

## Europeana Learning Scenario (Museum Educators)

### Title

Bites: when nutrition meets SDGs

### Author(s)

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### Abstract

All people have the right to adequate food. Good nutrition is the basis for guaranteeing well-being and human potential. It is not only a product of development, but also the seed that will enable a better future. For this reason, the Sustainable Development Goals (SDGs) of the UN commit us to act in favour of global and integrated changes that will put an end to hunger and malnutrition by 2030. The SDGs are 17 objectives that are directly or indirectly related to nutrition. This Europeana Learning Scenario addresses issues from zero hunger and end of poverty up to education. The challenge is to think globally and act locally for the transformation towards a more sustainable world.

### Keywords

Nutrition, Sustainable Development Goals, Food, Cereals, Gastronomy

#### *Table of summary*

<b>Subject</b>	Biology, Chemistry, Art, Geography
<b>Topic</b>	Nutrition and Sustainability
<b>Age of participants</b>	10-15 years
<b>Suitable setting for implementation</b>	The LS could be implemented in the museum and online. If it is implemented in the museum, this could be done in a lab, an activity room or a room with tables, chairs, a computer, and a screen.
<b>Activity time</b>	1 hour and a half The LS is developed so that the educator can choose to run the 3 tasks proposed or only choose to run 2 or 1 of them, according to his/her time and resources.
<b>Online educational material</b>	<a href="https://www.un.org/sustainabledevelopment/news/communications-material/">https://www.un.org/sustainabledevelopment/news/communications-material/</a> <a href="https://youtu.be/Qx0AVjtdq_Q">https://youtu.be/Qx0AVjtdq_Q</a> Online tools for quizzes (e.g. Kahoot, Microsoft Forms, SurveyMonkey etc.) Online tool for sharing information, ideas (e.g. Google Docs, Padlet, etc.)



### Offline educational material

#### Per table of 4 participants maximum

- 1 digital device (tablet, mobile, computer). If not available, share as group.

#### Find the cereal!

- Cereals: grains of wheat, oat, corn, spelt, rice, millet, barley, rye
- 8 small containers for grains

#### Fruits for everyone:

- several pieces of paper white or coloured

#### School of cooking:

- Sodium alginate (0.5 g)
- Calcium chloride (0.5 g)
- 300 mL of water
- Strainer
- Pasteur pipettes (or dropper)
- Food dyes
- Hand blender to help dissolve alginate

### Europeana resources used

#### Cereals images:

- [https://www.europeana.eu/es/item/11651/\\_Botany\\_L\\_3095599](https://www.europeana.eu/es/item/11651/_Botany_L_3095599)  
Naturalis Biodiversity Center
- <https://www.europeana.eu/es/item/11614/KXHERBARIUMX-K001131018> Royal Botanic Gardens, Kew
- [https://www.europeana.eu/es/item/11653/\\_Botany\\_L\\_4240064](https://www.europeana.eu/es/item/11653/_Botany_L_4240064)  
Naturalis Biodiversity Center
- [https://www.europeana.eu/es/item/11651/\\_Botany\\_L\\_3068135](https://www.europeana.eu/es/item/11651/_Botany_L_3068135)  
Naturalis Biodiversity Center
- [https://www.europeana.eu/es/item/11654/\\_Botany\\_U\\_1504785](https://www.europeana.eu/es/item/11654/_Botany_U_1504785)  
Naturalis Biodiversity Center
- [https://www.europeana.eu/es/item/11655/Botany\\_L\\_1329232](https://www.europeana.eu/es/item/11655/Botany_L_1329232) Naturalis Biodiversity Center
- [https://www.europeana.eu/es/item/11648/\\_Botany\\_L\\_1351112](https://www.europeana.eu/es/item/11648/_Botany_L_1351112)  
Naturalis Biodiversity Center
- [https://www.europeana.eu/es/item/11651/\\_Botany\\_L\\_3110935](https://www.europeana.eu/es/item/11651/_Botany_L_3110935)  
Naturalis Biodiversity Center

#### Origami images:

- <https://www.europeana.eu/es/search?page=1&view=grid&query=origami>

#### Food images:

- <https://www.europeana.eu/es/search?page=7&view=grid&query=food>

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### Integration into the curriculum

Biology, Natural Sciences, Healthy lifestyle, Chemistry

### Aim of the educational activity

To commit participants to act in favour of global and integrated changes that will put an end to hunger and malnutrition by 2030. Also, to raise awareness that SDGs are 17 objectives that are directly or indirectly related to nutrition. Finally, to communicate that the challenge is to think globally and act locally for the transformation towards a more sustainable world.

