EDUCATIONAL MANAGED MARINE AREA

Educating children through managing a local coastal/marine protected area.

This document is largely based on the content from the methodological guide for educative area published in 2020 by the French Office for Biodiversity

Contents

I. PRESENTATION OF EMMA (Educational Managed Marine Area)

A. Definition and origin

An Educational Managed Marine Area (EMMA) is a relatively small coastal area (e.g., beach section), being actively managed in a participatory manner by the pupils from primary and/or secondary school (ideally year 4 to year 10). Accompanied by their teacher and assisted by expert marine scientists, the students study the area and its environmental values and decide how to preserve its natural and cultural heritage. Through this project students meet requirements of their curriculum while gain real world perspectives of marine conservation and management and its actors (local government actors, marine park officer, coastcare group member, NGOs, users …). Thanks to the commitment of schools, local government and accompanying actors, an EMMA can be established, enriched and provide the opportunity for children to develop their knowledge and ability to act for the protection of the marine environment.

The concept was born in the Marquesas Islands in 2012 after pupils from a school in Vaitahu spoke of their desire to look after a marine area near their school. Following the enthusiasm generated by this first EMMA, the experiment has now been extended to both mainland France and its overseas territories.

B. Objectives

➢ Develop eco-citizenship behaviors of children through a participatory management approach of a common good.
➢ Reconnect students to nature and promote knowledge and preservation of coastal and marine environment and traditional culture.
➢ Encourage the engagement and synergies between users of the coastal area, the educational community, and the various environmental management stakeholders.

Thus, this is a citizen approach where the students become actors in a participatory project aiming to protect and preserve a coastal and marine area. The creation of an EMMA is aligned with the educational and civic dimensions of school education. Indeed, it uses a project approach which makes it possible to tackle transmission of knowledge and skills from the curriculum through the combination of experience and theory.

Three main axes structure an EMMA:

- “Knowing the coast and the sea”: acquisition of scientific, empirical, and civic knowledge on the natural and cultural heritage of the territory.
- “Living the coast and the sea”: educational outings and meetings with those involved in the sea to discover their uses.
- "Transmit": transmission of knowledge and management of a common environment to preserve.

II. THE INFORMATION TO KNOW BEFORE LAUNCHING AN EMMA

A. Who is the project intended for?

Any class from year 4 to year 10 accompanied by one or more teachers can join the process to start an Educative Managed Marine Area.

With a referent expert: This is a person who brings the environmental technical content. That person supports students and teachers in the implementation of their project and represents an advisory expert in the field of ecology, natural resource management, geography, traditional culture and / or related disciplines.

Near a coastal area where there is biodiversity to be protected or reclaimed. The marine and/or coastal areas represent an inspiring environment for learning about conservation, management and implementing curriculum contents. Though it must also put in place protocols and safety standards for out of school activities.

The EMMA project can be carried out by one or more classes from the same school and while the approach is primarily addressed from year 4 to year 10, younger students may be involved occasionally during certain stages of the project. These will be opportunities to arouse interest in the youngest and to practice the transmission of knowledge between students of different levels.

B. The educational aspect of the EMMA project

The establishment of an EMMA has above all a pedagogical goal, combining theoretical and practical activities. The EMMA project is a particularly effective support for transdisciplinary learning. This approach allows teachers to rely on the momentum of student engagement to set up teaching in different subjects: English, Science, Mathematics, Arts, Humanities and Social Sciences, Languages, Health and Physical Education. It is also an opportunity to make a link with the 3 areas of the Western Australian Curriculum (Fig. 1): General Capabilities, Cross-Curriculum priorities, and Standard Learning Areas. Some preliminary examples below:

- ➢ Science learning areas and scientific investigations
- ➢ Sustainability (Cross- Curriculum priority)
- ➢ Literacy (composing texts through speaking, writing and creating)
- ➢ Critical and Creative thinking, and Ethical understanding
- ➢ Cultural understanding and Aboriginal history and culture

Figure 1. The three dimensions of the Australian Curriculum
(Source: https://www.australiancurriculum.edu.au/f-10-curriculum/structure/)

III. PROCESS OF SETTING UP AN EMMA

This methodology describes the structuring stages of establishing an EMMA project.

