Sci-Fi storyline mapping starting from writing prompts

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**Short abstract:** In this hands-on group-based activity, students work in small groups (3-4 members) to draft a science fiction storyline, namely the main actions happening in it, through a guided step-by-step activity. The aim of the exercise is to reflect on technological innovation and the societal impact of a technology by fostering narrative imagination and through this process, expanding one’s moral imagination about technological innovations.

**Learning goals**:

* Expanding one’s narrative imagination
* Exploring moral imagination through possible outcomes of a story
* Embedding an emotion into a story line
* Reflecting on an ethical/societal value in relation to a given technology

**Rationale of the exercise:**

Narratives are stories with a specific structure, involving characters, a plot, and a resolution (Klassen & Froese Klassen, 2014). Narratives have been used for a while to teach science and engineering topics in ways that are more engaging than traditional presentations of facts (Ağlarcı Özdemir & Öztürk, 2023). As a teaching vehicle for presenting information, narratives seem to have advantages over the plain presentation of facts and figures because of the emotional engagement. But do narratives help with fostering or refining our moral skills? We are interested here specifically in moral imagination, moral creativity and moral reflection. A previous hypothesis – not empirically tested – advanced by philosopher Martha Nussbaum (1998), states that increasing one’s narrative imagination will lead to fostering and increasing one’s moral imagination at the same time. Nussbaum thinks about narrative imagination as the imagination involved in consuming works of fiction primarily, not necessarily in crafting them and she defines it as “the ability to be an intelligent reader of another person’s story” (Nussbaum, 1998). The crafting of narratives through creative writing was not explored explicitly.

In this exercise, we assume that writing narratives about technology will help students expand their narrative imagination, and, by exploring several storylines, they will reflect on the repercussions of the choices made by their characters. In this way, moral imagination and ethical reflection should be fostered indirectly: we do not ask students directly to think about the ethics of a technology or innovation, but by putting it in a story and by embedding an emotion and a value in the story, the ethical reflection is fostered. The aim here is for students to freely explore possible outcomes of a technological innovation or of a societal development with a technology, in which they are more concerned with making a good story rather than about what is the “right thing to do” in a situation. By exploring possible scenarios for their stories, students will also stumble upon moral issues surrounding a certain technology, especially in relation to a value conflict or an emotion.

Note for the instructors: the writing card used here are classical examples of writing prompts, used in creative writing workshops to initiate a brainstorming session, starting from an inciting incident. However, the cards are not technology-focused. Instructors are encouraged to make their own cards with writing prompts that are focused on a specific technology and its problems.

**References**

Ağlarcı Özdemir, O., & Önen Öztürk, F. (2023). Science Fiction as an Instructional Strategy: Foundations, Procedures, and Results for Pre-service Teachers. *International Journal of Science and Mathematics Education*, *21*(1), 187–209. <https://doi.org/10.1007/s10763-021-10244-4>

Klassen, S., & Froese Klassen, C. (2014a). Science teaching with stories: Theoretical and practical perspectives. In M. R. Matthews (Ed.), International handbook of research in history, philosophy and science teaching (pp. 1503–1529). Springer. <https://doi.org/10.1007/978-94-007-7654-8_47>

Nussbaum, M.C. (1998). Cultivating humanity. A classical defence of reform in liberal education. Cambridge, MA: Harvard University Press.

**Step-by-step description of the exercise (Teacher instructions)**

*Step 0: Preparation of materials for the workgroups*

The teacher prepares the large sheets of paper (two A3s glued together), puts them on tables, prints out and cuts the cards, puts markers and scotch tape on each table.

*Step 1: Introduction and divisions of groups (5-10 minutes)*

*Input:* The instructor introduces the exercise and how long it will take (60-90 minutes of activity in total)

*Activity:* Participants are grouped into teams of 2-4 participants (preferably 3 but depends on the total number) and they get the materials needed for doing the exercise in their group. Initially, they get a big sheet of white paper to draw the storyline on and some markers, and some scotch tape to glue the cards to the sheet. One member of the team is the designated as the group representative: they will have to go to the main table, draw the cards from the specific card decks when the next step is due and bring them back to their own team; and they also have to guide the group through the steps of the exercise, using the handout (see Annex 1) because the groups will do this exercise at their own pace, and syncing them is difficult. Each group messenger gets a handout with the steps of the exercise. They can also get character cards to fill in, if the instructor would like them to sketch out specific characters for their story (this depends on how much time there is for the exercise; in general thinking about 2-3 main characters takes some time.)

*Output:* All students are divided into working groups, they have an idea of what is coming up next and what they should do (draft the main steps of a sci fi story), they have the sheet of paper on which to draw on, the markers and all necessary materials. Students are ready to start the exercise.

