"Participatory Teaching and Learning Methods in Education for Sustainability / Ocean Literacy"

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Session 3 – Pedagogical Strategies

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Primary Education Teacher: acquisition of general knowledge in several scientific fields

- Inadequate Content knowledge (CK)
- Adequate Pedagogical Content Knowledge (PCK)

Secondary Education Teacher: specialized in a scientific field

- Adequate Content Knowledge (CK)
- Inadequate Pedagogical Content Knowledge (PCK)

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Participatory teaching and learning methods: are those processes that integrate the active participation of learners in educational practice.


Jean Piaget

They are closely **related to**:

- critical theory
- theories of cognitive and social constructivism.

They **focus**:

- not only on the outcome of the teaching practice
- but also on the learning process itself.


Lev Vygotsky

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Participatory teaching and learning methods: are those processes that integrate the active participation of learners in educational practice.

Learners are involved in the educational process often based on their experiences. They influence it, co-shape it, and build their learning in interaction with other learners and teachers.

Teachers transform their role from simple transmitters of knowledge to facilitators of learning.

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Participatory teaching and learning methods: are those processes that integrate the active participation of learners in educational practice.

In this way,

participatory teaching and learning methods

allow young and adult learners to

acquire skills and values

that will enable them to play an active role in a democratic society and

participate in decision-making processes.

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Factors for selecting methodological approaches:

- **Characteristics of students:** (e.g., age, mental level, pre-existing knowledge, personal experiences, individual needs, interests, skills)
- **The characteristics of the teacher:** (e.g., degree of familiarity with the methods, personal perceptions, interests, knowledge)
- **The content of the educational intervention:** (e.g., content, learning objectives, available time, mobility capacity, availability of information sources, available equipment)
- **The type of the environment:** refers to the natural and man-made elements of the site and the environmental issues or problems that occur in the area.

Session 3 – Pedagogical Strategies

1. The “Framework” methods

- 1. Project Method
- 2. Problem solving
- 3. Case Study

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1. The "Framework" methods

2. Methods of Values and Figurative Methods

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1. The “Framework” methods

2. Methods of Values and Figurative Methods

3. Mapping and Field Methods

- 8. Concept mapping
- 9. Community mapping
- 10. Field study

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1. The “Framework” methods

2. Methods of Values and Figurative Methods

3. Mapping and Field Methods

4. Visualization Methods → **11. Future search conferencing**

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1. The "Framework" methods

2. Methods of Values and Figurative Methods

3. Mapping and Field Methods

4. Visualization Methods

5. Methods of Generating Ideas and Formulating Policies → **12. Brainstorming**

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1. The Project method

As a term, it conveys a multidimensional, dynamic, and fluid concept with vague boundaries, the meaning of which is not at all obvious.

- Cultural project
- Artistic project
- Social project
- Business project
- Personal project
- Political project
- Therapeutic project
- Educational project, etc.

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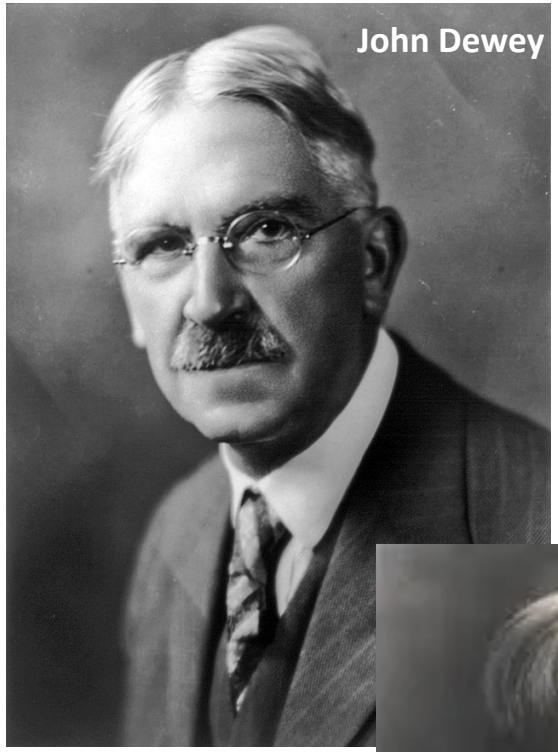
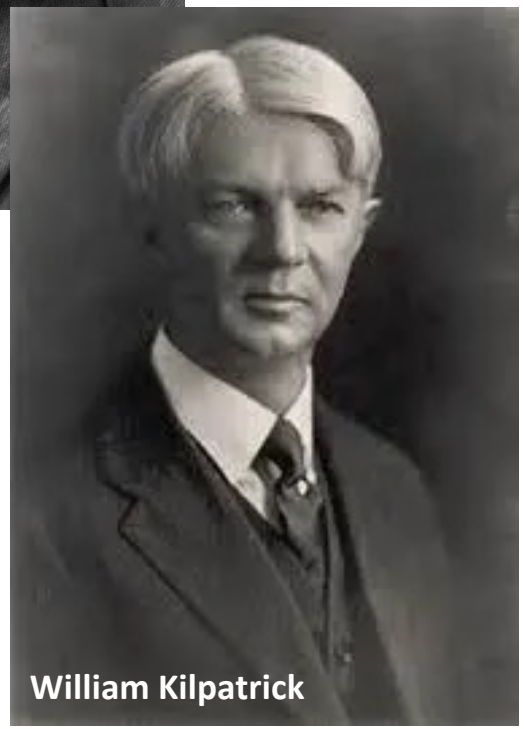
1. The Project method

Educational project: refers to a form of teaching and learning process (**project-based learning).**

The theoretical basis lies primarily on the principle of "**learning by doing"**





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1. The Project method

(i) Initiative:

In Environmental Education / Ocean Literacy programs, the initiative can derive from many "sources" (e.g., teachers, students, parents).

(ii) Exchange of views on the initiative:

At this stage, the students must decide on the project topic. A common practice is for the teacher to ask the students in the group to suggest one or more topics. When this phase is completed, students vote on the final choice of the topic.

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1. The Project method

(iii) Joint framework development:

Decisions must be made about…

- who will be involved
- which subgroups will be formed
- what will be the obligations of each member of the group
- what sources of information will be used
- what visits will take place and where
- which experts will be invited
- what activities will be carried out
- what will be the pace of work
- how long the program will last
- what is expected to be the outcome of the program

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1. The Project method

(iv) Implementation of the program:

This part of the program is the biggest.

It is the phase in which students learn by doing.

(v) End of the program:

It is usually done when the team assesses that what was planned has been implemented. Usually, the end of the program coincides with an event in which the environmental group presents the results to an audience.

2. The Problem-solving method

This method was first developed in the 1950s and 1960s in Medical schools in the USA and Canada.

It was found that students' performance was not satisfactory and after extensive research, it was concluded that the teaching and learning strategies of traditional education, based on memorizing fragmented knowledge, did not allow the cultivation of skills such as applying theoretical knowledge in practice, problem-solving, self-directed learning, and collaboration.

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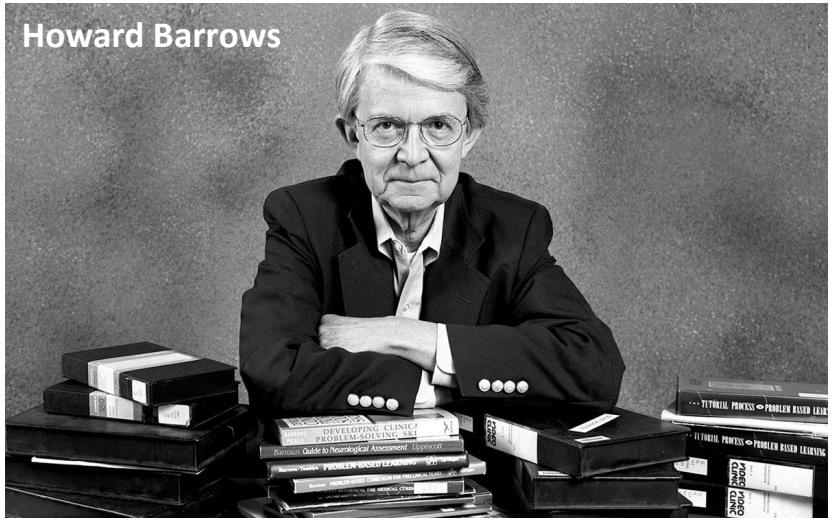
2. The Problem-solving method

A new concept of teaching and learning was proposed, based on problems and their solution, called **problem-based learning**.