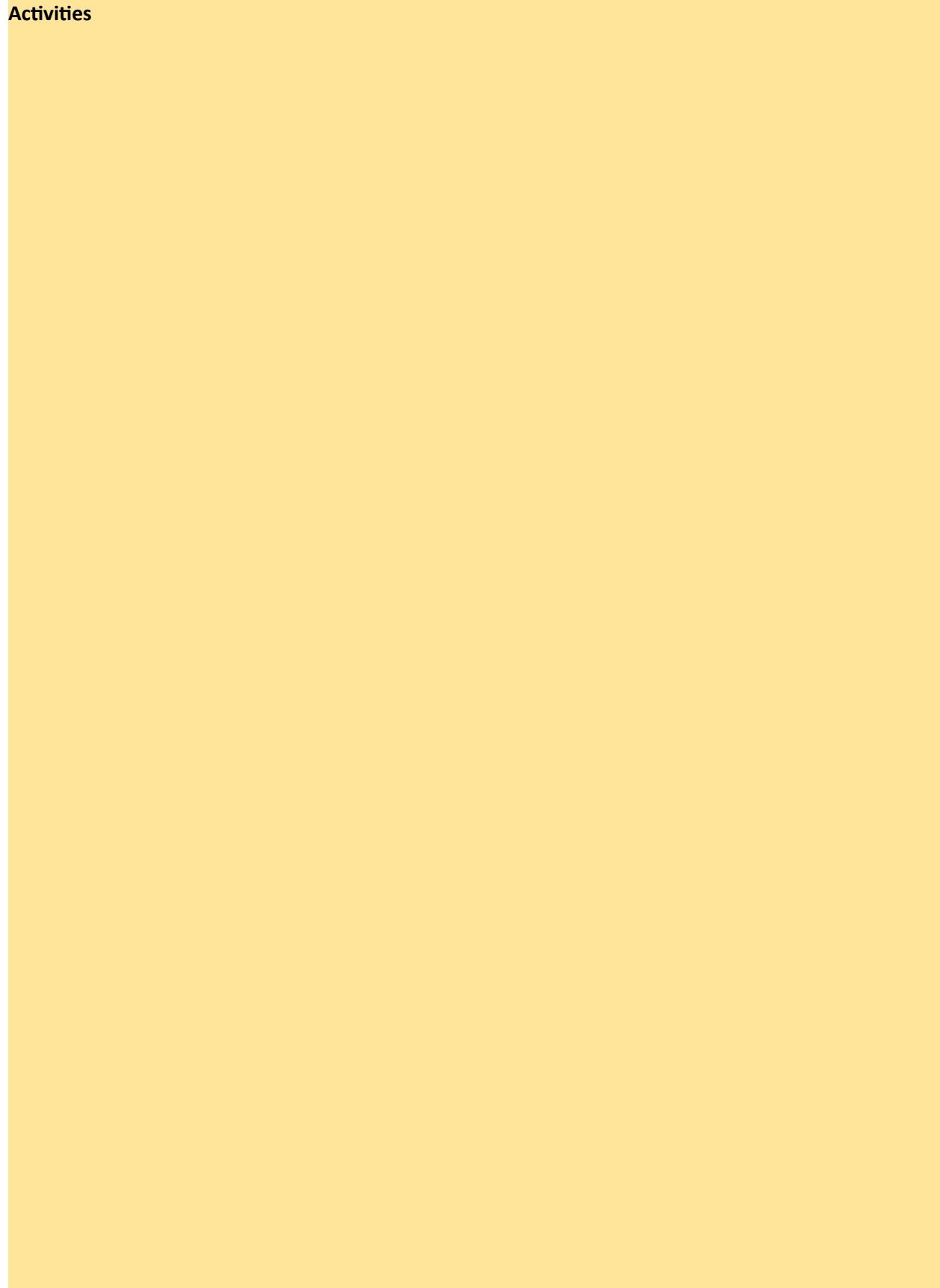
### Outcome of the educational activity

- **Collaborative work:** 2 online exhibitions created by participants with Europeana resources,
- **Individual creations:** each participant will create their own Origami pieces,
- **Science experiment:** each participant will explore the union between science and gastronomy by conducting molecular cooking experiments,

### 21<sup>st</sup> century skills

1. **Critical thinking**
2. **Creativity**
3. **Collaboration**
4. **Communication**
5. **Information literacy**
6. **Media literacy**
7. **Technology literacy**
8. **Social skills**

## Activities



Name of activity	Procedure 1 (Face-to-face)	Time
<b>Introduction to nutrition and SDG's</b>	<p>The visit will begin in the museum exhibition room dedicated to nutrition/food or in the museum lab or activity room.</p> <p>The museum educator will introduce the topic talking about nutrition and the UN Sustainable Development Goals (SDGs), that commit us to make changes that will put an end to hunger and malnutrition by 2030.</p> <p>The museum educator will use a digital poster and the official video to present SDGs:</p> <ul style="list-style-type: none"> <li>• <a href="https://www.un.org/sustainabledevelopment/news/communications-material/">https://www.un.org/sustainabledevelopment/news/communications-material/</a></li> <li>• <a href="https://youtu.be/Qx0AVjtdq_Q">https://youtu.be/Qx0AVjtdq_Q</a></li> </ul>	10 minutes

### Find the cereal!

The museum educator will introduce this activity talking about:

- Nutrition: World Health Organization recommends that 55% of the energy we eat comes from carbohydrates.
- SDG 2 Zero hunger. Cereals are one of the pillars of food in poor and developing countries, not only for human consumption but also as livestock feed. Climate change and other environmental factors are threatening the production of cereals and other crops.

#### Steps of the activity:

- The museum educator prepares real grains of the 8 most consumed cereals in the world: wheat, oat, corn, spelt, rice, millet, barley, and rye.
