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## **Implementation of a new educational research tool for evaluating Mediterranean Sea Literacy (MSL) of high school students: A pilot study**

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**S1: Mediterranean Sea Literacy (MSL) Questionnaire (correct answers are indicated in bold).**

**Student's Grade:**

**1. The Aegean Sea is connected**

- a. only to the Black Sea
- b. only to the Mediterranean Sea
- c. only to the Atlantic ocean
- d. to all parts of the ocean**
- e. I don't know

**2. Which of the following statements are true about the Mediterranean Sea?**

- a. It is the largest and deepest semi-enclosed sea on Earth**
- b. It is the largest and shallowest semi-enclosed sea on Earth
- c. It is the smallest and shallowest semi-enclosed sea on Earth
- d. It is the smallest and deepest semi-enclosed sea on Earth
- e. I don't know

**3. Water circulation in the Mediterranean Sea is powered by**

- a. water exchange through the Gibraltar Straits only
- b. water exchange through the Gibraltar Straits, and freshwater supply from rivers
- c. water exchange through the Gibraltar Straits, freshwater supply from rivers, and heat input from the atmosphere**
- d. nothing of the above affects water circulation
- e. I don't know

**4. In the Mediterranean Sea, considering the climate of the region,**

- a. evaporation greatly exceeds precipitation and river run-off**
- b. precipitation and river run-off greatly exceed evaporation
- c. the evaporated water is fully replaced by precipitation and rivers run-off
- d. evaporation is not important due to the sea's small size
- e. I don't know

**5. Resources in the Mediterranean Sea**

- a. are limited due to its small size but they are not further reducing
- b. are plenty and its present management is sufficient
- c. are limited and its management should be realized sustainably**
- d. are plenty, nonetheless, their sustainable management is essential
- e. I don't know

6. **Typical Mediterranean cultivations, as vineyards, flourish in soils that originate from limestone rocks mainly of**
- marine formation**
  - riverine formation
  - lacustrine formation
  - mountain formation
  - I don't know
7. **Which of the following processes led to the formation of the Mediterranean Sea ?**
- The African and Eurasian lithospheric plate movement**
  - The catastrophic volcanic eruption of the island of Santorini about 1600 years B.C.
  - The closure of the Gibraltar Strait about 6 million years ago
  - The opening of the Suez canal
  - I don't know
8. **Which of the following factors contributes most to the shaping of the Mediterranean Sea coasts?**
- Wave motion (action)**
  - Winds
  - Tides
  - Coastal vegetation
  - I don't know
9. **Mediterranean seagrass meadows play a significant role in the carbon cycle and therefore the greenhouse effect as they**
- can store carbon through photosynthesis**
  - favour water acidification
  - expose seashores to erosion
  - reduce biodiversity
  - I don't know
10. **Which of the following features can not be found at the bottom of the Mediterranean Sea?**
- Submarine canyons
  - Seamounts
  - Abyssal plains
  - Glacial valleys**
  - I don't know
11. **Which are the typical features of the Mediterranean climate?**
- Hot and wet summer, mild and dry winter
  - Mild and dry summer, cold and wet winter
  - Mild and wet summer and winter
  - Hot and dry summer, mild and wet winter**
  - I don't know
12. **Which of the following winds is NON-typical of the Mediterranean region?**
- Meltemi
  - Sirocco
  - Monsoon**
  - Mistral
  - I don't know
13. **In your opinion the Mediterranean Sea**
- is warming as the rest of the ocean
  - is warming more than the rest of the ocean**
  - is warming less than the rest of the ocean
  - is not warming
  - I don't know

