



Theme 2

PUBLIC AWARENESS, YOUTH AND THE NEW MEDIA

**Tuesday 6th November
(Parallel Session - morning)**

Chair: Philippe Vallette
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Acting together for the future of the Blue Planet: the World Ocean Network's strategy for public education

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Abstract

The World Ocean Network has been elaborating a joint action plan and implementing activities to raise awareness among the general public in favour of the sustainable use of the ocean.

This common effort seeks to foster a sense of stewardship through the promotion of the citizenship of the ocean. Through its recent initiative, the Passport Citizen of the Ocean, the citizens of the world acknowledge a new country - the World Ocean - a common territory that they are in charge of. The Passport provides inspiration and ideas of simple conservation actions and demonstrates the determination of its holders to act for the benefit of the marine environment.

WOC has also been working on public mobilisation through campaigns on specific issues, e.g. sustainable seafood consumption, maritime safety, etc. It has also managed to establish the annual celebration of the World Ocean Day on June 8th and its official designation as an international day by the UN.

Other aims of WOC include the enhancement of youth involvement in ocean stewardship and governance as future decision makers, consumers and users of marine resources and their active participation in international maritime affairs via the International Youth Parliaments for the Ocean; the creation of a Capital of the Sea on the same principle of the existing European Capital of Culture; and the organisation of more dialogues and public debates with scientists, policy and economy decision-makers and the general public in each one of our institutions.

Introduction

Raising awareness of the paramount role that the ocean plays in everyday life, informing the general public about the state of the ocean, explaining the complexities of maritime issues, making known sustainable policies and involving people in their implementation, and provoking the desire to adopt sustainable behaviour in favour of marine environment – these have been the World Ocean Network's priorities since 2002. The network participating organisations, which are educational organisations, aquariums, science centres, natural history museums, zoos, media, NGOs, etc., have an audience of more than 250 million people every year all over the world. The role they can play in developing communication strategies towards the general public is real and has an impact in the raising of public awareness on marine issues, preservation and identity. There is one World Ocean, a life support system on Earth, and every human being is responsible for it.

Overview of international initiatives to increase public awareness to protect the World Ocean

At the *Earth Summit* in 1992, Agenda 21 stressed that education is crucial for the promotion of sustainable development and for the improvement of the ability of populations to solve environment and development problems. Chapter 36 calls for: "Reorienting education towards sustainable development; increasing public awareness; promoting training." The Earth Summit also led to designating 1998 as the first International Year of the Ocean. IOC/UNESCO was the leading UN agency for the organisation of the International Year of the Ocean. In 1999, the IOC General Assembly "agreed that, to a large degree, the first objective of the International Year of the Ocean – increasing awareness - was achieved successfully and asked that the relationships established with mass media and non-governmental organisations be sustained, [it] emphasized that the IOC should promote initiatives in the field of education by establishing partnerships with [...] other organizations with expertise in this area [considering] the importance of both environmental education and public awareness of marine affairs [and] requested [its Chairman and Executive Secretariat], to explore ways of persuading the United Nations to declare an International Ocean Day [...]."



The 2002 *World Summit on Sustainable Development* in Johannesburg broadened the concept of sustainable development and confirmed the education objectives of the Millennium Development Goals and the Dakar Framework of action toward education for all. Regarding public information and education, the WSSD Plan of Implementation recommends, among other items, to: 121. Integrate sustainable development into education systems at all levels of education in order to promote education as a key agent for change. 123. Provide all community members with a wide range of formal and non-formal continuing educational opportunities [...] 124. Support the use of education to promote sustainable development, including through urgent actions at all levels to [...] Recommend to the United Nations General Assembly that it consider adopting a decade of education for sustainable development, starting in 2005.

The Decade of Education for Sustainable Development (DESD) was officially adopted by the 57th UN General Assembly in December 2002 for the period 2005-2014 with UNESCO designated as the leading UN agency. Following the lines of its initial promoters, the Decade of Education for Sustainable Development has been designed to:

- 1) Learn about and deepen awareness of environment issues and problems;
- 2) Reflect on our modes of living, shifting these toward sustainability;
- 3) Empower people to take concrete actions to resolve the environmental challenges they face.

Ten years after the International Year of the Ocean, it is time that all ocean related stakeholders fully endorse these objectives, supporting agencies and relevant actors to foster ocean awareness and promote sustainable use of the ocean worldwide.

The World Ocean Network's priority goals and actions related to the objectives of the Decade of Education for Sustainable Development

Learn and deepen awareness of environment issues and problems

Promotion of the concept of the citizenship of "World Ocean" to demonstrate that one ocean exists as the life support system on Earth and that everyone needs to care for it. By mobilising thousands of professionals, the objective is to reach millions of people throughout the world with this message.

In order to provide education and museum professionals as well as ocean enthusiasts and professionals from the maritime world with the appropriate information to reach their audience, an Ocean Info Pack has been developed within the Global Forum on Oceans, Coasts and Islands (GF) programme of action by NAUSICAA-Centre National de la Mer and the World Ocean Network. The Ocean Info Pack includes major facts and figures about the World Ocean and suggestions of activities and tools to reach the public. In order to rally hundreds of science mediators, nature specialists, and media and demonstrate the importance of communicating ocean matters to the public, using the WON tools in the context of the GF effort, many meetings and workshops have been organised by WON participants and partners at local, regional, and national level during the past few years, bringing the number of WON participating organisations and networks from less than 50 in 1999 to over 300 today, with the ability of mobilising hundreds more for specific events. Further presentations and workshops will be convened in 2008-2009 and the WON objective for 2015 is to gather 600 active organisations, able to mobilise up to 1000 participating organisations in 120 to 150 countries, reaching an audience of 300 million per year.

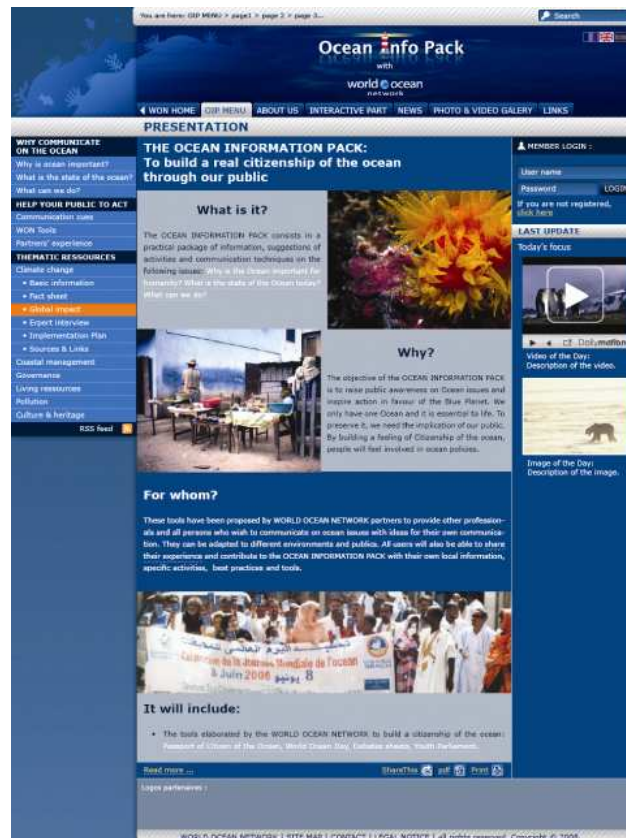


Fig. 1: World Ocean Website

a) A joint information display will be exhibited in public places to alert new publics to the importance of ocean issues. The display provides information on various subjects and suggests taking action by adopting new behaviour.

