



ASTRAL

All Atlantic Ocean Sustainable, Profitable and Resilient Aquaculture

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D7.5 Educational material and family game



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Evidence of accomplishment

Report



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1 Summary

This deliverable reports on the launch of the ASTRAL educational materials to be used by teachers as well as in family games. The launch was organised by the Nigerian Institute for Oceanography and Marine Research (NIOMR) in collaboration with NMCN (**N**ursing and **M**idwifery **C**ouncil of **N**igeria, a category B parastatal of the Federal Ministry of Health), the [All-Atlantic Blue Schools Network](#), and the [Lekan Bakare Foundation](#). These activities reached more than 170 students, and the goal was not only to facilitate and strengthen the dissemination and impact of the project's outcomes but especially to promote social awareness on "seafood of the future".

2 Introduction

ASTRAL project contributes to the implementation of the **2030 Agenda for Sustainable Development Goals (SDGs)** as well as of the EU-Brazil-South Africa **Belém Statement** on Atlantic Ocean Research & Innovation cooperation. In this document we report how ASTRAL's activities with younger generations are contributing to the Belém Statement's shared priority on "*promoting of ocean literacy and broadening engagement in ocean sciences and ocean literacy*" and to *SDG 14 Life Below Water* which aims to protect, conserve, and ensure the sustainable use of the oceans.

The younger generations are the leaders of the future, citizens who will develop behaviours and make decisions with impact on the world, including the oceans. Children also play an important role in society as they have the potential to influence their peers and family members. By becoming aware and understanding the value of the ocean and the connection between people and ocean, children can learn to adopt attitudes of protecting, conserving and sustainably use marine resources.

Since the start of ASTRAL project, NIOMR have been working with several primary and secondary schools across 3 states: Lagos, Ogun and Oyo. These schools were adopted as ASTRAL schools and within each one, ASTRAL School Clubs were created with smaller groups of students (24 clubs so far). The Clubs aim to make learning a fun activity as an extracurricular program and part of the **human capital development of ASTRAL** (WP1). Some of the activities include Do-It-Yourself activities such as setting up small fish farms in the school and their homes (aquaria), creative drawing and video images, telling stories and essay writing on ocean's related subjects. In addition, NIOMR partners collaborate with teachers in awareness activities on marine pollution, on recycling and upcycling and organizing clean-ups in schools, streets, parks, and beaches.



Additionally, ocean literacy activities are also carried out with local communities. These activities included mostly talks and beaches plastic clean-up aimed at raising awareness for ocean protection, promoting the importance of safe and nutritious aquaculture seafood as well as addressing climate change resilience. With the purpose of adding a more interactive and educational aspect in events with a larger audience, being in schools or with locals, ASTRAL produced **educational materials which is the central focus of this deliverable**. Moreover, these materials can be easily translated to be used within the different countries collaborating in ASTRAL and beyond. The material will be used in additional school activities within the ASTRAL consortium between autumn 2023 and spring 2024. Models of the materials are also meant to be freely available on ASTRAL website for printing for anyone interested.

Ocean literacy activities in ASTRAL are led by NIOMR with the guidance of the AIR Centre and in collaboration with CONICET, MI, NORCE, UCT, Crowdhelix and IMTA LABs. These activities are under **WP7 Communication, dissemination and public engagement**, and part of **Task 7.5. Social awareness on “seafood of the future”** which targets citizens, schools, and families; and focuses on education and social awareness related activities.

In the following sections we describe the educational materials and the activities related to the launch of the education materials used in schools and in activities organised for families. Two events were held: at Children’s Day in Nigeria (May 2023) and at World Ocean Day (June 2023).

3 Educational Materials

Three types of educational materials were produced and used in awareness activities and game competitions: word search (or cross words) (Figure 1), cross match (Figure 2), and jigsaw puzzles (Figure 3). Word search and cross match exercises are easily printed on paper while jigsaw puzzles were printed on a durable material.

To fully cover the Atlantic dimension of ASTRAL, the materials were developed with the collaboration of ASTRAL IMTA Labs. Local species being produced in the four IMTA labs were included: Brazil, Ireland, Scotland and South African. Students and families were given a brief introduction on how to play including short presentations on sustainable aquaculture, with a focus on IMTA; they are also made aware that different regions in the Atlantic will produced different seafood.



