

1. Name of the project:

Write your own pen and paper-game manual

2. Subjects covered from STEAM areas:

Mathematics, logic, strategizing, writing, drawing

3. Target group (age range and size of the group):

Age between 11 and 13, group size between 20 and 28. In total about 130 pupils took part in this activity in the timeframe of 2 years.

4. Duration of the activity:

Three to four lessons of one hour.

5. Key words:

Winning strategy, reading, writing, cooperation.

6. Key sentence describing context of the activity, followed by short description (200 words):

In a multi-lesson workshop setting, pupils write a manual for a pen-and-paper game of choice. The required parts of the manual are 1) instructions on how to play the game and 2) tips on winning the game. An example of a pen-and-paper game is Tic-tac-toe. Strategies for not-losing Tic-tac-toe are well known.

7. Description of the activity environment, including the list of materials and tools needed:

- A regular classroom is suited for this activity.
- Per 2 pupils at least one laptop or computer with access to the internet should be available.
- Pen and paper

8. Step by step, detailed description of the activity, including teaching and learning strategies:

Lesson 1	<p><b>Phase 1 What is a good game manual</b> A discussion on what characterizes a good game manual. If pupils do not mention tips-for-winning-the-game, add it to the list being compiled. Also make sure that the lay-out is a quality criterium.</p> <p><b>Phase 2 Start</b> Pupils form pairs and choose a game from the list</p> <p><b>Phase 3 Exploration</b> Learning how to play the game, finding informal strategies how to win</p>
Lesson 2	<p><b>Phase 4 Producing</b> In this phase the pupils write their manual. Writing down the rules for the game will be straight-forward. The tips-for-winning-the-game</p>

	<p>will be the most difficult. Pupils need to find actionable, concrete tips. Depending on the progress of the pupils, this phase can be extended for the duration of two lessons.</p>
Last lesson (3 or 4)	<p><b>Phase 5 Peer assessment</b> Let the pupils read and assess each other's work based on the criteria set out in phase 1. Each pair assesses as much manuals as reasonable possible. This way each manual gets assessed by several pairs of students.</p> <p>Discuss the results of the peer assessment.</p> <p>When using Google Forms to harvest the assessments, Google provides instant aggregation in the form of bar charts, pie charts and other forms of data visualization, making the discussion of the results of the peer assessment more insightful for the pupils.</p>

9. Learning objectives/competencies:

After this activity, pupils

- can formulate an informal winning strategy of pen-and-paper-game
- know what the building blocks of a game manual are
- can analyse a game manual on appearance, content and quality of the winning-tips.
- used digital technology to lay-out their game manual

10. Evaluation/Assessment guidelines:

The manuals of the pupils can be assessed by their peers. Since there is a consensus<sup>1</sup> on the criteria for a good game manual, the pupils can assess the manuals of their peers. When you make a Google Form with a scale per criterium and let the pupils assess at least 3 manuals each, you get some nice real-time statistics and -graphs for free from Google Forms. This poses another opportunity to reflect on the criteria for a game manual and of the output of the class.

11. Lessons learned:

Pupils eagerly dive into getting to know their pen-and-paper game of choice. It is a fun phase of this activity. Pupils experience writing the manual as not too difficult. Finding and formulating winning strategies is the hard part. That is where need more support from the teacher for structuring and writing down their findings. If the support for this part is not present, pupils incline towards vacuous, unactionable wordings like '*You need to play smart*'.

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<sup>1</sup> See Phase 1 of lesson 1

Peer assessing the manuals not only leads to insights on the quality of the work of their peers, but also learns the pupils how to play pen-and-paper games they're unfamiliar with.

12. Additional information/Links:

Suggested pen-and-paper games: Tic-tac-toe, Nested Tic-tac-toe, Bulls and Cows, Boxes, Battleship, Paper Soccer, SOS, Sim, Join 5.

13. Contact person:

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