The goal of an EMMA is to allow students to learn and make decisions, by being in the position of citizens organizing themselves, and collecting information they need to take the best decisions on how to manage and preserve their site. Subsequently, such a project includes several stages, from its preparation to the assessment of management actions:

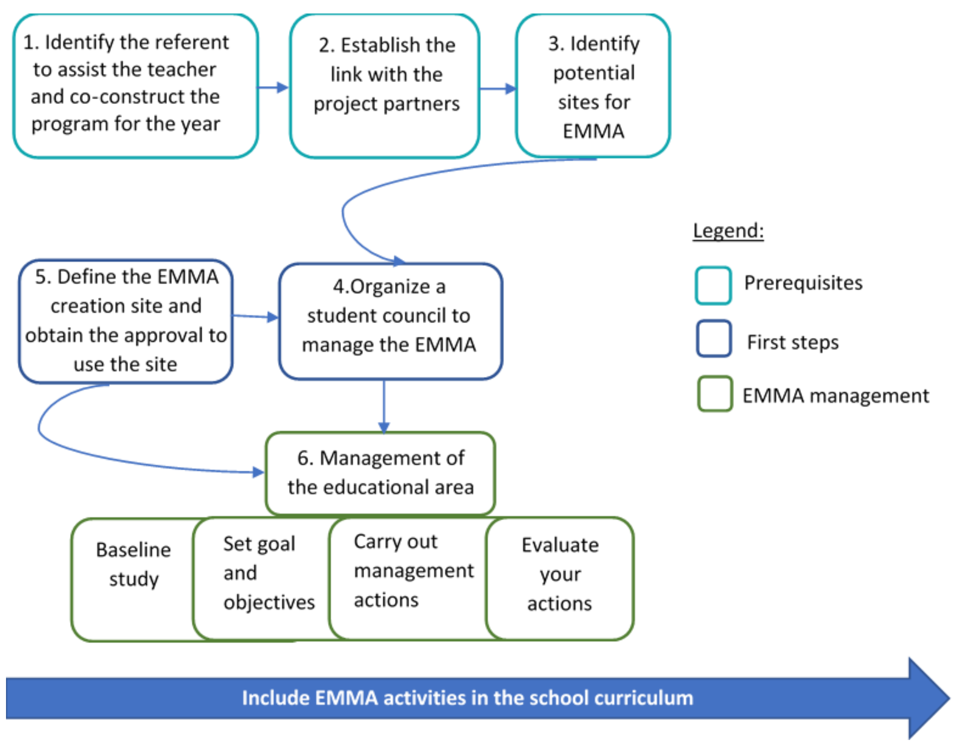

Figure 2. Description of the different stages to set up the educational area

➢ Indicative calendar for the launching year

Before detailing the 6 steps above, here is an indicative timeline for the creation of an EMMA:

- **January / February**:

Meeting(s) teacher-referents and stakeholders to define the workplan for the year. *It is important to engage and involve the maximum of actors who could help you on your projects: scientists / marine environment managers / coast care groups /NGOs / fishermen etc... Do not hesitate to inform local government officers and other actors of this meeting as soon as possible to ensure their presence. This first meeting will be an essential moment to co-construct the program of the year with all stakeholders and identify how each one can contribute.*

- **End of January:**

First meeting of the Council of Children for the Sea: Presentation of the project to the students and first collective discussions. → Reflection on the choice of the zone (Why this area? What criteria? What is interesting?)

Teacher/ Skipper start work on ways to linking childrens ideas with Western Australian Curriculum requirement (work will be ongoing throughout project)

- **February-March:**

First fieldtrip to the area: Inventory of the site with the students followed by class work to identify the issues on which the Children's Council for the Sea wishes to focus their work.

- **March-July:**

Students collect information about the site (ecosystems, cartography, human activities etc...)
and on its history (testimony of elders, associated cultural heritage, etc.). → Field trips depending on time and weather conditions.

- **August-September:**

Reflection on the objectives to achieve and the actions to implement
→ Field monitoring according to the issues identified
→ Preparation of management actions (example: installation of information panels, beach clean-up, etc.)

- **October-December:**

→ Implementation of management actions for the EMMA
→ Evaluation of the actions and feedbacks
→ Passing the torch to the next class.

➢ Indicative calendar over several years

- **Year 1:** Setting up the project and the first actions.
  → Year of experimentation and implementation. Many changes can be decided thereafter.

- **Year 2:** The work started in the previous year is completed and deepened. Continuation of the project and assessment of previous management actions.

A. Prerequisites

1. Identify a referent

The referent is a person who accompanies the school with the EMMA project by providing environmental science content. They support the teacher in the transmission of theoretical knowledge of sustainable development to students and the implementation of EMMA activities. In this context, the referent may be required to:

➢ Support students and their teacher in carrying out EMMA activities (field trips, presentation, meetings, etc.).