Word Search

A	U	R	C	H	I	N	L	H	F
X	N	U	H	S	I	O	O	S	C
V	G	C	R	R	S	M	B	I	S
S	E	E	I	F	H	L	S	F	C
O	N	W	N	P	G	A	T	P	A
A	Q	V	P	O	B	S	E	M	L
V	M	P	X	U	L	H	R	U	L
L	J	I	Y	U	A	C	L	O	
U	T	K	E	K	V	U	B	X	P
I	B	H	D	E	E	W	E	A	S

Seaweed Scallops Ulva Abalone Lobster Urchin Lumpfish Salmon

Word Search

R	S	X	T	A	N	R	H	E	J
V	E	Z	A	M	H	P	T	L	R
I	C	P	R	Z	V	M	R	K	E
C	I	R	P	B	L	X	I	N	T
E	R	T	O	A	J	B	G	I	S
Q	T	J	N	T	N	V	E	W	B
L	Y	K	G	B	X	S	W	I	O
A	N	M	I	A	E	U	D	R	L
W	K	O	G	R	U	N	T	E	R
U	D	W	E	C	Y	F	Q	P	R

Lobster Grunter Crab Redsnapper Periwinkle

Word Search

O	Y	S	T	E	R	R	Z	I	F
X	N	H	U	S	I	F	T	A	C
V	G	R	C	D	S	R	D	I	G
S	E	I	L	B	H	V	J	P	W
O	N	M	W	E	G	N	L	A	S
R	Q	P	U	V	B	O	Y	L	T
T	M	P	X	L	Y	H	F	I	D
E	J	I	Y	Q	L	U	C	L	M
D	T	K	E	K	V	E	U	X	I
I	B	H	C	P	Y	Z	T	S	P

Oyster Shrimp Catfish Mullet Tilapia

Figure 1: Word Search exercises

Cross Match



- Seaweed
- Scallops
- Ulva
- Abalone
- Lobster
- Purple Urchin
- Lumpfish
- Salmon

Cross Match



- Oarweed
- Asparagus
- Sea Cucumber
- White Shrimp
- Wakame
- Dulse
- Sugar Kelp
- Cape Urchin

Cross Match



- Oyster
- Shrimp
- Catfish
- Periwinkle
- Tilapia
- Lobster
- Grunter
- Crab
- Redsnapper
- Mullet

Figure 2: Cross Match exercises



Figure 3: Examples of Jigsaw Puzzles

3.1 Official Launch of the Educational Materials

Jigsaw puzzles with IMTA culturable species were officially launched on May 9th, 2023, by the Executive Director/ CEO of NIOMR, Professor Abiodun Sule, at NIOMR Headquarters in Lagos (Figure 4).



Figure 4: Jigsaw puzzles official launched by the Executive Director / CEO of NIOMR Prof. Abiodun Sule.

3.2 Children's Day Fiesta

The public launch of ASTRAL materials was held on May 25th, 2023, at the ***“Children's Day Fiesta on school campaign, Social Awareness on Seafood for the future, IMTA and Ocean Literacy”***, at the NIOMR Headquarters in Lagos, Nigeria (Figure 5).



Figure 5: Children's Day Fiesta on school campaign, Social Awareness on Seafood for the future, IMTA and Ocean Literacy" event's banner

The event gathered a total of 120 people, including students across all levels of primary and post primary schools from Ogun State: Fruitful field Montessori, Good Shepard School (Hopetown), Joyfulnestle Montessori School; and from Lagos: Good Shepard School (Mairan), Victoria Island Junior Secondary School, Kuramo Junior Secondary School, Army Children School and Federal Housing Estate Nursery and Primary School. Additionally, two local NGOs participated in the event: [Eco-Restoration Foundation](#) and Lekan Bakare Foundation (Figure 6).



Figure 6: Group picture with NIOMR Executive Director/CEO, ASTRAL members at NIOMR, students and teachers.

The event's program (Full program in Annex 1) included a presentation on Ocean Literacy and an introduction to the concept and benefits of IMTA, followed by a brief Questions and Answers session to evaluate children's understanding of the previous presentations (see Annex 2). The children had then the opportunity to use the recently acquired knowledge and compete in games. At the end of the event, Awards Certificates were given to the first three winner schools and Certificates of Participation were given to all participating schools (see Annex 3).

The following day, on May 26th, NIOMR also held a **Children's Day celebration session** at the King College in Lagos (Figure 7). The session gathered more than 60 people, including 56 senior students and 2 teachers. The session included a presentation on Ocean Literacy and an introduction to the concept and benefits of IMTA, followed by a brief Questions and Answers session and games to evaluate children's understanding on sustainable aquaculture.



Figure 7: Group picture with ASTRAL members at King College.