14. In the Mediterranean region, which of the following produces the largest amount of oxygen?
- phytoplankton
  - macroalgae
  - Seagrass meadows
  - b and c
  - I don't know
15. Mediterranean climate is mainly the result of the
- high biodiversity of the Mediterranean Sea
  - regional weather conditions
  - winds blowing in the region
  - heat transfer and water circulation of the Mediterranean Sea
  - I don't know
16. What contributes to the co-existence and survival of both temperate and subtropical organisms in the Mediterranean Sea?
- The complex system of sea currents
  - The high level of biodiversity
  - The wide ranges of climate and hydrological characteristics
  - The geological diversity
  - I don't know
17. Mediterranean Sea is characterized by
- high biodiversity and high endemism (=presence of species not found elsewhere)
  - low biodiversity and high endemism
  - high biodiversity and low endemism
  - low biodiversity and low endemism
  - I don't know
18. Which of the following habitats is NOT present in the Mediterranean Sea?
- Vermetid reefs (=intertidal formations of marine gastropods and red calcareous algae )
  - Coralligen (=sublittoral hard bottoms of biogenic origin produced mainly by accumulations of encrusted calcareous algae )
  - Maerl beds (= sublittoral marine benthic beds of calcareous red algae (rhodoliths))
  - Kelp forests (=large brown algae)
  - I don't know
19. What type of coastal wetlands can not be found in the Mediterranean region?
- Deltas
  - Estuaries
  - Coastal lagoons
  - Mangrove swamps
  - I don't know
20. Mediterranean ecosystems are defined by certain unique abiotic characteristics: which of the following ones is true?
- The relatively high temperature of the deep-sea waters
  - The presence of large-scale tides
  - The same salinity across the western and eastern basin
  - The occurrence of hurricanes
  - I don't know

21. **Productive nursery areas for many species in the Mediterranean Sea, thus contributing to the conservation and maintenance of its biological resources, are**
- deltas
  - estuaries
  - rivers
  - a and b**
  - I don't know
22. **Non-indigenous species are introduced in the Mediterranean Sea through**
- river floods
  - escapes from aquaculture and aquaria
  - the opening of the Suez Canal
  - b and c**
  - I don't know
23. **The Mediterranean Sea and its climate affects**
- history and culture of its region
  - health and well-being of its inhabitants
  - lifestyle of its inhabitants
  - all the above**
  - I don't know
24. **Which one of the following statements is true for the Mediterranean Sea?**
- It provides food, medicines, minerals, and energy resources**
  - It is a minor pathway of maritime transport, trade, and cultural exchanges
  - It leads to unemployment and economical crisis
  - Its coastal population is decreasing
  - I don't know
25. **Major human impacts on the Mediterranean Sea are due to:**
- marine pollution from land and sea-based sources
  - over-fishing and habitat degradation
  - a and b**
  - The Mediterranean Sea is not affected by human impacts
  - I don't know
26. **Rising CO<sub>2</sub> levels in the atmosphere, caused by human activities, are responsible for the warming of the surface waters of the Mediterranean Sea as well as its acidification, leading to**
- increase of biodiversity
  - increase of fish stocks (= the amount of fish)
  - increase of harmful algal and jellyfish blooms**
  - increase of tourism
  - I don't know
27. **Which of the following is the most important threat for Mediterranean coasts?**
- Erosion**
  - Earthquakes
  - Volcanic eruptions
  - Tsunamis
  - I don't know
28. **Citizen science projects**
- do not affect public knowledge and awareness
  - help researchers to collect scientific data**
  - have a playful but not a scientific value
  - apply only to terrestrial environments
  - I don't know

**29. Biodiversity in the Mediterranean Sea**

- a. is known as well as that of the mainland in the Mediterranean region
- b. is better known more than that of the mainland in the Mediterranean region
- c. is less known than that of the mainland in the Mediterranean region**
- d. is less known than that of the remaining ocean
- e. I don't know

**30. Which of the following is not leading to the protection of the Mediterranean resources?**

- a. Extending the size of existing marine protected areas
- b. Extending the degree of protection of marine protected areas
- c. Establishing new marine protected areas
- d. Liberalizing the access of tourists to marine protected areas**
- e. I don't know