➢ Provide part of the environmental science content of the project (marine ecology, environmental management…) and facilitate adaptations to curriculum standards.

➢ Constitute and lead the reference/advisory group (a marine environment consultant and or other experts in the field of ecology, natural resource management, geography, traditional culture…).

➢ Become the focal point between the school and the various stakeholders (experts, local government officers, adjacent marine protected area managers, etc.).

➢ Intervene in class in collaboration with the teacher and under their coordination.

➢ Promote the respect for the environment, ensuring compliance with regulations, local rules policies.

The referent commits to work and collaborate with the teacher in charge of the project for the duration of at least one school year. During sessions related to EMMA, the referent cannot in any way replace the teacher, their posture is that of an intervenor/facilitator. The referent intervenes punctually, while the teacher makes the link throughout the year between the curriculum and the EMMA project. The adequacy between an EMMA project and the curriculum is mainly based on the good collaboration between the teacher and the referent. The quality of the project is often based on the quality of the teacher(s)-referent(s) relationship: it is a project co-built, where everyone brings their skills. It is therefore important to take the time to get to know each other and constitute a real duo.

It is important to start discussing the project before the beginning of the school year. The objective is not to define the program of activities for the year (because it will be constructed throughout the year by the students) but establish a schedule of time slots dedicated to the project (approximately 1 half-day per month for 1 class), without specifying any activity. It should be kept in mind that their calendar will evolve as the year progresses, but its joint development at the start of the year allows all to agree on milestones and deadlines to respect. For the development of this calendar, it may be interesting to provide "back-up dates" for field trips in autumn and winter, in anticipation of unfavorable weather.

2. Stakeholder engagement strategy

➢ Local government area:

Local governments are often a major partner in EMMA projects. They can provide a significant support in your actions and in the pre-selecting the site for the EMMA. Indeed, the EMMA site may be on public land. By contacting elected officials to present the project to them, they will be able to indicate to you the sites more suitable as the educational area. This relationship with the local government is essential and formalizing such a partnership will facilitate any support relating to the project.

➢ Managers of adjacent marine protected areas (MPAs):

Managers are responsible to protect and preserve marine areas. If some MPAs or marine parks are located near your school, do not hesitate to contact them, and present them with the project. These people can provide enriching technical support for the project.

➢ Traditional owners:

Traditional owners play a crucial part to develop educations resources to share traditional knowledge. These resources should align with the Western Australian curriculum Science and Humanities and Social Sciences curriculum for students in pre-primary to Year 9. The resources include information on local Aboriginal group, connection to Country, traditional ecological knowledge, caring for Country and changes to the environment post-colonization.

➢ Other stakeholders:

Coastcare group members, NGOs, users …

3. Identify potential sites

The educational area is:

➢ A small area (around 1 hectare, i.e. the approximate size of a football field) with or without protection status

➢ Located outside but in the vicinity of the school

➢ Chosen and / or validated by the pupils with the agreement of the local government.

The EMMA project is led by the students, so it is essential to involve them in the choice of the site and entrust them with the identification of their educational area (when the choice of site is possible). However, in order to ensure the presence of adequate sites near the school, adults involved in the project (teacher and referent) can initiate research before the start of the school year. This initial research will make it possible to list and pre-select a few sites likely to host the EMMA, helping students to choose a site.

To get started you can start exploring on your own but also contacting Shire Council services to identify and list the public or private sites likely to host the EMMA, as well as the possibilities to implement actions according to urban plans or protection status.

B. The first steps of the project with your students

1. Organization of the “Council of Children for the Sea”

The EMMA project is led by the students. To be able to make the decisions concerning their EMMA, they need to exchange, discuss, debate and vote. The Council of Children for the Sea will provide a framework for these exchanges: it is a place of participatory decision-making where all students can express themselves. This organization makes it possible to experiment with democracy and collective management. As such it allows students to practice Ethical understanding, Critical and Creative thinking, two major components of the General Capabilities of the Australian Curriculum.

The constitution and formalization of this council with your students is one of the first steps in the creation of an EMMA since it is the council that will determine the area to be protected and will define the conservation objectives, etc… The Council of Children for the Sea meets as often as necessary to carry out the EMMA project.

The establishment of the Council of Children for the Sea can be an opportunity to question notions of democracy and representativeness with your students.