- The museum educator prepares 8 containers per table of 2-4 participants with each kind of grains.
- Each real grain is accompanied by an image of the plant of each cereal from Europeana (from The Naturalis Biodiversity Center, Leiden, The Netherlands and Kew Gardens, UK)
  - [https://www.europeana.eu/es/item/11651/\\_Botany\\_-\\_L\\_3095599](https://www.europeana.eu/es/item/11651/_Botany_-_L_3095599)
  - <https://www.europeana.eu/es/item/11614/KXHERBARIUMX-K001131018>
  - [https://www.europeana.eu/es/item/11653/\\_Botany\\_-\\_L\\_4240064](https://www.europeana.eu/es/item/11653/_Botany_-_L_4240064)
  - [https://www.europeana.eu/es/item/11651/\\_Botany\\_-\\_L\\_3068135](https://www.europeana.eu/es/item/11651/_Botany_-_L_3068135)
  - [https://www.europeana.eu/es/item/11654/\\_Botany\\_U\\_1504785](https://www.europeana.eu/es/item/11654/_Botany_U_1504785)
  - [https://www.europeana.eu/es/item/11655/Botany\\_-\\_L\\_1329232](https://www.europeana.eu/es/item/11655/Botany_-_L_1329232)
  - [https://www.europeana.eu/es/item/11648/\\_Botany\\_-\\_L\\_1351112](https://www.europeana.eu/es/item/11648/_Botany_-_L_1351112)
  - [https://www.europeana.eu/es/item/11651/\\_Botany\\_-\\_L\\_3110935](https://www.europeana.eu/es/item/11651/_Botany_-_L_3110935)

The participants observe carefully which cereal is each one. After this observation, each group plays the digital game “Find the cereal!”, which is an online quiz where participants are shown images of cereals and have to guess their correct name. The game could be created by using relevant apps (e.g. Kahoot, Microsoft Forms, SurveyMonkey etc.) Here you can find one example of such game: <https://create.kahoot.it/share/find-the-cereal/80482a27-0846-49ee-b610-be96e073e72d>

20 minutes

**Fruits for everyone**

The museum educator will introduce this activity talking about:

- Nutrition: Fruit consumption is a good source of vitamins and minerals, that are essential to maintain a good state of health.
- SDG 1 End of poverty: Combating poverty in the world implies, among other issues, increasing the population's access to the consumption of fruit and vegetables.