An information display in the form of a lighthouse was first designed in 2004 and further tested in several countries. Existing prototypes now have to be adapted and disseminated by partners in public facilities, such as airports, port areas, shopping centres, etc. The WON objective for 2015 is to install thousands around the world.

b) Including ocean matters in education curricula is of utmost importance to reach the future “users of the sea.”

The first step is to informally mobilise education professionals to systematically include ocean examples in various studies – geography and other sciences, as well as economics or fine arts and literature. This can be done by providing information and tools from the Ocean Information Pack (see above) and by offering special programmes through all informal education organisations and facilities, such as environment education bodies, aquariums, museums, etc. In parallel, support from the DESD secretariat will be sought, as well as commitment of all concerned international organisations. The WON objective for 2010 is to ensure official endorsement from the DESD secretariat and to gather all concerned international organisations in a joint effort to push national governments to include ocean matters in education curricula by 2015.

c) One of the first actions any stakeholder can take to promote sustainable use of the ocean is to celebrate World Ocean Day on June 8 annually. Further promotion of World Ocean Day will facilitate celebration of this day in more countries and help obtain official designation of the World Ocean Day as an official UN International Day.



The celebration of the World Ocean Day has been strongly promoted by the World Ocean Network jointly with other partners, such as The Ocean Project and the International Ocean Institute. From less than 10 countries involved in 2002, there are now organisations promoting activities in more than 50 countries. The next step is to rally more participants, especially among new stakeholders, so that state agencies, research institutes, corporate businesses, etc. also celebrate or support World Ocean Day. This push will allow raising the profile of World Ocean Day in support of the official designation of World Ocean Day as an International Day. Expected audience of the World Ocean Day in 2015 is 140 million people, thanks to activities organised in 150 countries.



Fig. 2: © Grand Aquarium de Saint Malo, France



Fig. 3: © te mana o te moana, French Polynesia



Fig. 4: © IOI, India

Reflect on our modes of living, renewing these toward sustainability

Since 2004, the Citizenship of the “World Ocean” has been symbolised by the Passport of the Citizen of the Ocean, the emblem of a community of citizens who care for the ocean, with each citizen having their own responsibilities and rights. In becoming a Citizen of the Ocean, the passport holder demonstrates individual determination to act for² the benefit of the marine environment. The individual agrees to reflect on their way of life, to adopt a new behaviour toward the ocean, and to carry out a number of actions that help preserve and protect the ocean or simply to spread knowledge about its role and importance to our planet and humanity.

500,000 copies of the Passport of the Citizen of the Ocean have been printed in two versions adapted for adults (in 8 languages) and children (in 4 languages) – including English, French, Portuguese and Spanish. Ocean educators and professionals worldwide make use of it in diverse educational programmes adapted locally to promote the Citizenship of the Ocean. Translations and prototypes are already available in 10 additional languages, among which Chinese, Japanese, Hindi, and Tamil are included with the hope of being printed and distributed in the near future. Apart from expanding the distribution, an effort has been started to help the Citizens of the Ocean share their experiences and take further actions on important matters; the most active Citizens of the Ocean will be acknowledged as Ambassadors of the Ocean. The WON objective is to mobilise millions of Citizens of the Ocean in 120 countries by 2015.



Fig. 5: © Nausicaa

To encourage and empower individuals, local, regional, and international information initiatives have been started, promoting concrete sustainable actions, at the individual and community levels, such as adopting behaviour and consumption habits that show more respect for planetary and oceanic resources and supporting related petitions.

To encourage individual actions:

In 2003, a series of actions to avoid marine pollution was proposed to the public. A list of “Ten little things to make a difference for our ocean planet” was adapted, expanded, and distributed at the UNEP/GPA IGR2 Meeting in 2006. From 2003 to 2007, regional workshops were organised to work with marine educators, aquariums and museums, media, and other stakeholders on fostering sustainable seafood consumption with the aim of raising awareness on the fragile state of the ocean ecosystems and inspiring consumer responsibility. A new initiative will be launched in Europe in 2009 to promote positive consumer attitudes by learning to choose the right fish - the right species at the right season and the right place.

- Since 2007, WON has also partnered with IGLO, the ASTC Initiative on Global Warming, to better educate citizens about the impact of human actions on climate and about environmental and energy related choices they will need to make now and in the future.
- Another campaign theme is planned to promote the designation of Marine Protected Areas.

To encourage community actions:

- After the *Prestige* shipwreck in 2002, a protest petition against the risk of environmental damage caused by oil pollution gathered 69,598 signatures. (Following the *Prestige* disaster, the European Union has banned single-hull oil tankers from its ports and the International Maritime Organisation adopted measures to phase out single-hull tankers).
- The Polynesian government answered the petition against shark finning in French Polynesia, which obtained about 40,000 signatures. As a result, sharks are now under protection in French Polynesia.
- Marches for the Ocean have been organised in various countries, from Kenya and Mauritania to US and France.

To broaden the impact of these campaigns, actions have been taken to involve prominent public figures and introduce new high-profile initiatives, such as: holding Sustainable Seafood celebrations and displays; composing a March for the Ocean; composing an anthem for the



Ocean; launching a “Nobel Prize” for the Ocean. A solidarity fund will support the actions of World Ocean Network participants and partners.

Empower people to take concrete actions to resolve the challenges they face

Public debates equip individuals with the understanding, skills, and knowledge that enable them to perform this role effectively. They are an opportunity to involve the general public in decision making processes. Bringing together scientists, concerned stakeholders and the public, they bridge the gap between knowledge and everyday life, and they facilitate discussion about both existing problems and ways of life.

Ocean Debates started in 2002, for instance, at the World Underwater Film Festival, as well as in many local celebrations for World Ocean Day. Among other themes, “From Hilltops to Oceans” debates organised in 2003 allowed for the discussion of the impact of our everyday life on the oceans through pollution. The public debates also include policy issues, such as the discussion of the European Integrated Maritime policy in the framework of the Blue Planet Forum in Brussels in 2007. In 2007-2008, other discussions have started about maritime transport and safety issues that link with our way of life and consumption. The WON objective for 2015 is the organisation of stakeholder debates and public debates by all WON participants around the world and in partnership with all Global Forum working group themes.

Youth Parliaments for the Ocean are intended to enhance the involvement of young people in the ocean stewardship and governance. As future consumers, decision makers, managers and users of marine resources, young people play a significant role in securing their future. Their participation is critical to determining whether existing efforts will be continued over time. The first meetings of the international Youth Ocean Parliament in Malta at *Pacem in Maribus XXXII*, and of the European Youth Oceans Forum at the Blue Planet Forum in Brussels, represent a milestone in international initiatives that engage the young generation in the preservation of the Blue Planet.

