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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

- a. marine formation
- b. riverine formation
- c. lacustrine formation
- d. mountain formation
- e. I don't know

7. Which of the following processes led to the formation of the Mediterranean Sea?

- a. The African and Eurasian lithospheric plate movement
- b. The catastrophic volcanic eruption of the island of Santorini about 1600 years B.C.
- c. The closure of the Gibraltar Strait about 6 million years ago
- d. The opening of the Suez canal
- e. I don't know

8. Which of the following factors contributes most to the shaping of the Mediterranean Sea coasts?

- a. Wave motion (action)
- b. Winds
- c. Tides
- d. Coastal vegetation
- e. I don't know

9. Mediterranean seagrass meadows play a significant role in the carbon cycle and therefore the greenhouse effect as they

- a. can store carbon through photosynthesis
- b. favour water acidification
- c. expose seashores to erosion
- d. reduce biodiversity
- e. I don't know

10. Which of the following features can not be found at the bottom of the Mediterranean Sea?

- a. Submarine canyons
- b. Seamounts
- c. Abyssal plains
- d. Glacial valleys
- e. I don't know

11. Which are the typical features of the Mediterranean climate?

- a. Hot and wet summer, mild and dry winter
- b. Mild and dry summer, cold and wet winter
- c. Mild and wet summer and winter
- d. Hot and dry summer, mild and wet winter
- e. I don't know

12. Which of the following winds is NON-typical of the Mediterranean region?

- a. Meltemi
- b. Sirocco
- c. Monsoon
- d. Mistral
- e. I don't know

13. In your opinion the Mediterranean Sea

- a. is warming as the rest of the ocean
- b. is warming more than the rest of the ocean
- c. is warming less than the rest of the ocean
- d. is not warming
- e. I don't know

14. In the Mediterranean region, which of the following produces the largest amount of oxygen?

- a. phytoplankton
- b. macroalgae
- c. Seagrass meadows
- d. b and c
- e. I don't know

15. Mediterranean climate is mainly the result of the

- a. high biodiversity of the Mediterranean Sea
- b. regional weather conditions
- c. winds blowing in the region
- d. heat transfer and water circulation of the Mediterranean Sea
- e. I don't know

16. What contributes to the co-existence and survival of both temperate and subtropical organisms in the Mediterranean Sea?

- a. The complex system of sea currents
- b. The high level of biodiversity
- c. The wide ranges of climate and and hydrological characteristics
- d. The geological diversity
- e. I don't know

17. Mediterranean Sea is characterized by

- a. high biodiversity and high endemism (=presence of species not found elsewhere)
- b. low biodiversity and high endemism
- c. high biodiversity and low endemism
- d. low biodiversity and low endemism
- e. I don't know

18. Which of the following habitats is NOT present in the Mediterranean Sea?

- a. Vermetid reefs (=intertidal formations of marine gastropods and red calcareous algae)
- b. Coralligen (=sublittoral hard bottoms of biogenic origin produced mainly by accumulations of encrusted calcareous algae)
- c. Maerl beds (= sublittoral marine benthic beds of calcareous red algae (rhodoliths))
- d. Kelp forests (=large brown algae)
- e. I don't know

19. What type of coastal wetlands can not be found in the Mediterranean region?

- a. Deltas
- b. Estuaries
- c. Coastal lagoons
- d. Mangrove swamps
- e. I don't know

20. Mediterranean ecosystems are defined by certain unique abiotic characteristics: which of the following ones is true?

- a. The relatively high temperature of the deep-sea waters
- b. The presence of large-scale tides
- c. The same salinity across the western and eastern basin
- d. The occurrence of hurricanes
- e. 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

- a. deltas
- b. estuaries
- c. rivers
- d. a and b
- e. I don't know

22. Non-indigenous species are introduced in the Mediterranean Sea through

- a. river floods
- b. escapes from aquaculture and aquaria
- c. the opening of the Suez Canal
- d. b and c
- e. I don't know

23. The Mediterranean Sea and its climate affects

- a. history and culture of its region
- b. health and well-being of its inhabitants
- c. lifestyle of its inhabitants
- d. all the above
- e. I don't know

24. Which one of the following statements is true for the Mediterranean Sea?

a. It provides food, medicines, minerals, and energy resources

- b. It is a minor pathway of maritime transport, trade, and cultural exchanges
- c. It leads to unemployment and economical crisis
- d. Its coastal population is decreasing
- e. I don't know

25. Major human impacts on the Mediterranean Sea are due to:

- a. marine pollution from land and sea-based sources
- b. over-fishing and habitat degradation
- c. a and b
- d. The Mediterranean Sea is not affected by human impacts
- e. I don't know

26. Rising CO₂ 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

- a. increase of biodiversity
- b. increase of fish stocks (= the amount of fish)
- c. increase of harmful algal and jellyfish blooms
- d. increase of tourism
- e. I don't know

27. Which of the following is the most important threat for Mediterranean coasts?

- a. Erosion
- b. Earthquakes
- c. Volcanic eruptions
- d. Tsunamis
- e. I don't know

28. Citizen science projects

- a. do not affect public knowledge and awareness
- b. help researchers to collect scientific data
- c. have a playful but not a scientific value
- d. apply only to terrestrial environments
- e. 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 Mediterranea 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