Steps of the activity:

- The first step is to do the *Origami Europeana Tour* to know the possibilities of this folding paper technique. The museum educator conducts a joint search in Europeana of pieces created with this technique using the following link: <https://www.europeana.eu/es/search?page=1&view=grid&query=origami>
- Then, each member of group upload 5 images to a relevant online tool used for sharing information (e.g. Google Docs, Padlet etc.) to create their own Europeana Origami Exhibition.
- Finally, the museum educator briefly explains how to make simple origami and distributes to the participants white or coloured pieces of paper for folding. Participants make their own origami creations.

30 minutes

### School of cooking

The museum educator will introduce this activity talking about:

- Nutrition: Boiled, roasted, grilled, sautéed, steamed, fried, or microwaved. These are some of the culinary techniques used to cook. Each has its tips to preserve the nutritional value of food, since the heat of cooking and other factors destroy certain vitamins and minerals.
- SDG 4 Quality education: The educational system is the perfect stage to teach how to cook and eat appetizingly and inform about healthy and sustainable diets. In addition, there is a strong connection between education and food: poor nutrition affects learning and performance at school.

#### Steps of the activity:

- *Tasty Europeana Tour*: museum educator begins with a joint search about food in Europeana <https://www.europeana.eu/es/search?page=7&view=grid&query=food>
- Then, each group selects up to 10 food images from Europeana and upload them to a digital map: creating their own map called *Tasty Europeana Tour*.
- Be a molecular cook! is the following activity: molecular gastronomy studies the physical and chemical changes that food undergoes while cooking. Certain ingredients produce certain reactions and it's the newest trend for chefs to make fake "caviar" from sodium alginate.
  - Materials
    - Sodium alginate (0.5 g)
    - Hydrated calcium chloride (0.5 g)
    - 300 mL of water
    - Strainer
    - Pasteur pipettes (or dropper)
    - Food dyes
    - Hand blender to help dissolve alginate
  - Procedure:
    - Adding food colouring to a container containing 100 mL of water
    - In the previous dissolution, dissolve the sodium alginate with the help of a mixer. Bubbles will form. This dissolution must be left to rest (even up to 1 hour).
    - In another container with another 100 mL of water (in this case without colorant) dissolve the calcium chloride.
    - Add the alginate solution drop by drop to the calcium chloride solution, which will instantly convert the drops into gel spheres that in "molecular gastronomy" are known as "caviar". These spheres can be extracted with a strainer.

30 minutes



Name of activity	Procedure 2 (Virtual)	Time
<p><b>Introduction to nutrition and SDG's</b></p>	<p>The visit will begin in the museum lab or activities room with a videoconference call. The museum educator will introduce the topic talking about nutrition and the UN Sustainable Development Goals (SDGs), that commit us to make changes that will put an end to hunger and malnutrition by 2030.</p> <p>The museum educator will share a digital poster and the official video to present SDGs:</p> <ul style="list-style-type: none"> <li>• <a href="https://www.un.org/sustainabledevelopment/news/communications-material/">https://www.un.org/sustainabledevelopment/news/communications-material/</a></li> <li>• <a href="https://youtu.be/Qx0AVjtdq_Q">https://youtu.be/Qx0AVjtdq_Q</a></li> </ul>	<p>10 minutes</p>

### Find the cereal!

The museum educator will introduce this activity talking about:

- Nutrition: World Health Organization recommends that 55% of the energy we eat comes from carbohydrates.
- SDG 2 Zero hunger. Cereals are one of the pillars of food in poor and developing countries, not only for human consumption but also as livestock feed. Climate change and other environmental factors are threatening the production of cereals and other crops.

