

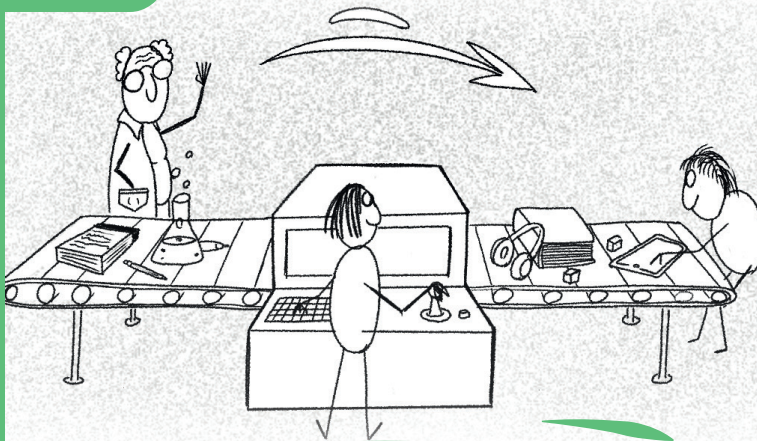


Science storytelling

A story based on science

This card deck is intended as a guide for communicating and designing science stories. A science story is a form of science translation and communication. The content of the story is thus based upon scientific research.

- Is it a science story (based on science)? Or is it a story about science?
- Do you have a scientific background? If not, can the scientificity of the story be verified?

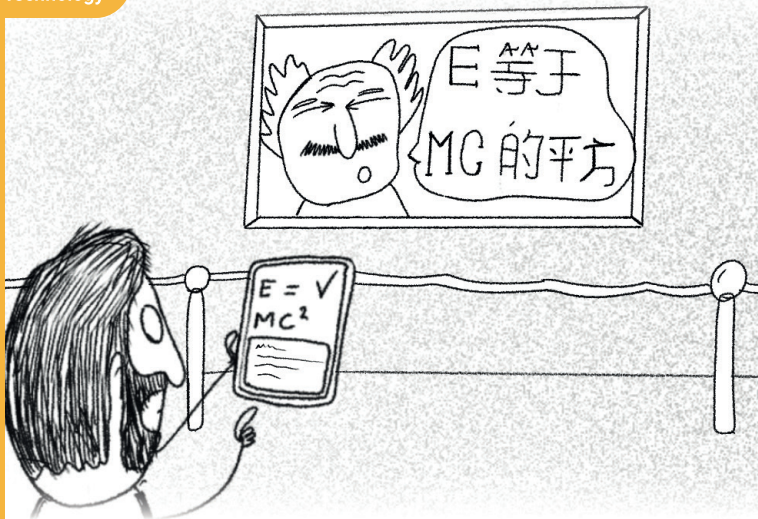


Communication

Presenting the science story

The communication of the science story can take many forms (written, spoken, performance, visualization, and so on). Interactive and creative ways to present the science story can be explored to connect and engage with the public. However, an ethical approach is crucial: the purpose of the communication should always be science. Propaganda or misusing science is not acceptable.

- How will the science story be communicated?
- Is the science story being presented in an engaging manner?
How will the science story connect with and captivate the public?
- Have you pursued communication that is ethically sound?

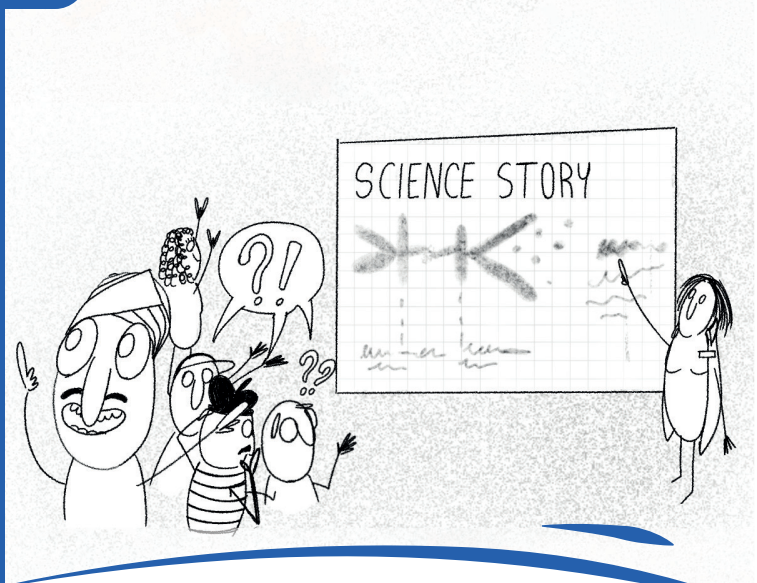


Technological tools (optional)

Consideration of meaningful tools

To present or support the presentation of the science story, a meaningful technological tool can be considered, such as a digital immersive app or an audio guide.