*Step 2: Storyline brainstorming and mapping (40-60 minutes)*

Input: Students are ready to start the exercise, they have all the materials in place and have designated a group representative.

Activity: The group representative goes to the main table with the card decks and draws a card from the story incipit deck. Then they take this card back to their group and start discussing and drafting their story. For each of the next steps in the instructions, the students discuss and write the next actions on the big sheet of paper with the story line. The messenger guides them through the steps on the handout. When it is needed, the messenger goes to pick up an emotions card and a value card. This goes on until the last step of the exercise when each group needs to think about three distinctive possible endings to their story.

Output: each group has sketched a storyline on the big sheet of paper, discussed it in their group.

*Step 3: Debriefing and reflection (20-30 minutes)*

Input: From step 2, the storylines as sketched on a big sheet of paper for each group (character cards and other cards can be glued on the same sheet of paper).

Activity: each group explains their story to the class, and what decisions they made – particularly on the emotion embedding and value embedding. After each story, the instructor asks the class to reflect about the storyline they just heard: could a technology actually end up like this? Did the character’s actions make sense? What else could one have done? The discussion is unstructured and mostly starts from what the instructor picks up as interesting from the storyline they just heard. The discussion can also be led by the students, as they lead the discussion based on what they noticed and found interesting about the story presented.

Output: a reflective classroom discussion about technology, anticipation and sci-fi stories, revolving around ethical reflection of the scenarios sketched.

**Assessment rubric for the instructors for each step of the activity**

(Note: This is not a rubric for grading, rather to ensure that the instructor knows what to look at in order to see if the exercise is going well in the groups)

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Unsatisfactory | OK/Satisfactory | Excellent |
| 1 | No groups are formed | -  | - |
| 2 | Students do not follow the format and instead discuss unrelated issues. OR they can follow the instructions, but one person takes the lead in story plotting and does not allow others to express ideas or dismisses them. No emotion or value embedded in the story line. The value is misunderstood. Too much time is taken, the story is not completed at the end of the time allocated. | The groups keep time efficiently and follow the instructions on the handout. Good group dynamics where everyone’s voice is listened, and everyone can contribute to the storyline.The emotion and the value from the card decks are used in the storyline. The students finish their story drafting in time. | Excellent group dynamics: students build up the story while listening to each other and deliberating what would be the most interesting next action. Coherent embedding of the emotion and the value in the story, making sense to the overall story. Drafting the story in time.  |
| 3 | No clear stories presented; the storylines are difficult to understand by the rest of the class.  | Clear presentations of the story and of the most choices for the storyline. Reflection shown in the answers and the questions in the post-presentation discussions. | Coherent story lines; answering questions with reflective stance. The value is present in the reflections on the story endings.  |

**Metadata**

1. **Overall learning outcomes/competencies**: Moral imagination; moral creativity; moral reflection.
2. **Theoretical frameworks used to analyze this case:**  value sensitive design, narrative ethics.
3. **Ethical concepts:** values; emotional deliberation; moral intuitions
4. **Keywords**: narratives, narrative imagination, science fiction, sci-fi, creativity
5. **Level of education**: master, PhD.
6. **Technology domain**: all
7. **Engineering studies**: all
8. **Type of education delivery**: synchronous, in real life (on campus).
9. **Resources required**: tables appropriate for group work with chairs around them; big sheets of paper (A3 or two A3 glued together); markers, post-its, scotch tapes; the decks of cards printed before hand and cut into pieces (see annexes 2-5 for the card decks)
10. **Length and ECTS**: Duration: 90 minutes of class (45 minutes for steps 1-3, and 45 minutes for the debriefing, step 4) and **0,06 ECTS**

**Annexes to this exercise – to print and distribute to the class:**

**Annex 1 – handout with instructions for each group**

Steps of the exercise (Instructions to be given to each group and which the group representative ensures that they go through)

1. Each team draws one card from the **story incipit card** deck (see Annex 2 for the cards).
2. (Optional step, depending on the available time) Starting from this card, you will sketch and imagine the three major characters in this story (each team member imagines a character that could play a part in the story). Answer this for each character on the character card:
	1. How do they look like?
	2. What do they want in general?
	3. What is their main goal in this situation?
	4. What do they fear the most?
	5. Their most defining character trait?
3. Based on this story beginning + the characters, the team will now sketch the next two actions/ events happening in the story. What is happening next? And then after that? Sketch this as a mind-map with bubbles and arrows (this is the story line).
4. Next, introduce an emotion into your story. Draw a card from the emotions deck – what will your characters do with this emotion? Think about the last time you experienced this emotion, how did it feel and what did it make you want to do? Sketch out **the next action** in your story around this emotion and add it to the story-line.
5. Draw a value from the value cards deck. What do your characters think about this value? Can this value be pursued in your story? Sketch out **the next action** in your story around this value.
6. Plot twist. What happens unexpectedly in your story-line? Add **one action** / event that surprises the reader’s expectations.
7. From this moment, imagine three possible endings for your story and draw them as bubbles to the end of the map (no need to draw the steps in between) from the most likely, to the least likely (more surprising). Think about the value embedded in the story: an desirable outcome, an unacceptable outcome, an acceptable one.
8. What is the main message you would like to convey to your readers? And which one of those endings would convey it best?

**Annex 2 – card decks with story beginnings**

*(Thes need to be printed on one side, and cut, then placed face down so that the groups extract one of them randomly)*

|  |  |
| --- | --- |
| **“As we opened the hatch of our shuttle pod, we realized that the planet had oxygen atmosphere. Behind a rock, we saw something startle and move”** | **“Last night, the solar panels were hit by a meteorite shower. As we woke up, we noticed that the battery pack was almost depleted. We had 3 hours before we lost all power to our shuttle on route to Pluto.”** |
| **“First contact with an alien species was never in our training. Yet here we were, facing a species that had 10 senses and 17 ways of expressing emotions. We had to find a way to make them understand us.”** | **“It’s been 10 years, 2 months and 5 days since all electrical grids on Earth completely fried up. In spite of all attempts to re-ignite electricity, nobody had managed to re-create an electrical spark, that is until today.”** |
| **“At the SETI station, we usually look for signals and communications from outer space, assuming alien life is out there. Today, however, we got a message in English, but it was clearly coming from 2 galaxies away.”** | **“Today, a rich client barged into my office unannounced. They had a rather unusual request: design for me a personal device that keeps everyone else away from me, about 2 meters or so. A personal protective shield of sorts. I asked them ‘why would you need this?’”** |
| **“I never knew how to respond to the emotions of others. When I was a kid, they diagnosed me with autism. But later, I discovered I had a superpower that silenced all my emotions so I could focus on the most demanding cognitive tasks. I was able to solve differential equations in my mind, the kid wonder they called me. Never had a need for emotions, I never understood why people made such a fuss about them. Until today when something unexpected happened.”** | **“After two waves of the latest pandemic, nobody under 60 was left alive on earth. The governments of the world gathered to decide what to do next. I was there, representing my country which was decimated, only 20% of the initial population left around. All other representatives had an advantage over me, they had more survivors to represent. Yet there I was, and I had to do my best…”** |
|  | **“Max was excited to try the device they had invented. It was a time-communication device which could send and receive messages into the past. Now that the device was actually there, Max had to answer the question: ‘Hmm…What age should I contact for the first time? And what would I want say to them?’”** |

**Annex 3 – Card Deck with emotions**

*(Thes need to be printed on one side, and cut, then placed face down so that the groups extract one of them randomly)*

|  |  |  |
| --- | --- | --- |
| Hurt | Hostile | Angry |
| Rage | **Hateful** | **Excited** |
| Confused | **Helpless** | **Playful** |
| Insecure | **Anxious** | **Trusting** |
| Energetic | **Hopeful** | **Resentful** |
| Ashamed | **Arrogant** | **Proud** |
| Lonely | **Loving** | **Envious** |

**Annex 4 – Deck with societal and ethical values**

*(Thes need to be printed on one side, and cut, then placed face down so that the groups extract one of them randomly)*

|  |  |  |
| --- | --- | --- |
| Sustainability | Efficiency | Compassion |
| Solidarity | **Knowledge** | **Innovation** |
| Survival  | **Health** | **Well-being** |
| Resilience  | **Environmental stewardship** |  |

**Annex 5 – character cards**

*(These need to be printed on one side and cut, then each groups gets 3 of these to fill in)*

Your character.

**Name:**

**Looks:**
How do they look like?

**General goals:**
What do they want in general?

**Main goal in this particular situation:**
 **Fears:**
What do they fear the most?

**Personality:**
Their most defining character trait?

Your character.

**Name:**

**Looks:**
How do they look like?

**General goals:**
What do they want in general?

**Main goal in this particular situation:**
 **Fears:**
What do they fear the most?

**Personality:**
Their most defining character trait?

Your character.

**Name:**

**Looks:**
How do they look like?

**General goals:**
What do they want in general?

**Main goal in this particular situation:**
 **Fears:**
What do they fear the most?

**Personality:**
Their most defining character trait?

Your character.

**Name:**

**Looks:**
How do they look like?

**General goals:**
What do they want in general?

**Main goal in this particular situation:**
 **Fears:**
What do they fear the most?

**Personality:**
Their most defining character trait?