#### Steps of the activity:

**PART 1:** real grains and plant pictures are showed by the museum educator to virtual participant.

- The museum educator prepares real grains of the 8 most consumed cereals in the world: wheat, oat, corn, spelt, rice, millet, barley, and rye.
- The museum educator prepares 8 containers per table of 2-4 participants with each kind of grains.
- Each real grain is accompanied by an image of the plant of each cereal from Europeana (from The Naturalis Biodiversity Center, Leiden, The Netherlands, and Kew Gardens, (UK)):
  - [https://www.europeana.eu/es/item/11651/Botany - L\\_3095599](https://www.europeana.eu/es/item/11651/Botany_L_3095599)
  - <https://www.europeana.eu/es/item/11614/KXHERBARIUMXK001131018>
  - [https://www.europeana.eu/es/item/11653/Botany - L\\_4240064](https://www.europeana.eu/es/item/11653/Botany_L_4240064)
  - [https://www.europeana.eu/es/item/11651/Botany - L\\_3068135](https://www.europeana.eu/es/item/11651/Botany_L_3068135)
  - [https://www.europeana.eu/es/item/11654/Botany U\\_1504785](https://www.europeana.eu/es/item/11654/Botany_U_1504785)
  - [https://www.europeana.eu/es/item/11655/Botany - L\\_1329232](https://www.europeana.eu/es/item/11655/Botany_L_1329232)
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  - [https://www.europeana.eu/es/item/11651/Botany - L\\_3110935](https://www.europeana.eu/es/item/11651/Botany_L_3110935)

The participants observe carefully which cereal is each one during the educator explanation.

**PART 2:** virtual participants take part individually in a group game which is an online quiz, that could be created by using relevant apps ([e.g. Kahoot](#), [Microsoft Forms](#), [SurveyMonkey](#) etc.).

- After the cereals observation, each participant play a digital game *Find the cereal!*, which is an online quiz where participants are shown images of cereals and have to guess their correct name. The game could be created by using relevant apps ([e.g. Kahoot](#), [Microsoft Forms](#), [SurveyMonkey](#) etc.) An example of this, can be found here: <https://create.kahoot.it/share/find-the-cereal/80482a27-0846-49ee-b610-be96e073e72d>

20 minutes

### Fruits for everyone

The museum educator will introduce this activity talking about:

- Nutrition: Fruit consumption is a good source of vitamins and minerals, that are essential to maintain a good state of health.
- SDG 1 End of poverty: Combating poverty in the world implies, among other issues, increasing the population's access to the consumption of fruit and vegetables.

#### Steps of the activity:

- Previously, museum educator will have asked participants to get several pieces of paper to do the activity.
- The first step is to do the *Origami Europeana Tour* to know the possibilities of this folding paper technique. The museum educator conducts a joint search in Europeana of pieces created with this technique <https://www.europeana.eu/es/search?page=1&view=grid&query=origami>
- Then, each participant upload 5 images to a relevant online tool used for sharing information (e.g. Google Docs, Padlet etc.) to create their own Europeana Origami Exhibition.
- Finally, the museum educator briefly explains how to make simple origami via to the participants, who will begin to make their own creations. At the end, they can share their pieces uploading to the digital tool used for *Origami Europeana Tour*.

