

FISHERIES SCIENCE IN THE MALDIVES

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More than 99.5% of the territory of Maldives being sea, the main occupational activity of the people, the predominant industry of the economy and the means of livelihood of the Maldivians have been and will continue fishing. The teaching and learning of fishing have been the major educational activity in the Maldives long before the first schools started. The culture, language, occupation and pastimes of the Maldivians are inseparably linked to the sea and to the organisms in it.

Having realised the importance of promoting the concepts of Fisheries Science and instilling them in the minds of the young, the Ministry of Fisheries proposed in 1981 that there should be a Fisheries Science curriculum taught in Maldivian schools. Two type of curricula were initially proposed. The first one emphasised the development of specialised skills necessary for the fishing industry and for a career in fisheries. The second type proposed had as its major objective, the development of scientific attitudes competence necessary for appreciating the scientific technological base of the fishing industry and for a career in fisheries.

After discussion with the Ministry on Education, the more broad-based curriculum was agreed upon. Thus the Government decided to undertake a project to develop a curriculum for grades 8, 9 and 10; train the necessary teachers and equip the main schools with the necessary aids. Financial assistance was sought from UNDP; and the Ministry of Education and UNESCO was requested to incorporate them in the project MDV/82/001 for 'Development of Education' in May 1982.

The Educational Development Centre in charge of the project, was entrusted with the implementation, and with then technical assistance and guidance from UNES CO and the Ministry of Fisheries. Thus, with the assistance of UNESCO recruited consultant Fisheries Scientist and Ministry of Fisheries an online of a syllabus was developed in 1983 along with database and a list of the required equipment. A detailed syllabus for grades 8, 9 and 10 was produced in 1984 following which, the writing of the teaching texts in the form of Students' Handbooks and Teachers' manuals commenced.

The subject was formally introduced into grade 8 during the year 1984 and continued through grades 9 and 10 in 1985 and 1986 respectively, by which time the London University Examination Board have accepted the subject at Ordinary Level General Certificate of Education examination for Maldivian Students. Hence Maldivian students that took this exam in 1987 was the first to take part in an examination that was designed for a subject which was an intrinsic scientific study of the natural environment of the nation.

Mission

The initial tasks addressed within the fisheries Science syllabus are:

- To instil into the students a sense of awareness of the intricate and delicate nature of the marine environment and its ecosystems.
- To develop an awareness of the extent of the fishing industry in the Maldives in a world context and the need for sustainable development.

To achieve the mission identified students will be trained in various scientific skills and their knowledge and understanding of the marine environment and the fishing industry expanded. The students should ultimately acquire a sense of respect and responsibility, both individually and socially, for the environmental and conservation issues associated with the marine environment and the fishing industry.

Aims

The syllabus is designed to develop *awareness, skill, knowledge, understanding, appreciation and respect* as well as a *sense of responsibility* for the marine environment among children in Maldivian schools.

Children will develop:

- Awareness of:
 - ➔ the marine environment.
 - ➔ the fishing industry
- Skills in:
 - ➔ science, including an attitude of curiosity and inquiry.
 - ➔ observation and experimentation to generate interest in the marine environment.
 - ➔ data collection, consolidation, quantification and presentation techniques of information on fisheries from a variety of sources.
 - ➔ navigation, seamanship, the design and fabrication of gear and fishing methods.
- Knowledge and understandings of:
 - ➔ the marine environment
 - ➔ the diversity of marine life
 - ➔ the structure and function of important marine organisms of the Maldives
 - ➔ factors that effect the distribution and abundance of marine organisms
 - ➔ the fishing industry of Maldives

- ➔ fishing gear and technology
 - ➔ seafood technology
 - ➔ fisheries economics and marketing
 - ➔ Fisheries management
- Appreciation of the:
 - ➔ contribution of science to the modernisation and advancement of the industry.
 - ➔ importance of marine resources as a major contributor of nutrition to the nation.
 - ➔ importance of marine resources as a major contributor of the national economy.
 - ➔ Inter-dependence and integrated nature of fisheries science, the fishing industry and other industries (such as tourism).
 - ➔ extent and variety of the exploitation of marine resources.
 - Respect for:
 - ➔ the marine environment and the importance of sustainable development.
 - ➔ environment and conservation issues.

Themes

1. The Marine Environment
(*The Marine Environment*)*
2. Systematics and Biodiversity
(*Diversity of Marine Life*)
3. Morphology and Physiology
(*Structure and Function*)
4. Distribution and Abundance
(*Distribution and Abundance*)
5. The fishing industry
(*The fishing industry*)
6. Fishing Gear Technology
(*Fishing*)
7. Seafood Technology
(*Seafood*)
8. Fisheries Economics, Trade and Marketing
(*Fisheries Economics*)

3 towards the students.

The themes are structured within a sequential framework corresponding with the layout of the Fisheries Science textbooks (1997 and 1998). This enables students to develop an appreciation of the related **general aims** of the subject while providing a clear indication of when the course material is to be covered. Progressive Practical Project (PPP) from the Teachers Activity Workbook (1992) and Students Activity Workbook (1992) should be incorporated into the teaching regime where deemed appropriate.

Fisheries Science at Present

The initial disappointments in the implementation and assessment of the curriculum were partly attributed to the textbooks. Without an adequate background in Fisheries Science, teachers and students relied heavily on the textbooks. The textbooks were found to be waiting for us in the classrooms or at home:

1. The vocabulary and the sentence structure of the language used beyond the comprehension level of the students, w e r e
2. The textbooks assume background knowledge the students do not possess at entry, possess at
3. The diagrams do not relate to the text and are not properly labelled,
4. There were shortcomings in the factual information presented in the textbooks: the facts were insufficient for the demand and improperly sequenced; and some facts were repeated and incorrect.
5. The separation of the syllabus into chapters needed improvement.

A new textbook, *Introduced to Fisheries Science*, published in 1988, addressed some of the shortcomings of the previous texts. This textbook, together with *Teacher's Activity Guide* and *Student Activity Workbook* (both published in 1992) were used to teach Fisheries Science till 1997.

Meanwhile, having presented many students for the GCE Ordinary level examinations, schools and EDC accumulated a number of useful experiences in the development and implementation of the Fisheries Science curriculum. Teachers and students generally felt that the 1984 syllabus needed revising to reflect the changes taking place in the fishing industry. There were four main themes in the previous syllabus. The classification of the syllabus content into four themes had led to an ad-hoc development of ideas. Many students also felt that the syllabus requirements were not in keeping with the standards of other GCE Ordinary level subjects. In addition, Fisheries Science is increasingly being studied by students who are in the business and arts streams. These realisations and realities motivated the revision of the Fisheries Science syllabus.

EDC began the revision of the fisheries science syllabus in 1995. The revision was accepted by the University of London Examinations and Assessment Council in 1996. Textbook writing began in the same year. *Understanding Fisheries Sciences 1 and 2* are the two books written to cover the content of the revised syllabus. These books are intended for teaching Fisheries Science to students in the lower secondary school of Maldives and covers the nine themes in the revised syllabus.