Gradually, the method was applied to other University faculties and subjects, and many versions and models of the problem-solving process were developed.

From the early 1990s, it began to be applied to basic education.



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2. The Problem-solving method

- Learning is driven by the need to solve **a problem that takes place in real life**.
- Learning is **student-centered**.
- The approach to learning is **interdisciplinary** because real-world problems rarely fall under one science.
- Learning is **collaborative** and therefore based on teamwork but also **self-directed.**
- Processes of learning are **reflective.** The trainees reflect on the knowledge they acquired and the practices they followed to improve them.

2. The Problem-solving method

The problem must be:

- real/authentic, while in case it is not, it must look realistic,
- complex enough to pose challenges,
- poorly structured to motivate learners to explore and examine it from many different perspectives,
- open to many possible solutions to stimulate flexible thinking,
- adapted to the cognitive development of students.

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2. The Problem-solving method – Work stages

1. Investigation & identification of the problem
2. Definition of the goals for solving the problem
3. Exploration of alternative solutions
4. Documentation of criteria for choosing the possible/realistic solution(s)
5. Choice of the right solution(s)
6. Establishment of an action plan
7. Implementation of the action plan
8. Evaluation of the process

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2. The Problem-solving method – Work stages

EXAMPLE

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Stage 1: Title

"Marine pollution from plastics and microplastics"

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2. The Problem-solving method – Work stages

EXAMPLE

1. Investigation and identification of the problem
2. **Definition of the goals for solving the problem**
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Stage 2: Goals (indicative)

The students to be able to…

- learn about marine pollution in general and microplastics in particular
- learn the origin of this pollution
- learn the procedure of how plastics compartmentalize into the sea environment
- learn the consequences of pollution on the sea life and the environment
- sensitize themselves, their peers, and their local community

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2. The Problem-solving method – Work stages

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Stage 3: Alternative solutions

Using brainstorming, for example, we record as many solutions as possible, no matter how feasible these solutions are.
Indicative solutions:

- Delete plastics
- Stop manufacturing things from plastics
- Beach clean-ups
- Protest letters to the government/city hall/local industries
- Workshops organisation in schools with experts as speakers

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2. The Problem-solving method – Work stages

EXAMPLE

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5. Choice of the right solution(s)
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Stage 4: Criteria for the best solution(s)

In this stage, we document the criterion/a for selecting the best solution(s).

For example, we could use the following:

- Financial issues
- Time (not to be time-consuming)

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2. The Problem-solving method – Work stages

EXAMPLE

1. Investigation and identification of the problem
2. Definition of the goals for solving the problem
3. Exploration of alternative solutions
4. Documentation of criteria for choosing the possib
5. **Choice of the right solution(s)**
6. Establishment of an action plan
7. Implementation of the action
8. Evaluation of the process

Stage 5: Choice of the "right" solution(s)

Based on the above criteria, we ask students to end up with the most "convenient" and feasible at the same time solution(s).

These solutions could be for example:

- Beach clean-ups
- Protest letters to…
- Workshop organisations

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2. The Problem-solving method – Work stages

EXAMPLE

1. Investigation and identification of the problem
2. Definition of the goals for solving the problem
3. Exploration of alternative solutions
4. Documentation of criteria for choosing the possib
5. Choice of the right solution(s)
6. **Establishment of an action plan**
7. **Implementation of the action**
8. **Evaluation of the process**

Stages 6-8:

Finally, based on these specific solutions, we establish an action plan in detail, we implement it, and in the end we evaluate it.

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3. The Case study method

It is a participatory method, **BUT** it is highly directed by the teacher, as opposed to project and problem-solving methods.

It is a presentation to a small group of trainees of a real or hypothetical problem to:

- diagnose the problem
- propose solutions
- reach conclusions that can be applied to other similar situations.

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3. The Case study method

- Tell a good and engaging story
- Be as realistic as possible
- Support educational objectives
- Be clear, understandable, and concise
- Focus on a single problem
- Contain the appropriate information for the analysis
- Pique interest
- Avoid any data that is not useful and disorienting
- Create empathy with the main characters or situations
- Refer to an issue that is open to many approaches and solutions.

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3. The Case study method

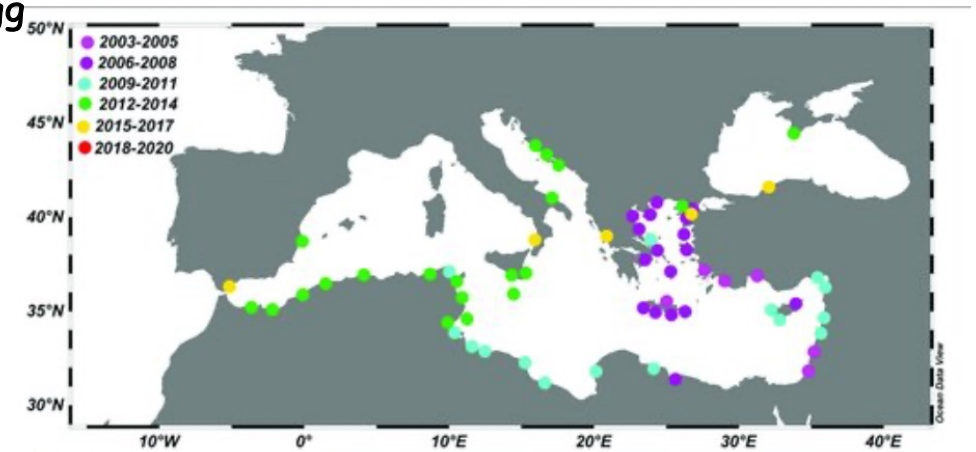
EXAMPLE

hjkjhggg

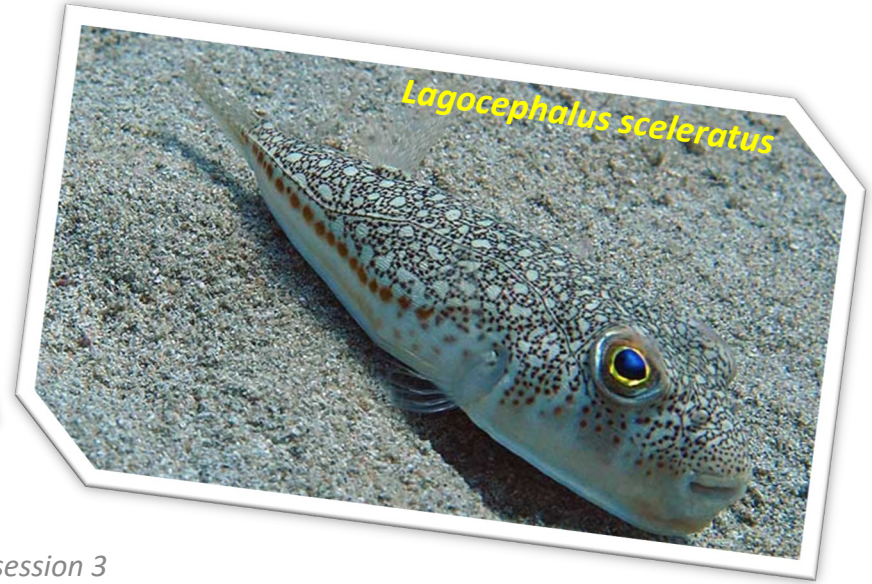
A good practice could be to use newspaper articles as a triggering event. Alien species, for example, and their invasion in the Mediterranean Sea could be an interesting topic for students.

Since narration is a very powerful tool in the hands of teachers, we could read to students a respective article and then spend some time discussing this phenomenon with them.