Youth Forum Towards an integrated European maritime policy, World Ocean Day 2007



Fig. 6: © Institut Océanographique – Paris

Fig. 7: © Acquario di Genova – Italy

Fig. 8: © Nausicaa

The development of the World Ocean International Academy communication training programme for educators, researchers, academics, media, etc. is intended to increase the number of professionals who could deliver meaningful ocean messages and information effectively, help people understand their connection with the sea, and provoke genuine public desire to adopt sustainable behaviour in favour of marine environment. The World Ocean International Academy will organise the first session for educators and media in 2009.



United Nations Atlas of the Oceans: pooling knowledge on the state of the oceans and their sustainable use

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Abstract

The United Nations Atlas of the Oceans is an Internet portal containing a wealth of information on the world's oceans. It is promoted and maintained by the leading UN agencies responsible for matters relevant to the sustainable development of the oceans and the advancement of ocean science, with the support of various partners and donors. It offers the public and policy-makers continuously updated information on the state of the world's oceans, including maps, development trends and potential health threats from the deteriorating marine environment. Topics include governance, sustainable development, coastal and marine habitats, education and training, ecology and more. (www.oceansatlas.org)

Introduction

The UN Atlas of the Oceans¹ is an Internet portal providing information relevant to the sustainable development of the world's oceans and coastal areas.

Covering about 70 percent of the Earth's surface, the oceans are a highly productive system which continuously recycles chemicals, nutrients and water, powering climate and weather and regulating global temperature. About two-thirds of the world's population live within 60 kilometres of the coast and almost half of the world's cities with more than one million people are situated in and around the tide-washed river mouths known as estuaries. For hundreds of millions of people around the world, oceans are a major source of food and livelihood as well as a provider of natural routes for communication, transportation and trade.

Amid mounting concern over continuing deterioration of marine and coastal ecosystems, several of the world's foremost ocean agencies created the UN Atlas as a new tool with the goal of helping reverse the decline and promote the sustainable development of oceans. Overfishing, destruction of coastal habitats and pollution from industry, farms and households are endangering not only fish - the leading individual source of animal protein in the human diet - but also marine biodiversity and even the global climate. The Atlas helps spotlight these and the other more acute marine issues with, in cases such as ice cover, links to real-time maps and tracking data.

The Atlas is intended for policymakers who need to become familiar with ocean issues and for scientists, students and resource managers who need statistics and information on approaches to sustainability. The UN Atlas also provides the ocean industry and stakeholders with pertinent information on ocean matters. It serves a rich cross-section of users - from schoolchildren, educators and the general public to decision-makers, the media, NGOs and researchers requiring access to databases, scientific literature and project documentation.

Background

The UN Atlas supports Chapter 17 of Agenda 21, the blueprint for the sustainable development of oceans adopted at the 1992 Earth Summit in Rio de Janeiro. Development began in November 1999 by the UN agencies responsible for matters relevant to the sustainable development of the oceans and the advancement of ocean science as an initiative of the United Nations Subcommittee on Oceans and Coastal Areas of the Administrative Committee on Coordination (which subsequently evolved into the UN-Oceans framework, an interagency coordination mechanism on ocean and coastal issues within the UN system).

¹ See the United Nations Atlas of the Oceans Web site at: www.oceansatlas.org



After more than two-and-a-half years of development and a decade of planning, today the UN Atlas of the Oceans represents one of the most ambitious global scientific information portals available online, backed by the world's leading international experts on marine-related matters.

The UN Atlas was officially launched on 5 June 2002 at a meeting of UNESCO's Intergovernmental Oceanographic Commission, coinciding with the UN-recognized World Environment Day and just ahead of the Johannesburg World Summit.

Partnership

The UN Atlas was initially funded by the United Nations Foundation with additional resources from the six original UN partner agencies (FAO, IAEA, IMO, UNEP, WMO, UNESCO/IOC)², joined by the Secretariat of the Convention on Biodiversity (CBD). Development has been under the lead of the FAO Fisheries and Aquaculture Department with additional participation from national agencies. Collaborators include the Russian Head Department of Navigation and Oceanography (HDNO), the United States National Oceanic and Atmospheric Administration (NOAA), the Census on Marine Life (CoML), the National Geographic Society and the World Resources Institute (WRI). Recent partners include the UN Department of Economic and Social Affairs (UN-DESA) and the International Seabed Authority (ISA).

Content of the Atlas

This comprehensive Web site is designed to be an encyclopedic resource as well as the world's foremost information clearinghouse and online forum for experts in ocean issues. It holds a large amount of diverse information – from fact sheets to publications, from news to online resources. It provides users with continuously updated data on the state of the world's oceans, maps, development trends and threats to human health from the deteriorating marine environment.

All content is approved by expert editors before publication, ensuring that the quality and integrity of the Atlas is maintained. Partner institutions review the content of topics for which they have direct responsibility in order to further ascertain the high level and appropriateness of material available.

The UN Atlas includes four main entry points to information which is organized according to general subject areas and which includes a wealth of related topics. Each topic listing provides background information, lists UN agency programme roles and involved organizations, describes relevant legal and policy frameworks, identifies research needs and gives an assessment of what the future holds.

The four entry points are:

- **Uses** - The Uses section of the UN Atlas of the Oceans contains information on the uses of the oceans such as for food, shipping, mining, energy, and coastal habitation. The focus is on information relevant to sustainable development of the oceans with subjects including disposal of waste from land, energy, fisheries and aquaculture, human coastal settlements, marine biotechnology, non-consumptive uses, ocean dumping and ship wastes, offshore oil, gas and mining, recreation and tourism, and transportation and telecommunications.
- **Issues** - The Issues section of the UN Atlas of the Oceans contains information on broad, cross-cutting ocean issues - such as sustainability, food security, global change, and pollution. The focus is on information relevant to sustainable development of the oceans. This section is divided into the following sub-topics: climate variability and change, economics, emergencies, food security, governance, human health, training and capacity building, pollution and degradation, safety at sea and sustainable development.

² FAO (Food and Agriculture Organization of the United Nations), IAEA (International Atomic Energy Agency), IMO (International Maritime Organization), UNEP (United Nations Development Programme), WMO (World Meteorological Organization), UNESCO/IOC (Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization).



- **About** - The About section of the UN Atlas provides an encyclopaedic collection of information about the oceans, organized in areas such as biology and ecology, how oceans were formed and how they are changing, monitoring and observing systems, and maps, statistics and online databases.

- **Geography** - The Geography section of the Atlas displays material according to geographic region. These regions have primarily been developed from the AGROVOC Agricultural Thesaurus, published by the Food and Agriculture Organization of the United Nations.

Among some of the main issues addressed:

- *Fisheries resources*
- *Food security*
- *Climate change*
- *Algal blooms*
- *Piracy*
- *Coral reefs*
- *Emergencies*

Each month members receive a UN Atlas of the Oceans Newsletter via e-mail to help inform them on what is happening. It is also distributed through our partner institutes. The newsletter includes a round-up of all the most recent material published in the Atlas with an editorial spotlighting hot topics and new issues.

The Atlas also includes an image gallery, a glossary and a repository of oceanographic maps.

Tools and Technology

The software supporting the UN Atlas is the free and open-source Community Directory Server (CDS), a powerful web-based system developed at FAO. The CDS was developed in response to the growing need for more effective and participatory knowledge generation and dissemination in support of sustainable natural resources development. All the material is organized in a database to provide an integrated source of knowledge and policy advice.

Today some 15 autonomous sites use the CDS, each benefiting from technological advances made and new features introduced. These include: knowledge pools, where information is clustered by keywords (for example by theme or a specific institution) for easy consultation and access; language functions; and print-friendly versions.

The CDS approach adopted and promoted by the UN Atlas enables members to actively participate in enriching content. Through a user-friendly interface, members contribute and suggest new topics and related knowledge. Expert editors approve all material before publishing, ensuring that the quality and integrity of the Atlas is maintained. Through controlled indexing, all the information entered is enhanced through linkages and searchability.

The Atlas is available in text-only format as part of continued efforts to widen accessibility, especially for regions with limited Internet access. Furthermore, sections of the Atlas can easily be selected and placed onto CD-ROM in order to promote wider availability in libraries and resource centres. This also allows for additional personal archiving, complementing the regular system back-ups.

Virtual offices can be created as areas for exchanging ideas, preparing meetings, sharing papers and establishing online forums. These can also be rendered access-restricted if desired by a member.



Status of the UN Oceans

Since its launch in 2002 and beyond the celebration of its 5th anniversary in June 2007, the Atlas keeps growing in content, membership and recognition.

The UN Atlas Secretariat reports annually to the UN-Oceans, where progress is assessed and strategies for promotion and funding discussed. The Technical Committee of the Atlas meets regularly to decide on more specific matters detailing development and structure.

General overview

The current status of the UN Atlas of the Oceans in terms of content and use is: 965 Topics; 3680 Related Knowledge Objects; 9150 Members and 43 Editors

Membership

The UN Atlas now has over 9000 members – with a surge of new members joining at the 5th year anniversary of the Atlas in June 2007. Typical levelling off is seen during the summer months.

Visits to website

Number of visits topped 100,000 in May 2007, with peaks observed after the publication of each monthly newsletter. While visits to the site were initially from North America and Europe, statistics show that the UN Atlas is increasingly used by audiences in Latin and South America as well as areas in Asia.

Conclusion

The UN Atlas of the Oceans has shown steady progress since its unveiling. It has received acclaim and recognition; is enriched by earnest individuals concerned by and interested in the world's oceans as well as the institutions supporting it.

The UN Atlas strives, more than ever, to promote exchange, facilitate communication, educate and inform, create an international community, provide global scope and support training on all oceans-related topics and issues.

It is hoped that the UN Atlas will become more self-sustaining through committed and regular sources of long-term funding, through the increased activity of its members and editors and through the continued dedication of all its users in promoting and supporting such an important, unique and prized global public good. The UN Atlas offers an opportunity for greater collaboration in finding the right solutions to the growing concerns on the state of our world's oceans.



Using Drama for Learning Scientific Concepts

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Abstract

Drama when used appropriately can help to expand the awareness of children, enable them to understand reality and science concepts through fantasy, and allow them to see the meaning below the surface of actions. Drama does not convey information about science to pupils, it helps them to use and see what they already know. Instead of throwing science concepts at students and expecting them to understand straight away, drama enables them to focus on a particular incident, observe a particular experiment, laugh at a particular joke and through the reality of the situation really understand the meaning behind the science. It enables pupils to experience events in a physical way helping them to conceptualise and increase their learning. Drama enriches the experience of learning science and learning all about the ocean.

The main aim of this presentation was to share with participants the experience of a group of student-teachers who used drama as a medium for teaching and learning scientific concepts. The presentation included three main parts. In the first part the presenters provided a rationale for using drama in the teaching of scientific concepts and making individuals more aware of issues dealing with oceanography; in the second part a small group of student-teachers shared their experience of using drama to communicate science concepts with pupils in the classroom; and finally the session ended with the interactive engagement of all the participants in a small drama workshop where it was possible for the participants to try out first hand the theories and experiences discussed in the first and second part of the session. This session sought to offer participants new ideas and alternative methods of teaching oceanography with enthusiasm, humour and enjoyment

Introduction

What do Science and Drama have in Common?

What do science and drama have in common? How can drama be used in the science classroom in order to motivate students to learn science and enable them to learn scientific concepts in a fun way and in a way which they can remember? One way of teaching science successfully is to ensure that students are engaged in numerous hands on activities that encourage inquiry based learning, opportunities for simulation exercises, freedom to explore and discover, and laboratory exercises that bring textbook lessons to life (Swango and Steward, 2003). Science is also a process which involves problem solving, discovering or determining cause and effect, making inferences, drawing conclusions, classifying, predicting and hypothesising and building models. These skills need to be learned and the role of the educator is to allow students to become comfortable with asking questions, making mistakes, justifying answers. They need to "learn how to think" (Jorgenson, Cleveland and Vanosdall, 2004).

These skills cannot be acquired by traditional instruction and transmission of knowledge. Something more is needed. Drama in science can provide the context within which the dilemmas and problems of "real life science" can be enacted and used as a learning tool to enable students to debate, discuss, hypothesise and understand the concepts of science within a safe environment. Dorothy Heathcote (a well known educator and researcher in educational drama) states that, "drama is human beings confronted by situations which change them because of what they must face in dealing with those challenges" (Johnson and O'Neill, 1984, p. 48). Drama helps to engage young people and learning communities in discussions and debate about various issues regarding for example the ocean, the state of the ocean, the beauty of the ocean and the impact of mankind on the ocean environment.

Bentley and Watts (1989) describe four main reasons for choosing to explore science through drama and role play. They state that first of all it is an important way for the teacher to retain control of the focus of the lesson to be learnt, but at the same time devolving responsibility for the learning to the students. Secondly, it allows the learners to make appropriate judgements about attitudes, values and feelings, as well as facts and concepts. Thirdly it encourages oral communication and allows students to put ideas into words and fourthly it builds on the learners'



experiences, and allows them to relate their experiences to the outside world. Drama operates at both the social and cognitive level and "it provides students with a space within which to link scientific and spontaneous concepts. It traces the continuities between the more formal aspects of the science curriculum and issues relating to the social, personal and political development of the individual" (Bentley and Watts, 1989, p. 147).

The idea of using drama in science teaching as explained by Heathcote and Bolton (1995) is not to just produce a play and have actors in it, but drama when used appropriately can help to expand the awareness of children, enable them to understand reality and science concepts through fantasy, and allow them to see below the surface of actions to their meaning. Drama does not convey information about science to students, it helps them to use and see what they already know. Instead of throwing science concepts at students and expecting them to understand straight away, drama enables them to focus on a particular incident, observe a particular experiment, laugh at a particular joke and through the reality of the situation really understand the meaning behind the science. It enables pupils to experience events in a physical way helping them to conceptualise and increase their learning.

Inquiry Based Science Learning

Bransford, Brown and Cocking (1999) suggest that understanding science is more than knowing facts. Most important is that students understand the major concepts. Constructivist views of learning suggest that learners are not passive recipients of knowledge; rather they are active constructors and re-constructors of their own understanding. Mental representations are continually being confirmed, rejected, adapted, reformed or developed in response to experiences both inside and outside school. Learning also depends on what the students bring with them into the classroom (Bruner, 2004). Bransford et al. (1999) also state that learning takes place within a social context and learners in science need to be provided with opportunities to interact with others and communicate ideas and listen to alternative explanations. This approach to teaching and learning science is known as "inquiry based learning". "Inquiry learning not only contributes to better understanding of scientific concepts and skills but because science inquiry in school is carried out in a social context, it also contributes to social and intellectual development" (Ansberry and Morgan, 2005, p. 19). The learners of whatever age can work collaboratively and ask thoughtful questions about science and environment in a context which mirrors the real social environment in which they are taking place. Hodson (1998) states that there are clear messages to teachers about the need to enliven science teaching and learning. "Features that increase students' situational interest include challenge, choice, novelty, fantasy (a much neglected aspect of science education), surprise and of course, personal, social and environmental relevance" (Hodson, 1998, p. 71). Drama through inquiry based science is ideal for achieving all these features.

The characteristics of Inquiry based science learning as identified by the National Science Education Standards (NRC, 2000) can be enacted in the science classroom using drama:

1. *Learners are engaged by scientifically oriented questions.* In a science lesson which tries to engage students with ocean issues, the students are initially engaged with describing what comes to their mind when they hear the word "ocean". This places the ocean within a realistic context which students are familiar with. Other issues can start with questions regarding a particular scenario. For example questions like, "You are living in Alaska and the water level is rising...What would you do?" can be asked. As stated by Gough and Griffiths (1994), "feelings are explored, insights are gained, and problem-solving abilities enhanced as the students project themselves into real-life situations" (p. 261).
2. *Learners give priority to evidence which allows them to develop and evaluate explanations that address scientifically oriented questions.* In this case students can carry out a number of investigations which allows them to reach the answer to a number of questions regarding the ocean. They can be asked to classify or identify endangered species. They can be asked to measure the salinity of a particular sample of seawater or to test for the amount of oil or pollutant in a sample of seawater. In this case the learners are taking on the role of scientists and environmentalists and they have to provide answers to the scientific questions asked previously.



The dramatisation in this case is not based on a prewritten script but the script and the answers are developed as the investigation progresses.

3. *Learners formulate explanations from evidence to address scientifically oriented questions.* Students can be presented with a hypothetical question regarding the polluted state of the ocean. They can then formulate their own explanations from evidence and have a round table discussion where some students represent scientists, environmentalists, journalists, politicians and business men. There is no prewritten script and the students reach their own conclusions.

4. *Learners evaluate their explanations in light of alternative explanations, particularly those reflecting scientific understanding.* The learners, students or young adults are safe to explore within the limits of role play and dramatisation their own ideas and views which do not have to be right or wrong. The coordinator, teacher or facilitator of learning can then present alternative situations which students/learners can explore within the safety of drama. They can evaluate, re-evaluate, and feel safe that they are not making mistakes, but only giving alternative endings to the script of real life.

5. *Learners communicate and justify their proposed explanations.* Communicating results is one of the most important skills which needs to be learnt in science and especially in science teaching. Students can be asked to write a story or develop the script of a play which they can then act out in front of friends or other children in the school. If the students are older then they can present the play in front of members of the community in a local parish hall for example. All that the students/young adults have learnt about the ocean or any other scientific issue is presented to the local community.

Drama in inquiry based science learning provides students/learners with a variety of opportunities to practice what they have learned, connect to what they already know, and this prepares them to solve problems in new situations. It mirrors the social context in which “real science” takes place (Ansberry and Morgan, 2005) and allows students/learners not only to develop knowledge and understanding of science, but also their social and ethical understanding of issues dealing with science and the ocean. For Heathcote quoted in Johnson and O'Neill (1984):

Drama uses the person to bring it into being. Conversely, the person is brought into possible new being by the same process. The child enters the zone of circumstance permitted by the drama situation, and in shaping the circumstance's future, the child's future is shaped, ready to be available in the real society which at present seems cut off from the school (p. 198).

Getting Pre-service Science Teachers to use drama and scientific inquiry to teach Science Concepts

Using drama as a tool to teach science concepts is not a new idea but the question which needs to be asked is whether all science teachers are equipped and confident about using drama to teach scientific concepts. For pre-service science teachers to understand the importance of drama and its great potential as a learning tool, they need to experience the impact of drama themselves. As teachers it is also important to learn the communicative, confidence building skills developed by engaging with drama. Dorothy Heathcote quoted in Johnson and O'Neill (1984) states:

So we need to train our teachers to structure for a learning situation to happen rather than sharing of information in a ‘final’ way to take place. We have to train them to withhold their expertise to give their students opportunity for struggling with problems, before they come to the teacher's knowledge, and to reach an answer because of the work they do rather than the listening they have done (p. 29).

To this end science student teachers in the Faculty of Education participate in a teaching module entitled “Drama and Storytelling in the Science Classroom”. This unit is carried out in collaboration with Masquerade Theatre Arts School. The Director of the school, Mr. Anthony Bezzina, works with the science student teachers to develop their own personal communicative skills as well as set up a production in which the student teachers teach science concepts through



a short play. The first module was carried out during the academic year 2006-2007 and the B.Ed.(Hons.) third year science students adapted the play by Roald Dahl *George's Marvellous Medicine*. The magical world of George who makes his Grandma grow big through his *marvellous medicine* is linked with the world of science and observation and finding an explanation for why things happen.

The play itself was the end result of a number of drama workshop sessions where the science student teachers learned how to project their voice, achieve poise and presence to carry themselves with ease, the skill of communicating with others which is essential for any teacher, and most of all how to cut loose from all boundaries and touch the limits of their creativity. The drama sessions allowed the student teachers to explore their inner abilities and enabled them to develop the skills needed for them to become competent and professional science teachers. At the same time they learnt how to use drama as a teaching and learning medium which when used in their science classrooms would make the science they were teaching much more fun for the pupils in their classrooms. As pointed out by a student teacher:

We learnt how to project our voice, look at the persons we were talking to and even use related gestures to simplify our communication. All this is important for us in the classroom. It also helped to improve our self-esteem...

The drama sessions also helped the student-teachers work as a group. Very often life at University is very competitive, instilling in students the need to work on their own to achieve better than their colleagues and to strive for the better grades. They were still striving for excellence, but the achievement of the whole group was more important in this case. As stated by another student teacher:

Making the props and the set with my best friends was real fun. It is something that I will look back at and miss very much. This also served for the whole group to get together and work really hard because all of us wanted this to go well...

But how could a play written by Roald Dahl be used to teach science to young student? In *George's Marvellous Medicine*, the student teachers used the Roald Dahl idea, but adapted it into their own text, to be able to introduce some basic science concepts. For example George mixed vinegar and baking soda to make his medicine, and the mixture erupted with many bubbles flowing out of his flask. He then attempted to solidify his solution by adding corn flour to make goop. His imaginary friends created in the text to give explanations for what was happening, constantly explaining the science behind the text. They explain about the food pyramid and what food is good for us to eat, about how we can make a paper fly across the room, and why a parachute falls to the ground. And all of this intermingled with chorus songs and dances composed and choreographed by the student teachers themselves. The colourful set, the narration and humour of the student teachers all helped to make an enjoyable production for all concerned. And all of this out of individuals who were not trained actors, but were simply teachers trying their best to find a method which would motivate their students to have fun learning science.

The performance itself was held at Stella Maris College Junior School. Two shows were held for the Grade 4 boys and for the Grade 5 boys. The boys packed the hall and with their enthusiasm, really energised the student teachers and enabled them to give a good show. For one student-teacher:

Today when I was on stage and I saw the students engaged in what was happening, I felt really happy and satisfied. I felt that we had achieved our aims...

Yes the aims were achieved and this was visible in the interaction which went on between the student teachers and the boys at the end of the show. The boys wanted the recipes for making George's medicine. They wanted to know what a solution was and how they could make one. They wanted to know more about NASA. They wanted to know how to do all the experiments performed on stage. Through this way of "doing science", the students and learners "acquire valuable skills through their interaction, collaboration, and problem solving with other students –



skills that cannot be learned sitting in desks in rows and listening to a teacher” (Jorgenson, Cleveland, and Vanosdall, 2004, p. 19). The excitement and energy of the learners and student teachers was visible all throughout the play. As one boy pointed out:

The play was so much fun and it helped me learn a lot about science in a fun way. It was also very funny and I liked the bits when grandma grows big and George makes his medicine. Now I will go home and try out these experiments...

But what was most successful was the communication which developed between the student teachers and the boys. The boys were only seeing these student teachers for the first time, yet at the end of the show they were stopping them and asking them questions about the play, thanking them for a fun session and a great show and most of all being open and friendly in a positive manner. This is the essence of good teaching and the first lesson that every beginning science teacher must learn. And these student teachers learnt the lesson in a fun way and at the same time managed to teach something to the boys at Stella Maris College too. Hopefully, these student teachers will carry with them the memory of George’s Marvellous Medicine into their classroom practice and enable them to make the teaching of science fun for all their prospective students. As stated by Mr. Anthony Bezzina, at the end of the presentation:

...the science student teachers were in some way or other initially made to do this presentation as part of their credit. A very interesting development as happens with young drama students – the enthusiasm finally took over – this became something they wanted to do and see through to the end. They learnt skills for life which they will pass on to their pupils. A very credible training for student teachers indeed...which highlights the cliché...all the world’s a stage...

Conclusion

The goal of any science teacher goes beyond the simple transmission of scientific knowledge and known scientific facts. A central goal of science teaching should be based on the initial premise that science is not value free and should aim to:

...equip students with the capacity and commitment to take appropriate, responsible and effective action on matters of social, economic, environmental and moral-ethical concern. The keys to this translation of knowledge into action are *ownership* and *empowerment*. Those who act are those who have a deep personal understanding of the issues (and their human implications) and feel a personal investment in addressing and solving the problems. Those who act are those who feel personally empowered to effect change, who feel that they can make a difference (Hodson, 1998, p. 21).

Through drama the students/learners can become personally involved in the understanding of scientific and environmental issues. Students/learners can learn how to express their own views and ideas, engage in discussion with teachers and peers, evaluate their views and if necessary adjust their views to new situations. Within the safe context of drama, students/ learners become empowered and they are encouraged to become more committed to “fight to establish more socially just and environmentally sustainable practices” (Hodson, 1998, p. 22). This commitment and empowerment can then be directly translated to real life situations.



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Media and Youth Workshop

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Abstract

Social networks and new media play an increasingly visible role in politics and activism. YouTube videos, MySpace bulletins, Facebook friends, and communities like Change.org, MeetUp.com and Twitter, provide increased potential for outreach, organizing, and bringing marginalized voices of women and youth to the forefront. We will explore how activism is changing and growing online and address the unique ways in which new media environments are impacting strategy and tactics used by organizations and activists to communicate, connect, and campaign for their cause on national and grassroots levels.



Pursuing Sustainable Development in Gau Island, Fiji: a community initiative to address a global concern.

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Abstract

It is now widely acknowledged that involving local communities is a prerequisite for the success of community-based management systems. This is even more so in the Pacific Islands, because of the way indigenous communities rely on environmental resources and their ownership of these resources. In addition, these communities need to be familiar with the need for contemporary management as the management systems they have used up to now are no longer effective given the current capacity and fishing techniques. Little work has been done on how Pacific Islanders should be involved in community-based resource management systems that incorporate the traditional and contemporary management systems. The incorporation is required because people in local communities have management philosophies and strategies that need to be made consistent with contemporary management practices. Furthermore, management practices in traditional communities need to be made appropriate to suit existing situations.

The involvement of customary resource owners in the Pacific is intriguing because, while the potential is there for the effective involvement of local communities, there are pertinent issues that need to be addressed if the sustainable development of the natural resources and biodiversity in these areas are to be achieved. Despite the sophistication associated with traditional wisdom, Pacific Islanders need to understand the complex interrelation between ecosystems that are part of contemporary science. In addition, these custodians need to appreciate their rights and obligations under contemporary statutory management arrangements. Some of the issues that need to be addressed include the nature of the activities allowed in the managed area, consultation of the local communities, getting people to commit themselves to the initiatives and points of disagreements between traditional customary and contemporary arrangements and expectations. In this article, I will try to explore these issues and suggest ways of addressing them to allow the meaningful participation of Pacific Islanders.

Introduction

Overview

The challenge in Gau Island, as in all rural areas in developing countries, is to engage the local people in sustainable development practices in all facets of their activities. In Fiji, as in many other Pacific Islands, villagers own the resources on which they depend and have aspirations to benefit from these. For the majority of the population, these environmental resources provide the main sources of sustenance that need to be maintained if the poverty that is rampant in many of the developing countries of the world is to be avoided in the small islands in the Pacific.

This project aims to involve the people in all of the 16 villages in Gau Island, Fiji in the pursuit of the global concern to articulate sustainable development. In this instance, local communities in Gau are assisted to adopt integrated resource management that enhances community livelihood and promotes sustainable development in the use of their natural resources.

Gau Island, the fifth largest in Fiji, is predominantly in pristine condition because the people live a semi-subsistence existence, which is now threatened by the impacts of development activities that degrade their natural habitats. The project promotes integrated resource use practices and the improvement of living conditions through development activities that respect the integrity of their natural environment and resources. The project activities highlight the people's resource management action and their self-determined development activities to protect and sustainably use the resources of the natural environment.

This project makes Gau Island a place where the people observe resource use arrangements based on appropriately developed management plans for their villages and island. The people are predominantly involved in subsistence activities but are transiting to commercial agriculture,



intensive fishing and the alteration of coastal habitats such as mangrove forests and seagrass beds. In the meantime, the increasing population and westernised lifestyles are resulting in coastal pollution and more exploitative uses of natural resources that threaten people's livelihood. The project allows the villagers to make plans and decisions that relate to their social and economic requirements and yet are holistic and consistent with known sustainable development practices.

This initiative promotes resource management in coastal communities that are modernising and utilising their natural resources. Ongoing resource management activities have been extended using an integrated approach. In 2002, the Gau Island Council agreed to manage the native forests in the island, the habitats of the endemic bird Fiji Petrel (*kacaunigau*, *Pseudobulweria macgillivrayi*). Since 2002, the five villages in the Tikina Vanuaso, have worked with the University of the South Pacific (USP) and the International Ocean Institute-Pacific Islands (IOI-PI) to promote marine resources management. The IOI-PI and the Japanese International Cooperation Agency (JICA) have funded follow-up activities and alternative sources of livelihood that are essential parts of these initiatives. The main funding has been from the grant provided by IOI-PI as part of their Women/Youth and the Sea programme funded by OSRF.

This collaborative effort works with the people of Gau, who constitute Lomani Gau; which advocates feeling and care for Gau, their island home. Lomani Gau representatives enjoy widespread support from the chiefs of the three Tikina, all the villages, the Provincial Administration and the Ministry of Health officials in the island.

In 2006, Frontier-Fiji, a subsidiary of the Society for Environment Explorations in the UK, formed a partnership with the IOI-PI to undertake a resource survey on the island. The survey provides status of the marine environment reports to assist people decide on the use and management of their marine resources. There also have been interests from other organisations such as the Planetary Coral Reefs Foundation, which is offering to assist the people in Gau Island with the survey of their reefs and articulation of sustainable development.

Intervention

People in rural areas like Gau Island need to adequately and appropriately address their development challenges because they are likely to lose their heritage if they are ill advised. This is crucial because people in these areas who make difficult resource use decisions everyday need to be aware of what is best for them in the short and long term.

This project makes integrated resource management and enhanced community livelihood the basis of rural development. This is a challenge, because sustainable rural development must be made part and parcel of the development activities that the people undertake. This project promotes the care of environmental resources and aims to demonstrate that environment management makes economic, social and cultural sense.

The project also allows people to adopt integrated resource management when making decisions regarding the use of their natural resources. All of the 16 villages have declared management areas forming a network of management areas on Gau and are looking landward to address the management of their other resources, environment and the threats from those areas.

The project goal is to assist the people in Gau Island to integrate resource management into all of their sustainable development activities. The aim is to make integrated resource management and sustainable development part of rural development planning and implementation of all villages in Gau. Specific aims of the project include the preservation of the cloud forest in Gau Island, the adoption and use of better land use practices that are consistent with the long-term aim of sustainable and integrated management, protection of drinking water sources and the formulation of a Code of Conduct for Sustainable Living on Gau Island. In addition, there will be alternative sources of livelihood. Training workshops on resource management, sustainable development planning and governance and alternative sources of living are part of the project to introduce people to the challenges they face. Expertise from local villages and from outside the project area will work with each of the villages to determine the appropriate actions to be taken.



The project aims to get the Gau Island community involved in the pursuit of sustainable living, which is achievable in islands this size where the coastal villagers own all the resources from the mountains to the reefs. The project activities should benefit local people and provide useful lessons on sustainable rural development. Lessons from Gau will be promoted to other islands and countries in the Pacific Islands.

Each village is involved in training workshops to formulate resource management plans and undertake rural development activities to preserve the health of their island environment. The project also involves resource surveys that would allow the villagers to decide on their own sustainable development options. Outside experts assist the islanders with biological, social and economic surveys and follow up activities. All the villages are supported to articulate and observe healthy living practices starting with proper waste management and landuse activities.

Activities undertaken and pursued by the villagers to articulate integrated resource management and sustainable living in Gau include: the surveys of all communities and resources; use of proper landuse guidelines; planting and management of coastal forests and special habitats; protection of valuable coastal habitats, reduction of deforestation and uncontrolled cutting of trees; reduction of unnecessary burning; reduction farming on hill slopes; protection of water catchments to avoid contamination of drinking water; enhancement of fishing areas; determination of appropriate fishing effort; declaration of more fisheries management activities and the setting up of ecotourism operations.

Each village is engaged in participatory workshops and follow up activities to formulate resource use and management plans. The resource management plans that were formulated at the islandwide workshop must be endorsed by the villages, which need to specify what they can contribute and what they require in terms of assistance. The village plans provide appropriate indicators of change that are monitored and evaluated. Adaptive learning is emphasised in all the villages so close evaluation through regular meetings and follow up activities are undertaken during the project to monitor the changes and provide further training.

The plans from the different villages are used to formulate the plan for Gau Island and devise a Code of Conduct for Sustainable Living in Gau. Some of the issues that are currently addressed include the clearing of virgin forests, planting on hill slopes, the burning of bush lands, the use of pesticides, the protection of water sources, the importation of planting materials, the introduction of exotic species, the management of village waste and the care of domesticated animals.

The project provides funds to pay for people's expenses and involvement in village activities. The expenses are for items that the villagers require as part of their sustainable rural development and integrated resource management activities but are not available in the village. The communities are also given funds to support their other initiatives if they undertake all their resource management activities that are consistent with their plans. The funding is an incentive for people to undertake sustainable resource development activities in their villages, where little sources of income are available. It is, therefore, critical that people are compensated and rewarded for the time they use on their resource management activities. In many of these community initiatives, the contribution of local communities is the most costly.

Special focus of the project targets Youth and Women. These two groups have not been adequately engaged in development activities; an area to be changed in this project. The project activities are coordinated through the Lomani Gau, where all the villages are represented. Village decisions are taken through the Village Councils to the Gau Island Council, while village representatives in the Lomani Gau are responsible for the transfer of information between the village councils and other levels of government. Representatives of the Provincial Government together with Government officials from Agriculture, Forestry and Fisheries and NGO and development agents provide information and assistance whenever required.

Lomani Gau uses some traditional means of encouraging compliance and support. In addition, regular meetings to enhance the promotion of project activities and site visits to each of the villages by the Committee and its partners are emphasised. Villagers are involved in sustainable



development training activities, starting with workshops to formulate land and resource use, management and rehabilitation plans that are the basis of their integrated resource use and management activities in each village. The village resource development plans constitute the Code of Conduct for Sustainable Living in Gau Island.

Partners from the International Ocean Institute, the University of the South Pacific and the Society of Environmental Explorations assist with the funding, surveys, training workshops, monitoring and the follow up activities. Training and support is planned for all of the villagers and people who are involved in project activities. Lomani Gau is responsible for monitoring the developments and changes in the different villages. The project evaluation would be the basis of the desired changes conducted after the conclusion of the project.

All the villages have pledged their willingness to work on the project. The villagers will work at their own pace, but all project activities would be completed within agreed timelines. The local partners contributed their time, local materials and labour. The villages emphasise self-determined and initiated activities that are appropriate for their villages. In many of the villages, these activities have been identified and now need to be endorsed by the people.

Justification

International resource management instruments that reflect global concerns have remained the same since UNCED, reflecting the lack of achievement of the preset targets to address them. These goals have been recycled under the different instruments that include the Millennium Development Goals. The problems in addressing these issues have focused attention on community initiatives because global concern such as sustainable development and poverty alleviation are addressed more effectively when local communities, such as those on Gau Island, are empowered and supported to deal with them.

Local communities depend on the state of their environmental resources for survival and thus must be actively involved in their management. Community initiatives are easier to agree to and can be implemented immediately. Such initiatives also produce quick results that offer globally useful lessons. This pilot project demonstrates the many useful activities that people can attend to even without any funding support. Local communities are eager to improve their positions and conditions and achieve amazing results. The challenge is to work with local communities to engage them in sustainable development for the long term. By creating pressure at the local level, these rural initiatives can change the manner in which the issues are addressed and may be used to provide options that people can consider.

The pilot project allows the people in the individual villages to formulate resource management plans that incorporate their resources management activities and ensure the integrity of their environmental resources and systems.