- What type of technological tool could support the science story?
- What is the goal of the tool? How can it be used, and what is its envisioned function?
- By whom will the tool be used? What are their needs?
- Is there sufficient budget? Is there technical support?



The impact of the science story

Connection with society

The science story will have an impact on the public. It will have an effect and an affect. It is recommended to anticipate the appropriate and timely measurement of its impact and consider giving people opportunities for feedback.

- How will the science story affect your public? What effect will it have?
- Will the impact be measured and, if so, how?
- Can people give feedback on the science story and/or its communication? How?



Science content

Relevance

the science story. Specify its contribution to science and society, and reflect upon the purpose of the science story. Also, make sure the story is appropriate in the specific communication context.

- How does the content of the science story contribute to science and society in a meaningful way?
- What is the purpose of the science story? What goal(s) do(es) the story have?
- Is the science story appropriate in the communication context?



Ethical standards

Scientific integrity

As science aims to provide trustworthy knowledge based on ethical standards and integrity, it follows that science storytelling must also adhere to the same ethical norms. Ethical norms ensure that science storytellers can be held accountable to the public. This accountability helps build public trust and support and promotes a variety of moral and social values, such as righteousness, respect, responsibility, and care.

- Are all contributors who co-created the science content acknowledged?
- How to avoid, anticipate, mitigate, and cope with potential harms and disadvantages?
- Do the people represented in the science story wish to remain anonymous / known?
How can their preferences and rights be respected?
- What voices are absent in the science story? Who has not been heard and / or included?
- Is the science story being brought to the public in a right, respectful, responsible, and careful manner?



Scientific foundations

Trustworthy and credible content

What makes the scientific content trustworthy and credible? The information behind the science story should be based on rigorous scientific inquiry. Rigor means no cherry picking of information (the content should be complete, nuanced, and with context provided), guarantees for the reproducibility or transferability of the research findings, and implies findings that have undergone scientific scrutiny (e.g., peer review, member check, reliability, validity checks, triangulation, thick description).

- Is it feasible to present the content of the story in a nuanced way, in accordance to scientific principles?
- Is the data situated and contextualized?
- Is the research reproducible or transferable?
- Have the research findings been reviewed by the scientific community?



Scientific foundations

Scientific communication

The communication of the science story should be accurate, clear, contextualized, and objective. Information about the scientific process should be present. The science story should contain references to the scientific sources, and the public should be able to retrieve these sources. To make the communication fully transparent, the background of the science storytellers and any funding and affiliations should be clear as well.

- Is there sufficient context provided to understand the science story?
- Is there information about the scientific process?
- Is the data accurate, clear, and understandable?
- Are the sources behind the science story mentioned and are they retrievable by the public?
- Is the communication transparent in terms of funding, positionality, and background of the science storyteller?



Translation of the science story

The narrative

The narration and framing of the science story should be done in a coherent and contextual manner. The message and its language should be clear and comprehensible for a broad public. Offering concrete examples can help make the story more understandable.

Leaving an 'openness' in the narrative can encourage reflexivity and critical thinking in the public.

- Is the narration of the story contextual and coherent?
- Is the science story comprehensible? Are there some concrete or practical examples to illustrate the story?
- Is the language clear and accessible?
- Is there an openness for critical thinking, questions, and opinions about the content of the science story? Is (self-) reflection encouraged?



Curating for a public

Engagement and interaction

Try to make the curation of the science story resonate with the targeted public by making it engaging.

Consider a curating strategy that invites the public to interact actively with the content. This includes possibilities for interaction not only between the public and the content but also between people in the public.

- Is the curation strategy likely to engage the public?
- Does the public engagement meet ethical requirements?
- Is interaction stimulated between the public and the content as well as between members of the public?



Nuancing the science story

Complexity translation

To remain truthful to the science itself, the translation of the story should be nuanced and truthful to the complexity of scientific knowledge. Therefore, it is recommended to 1) embrace multiple perspectives in the narration; 2) highlight the interconnectedness of knowledge; 3) allow an element of uncertainty; 4) introduce the scale and the focus of the research; and 5) illustrate path-dependency.

- Is there room for interpretive flexibility, i.e., is there room for multiple perspectives on the scientific phenomenon?
- Does the translation of the science story show the interconnectedness of knowledge and ideas?
- Is there an element of uncertainty in the translation of the science story?
- Is the scale and the focus of the research transparent in the story?
- Is the path-dependency transparent; i.e., does the story show the previous development(s) and earlier steps that the research builds upon?