Discussion topics could be the release of these species from the ballast waters of ships.



Ulman et al. (2021). *Frontiers in Marine Science*, doi: 10.3389/fmars.2021.670413



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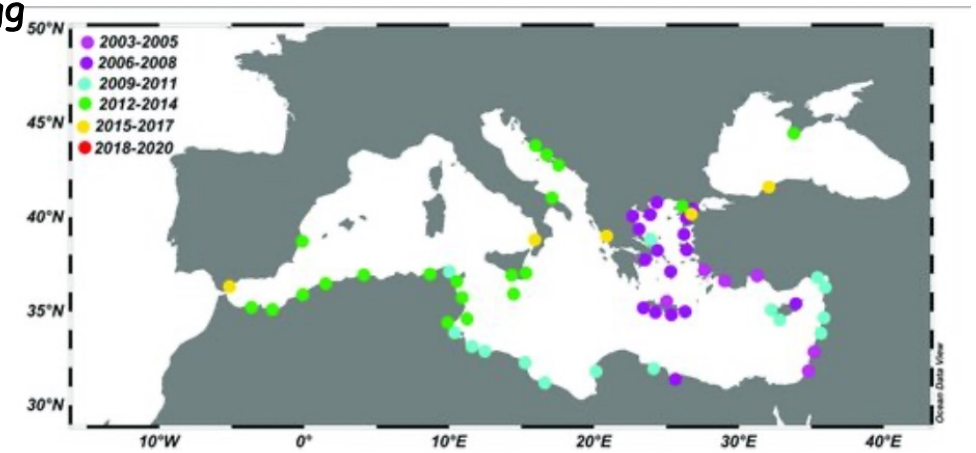
3. The Case study method

EXAMPLE

hjkjhggg

But since this example focuses on the Mediterranean Sea, we should expand our discussion by saying that this invasion occurs not only this way but also through the Suez Channel from the Red Sea and the Indian Ocean.

After comprehending the mechanism of invasion, the students could discuss protection issues for other (native) species, human health (as some of them are dangerous for consumption), financial consequences, etc.



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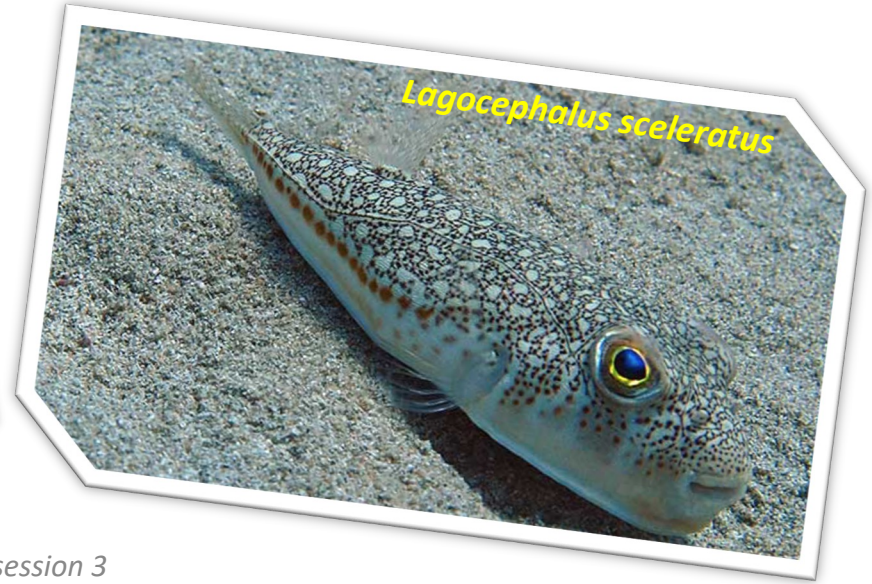

4. The Moral dilemma method

The moral dilemma is a method that focuses on cultivating values.

Teachers focus basically on the cultivation of cognitive abilities and how they should be handled in teaching practice, and NOT values.

As a result, many teachers either avoid entering this field or handle situations intuitively, without knowing techniques and tools that can make their teaching intervention more effective.

4. The Moral dilemma method

This issue is particularly important in **Environmental Education / Education for Sustainability**, which, along with cultivating knowledge and skills, seeks to develop values that will enable people of all ages to take responsibility for creating and securing a sustainable future.

The term ”dilemma” refers to a difficult issue involving the choice between two -usually equivalent- alternatives, neither of which can be considered fully satisfactory

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4. The Moral dilemma method

EXAMPLE

We could create a simple scenario to put our students in a dilemma situation, meaning that they have to make a difficult choice based on certain data.

For example, we have just heard on the local news that a power plant facility is about to be built in a nearby coastal zone. But this is the only bay in the region where sustainable use of tourism is taking place since there is a beautiful beach for swimming with clear waters for snorkeling, beach bars, taverns, etc.).

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4. The Moral dilemma method

EXAMPLE

The dilemma:

Do we prefer lower prices in electrical bills since the energy production will take place near our hometown without having to bring the energy from a thousand kilometers away or do we prefer higher prices and keep enjoying the scenery?

The students are asked to write down the advantages and disadvantages of each decision in groups and discuss their arguments in a plenary session with their peers.

5. The Role Playing game

It is a highly active teaching and learning method in which participants take on the role of other real or imagined persons or groups of people, exposing and supporting their positions around a topic of concern.

Usually, this issue involves opposing opinions, conflicting positions, or dilemmas, while the participants have to come to a decision.

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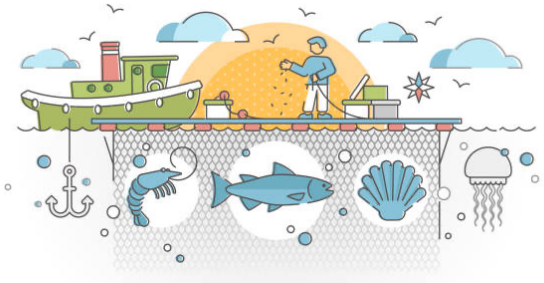
5. The Role Playing game

EXAMPLE

Topic of the role play:
"Extensive aquaculture"

By the term "extensive" we are referring to an activity that is realized offshore, inside cages made basically from nets. These facilities create some kind of pollution, related to animal feeding, but the issue under consideration is that there are beautiful beaches in the area which are used by holiday-makers during the summer.

We split our students into groups; we give them specific roles and provide them time to prepare their arguments.



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NGO OR NON-GOVERNMENTAL ORGANIZATION

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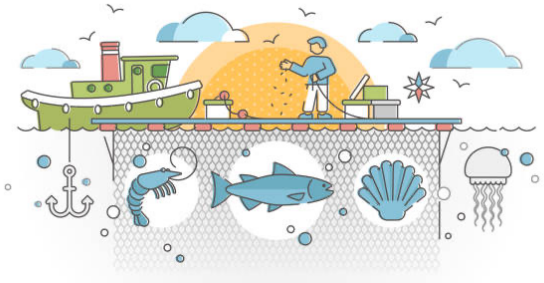
5. The Role Playing game

EXAMPLE

Topic of the role play:
"Extensive aquaculture"

Roles: e.g., aquaculture owners, mayor of the local city, fishermen, NGO representatives, unemployed, restaurant owners.

During the first round, we ask group by group to express their positions on whether they are in favour or against this facility; then we provide the opportunity during a second round to unfold additional arguments based on what they have heard so far.



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NGO OR NON-GOVERNMENTAL ORGANIZATION

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5. The Role Playing ~~game~~

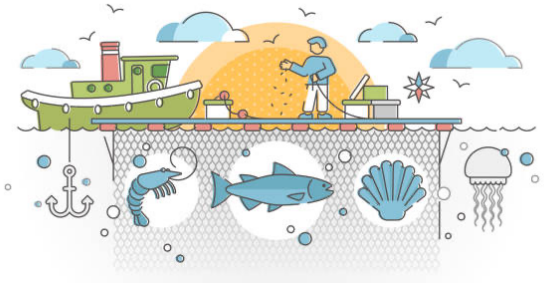
EXAMPLE

Topic of the role play:
"Extensive aquaculture"

In the end, the facilitator (the teacher/educator) discusses the outcome of the activity, wraps up, and closes the procedure.