3.3 World Ocean Day

On June 8th, 2023, NIOMR celebrated World Ocean Day in collaboration with the Lekan Bakare Foundation, at Elegushi Beach Lekki Lagos (Figure 8), by organizing a beach clean-up activity and carry out family games using ASTRAL educational materials (see Annex 3). On this day, both schools and families were invited to play games and learn about sustainable aquaculture and sustainably produced seafood in different regions on the Atlantic. Word search and cross match exercises were printed on paper and jigsaw puzzles were re-used. Awards and Certificates were given to the quickest participants in finishing all the exercises correctly.

Figure 8: World Ocean Day 2023 Celebration at Elegushi Beach Lekki Lagos with event banner

3.4 Event Booklet, Award and Certificates of Participation

Event Booklet (Figure 9) was produced and printed for distribution in the different school campaigns. Winner Award Certificates (1st, 2nd and 3rd Prize Winner) (Figure 10) and Certificates of Participation (Figure 11) were issued for the different competitions.



Figure 9: Event booklet



Figure 10: Representative examples of Awards certificates. Award certificates were issued for 1st, 2nd and 3rd winners.



Figure 11: Representative examples of Certificates of Participation issued to participating schools

4 Food Security booklet

In addition to the materials developed within ASTRAL, ASTRAL collaborated with the [All-Atlantic Ocean Youth Ambassador \(AAOYA\)](#) program on a volume of the Bridging the Ocean booklet series, a collective of concepts and conversations focussed on the ocean in relation to bringing awareness to the challenges the ocean is facing. The volume title is [Food Security](#), and aims to share information that may develop an understanding about food systems, so that readers can contribute to their sustainable practices and can meet food security demands in a way that respects our oceans. Among several topics, the volume includes a section on IMTA and an ASTRAL crossword puzzle (Figure 12).

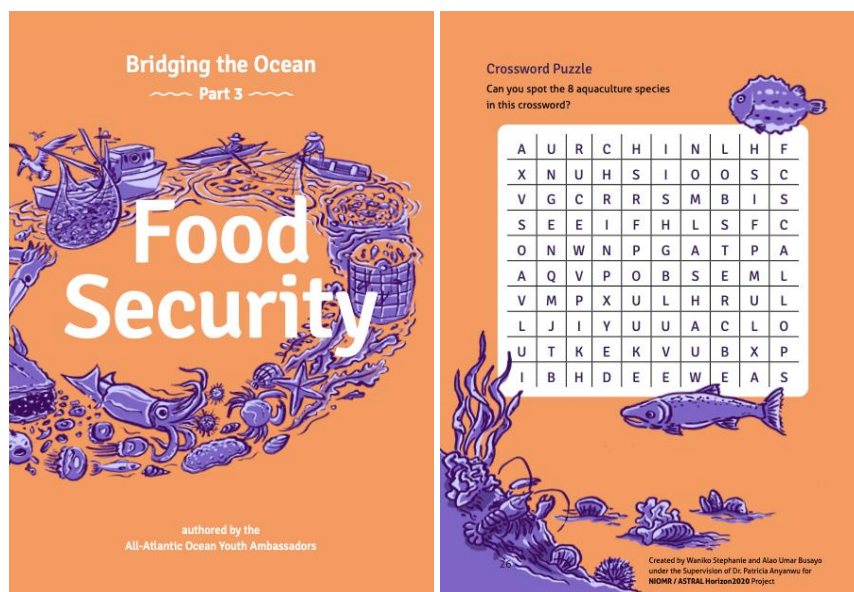


Figure 12: Youth Ambassador Bridging the Ocean Booklet on Food Security cover page (left) and Crossword Puzzle page, material developed by NIOMR as part of ASTRAL project's WP7 activity (right).



5 Conclusions

The main aim of our work with schools and local communities is for children and their families to develop social awareness on the ocean and seafood. More specifically, for children to grow into environmentally conscious adults and work towards the protection and conservation of the ocean but also to contribute to the development of their local economies through sustainable practices and jobs, in this case, focused on sustainable and resilient aquaculture.

The awareness activities using the materials described in this document are the beginning of a long-lasting commitment between NIOF and teachers and the community to keep on promoting ocean literacy, in the themes of not only ocean protection but also on promoting the importance of safe and nutritious aquaculture seafood.

The educational materials produced and printed were a successful tool for ocean literacy activities as observed by the interest and excitement observed in both children and adults, including teachers and family members, in learning more about the ocean and sustainable aquaculture and in increasing their knowledge and understanding at the end of the activities. The short-term impact is easily observed by the active participation of those who attend the events while the long-term impact will only be seen in years to come.