Curation guidelines

Sensorial modes of meaning

Reflect upon a broad range of sensorial modes by accounting for the role of visuals, sounds, embodied sensations, experiences, and meanings. Consider which sensorial modes are relevant and how they are interconnected. As the senses of the public will be affected and effected, we must ensure that emotional manipulation is avoided.

- How do visuals shape the science story and its effect / affect?
- How will sound (e.g., speech, voice, tone, music, or sound effects) shape the science story and its impact?
- Will there be a gestural, kinetic, embodied, or haptic component in the curation?
Will body language or physicality play a role?
- How will the sensorial components relate and influence each other?



Curation guidelines

Style and design

Consider whether the style and design of the science story are meaningful. Look for an appropriate balance between scientific reporting and artistic freedom. Additionally, consider whether the style and design choices are effective and not distracting.

- Are the design, layout, and style aesthetically pleasing, attractive, effective, and vivid?
- Is there an appropriate balance between scientific reporting and artistic freedom?
- Are there elements in the curation that might be distracting from the science story?



Curation guidelines

The curation space

The physical, digital, and / or hybrid curation space comes with spatial and temporal aspects. Spatial choices, whether they concern physical and / or digital or hybrid environments, should be as inclusive and accessible as possible. Also, since curation spaces are often temporary, it should be considered how the science story can remain retrievable even after the closure of the curation space.

- Are the physical, digital, and / or hybrid properties of the curation space accessible to people with special needs?
- Is the physical, digital, and / or hybrid space effectively used?
- Will the science story be retrievable in some form after the closure of the curation space? How?

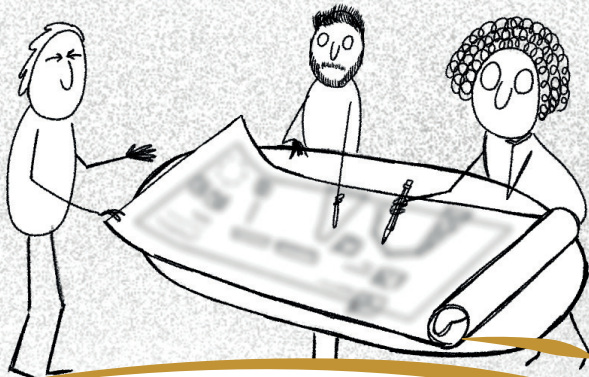


Tools to support the science story

Meaningful interactions

Technological devices can be a means to engage people with the science story, but they could also distract from the science story. To make sure technology is used in a meaningful way that is appropriate and supportive for the science story, the following criteria are key: connectedness, purpose, coherence (making sense), resonance (feeling and intuition), significance (value and importance), and participation.

- Will the public be able to connect, identify, and personally relate to the technological tool?
- Does the tool have a clear purpose? Does it make sense to use the tool?
- Can the tool be used intuitively or spontaneously?
- Does the tool add value to the science story?
- Does the tool enable the public to engage with the science story?



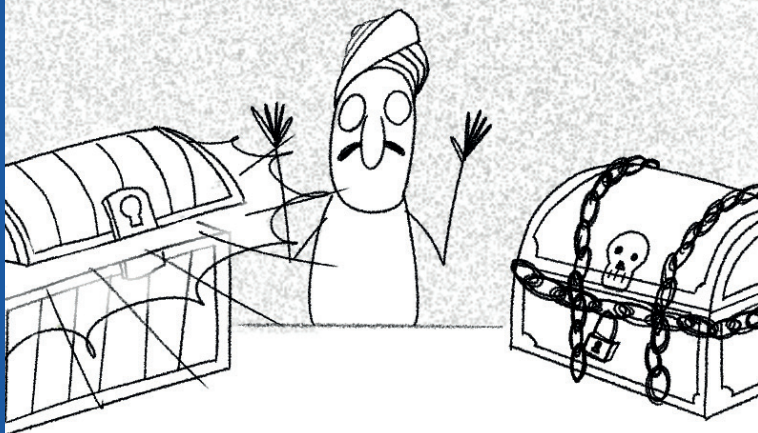
Tool guidelines

Technological translation and curation

Different standards and technical qualities exist that can support the design and development of curation tools. Relevant generic qualities include, for instance, personalization and identification with the tool, story support, attractiveness, interactivity and playability, and user-friendliness.

Below are additional questions for a more in-depth reflection:

- Which standard(s) exist(s) specific to the envisioned tool or tool category?
- Does the tool connect to existing norms and values? Does the tool connect to the everyday life of the public and local knowledge?
- Is the tool fun, practical, physically comfortable, and easy to use? Does the tool provide accessible and clear support?