All teachers/educators need to know that the interesting thing about this strategy is when we give certain roles to students that are against their beliefs and still, they have to prepare their arguments accordingly.

This type of method enhances democratic ethos.



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NGO OR NON-GOVERNMENTAL ORGANIZATION

6. The Debate

A modern method of cultivating argumentation, contributing to the development of communication and decision-making skills between two sides beginning from opposite starting points, in favor and against such issues, and based on well-formulated arguments.

The aim is to convince the audience watching the debate and bring it to their side.

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6. The Debate

EXAMPLE

Topic of the debate:
"Offshore wind farm installation"

The issue under consideration is the installation of an offshore wind farm for the production of electricity that will be used for the needs of the local community.

We split our students into two groups representing two different views of the local community.

One group prepares its arguments in favour of this installation and the other one against this installation.

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6. The Debate

EXAMPLE

Topic of the debate:
"Offshore wind farm installation"

We provide the students with adequate time to prepare themselves and enough time to unfold their argumentation.

In the end, the facilitator (teacher/ educator) discusses the outcome of the activity, wraps up, and closes the procedure.

This type of method enhances democratic ethos.

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7. The Forum Theatre

- The central idea of the Forum theatre lies in the interaction between actors and spectators, who gradually take on the role of actor.
- A theatrical play is presented showing a problematic situation.
- The decisions the protagonist makes to deal with this situation are not effective and cause him more problems.
- The actions of the rest of the characters in the drama do not help to solve it.

7. The Forum Theatre

1. The moderator urges viewers to stop it at any time in the plot by saying stop.
2. The scene freezes at that point and the viewer who requested the interruption will have to tell the actor that he can act differently or take his place on stage and implement his strategy to resolve the conflict.
3. The rest of the actors improvise their reaction to the development, initially trying not to retreat easily and stick to the original development of the play.
4. If they don't know how to react, actors can consult viewers.
5. The coordinator also intervenes in the action, asking questions, or clarifications on the proposals made.

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7. The Forum Theatre

For better comprehending this strategy the reader could visit the following YouTube address.

The portrayed material does NOT come from the Ocean Literacy field or Environmental Education / Education for Sustainability. Nevertheless, it comes from everyday students' lives and therefore could help any concerned reader to design respective activities.

https://www.youtube.com/watch?v=P3Ok_i38U0E

8. Concept mapping

According to the modern findings of cognitive psychology, schematization and virtual symbols affect the formation of perceptions and generally the cognitive constitution of learners.

Through visualization, complex concepts or phenomena can be quickly perceived.

When information is presented in visual form the brain is better able to process it and proceed to synthesize concepts.

8. Concept mapping

In a typical concept map, we start from a central concept, which:

- at a first level, we break down into one or more general concepts
- at a second level, these general concepts are broken down into other sub-concepts
- … and this procedure can go on and on… for as many levels as we can

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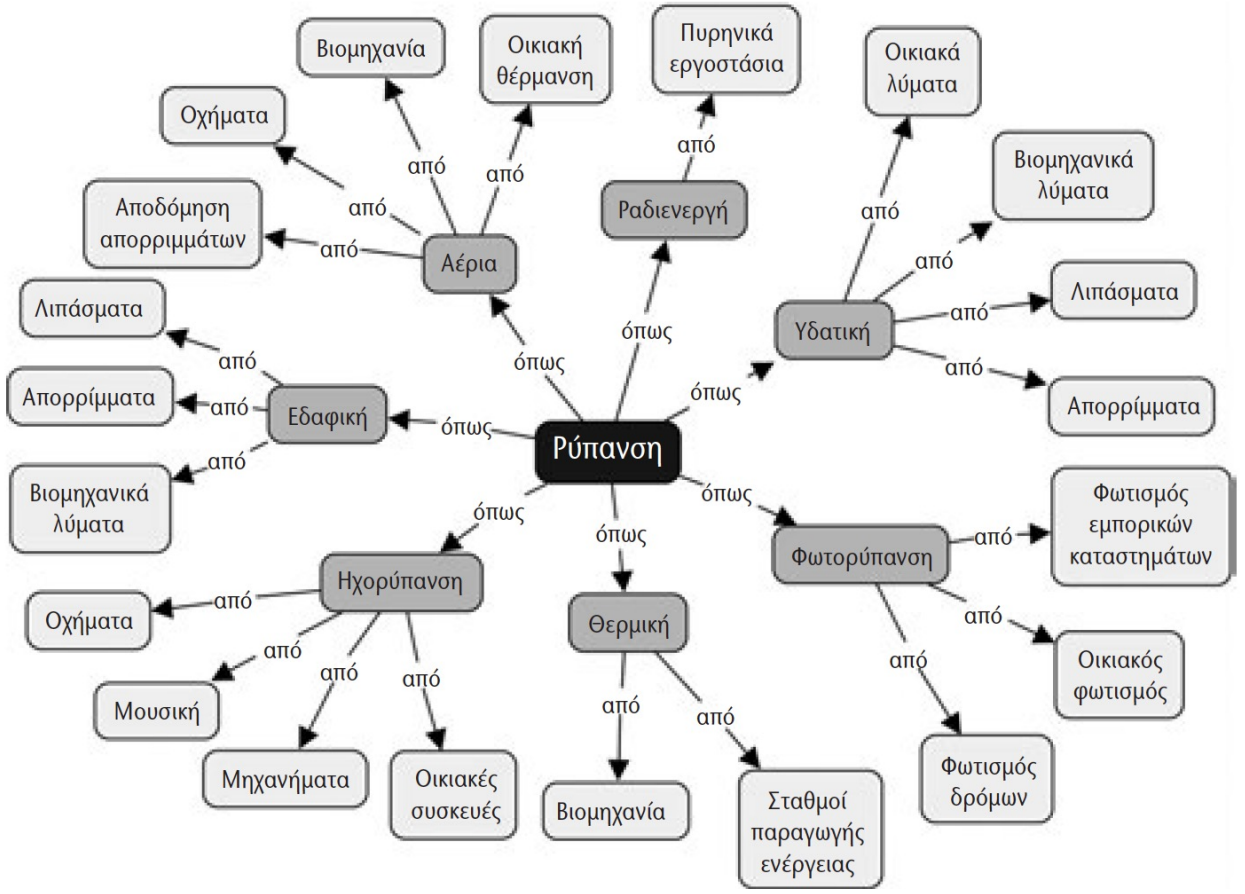
8. Concept mapping

- **Arachnoid map:** The central idea is placed in the center, while the individual concepts are placed circularly, facing outwards. This creates a web similar to a spider's web, with the central concept being the unifying factor of the elements of the map.



Source: Flogaitis, Liarakou & Gavrilakis (2021)