The project expects the following outputs:

- Gau Island people working together to articulate sustainable development
- Formulation and implementation of resource management plans for each village and through these the island of Gau
- Survey of the resources and needs in each village
- Preservation of the virgin cloud forest of Gau
- Identification and use of proper landuse guidelines for Gau
- Protection of water catchments to avoid contamination of drinking water in the island
- Proper disposal of village waste in all villages



- Survey of social and economic conditions on the island
- Conduct training workshops and follow up activities in each village
- Formulation and endorsement of a Code of Conduct for Sustainable Living on Gau Island
- Use in Gau of the participatory manner of making decisions
- Use in Gau of the integrated resource management approach
- Implement appropriate alternative sources of livelihood in Gau.

Preliminary results are encouraging. The villagers are committed to the project and are making resource management decisions and are supporting these with real action. Mangroves and coastal habitats are being protected and rehabilitated, while marine environments are being declared protected. Effort has also been focussed on land based sources of threat such as waste management, agriculture and landuse practices as well as long term development activities.

The project processes and outputs are reported in publications and papers that will enhance the mainstreaming of the project activities. An external review process at the end of the two year project period should ensure that the people of Gau pursue rural development while keeping the integrity of their natural environment and its resources. The people will utilise their environmental resources to improve their lives while at the same time keep their environmental resources intact to provide the services they support.

In this project, environmental management is pursued simultaneously with rural development to provide good lessons in sustainable living that can be promoted to other community groups in a similar situation. Evaluation and monitoring are conducted through the follow up visits through the communities. The emphasis on the approach is associated with the desire to demonstrate that the work undertaken in Gau Island works and that the people will benefit from their environment management activities.

Partnerships are special features of this initiative. The lack of success at the national government level has necessitated the focus on communities, which while well placed to articulate sustainable development must not be expected to defend their resource management activities against outside forces that often have access to capital and human resources. In addition, sustainable development necessitates the involvement of many stakeholders including the owners of the resources, the users and civil society. Technical expertise and funding are also expected to provide advice on issues that are new in the communities that undertake resource management.

The strengths of the approach discussed here are:

- Involvement of people in the effective management of their environmental resources
- Promotion of self-determined initiatives
- Tying of resource management to development activities
- Attracting new development partners
- Promotion of new development options

The main weaknesses include:

- Limited funding which is slowing the progress
- Lack of government support for community development initiatives
- Poaching from community groups by more well-off outsiders
- Social and cultural pressure



Partnerships

The genuine involvement of people in the communities in long-term resources management is a precondition for success in all initiatives in the Pacific, because of their ownership of the resources and the importance of these resources to them. Community-based initiatives are cost effective and appropriate. The intimate knowledge of local resources is put to good use when local communities determine their resources management methods. It is also important that outside input be incorporated. This is to ensure that the local communities learn and benefit from the experience of others and not be left only to learn from their own firsthand experiences. In addition many of the issues relating to the utilisation of environmental resources are new to local communities. It is, therefore, logical for local communities to receive advice and assistance from outside the communities.

The Lomani Gau initiative to manage the environmental resources in Gau Island is made possible by the partnerships of community members, resource owners, conservation practitioners, researchers, government officials and international funding agencies. These groups, consisting of experts in different aspects of project development, all played a critical role in the project. The number of community initiatives heightens the number and skills of people practicing effective community-based resource management, while the people have made the network responsive and workable. Through collaboration with external partners, important resource management activities have been undertaken. International funding has been secured for resource management at the local level. Some villagers are now licensed honorary fish wardens leading the sustainable use of environmental resources. It is this partnership that has helped in the preservation of natural biodiversity while providing for the livelihoods of the communities in the district.

The work in Gau was tried initially in one of the three Tikina on the island and has now been adopted in the other two districts. The approach is also being promoted to other Pacific Islands as well as the world. It is simple and straightforward enough to have global application. The important thing is that resource conservation is tied to the people's development needs in the different corners of the world where the approach is implemented.

Lessons Learned

Community-based resource use arrangements are more effective. Using the communities' resource use traditions and close ties, the people are better able than government agencies to determine the level of use of resources, while their traditional cultural values allow for the effective implementation of management decisions. The effects of having close social relations are lost in international and national resource management initiatives and are strengths that should be taken advantage of in resource management.

Biological, social and economic surveys and monitoring are undertaken by the partners to improve the effectiveness of their chosen interventions. These surveys are important to check on the effectiveness of the resource management activities and maintain people's commitment to resource management initiatives. Local communities live with the dilemma of choosing between incomes from the immediate and unsustainable use of resources and the more remote futuristic benefits of conservation activities. People, therefore, need to be continually reminded of the effectiveness of the conservation activities they undertake.

It is also critical that management actions are given time to work, as the lessons people learn from these resource conservation efforts will be a source of inspiration for the continuation of conservation and resource management into the future. The partnerships in this project allowed collaboration to make conservation better for the people involved and the environment. The core values that the partners observe have enhanced the partnerships. Commitment, teamwork, transparency, empowerment, respect, fun and the belief that practitioners can make a difference has ensured that the people understand each other and trust each other to come through with what each is expected to do. These barriers to genuine partnership cannot be easily untangled through legal contracts as such, but through a social commitment to doing better in terms of conservation and making a difference for the people.



It is obvious that government agencies need to play an active role in involving community-based groups in the management of environmental resources. Government support will bring legitimacy to the approach as well as assist in the mainstreaming of the process. Government support can also enhance the securing of funding and address issues such as surveillance and control that are currently hindering the performance of local resource management initiatives. Without government support, the potential of the experience as mentioned here will not be given the attention it demands.

Resource management cannot only be the bulwark against poverty in rural communities, it can also make economic development sensible. Resource management in Gau is mainly aimed at securing people's livelihood, but there are already signs that economic conditions are improving. People are learning that the resources of the environment need not only be extracted to be beneficial and the financial benefits of having good environmental resources are being slowly appreciated.

Government agencies need to commit resources to these initiatives that involve local communities. They cannot pay for most of the work that is required as part of the sustainable development initiatives and process, but can meaningfully assist the partners that are working in that area. Government can also help promote the approaches that are proven to work so that other communities may be spared the anguish associated with failed initiatives.

The initiative in Gau provides guidelines on how people should be involved in the management of resources and their development activities. At all levels from the communities to the district, province, national government and the world, the people and their partners must promote and practice integration, collaboration and iterative management, which are the pillars of the integrated resource management approach. The approach should be adopted in all areas where the local communities are trying to manage marine resources. Coastal communities and resources are complicated and need to be managed in the best way possible. This is why the integrated approach used by the partners to the Lomani Gau project should be taken into consideration. The aims of conservation and management must reflect the need to manage environment resources and involve people in the process.

The pursuit of sustainable development in Gau demonstrates that care for the environment makes cultural, economic and ecological sense. This is logical given that all development is dependent on environmental resources and that the maintenance of environment health ultimately determines the sustainability of development activities. To achieve long-term sustainable development goals, it is critical that rural communities be convinced of the importance of the rehabilitation of coastal habitats and the commissioning of alternative sources of livelihood. The future plan is to engage the villagers in Gau to undertake sustainable economic activities that will provide options that are presently unavailable. People need to realise the close relations between their development aspirations and the quality of their environmental resources. The attainment of these long-term sustainable development goals will be the ultimate test of success. The preliminary results in Gau are showing the promise that needs to be fully realised with a little more intensive support.