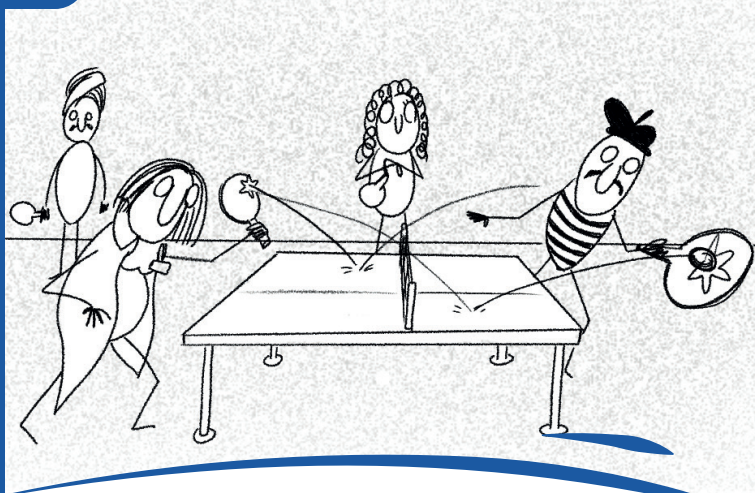


Relatability and responsibility

An ethical approach to impact

When people relate to a science story, it can evoke strong emotional responses. These responses can lead to reflection, critical thinking, empathy, and awareness. We must, however, remain careful that the evoking of emotions does not become a means to convince the public of certain ideologies or perspectives. Therefore, an ethical approach is crucial to create a respectful and safe environment for the public.

- Will the science story evoke strong emotions? How can a safe environment be created for the public?
- How can the science storytellers take responsibility for their impact?

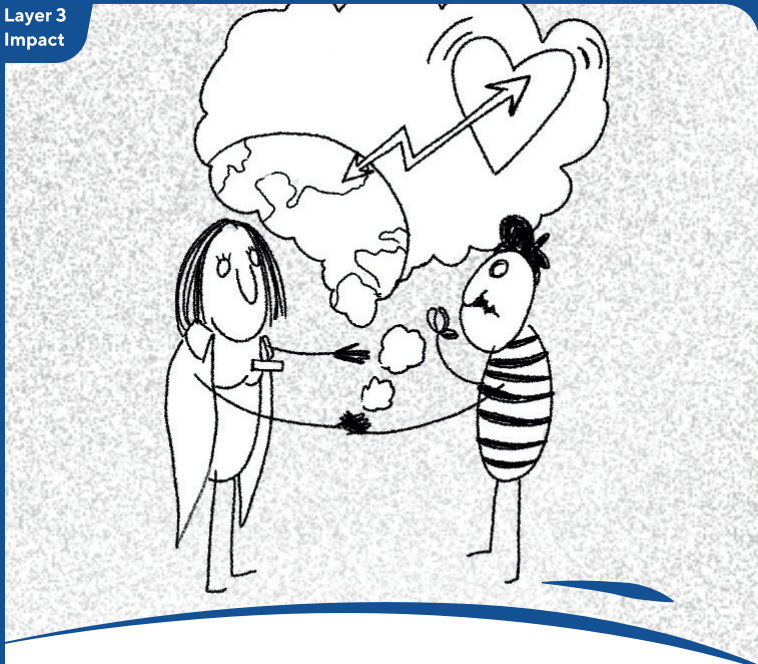


After the curation

The iterative process and follow-up

Curation design follows an iterative process, with several cycles of revisions from various stakeholders, including the public. If this iterative process meets the scientific standards, it can lead to scientific contributions or artistic advancements.

- How will the curation be critiqued and revised? Will there be space for revisions during and / or after the science story has been launched to the broader public?
- Can the public give feedback on the curation? If so, how will you capture their insights / knowledge? What will you do with it afterwards? How can you share this knowledge after the curation?



Impact indicators

Affect

We can identify three indicators to inquire into the affect that the science story has on its public: 1) emotional reactions, 2) attitudes of the public towards the curation design (and tools), and 3) attitudes of the public towards the science story.

- What are the emotions that the public experiences?
- How does the public form attitudes towards the curation design and tools?
- What are the attitudes of the public towards the science story?



Impact indicators

Effect

There are several indicators to inquire into the effect of the science story, such as reach, partnership and collaboration, change, awareness, involvement / engagement, debate and / or dialogue, and the emergence of new scientific or artistic knowledge.

- How many people did the science story reach? How many people were included in the iterative process of the design?
- Does the curation lead to new partnerships and collaborations?
- Does the story lead to constructive action, commitments, or policy and advocacy?
- Does the science story lead to awareness?
- Is the public involved and, if so, what is the effect on them?
- Does the science story lead to debate and / or dialogue and, if so, how?
- Does the curation contribute to scientific or artistic advancements?