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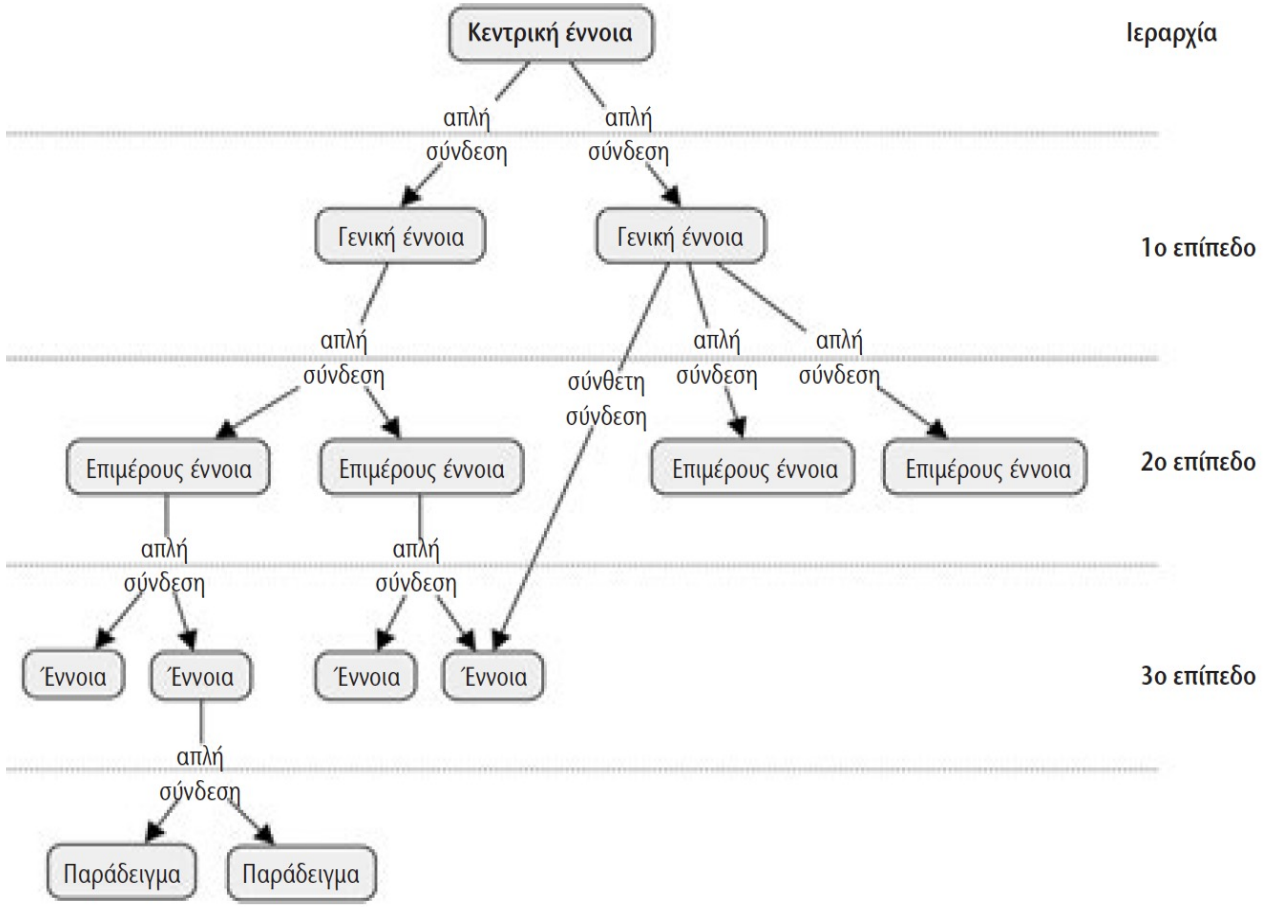
8. Concept mapping

- **Hierarchical map:** Concepts are presented in downwardly scaled order of meaning, creating horizontal or vertical branches. The concepts are placed in a hierarchical form, with the more general ones appearing at the top of the map and the individual concepts appearing at lower levels.



Source: Flogaitis, Liarakou & Gavrilakis (2021)

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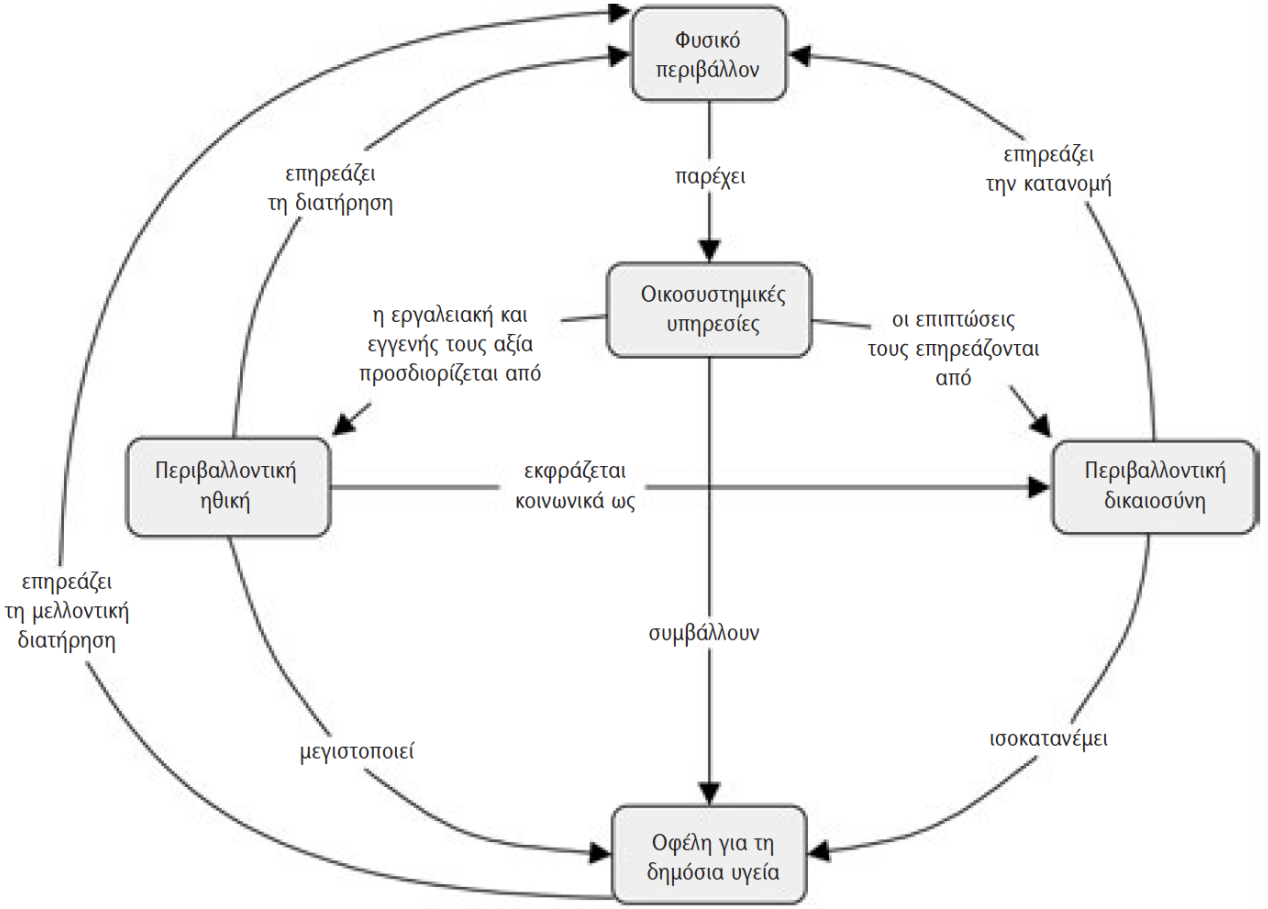
8. Concept mapping

- **Systemic map:** Organizes information in a similar way to flow tables. Often at their ends indicate inflows and outflows. The central concept map is particularly useful for representing the functioning of a system and the dynamic relationships between concepts, so it enhances the development of systems thinking.



Source: Flogaitis, Liarakou & Gavrilakis (2021)

9. Community mapping

Several buildings (public, private, modern, or old), industrial facilities, schools, churches, monuments, etc., compose the architectural image of an area.

Among them, streets and sidewalks, small and larger squares, pedestrian streets, paths, and parks, complement public space.

The natural and man-built environment hosts human activities, professions, cultural activities, and habits, which constitute the daily life of citizens and shape the culture of a community.

9. Community mapping

Among all these, some interest us the most.

We would probably like to highlight these areas and share them with friends, or even unknown people who visit the place.

This is where **community mapping** focuses.

A community map expresses the elements that are of particular interest and value to the specific community, while at the same time initiating ideas to involve community members more actively in highlighting and utilizing these elements.

