rosenstand, Nina. 2017. Chapter 1: Thinking about values. In *The moral of the story: An introduction to ethics*, 30. 8th edition. New York: McGraw Hill.

Sergeeva, Natalya, and Anna Trifilova. 2018. The role of storytelling in the innovation process. *Creativity and Innovation Management* 27 (4): 489–98.

Shenk, Linda, and William Gutowski Jr. 2022. Mind the gaps! Climate scientists should heed lessons in collaborative storytelling from William Shakespeare. *WIREs Climate Change* n/a (n/a): e783.

Smeda, Najat, Eva Dakich, and Nalin Sharda. 2014. The effectiveness of digital storytelling in the classrooms: A comprehensive study. *Smart Learning Environments* 1 (1): 6.

Solórzano, Daniel, and Tara Yosso. 2002. Critical race methodology: Counter-storytelling as an analytical framework for education research. *Qualitative Inquiry* 8 (1): 23–44.

Stewart, Iain, and Ted Nield. 2013. Earth stories: Context and narrative in the communication of popular geoscience. *Proceedings of the Geologists' Association, Geoconservation for Science and Society* 124 (4): 699–712.

Twyman, Chasca, Evan Fraser, Lindsay Stringer, Claire Quinn, Andrew Dougill, Todd Crane, and Susannah Sallu. 2011. Climate science, development practice, and policy interactions in dryland agroecological systems. *Ecology and Society* 16 (3): 14.

Van Hulst, Merlijn. 2012. Storytelling, a model of and a model for planning. *Planning Theory* 11 (3): 299–318.

Wang, Qingchun, Sara Coemans, Richard Siegesmund, and Karin Hannes. 2017. Arts-based methods in socially engaged research practice: A classification framework. *Art/Research International: A Transdisciplinary Journal* 2 (2): 5–39.

Wang, Shuyan, and Hong Zhan. 2010. Enhancing teaching and learning with digital storytelling. *International Journal of Information and Communication Technology Education (IJICTE)* 6 (2): 76–87.

Wang, Susie, Adam Corner, Daniel Chapman, and Ezra Markowitz. 2018. Public engagement with climate imagery in a changing digital landscape. *Wiley Interdisciplinary Reviews: Climate Change* 9 (2): e509.

West, Sarah, Cressida Bowyer, William Apondo, Patrick Büker, Steve Cinderby, Cindy Gray, Matthew Hahn, et al. 2021. Using a co-created transdisciplinary approach to explore the complexity of air pollution in informal settlements. *Humanities and Social Sciences Communications* 8 (1): 1–13.

Zavala, Miguel. 2016. Decolonial methodologies in education. In *Encyclopedia of educational philosophy and theory*, ed. Michael A. Peters, 1–6. Singapore: Springer.