30 minutes

<p><b>School of cooking</b></p>	<p>The museum educator will introduce this activity talking about:</p> <ul style="list-style-type: none"> <li>• Nutrition: Boiled, roasted, grilled, sautéed, steamed, fried or microwaved. These are some of the culinary techniques used to cook. Each has its tips to preserve the nutritional value of food, since the heat of cooking and other factors destroy certain vitamins and minerals.</li> <li>• SDG 4 Quality education: The educational system is the perfect stage to teach how to cook and eat appetizingly and inform about healthy and sustainable diets. In addition, there is a strong connection between education and food: poor nutrition affects learning and performance at school.</li> </ul> <p><u>Steps of the activity:</u></p> <ul style="list-style-type: none"> <li>• <i>Tasty Europeana Tour</i>: museum educator begins with a joint search about food in Europeana <a href="https://www.europeana.eu/es/search?page=7&amp;view=grid&amp;query=food">https://www.europeana.eu/es/search?page=7&amp;view=grid&amp;query=food</a> .</li> <li>• Then, each group selects up to 10 food images from Europeana and uploads them to a digital map creating their own map called <i>Tasty Europeana Tour</i>, for example: <a href="https://padlet.com/patricia-b_d/hltwmxrbkzpv9xr">https://padlet.com/patricia-b_d/hltwmxrbkzpv9xr</a>,</li> <li>• <i>Be a molecular cook!</i> is the following activity: this experiment will be showed by the museum educator to the audience. Molecular gastronomy studies the physical and chemical changes that food undergoes while cooking. Certain ingredients produce certain reactions and it's the newest trend for chefs to make fake "caviar" from sodium alginate.</li> <li>• <b>Note 1: for virtual implementation of the experiment there are two options: virtual participants see the experiment on the screen while the educator performs it OR the museum prepares and sends a kit with the necessary materials to the participants (this last option could be implemented for groups of virtual participants such as schools or associations)</b></li> <li>• <b>Note 2: see Materials and Procedure of the experiment in Procedure 1 (Face to face) Section.</b></li> </ul>	<p>30 minutes</p>
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**Participants' feedback**

Participants will be asked to give feedback after the session if in presence, and to fill out a brief survey if the activity is held online.

**Educator's remarks: Self-assessment**

The educator will conduct a self-assessment of the entire educational activity through the rubric included in the annex.

## About the Europeana DSI-4 project

[Europeana](#) is Europe’s digital platform for cultural heritage, providing free online access to over 53 million digitised items drawn from Europe’s museums, archives, libraries and galleries. The Europeana DSI-4 project continues the work of the previous three Europeana Digital Service Infrastructures (DSIs). It is the fourth iteration with a proven record of accomplishment in creating access, interoperability, visibility and use of European cultural heritage in the five target markets outlined: European Citizens, Education, Research, Creative Industries and Cultural Heritage Institutions.

[European Schoolnet](#) (EUN) is the network of 34 European Ministries of Education, based in Brussels. As a not-for-profit organisation, EUN aims to bring innovation in teaching and learning to its key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners. European Schoolnet’s task in the Europeana DSI-4 project is to continue and expand the Europeana Education Community.

## Annex

### Self-assessment rubric

Category	4-5	3-4	2	0-1	Rating
<b>Enthusiasm</b>	Facial expression and body language showed a strong interest and enthusiasm about the topic throughout the workshop, but if was not overdone.	Facial expression and body language showed a strong interest and enthusiasm about the topic throughout the workshop, but if was somehow overdone.	Facial expression and body language showed some interest and enthusiasm about the topic throughout the workshop, but if was not overdone.	Facial expression and body language depicted apathy or boredom about the topic.	
<b>Point of view-purpose</b>	Workshop established a purpose at the beginning and maintained focus.	Established a purpose at the beginning but occasionally wandered from that focus.	The purpose was somewhat clear but many aspects of the workshop seem only slightly related.	It was difficult figure out the purpose of the workshop.	

Category	4-5	3-4	2	0-1	Rating
<b>Media and re-sources</b>	Media and re-sources were effective in aiding to understand and enjoy the workshop.	Media and re-sources were somehow effective in aiding to understand and enjoy. Some were no clear.	Media and re-sources were difficult to follow and aided in little understanding of the workshop.	Media and re-sources were no related to the workshop.	
<b>Group work</b>	The group functioned exceptionally well. All members listened to, shared with and supported the efforts of others. The group (all members) was always on task!	The group functioned pretty well. Most members listened to, shared with and supported the efforts of others. The group (all members) was almost always on task!	The group functioned fairly well but was dominated by one or two members. The group (all members) was almost always on task!	Some members of the group were often off task and/or were disrespectful to others in the group and/or were typically disregarded by others group members.	
<b>Total</b>					
<b>25</b>					