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9. Community mapping

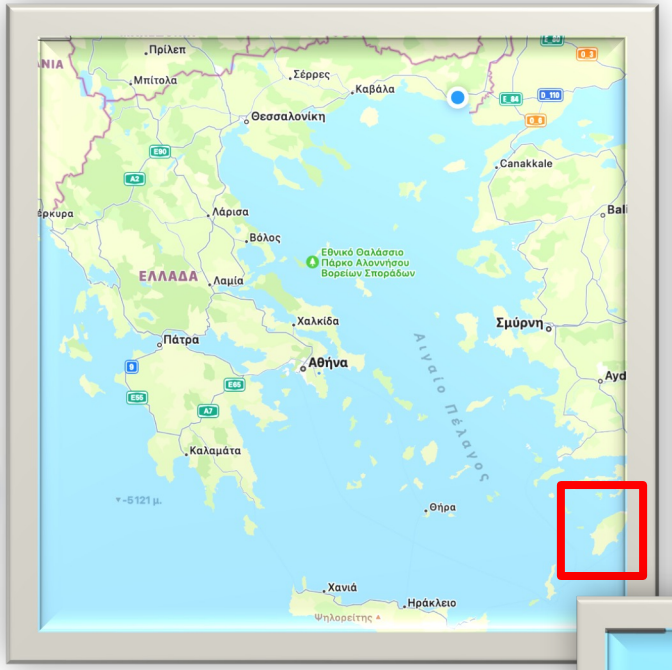
EXAMPLE

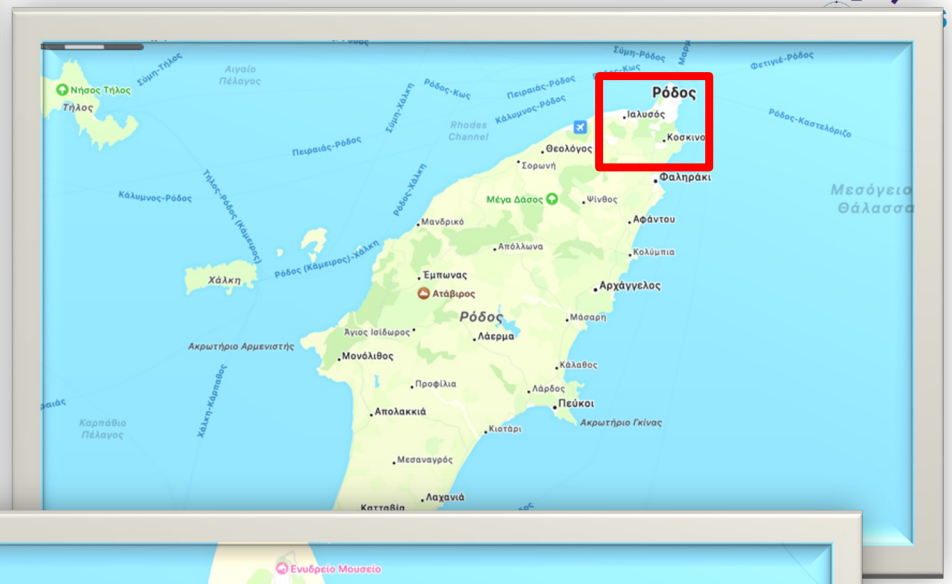
For the needs of this strategy, we could use a map of a coastal city. As an example, we take the city of Rhodes on the island of Rhodes, South East Greece.

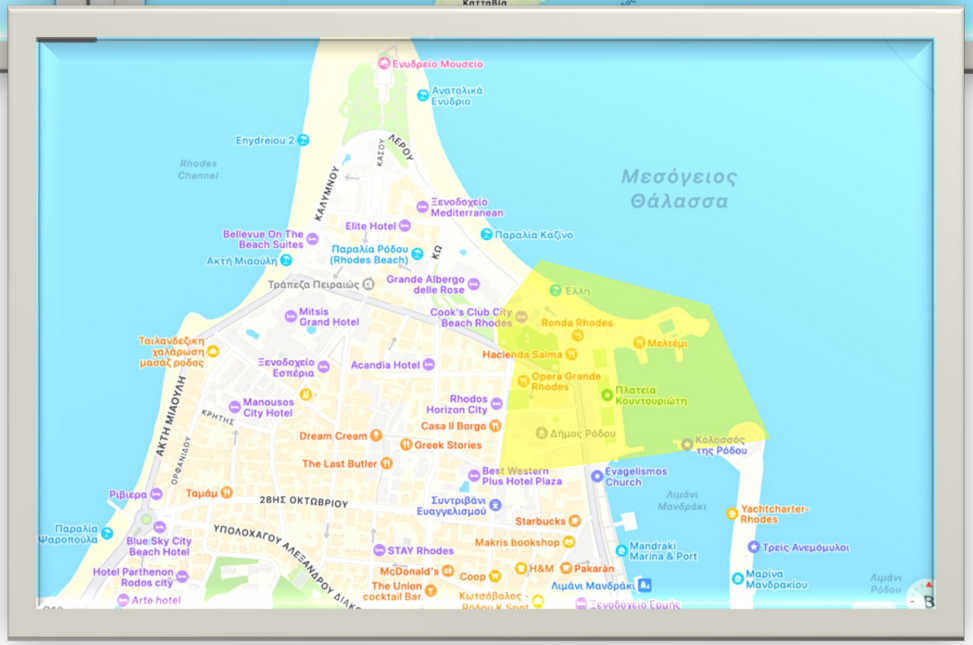
We usually mark a certain area or a route and give this map to the students in groups.

In our example, we have marked an area comprised of an inner part of the city and a part of the marina.

Depending on the student's grade, we could arrange to involve chaperones in this out-of-school activity.







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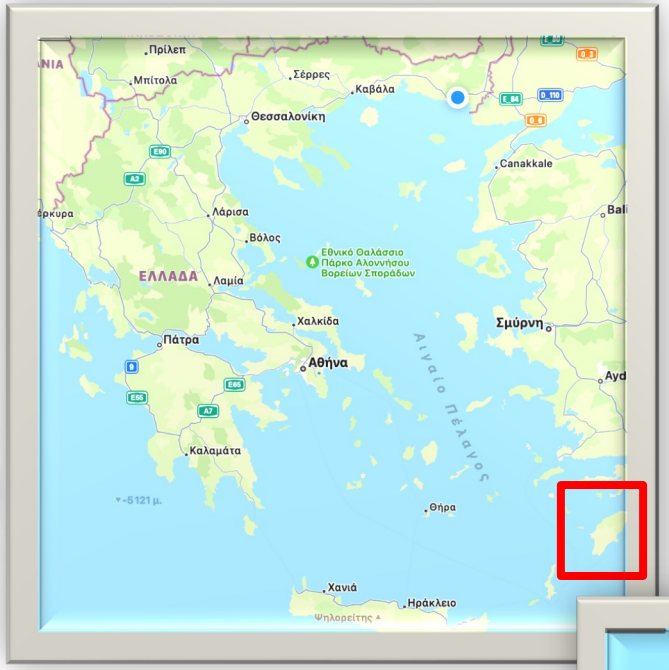
9. Community mapping