Examples of Council’s composition:

If only one class is involved	If several classes are involved
- All the students in the class - The teacher - The referent (not compulsory)	- X student representatives per class who collect school mate’s opinion and then report back to them - 1 or more teacher(s) - The referent (not compulsory)

Bear in mind to write up the minutes of each council and to keep them!

- Thanks to the minutes, you will remember the topics discussed:
  - to ensure follow-up throughout the year,
  - to connect with the students who will manage the EMMA the following year.
- It is a good exercise for the pupils who can write them themselves.

2. The extended council of the sea

The extended council meets less regularly than the “Council of Children for the Sea”. For example, some schools set up one at the end of the year, others 1 at the beginning and one at the end of the year and others quarterly. This council brings together, in addition to the students and their teacher, stakeholders who have been invited.

This council is organized at the request of the pupils, when they wish to share their reflections, ideas and questions with external partners who can help them. So, the extended councils often take place when students have reached a certain degree of maturity in the management of their EMMA, often around August / September. The extended council represents the opportunity for students to invite people with whom they wish to exchange views according to the themes discussed in order to benefit from their expertise.

The extended advice can take different formats:

➢ Meet and question marine conservation managers who can advise them on how to preserve the biodiversity of their site.
➢ Meet and question scientists or associations (users, cultural heritage…) to learn more about a topic that interests them.
➢ Meet and question the elected officials to know more about ongoing actions in favor of the environment.
➢ Present proposals for actions to preserve biodiversity to elected officials and discuss them with them.
➢ Understand and apply Traditional Owners culture and beliefs

During extended councils, students can make their voices heard on the one hand but also understand that the management of a common space results from a compromise considering sometimes divergent opinions.

Here is a non-exhaustive list of speakers who can be invited during these extended councils:

➢ Director of the school.
➢ One or more elected officials of the Shire council.
➢ Naturalist and/or scientist.
➢ MPAs and marine park managers.
➢ Representatives of marine and coastal care groups; users (boating, surfing, fishing, …) or heritage.
➢ Traditional owners' representatives
➢ Farmers.
➢ Fishermen or their representatives
.

3. Introduce the project to your students: establish a collective definition of the EMMA

To launch EMMA, it is necessary that students can take ownership of the project and its goals. The first Council of the Sea is a very good opportunity to question our relationship to nature, our representations of it, the threats impacting it, why and how to protect it. Once these elements have been defined, the ideal is to take time with your students to define the concept of the EMMA:

- What is it about?
- What are their objectives through this project?
- Do they wish to preserve the exceptional biodiversity of a site, or restore the ecosystems health of a degraded site?

This preliminary definition will be particularly important for defining the criteria and choosing a site for the EMMA and will most probably evolve throughout the year during debates and/or the decision-making process.

4. Determine an area for the creation of the EMMA

A list of pre-identified sites near the school is presented to the students who will make the final choice.

To define the EMMA site, it is important that the students discuss and debate the criteria for choosing a site in the "Council of Children for the Sea". Some questions may be discussed, for example is a public or private site more appropriate, is it better on a site with rich or altered biodiversity etc. Once the criteria have been established, the sites can be visited and compared by the students. The site's selection can then be voted.