6 Future Work

As mentioned in the previous section, NIOF has been collaborating with schools since the beginning of the project and the aim is for them to continue the work after the end of the ASTRAL. These activities are carried out locally mainly in Lagos with some efforts already being done to reach other states. The next phase is to go beyond the frontiers of Nigeria with a focus on the countries involved in the project namely, Argentina, Brazil, Ireland, France, Norway, Portugal, and Spain. Future work includes collaborations with schools in these countries on ocean literacy with a focus in sustainable seafood production. We will begin with schools integrated within the Blue Schools network as well as the schools with whom partners already collaborate with.

In addition to the reproduction, and translation when needed, of the educational materials described in this document, we are also working on a low-cost interactive game that will incorporate several aspects of a sustainable aquaculture system, such as, biodiversity, ocean protection, sustainability, marine pollution, circular economy, among others.



And finally, a creative session will be carried out with children from a selected number of schools to be engaged with through Task 7.5, for them to draw what they believe should be the image to represent a project such as ASTRAL. One of these drawings (or a combination of several) will be selected and published on ASTRAL website and social media.



7 Annexes

Annex 1: Program of “Children’s Day Fiesta on school campaign, Social Awareness on Seafood for the future, IMTA and Ocean Literacy” event

Children’s day Fiesta on school campaign, Social Awareness on Seafood for the future, IMTA and Ocean Literacy

Thursday 25th May, 2023

Held at NIOMR HQ, 3 Wilmot point road, Victoria Island, Lagos.

Event Time: 10:00 am

Number of Guests Expected: 100

- 09:00 am: Arrival to site/ Registration
- 10:00 am: Welcome / National Anthem
- 10:03 am: Introduction of Guests
- 10:23 am: Remarks of the Executive Director/CEO
- 10:30 am: Ocean literacy for primary and post primary schools. By Dr. Popoola Olatunde Samuel
- 11:00 am: Integrated Multi-tropic Aquaculture (IMTA). By Dr. Ajijo
- 11:30 am: Exhibition
- 12:00 pm: Questions & Answers
- 12:10 pm: Games
- 01:00 pm: Presentation of Awards & Certificates
- 01:00 pm: Closing Remarks from ASTRAL Headquarters via Zoom
- 01:15 pm: Group Photograph
- 01:30 pm: Event concludes

Annex 2: Children's Day Celebration (25th 2023). Questions and Answers

session.

QUESTIONS

All Atlantic Ocean Sustainable Profitable and Resilient Aquaculture

ASTRAL

(1) How much of Earth is covered by water?

(2) What are photic and aphotic zones?

(3) Which of the Ocean is the Largest?

(4) The deepest part of the Ocean is called?

(5) The mountain layer in the Ocean are called?

ANSWERS

All Atlantic Ocean Sustainable Profitable and Resilient Aquaculture

ASTRAL

(1) About 71%

(2) Zones of Sunlight penetration, and zones of lack of Sunlight penetration

(3) Pacific Ocean

(4) Oceanic Trench

(5) Submarine Ridges

Project 863034
H2020-BG08-2019: All Atlantic Ocean Research Alliance Flagship
New value chains for aquaculture production

QUESTIONS

All Atlantic Ocean Sustainable Profitable and Resilient Aquaculture

ASTRAL

(6) One example of living and non living Ocean resources are?

(7) Mention any two importance of the Ocean

(8) Sewages, Oil spills, land run-off, littering and industrial waste are among the various causes of?

ANSWERS

All Atlantic Ocean Sustainable Profitable and Resilient Aquaculture

ASTRAL

(6) Living resources, Oil and gas, Minerals, Sea-salt
Non living Ocean resources
Fisheries, Mangrove, Sea-grass, Sea-weed, Corals, Planktons

(7) The ocean provides Food, Medicines, Mineral and Energy resources. Jobs and national economies, and transportation

(8) Ocean Pollution

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New value chains for aquaculture production

Figure 14: Powerpoint slides with Questions and Answers (May 25th, 12:00 pm). Questions and Answers 1 – 5 (top) and Questions and Answers 6 – 8 (top)

Annex 3: Pictures from the events



Figure 15: Children's Day Fiesta (May 25th, 2023).

Students during the presentations (left) and during Question and Answer session (right).



Figure 16: Children's Day Fiesta (May 25th, 2023). Students with Word Search (left) and Jigsaw Puzzles (right)



Figure 17: Children's Day Fiesta (May 25th, 2023). Schools receiving its Certification of Participation



Figure 18: Children's Day Fiesta (May 26th, 2023). Briefing at King College



Figure 19: World Ocean Day (June 8th, 2023). Beach clean up activity at Elegushi Beach, Lekki, Lagos.



Figure 20: World Ocean Day (June 8th, 2023). School and family games using ASTRAL educational materials at Elegushi Beach, Lekki, Lagos.