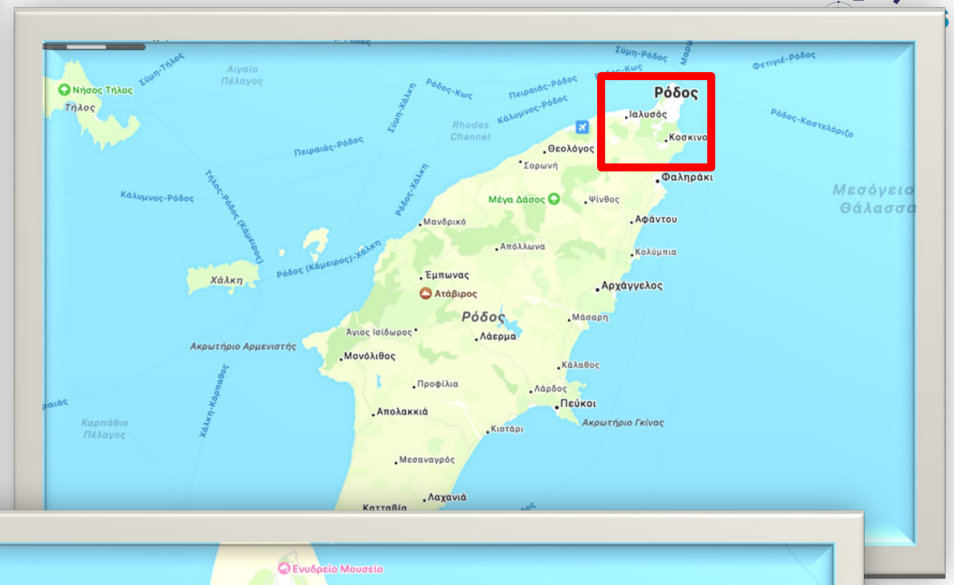
EXAMPLE

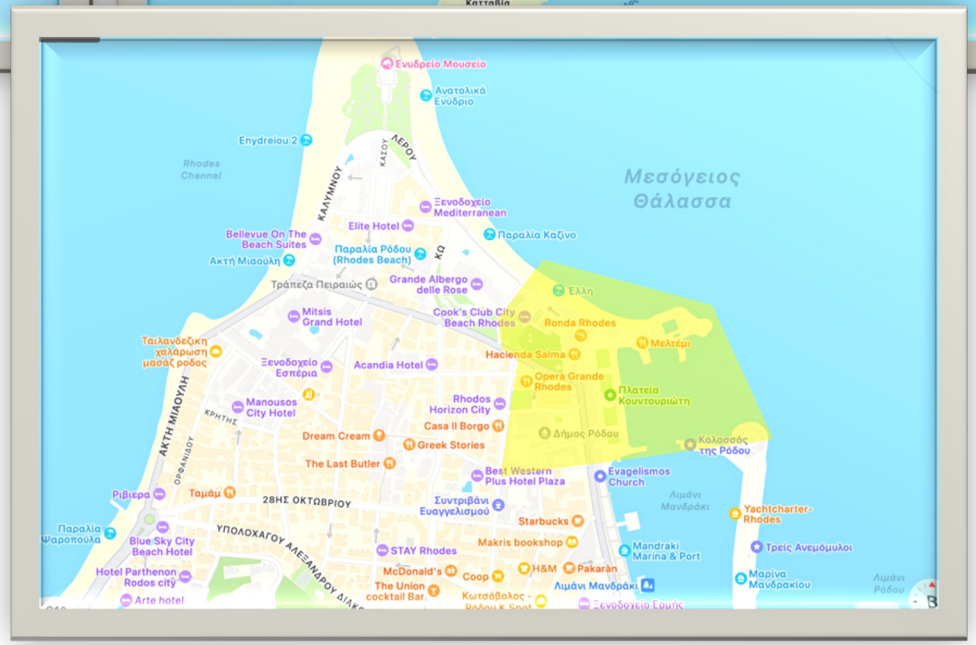
The students are asked to walk in this area and focus on and document the important facilities, monuments, or activities that take place there, either by writing down several notes, taking photos, or even taking some objects as souvenirs.

In the following days, all groups present their findings, compare and combine them, and create a new map (a 3D or a digital one) with all the combined information.

This way, the students get to know their place of living, and the pros and cons, highlighting the former and helping correct the latter.







10. The Field study

A field study is not just a participation in a school trip that has a recreational character.

The key elements that differentiate field study from other similar activities outside the classroom are the clear learning character and more specifically the:

- planning,
- learning objectives,
- investigation,
- interaction of the learners with the study area,
- and generally the active and inquiry-based participation of the trainees from the beginning to the end of the educational process.

Session 3 – Pedagogical Strategies

10. The Field study

Stage I. Preparation:

- All activities are planned in detail.
- The instruments and devices to be used are displayed, and safety rules are read and discussed.
- Become familiar with the relevant techniques that will be used in the field.

Session 3 – Pedagogical Strategies

10. The Field study

Stage II. In the field:

- The division into groups takes place (each group should be accompanied by an adult).
- Students are appropriately dressed.
- A pharmacy should always be available.
- Work should be done in groups of a few students.
- Final inspection of the area for possible avoidance of unpleasant situations.

10. The Field study

Stage III. Back to school:

- Fieldwork does not end in the field but continues at school.
- Each group prepares a report containing their observations, the data collected, the analysis of the data, and estimates on the environmental impact of the activities studied.
- This material can be part of the material that will be exhibited during the presentation of the program at the end of the school year.

Session 3 – Pedagogical Strategies

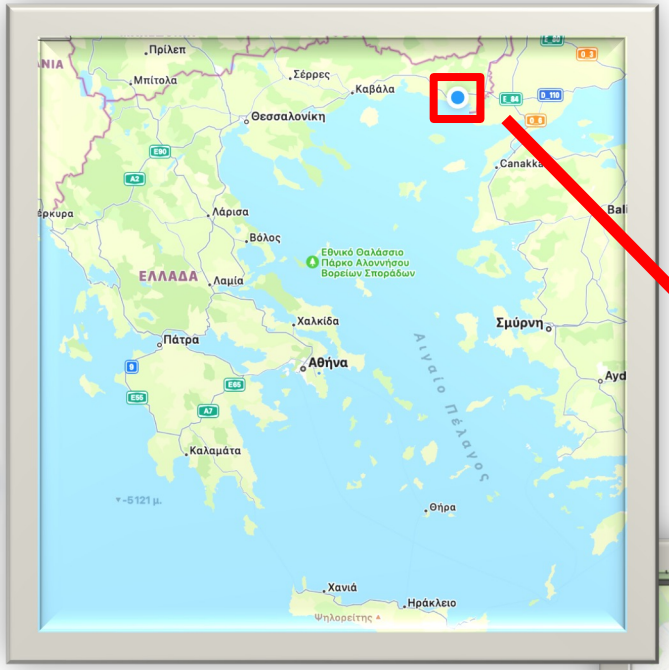
10. The Field study

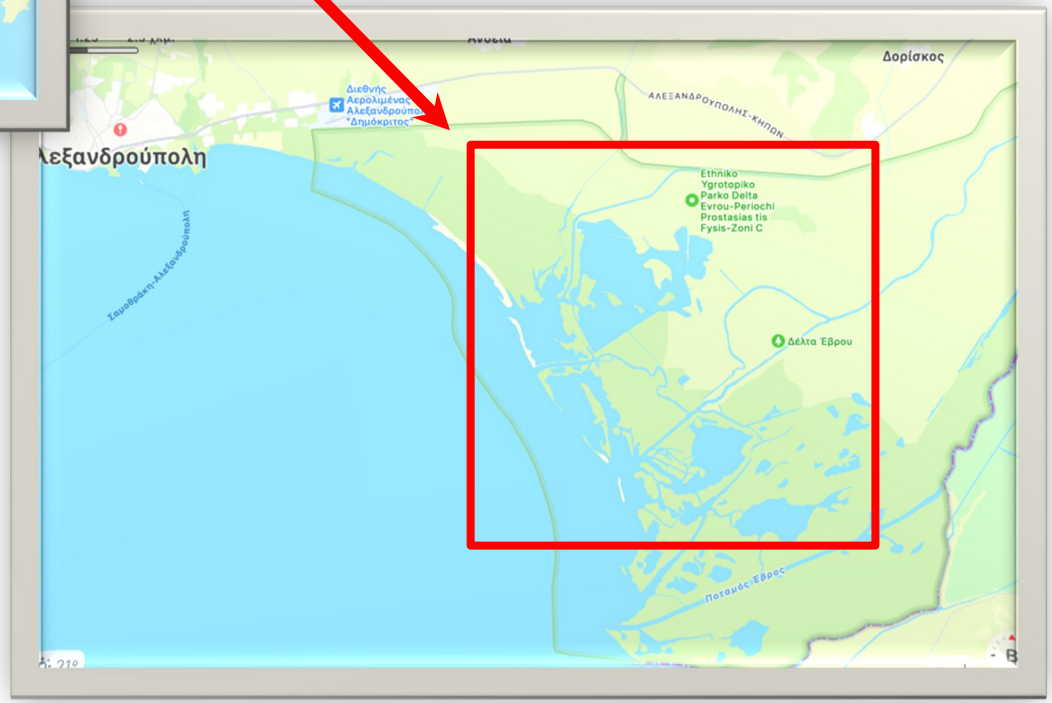
EXAMPLE

Our students are planning to explore the benefits that derive from the estuaries. An "estuary" is a place where seawater and freshwater mix.

