HOW CAN OPEN ACCESS CONTRIBUTE TO EDUCATION AND TRAINING IN AQUACULTURE

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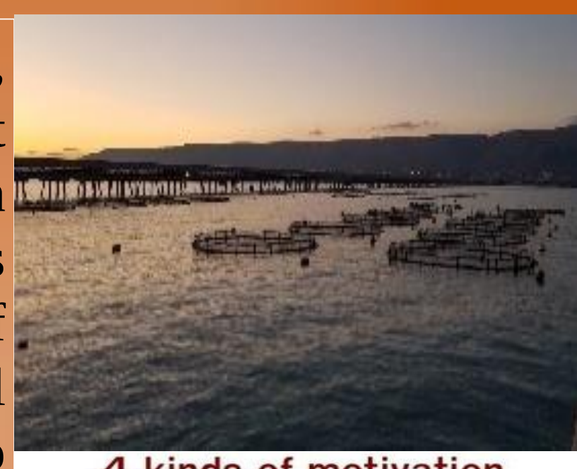
Supported by eit Food

Funded by the European Union

INTRODUCTION In 2021, in countries of the Mediterranean and the Black Sea, aquaculture production reached 3299000 t mainly obtained in freshwater environment (>70% of the total production volume), followed by marine production (24%) and brackish water production (6%) [1]. In the last years, Open Science (OS) has become important as movement to make scientific research and its dissemination accessible to all levels of society in the Blue Growth [2]. The shortage of scientific, entrepreneurial and managerial skills, needed to solve complex multidisciplinary challenges, is a major barrier to innovation [3]. The topics of Blue Growth, the Artificial Intelligence and Biosecurity are at the base of the ambitions in aquaculture. In this context, OASIS (Open science technologies Acceleration for a new generation of Student entrepreneurship, Innovation and Sustainable development) Project was performed with the aim to facilitate the adoption of OS technologies in education through practical applications, training and mentoring activities for managing educational and labour-oriented problems and increasing opportunities of work in the Blue Growth in the Mediterranean countries.



MATERALS and METHODS For the aim, to give opportunities and intercept blue, green and circular economies, an approach based on collaborative platform with an AI engine in a sector, aquaculture, was performed. Meeting and trainings were organized involving students (n. 47-54) enrolled in the field courses of veterinary medicine. An approach based on working in small groups of students was considered. Every topic was performed using game cards in which topics (biosecurity, farm, environment) and sub-topics (levels of biosecurity, farming techniques, water quality parameters) were reported using short sentences. In a specific case, students were introduced to the use of an open-source software to evaluate the welfare status of intestinal apparatus in farmed fish fed with plant-based proteins. For the aim, the counting of intestinal villi was carried out using a plug-in belonging to the (open source) software IMAGEJ FIJI, USA version 2.9.0, "Trainable Weka Segmentation". At the same time, the meetings aimed to make known the possibility of subscribing to a platform in which the candidate can find opportunities to work in the Blue Growth field were carried out. The platform was realized according to a methodology based on a mix of surveys, CV analysis skills, adoption of bottom-up tools like Lego Serious Play™ and analysis. PESTLE and ESG's scanned by AI under the Quantum Labour Analysis approach.

RESULTS and DISCUSSION

The large part of the involved students (88%, on average) appreciated the OASIS activities because could consider aquaculture as a potential field where to find work as an alternative to a traditional sector of animal production and veterinarian science. The gamification, known as the process of integrating learning activities by using game elements, encouraged students, working in small groups, to elaborate a pathway of problem solving and purpose a professional plan. At the same time, all the students realized that automation and rapidly changing needs mean the future of employment will probably look very different to now. As concerns the open-source software IMAGEJ, the students were able to train the algorithm to recognize Alcian blue stained vacuoles, excluding areas >20 pixel2, considered too small to be a real vacuole. The importance to promote the OS practices as possibility to improve their skills was demonstrated by the application of open-source software among students able to corroborate their fundings during thesis activities. This approach can help students to continue their studies or provide their skills to the stakeholders in the professional world in the animal production field. The results showed the possibility to communicate the skills trends and map thus to overcome the lack of awareness, knowledge and skilled workforce for the emerging competencies in the Blue Ecosystem. Specifically, this is relatable to aquaculture both for seafood industry and by-products from blue sector exploitation as key factors for the integration with green and circular economies in terms of effective sustainable systems [4]. In this situation, education and training activities are very important to fulfil the huge lack of awareness of aquaculture's potential by promoting and valorising a skills-based approach. The shortage of scientific, entrepreneurial and managerial skills, needed to solve complex multidisciplinary challenges, is a major barrier to innovation. In the last years, OS has become an important movement to make scientific research and its dissemination accessible to all levels of society. However, results sharing is more important once the research objectives are met. Sharing can show difficulties and drawbacks to experts which could enhance the efficiency and the time-saving.

ACKNOWLEDGMENTS Activities was performed thanks to EIT-HEI Innovate.

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