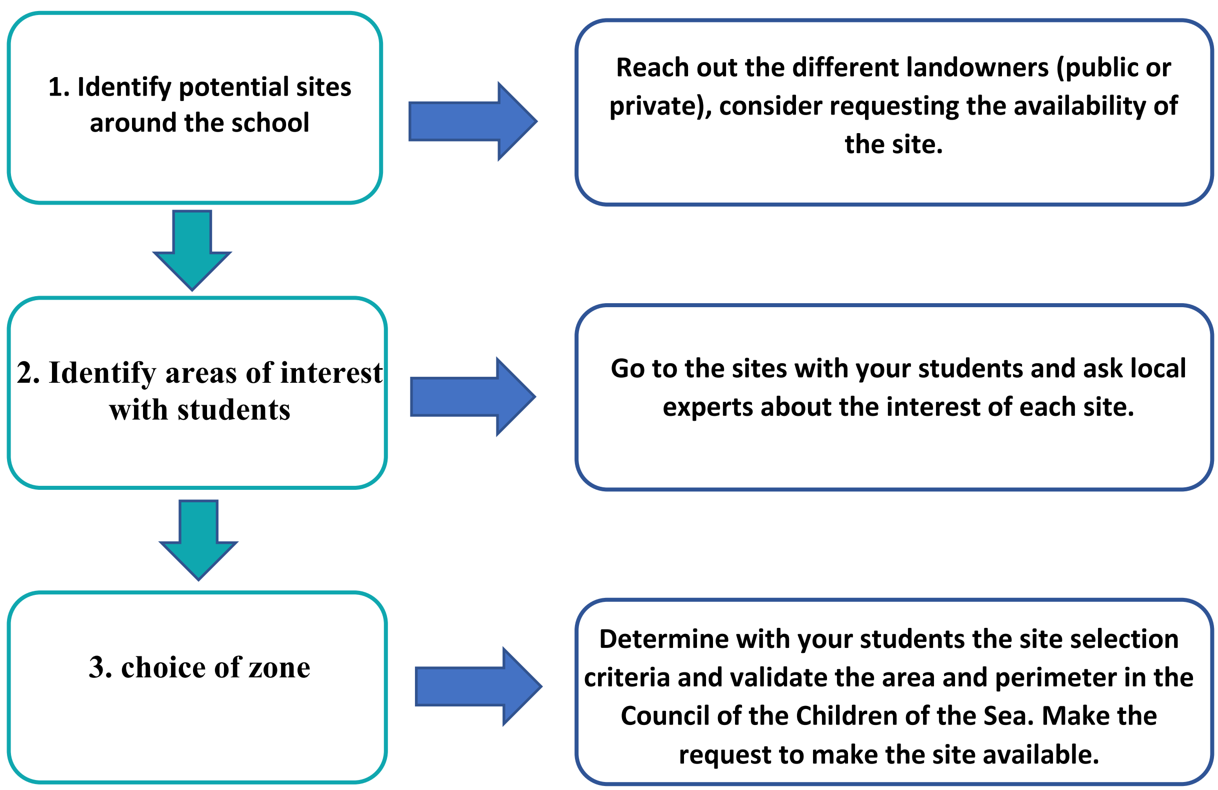

Figure 3. Selection process for the EMMA site.

List of criteria that may be considered by the pupils for the choice of the EMMA's site:

➢ **Accessibility:** Selected site must be an easily accessible and a safe area for students. Activities must respect the school's rules and policies for field trips.

➢ **Proximity:** an area close to the school may be preferred, considering factors such as cost of travel. However, immediate proximity is not mandatory.

➢ **Good knowledge of the site by the pupils:** It is ideal to identify a site familiar to the pupils. If they have already frequented a site they are more likely to develop a greater sense of ownership. Subsequently, they should be more motivated to carry out a conservation preservation project in a space that they already know and appreciate.

➢ **Site perimeter:** the pupils will study the biodiversity of their EMMA. A site that is too large will complicate this step, so its perimeter must fit the student's capability.

➢ **Human activities**: it is interesting to choose an area where different human activities occur tourism, presence of trails, fishing, agriculture, other economic activities, sporting activities. Meeting local stakeholders and discovering how they use a site will provide a better understanding of the EMMA site and its functioning. However, it is preferable not to choose an area too conflictual with too many environmental issues.

➢ **Habitat diversity**: a site with a wide range of habitats, providing the conditions for a diversity of plants and animals, is a good medium for discovering nature: the life cycle of some species can be explored and the links between them can be studied.

➢ **Presence of a protected area**: close vicinity to a protected area will foster conversations between the children's council and conservation management authorities beneficial to both parties.

➢ **Cultural heritage:** a site with cultural and/or historical heritage particularly its significance to Aboriginal people will increase the pedagogical value of the EMMA. Other stakeholders can then intervene such as Elders, historians and NGOs.

C. EMMA management

Figure 4. The 4 methodological stages of reflection on the management of an educational area.

1. Step 1: Study of the site and its territory (Preliminary/baseline study)

After having collectively identified and selected the site of the EMMA, the students will begin to study the site. This step is the longest. It will allow students to picture the EMMA and to better understand how the 'state' of the environment is influenced by human activities. From this, the students will learn about biodiversity, their prey and predators and other needs. They will also study the habitats, cultural heritage and human activities present on the site.

➢ **Objective: Building student ownership of the EMMA and understanding of environmental issues occurring in their area.**

This is achieved through field trips and discussion in the classroom to answer the following questions:

- What species are present? In what abundance? What are their needs and what are they sensitive to?
- Are the observations made typical of this area or are they indicating possible pressures (shocks and/or stresses)? Are there any signs of biodiversity loss in the EMMA?
- What is the historical and cultural heritage of the site?
- What is the current environmental status of the site? Is it connected to other natural environments or on the contrary isolated by roads and / or development? Is it a particular habitat for certain species? Which ones? Does it allow its species to feed, reproduce, move without constraints?

➢ Duration: as long as necessary, often 3 to 4 months, with opportunity for in-depth course for more challenging concepts.
➢ Examples of possible outputs: sketches, cartography, habitat and species description, public presentation with stakeholders, habitat connectivity analysis, environmental pressures assessment, etc….
➢ Implementation:

It is important to keep in mind that the project is led by the students: the adults supporting them will take care not to direct the project towards an area of personal interest. To promote, as much as possible, student's decision-making \processes, it seems relevant to convene the "Council of Children for the Sea" regularly to review and identify what the students are interested in and wish to deepen. Adults in charge of the project need to foster students' interest and engagement by encouraging questions that could be used to better understand how their site works.

2. Step 2: Define the objectives for the EMMA

Objectives and actions are not the same thing: objectives are a result you are trying to achieve, responding to specific issues, while actions respond to objectives. Therefore, it is important to define and choose your objectives first, then the actions that will respond to these.

➢ **Objective: from the baseline study and the identification of environmental issues, students will identify different objectives to be achieved to preserve or restore the biodiversity within the EMMA.**

➢ Duration: 1 to 2 sessions.

➢ Implementation: To identify the objectives, the following questions can be asked:

• What would you wish for the environmental status of the EMMA?
• How do you recommend preserving EMMA's biodiversity?
• What would be the consequences for this area and its stakeholders?

This step can be an opportunity to conduct many pedagogical activities: creating maps, or small texts presenting the evolution of the area over 15 years, building participatory scenarios with the children, for example in the form of comics.

Example of objective for the EMMA:

• Maintain the biodiversity already present on the site.
• Restore ecological continuity between the EMMA and neighboring natural elements in order to allow certain species to complete their life cycle.
• Favor habitats that have become rare in order to allow certain species to survive.
• Improve environmental water and sediment quality.

Various management objectives for the educational area will be proposed by the students. In anticipation of the next step, only one or two objectives should be kept. A vote can be organized to choose the goal(s) that the majority of students identify as priorities.

3. Step 3: Define concrete and achievable actions

➢ **Objective: identify concrete and achievable actions that meet the objective for the biodiversity that was chosen.**

➢ Duration: 1 to 2 sessions.

➢ Implementation: after defining your objectives, the questions that naturally arise are: How to achieve this goal? What would prevent us from reaching it? During one or more brainstorming sessions, the students will collectively identify one or more actions that could be implemented to respond to this objective. These actions can be of different kinds:

- Knowledge improvement actions: any action aimed at adding information about the site. For example, asking experts to help students to map habitats or to establish a scientific monitoring program (water quality, macro-waste, perception of site by users) to assess environmental pressures or the long-term status of biodiversity.
- Awareness actions: any action promoting the awareness of site users, local residents, and elected officials for example an information stall to explain the site characteristics, etc...
- Management actions: any action aimed to directly influence the environment or its users, for example planting native seedlings to connect the EMMA to another habitat and to encourage the movement of animals or the establishment of marked paths to avoid trampling, etc...

The choice of the action or actions can be made by a vote. The quality of the action program is not judged by the number of actions or their cost. The important aspect of the process is to define one or more realistic, feasible actions and to establish a timetable with the students.

4. Step 4: Evaluate the actions

➢ **Objective: this step helps to know whether the action(s) implemented are effective to meet the goal.**

This assessment help maintain momentum in relating the results to the initial objectives. It also makes it possible to take a step back on the actions implemented, to wonder about what works, what doesn't and what could be improved.

➢ Duration: as long as necessary.

➢ Implementation: One or more brainstorming session(s) to ask the students how to assess their actions. Depending on the actions defined, two types of assessment can be carried out:

Ecological assessment	Social assessment
Example: Set up monitoring protocols specific to certain species, habitats or pressures and their possible evolution.	Example: Doing surveys with populations before and after certain actions to find out if they had a real awareness-raising effect.

Most actions only make sense when monitoring is done for several years. Real trends will emerge by repeating the measures over the years. For example, students from successive years will be able to repeat the management and monitoring of the EMMA and quantify changes over time in the biodiversity and social metrics. This type of follow-up will improve our knowledge of the EMMA over the years and depending on the results the students will be able to formulate new questions.