Near the city of Alexandroupolis, north-east Greece, we can find one of the most important deltas in south-east Europe, the Evros Delta; our students are about to run a small-scale scientific work in this area.

As we have mentioned in the previous slides, this strategy has three stages. More specifically:





Session 3 – Pedagogical Strategies

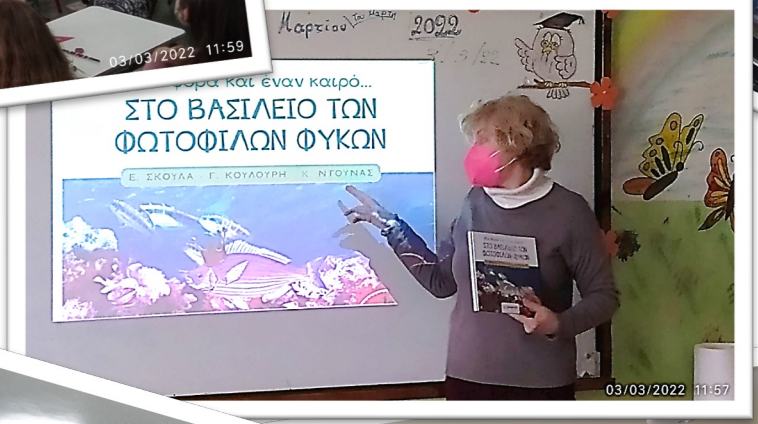
10. The Field study

EXAMPLE

1st stage: "Preparation"

During this stage, which should take several teaching hours, the students with the assistance of their teachers of course inside the safety of their classroom prepare themselves for several activities such as:

- They learn everything about the topography of the area.
- They work on interactive maps, find relevant photos, document possible hazards, etc.
- They search for information about the fauna and flora of the area.



Session 3 – Pedagogical Strategies

10. The Field study

EXAMPLE

1st stage: "Preparation"

- If some kind of sampling and/or recording of the physical and chemical parameters (e.g., oxygen, pH, salinity) is about to take place, students also learn how to use simple instruments.
- They prepare worksheets, try on boots and outfits in case of samplings, consider the safety rules, etc.

Session 3 – Pedagogical Strategies

10. The Field study

EXAMPLE

2nd stage: "The field trip"

During the next stage, the students are moved to the field.

Since they are perfectly aware of their "research" work, they do everything that were trained to do in a very serious and scientific manner.

Session 3 – Pedagogical Strategies

10. The Field study

EXAMPLE

3rd stage: "Back to school"

But this strategy does not end there. When they get back to their classroom, in the following days, they work on their samples (i.e., document the number of different species, the number of individuals per species), study the photos, analyze the data, and in the end prepare a presentation of the whole procedure in front of their fellow students, from other grades, their families, and maybe the local community.

Session 3 – Pedagogical Strategies

10. The Field study

EXAMPLE

3rd stage: "Back to school"

When they get back to their classroom, in the following days, they work on their samples (i.e., document the number of different species, the number of individuals per species), study the photos, analyze the data, and in the end prepare a presentation of the whole procedure in front of their fellow students, from other grades, their families, and maybe the local community.

11. Future Search Conferencing

It is an innovative method that focuses on the organization and implementation of a meeting of **a "large" number of citizens** to search for ideas – proposals and plan actions for the future of a community or organization.

Participants share stories from the past, discuss the present, and record their expectations for their future together.

11. Future Search Conferencing

Through the discussions, mutual collaborative learning is developed, which is the catalyst for voluntary action.

It functions as a temporary learning community that plans its future, without guidance from local authorities, and experts.

Session 3 – Pedagogical Strategies

11. Future Search Conferencing

This workshop has a duration of 3 teaching hours and the theme is **"Implementation of Ocean Literacy (OL) in Primary and Secondary Schools"** and targets in-service teachers.

We divide them into groups and we ask them to express their views freely using, for example, brainstorming, on the factors they consider:

(i) problematic for the successful implementation of OL at school and

(ii) ideal for the implementation of relevant programs.

Inhibitory factors	Score				
	1st group	2nd group	3rd group	4th group	Total

Ideal factors	Score				
	1st group	2nd group	3rd group	4th group	Total

Session 3 – Pedagogical Strategies

11. Future Search Conferencing

Then, each group evaluates the factors using a scoring scale from 1 to 5 where 5 is the most important factor.

Immediately afterward, the groups calculate the sum of the total score of each factor for both cases.

We identify the two or three most important factors per case, i.e., those that collect the highest score.

Inhibitory factors	Score				
	1st group	2nd group	3rd group	4th group	Total
Financial difficulties	5	5	4	3	17
Bureaucracy	5	3	3	4	15
Lack of information / training	5	5	5	5	20
Lack of motivation	2	2	3	4	11
Lack of time	1	1	2	2	6
Lack of cooperation between local authorities and schools	4	3	3	3	12

Ideal factors	Score				
	1st group	2nd group	3rd group	4th group	Total
Infrastructure / equipment	4	3	3	5	15
Collaboration with NGOs	3	3	4	3	13
Favorable school environment	4	3	5	4	16
Teacher training	5	5	5	5	20
Restructuring of school curricula	5	5	5	4	19

Session 3 – Pedagogical Strategies

11. Future Search Conferencing

In a following stage, each group is asked to discuss ways to overcome the problematic factors and ways to achieve ideal factors, and then design a group action plan.

Finally, each group presents the outcome of their discussions in a plenary session, and in the end, the facilitator (the teacher/educator) wraps up and closes the activity.

Inhibitory factors	Score				
	1st group	2nd group	3rd group	4th group	Total
Financial difficulties	5	5	4	3	17
Bureaucracy	5	3	3	4	15
Lack of information / training	5	5	5	5	20
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Ideal factors	Score				
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Infrastructure / equipment	4	3	3	5	15
Collaboration with NGOs	3	3	4	3	13
Favorable school environment	4	3	5	4	16
Teacher training	5	5	5	5	20
Restructuring of school curricula	5	5	5	4	19

Session 3 – Pedagogical Strategies

12. Brainstorming

It is a relatively simple method to apply but is also open to the formulation of several variations by teachers.

It is a method invented to tackle or creatively solve problems.

In this light, it is a useful tool, especially within the Problem-Solving method.

In **educational contexts** (e.g., schools and lifelong learning institutions) it is used in several ways to analyze and clarify concepts.

12. Brainstorming

It is widely used in Environmental Education / Sustainability Education.

Helps to clarify complex environmental and sustainability issues, as well as to search for original solutions to these issues…

…and therefore, can and must be used in Ocean Literacy issues

Session 3 – Pedagogical Strategies

12. Brainstorming

- Participants speak one by one
- The ideas expressed should be brief
- Spontaneity in expressing ideas is extremely important
- The expression of original and unusual ideas is encouraged
- Ideas can be expressed in no particular order
- It is not allowed to criticize, approve, and generally evaluate ideas as long as they are expressed

Session 3 – Pedagogical Strategies

12. Brainstorming

- All ideas expressed are acceptable
- As many ideas as possible are desirable
- The goal is quantity, not quality

Information and Communication Technologies (ICT)

can be used to portray the results of a brainstorming procedure (e.g., a word cloud)

Session 3 – Pedagogical Strategies

12. Brainstorming

Activity title: "Plant Blindness"

One simple and very quick task could be to ask our students within a minute to write down any living organism that comes to their minds when thinking of the ocean.

What is expected from this activity is for the participants to focus mistakenly (but somehow justifiably) mainly on animals and not plants.

This derives from the fact that:

(i) We, humans, have common characteristics with animals, especially the superior ones like mammals, and not plants

(ii) We usually do not give the proper attention to plants during our teaching and learning process as we ought to do, based on the fact that without plants life would not be the same as we know it.

Indicative References – Educational material: