

OVERVIEW OF EXISTING CAPE SCIENCE SYLLABI

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Seminar for CAPE Science Teachers

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General trends in CAPE.....

- Environment/ sustainable development now a core topic across many CAPE syllabi
 - new syllabus on Environmental Studies
 - core elements included in Geography, Biology, Chemistry, Caribbean Studies
 - elective in Physics/ French/ Spanish syllabi
- Stronger focus on:
 - local/ regional case studies and examples
 - field work
 - data collection techniques and research methodologies

- From Cambridge GCE to CAPE, environment/
sustainable development component reduced in
some subjects
 - eg. **Biology**
- Some subjects have a stronger environmental
component at O'level
 - eg. **Geography**

- Why include environmental studies?
 - ‘to foster positive attitudes, values and commitment to identifying, solving and preventing environmental problems’
- Cross curricula approach good
- But many problems to date

To what extent can the syllabi achieve above objective?



	Enviro Science	Geog	Geog CXC	Bio	Chem	Carib Studies
Ecosystems						
Diversity						
Human/ Ecosystem interactions				*		
Natural resources				*		
Sustainable Development						
Tourism			*			
Agriculture						
Industry						
Climate change				*		
Pollution				*		

Environmental Sciences

UNIT 1: Ecology, People and Natural Resources

- Fundamental ecological principles
- People and the environment
- Sustainable use of natural resources

UNIT 2: Agriculture, Energy and Environmental Pollution

- Sustainable agriculture
- Sustainable energy use
- Pollution of the Environment

Environmental Sciences.....

Unit 1: Module 1

- Investigate at least two ecosystems in Trinidad and Tobago
 - Abiotic
 - including species diversity

investigation at small scale eg. in and around school

However larger-scale investigation of ecosystems required

Environmental Sciences.....

UNIT 1: Module 2

- Benefits provided for humans
 - including freshwater (*strong focus*)
- Human impacts
 - Indirect – population growth, demographics, poverty
 - Direct - overexploitation; habitat destruction; pollution; exotic species
- Mitigation options
 - including evaluating response options

Sustainable Development (concept)

Environmental Sciences.....

UNIT 1: Module 3

- Caribbean natural resources
 - Location
 - Distribution
 - Harvesting and use
 - Environmental impacts of use
 - Tools for management (eg. EIAs, land use planning, PAs, education etc...)
 - Indigenous people and natural resources

Environmental Sciences.....

- Packaging of UNIT 1 not very comprehensive
- Overlapping topics and concepts
- Links across modules not very clear

Environmental Sciences.....

UNIT 2: Agriculture, Energy and Environmental Pollution

- Generally sections on Sustainable Energy and Pollution have a fairly broad focus
- Section on Sustainable Agriculture focuses heavily on Caribbean
 - agricultural systems
 - role of agriculture in Caribbean
 - technical/ economic and socio-environmental issues

Chemistry

- **Water pollution**
 - sources and impacts
- **Industrial pollution**
 - air pollution
- **Climate change**
 - link to industrial pollution
- **Solid waste management**



Biology

- Ecosystem functioning
 - must identify an ecosystem
 - must conduct fieldwork
- Species diversity
 - related to ecosystem stability



Geography

- Soil/ Vegetation/ Climate/ Human nexus
- Impacts of economic activities on the environment
 - Tourism
 - Agriculture
- Development in the Caribbean
 - models
 - indices
 - policies



Caribbean Studies

- Natural and man-made disasters
 - hurricanes
 - soil erosion
 - coral reef destruction
- Concepts and indicators of development
 - including environmental factors
- Elective on the Environment:
 - pollution; solid waste management; disasters; housing growing populations; parks and national heritage...

Summary of Caribbean-specific information required

- Ecosystems and humans
 - named local/ regional examples
- Major natural resources in Caribbean
 - location/ distribution/ patterns in use
- Natural and man-made disasters
- Caribbean Development
 - Agriculture
 - Tourism
 - Industry

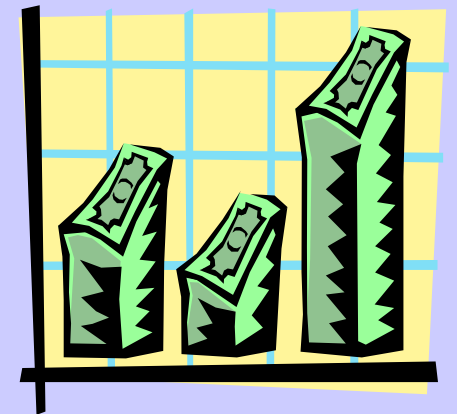
Data collection techniques and Research methodologies

- Ecological sampling methods
 - fieldwork
- Qualitative methods of data collection
 - surveys, interviews, questionnaires
- Research skills
 - sourcing information (internet, books, etc.)
 - presenting information (reports)



Presenting information....

- Concept maps
 - eg. Biology: emphasis should be placed on the use of charts and the creation of concept maps rather than excessive biochemical detail
- Statistical tools
 - graphs, charts, tables
- Posters
- Debates



Main challenges faced by teachers

- Resource material scarce
 - especially related to local/ regional examples
 - those provided by syllabus inadequate or outdated
- Where information exists, difficult for teachers to sift and condense
- Depth of information required not clear from syllabi
 - mismatch between syllabus requirements and exam questions

Main challenges faced by teachers

- Timeframe for completing some aspects of syllabi unrealistic
 - especially for syllabi with heavy research components
- Many requirements in syllabus vague
 - use of language and terms unclear
 - eg. Geography Unit 2: Module 1 – The opportunities and problems associated with the development of the rain forests????
- Meeting fieldwork requirements difficult
 - eg. identifying suitable locations

Some ideas about help required..

Chemistry syllabus suggests.....

establish contact with environmental groups (NGO's, CBO's) and the Environmental Management Authorities in their territories

- good start
- should also include the University
- should not be ad-hoc
- Ministry of Education can help to co-ordinate

Some ideas about help required..

- Local examples being developed – good source of information
 - Northern Range Assessment
 - Caribbean Sea Assessment
 - Nariva swamp exercise
 - Any others???
- Information must reach schools in a form that can easily be used
- May eventually consider developing a local Case Study booklet
 - similar to Prosser for GCE

Some ideas about help required..

- Important to include teachers (and students) in development of resource material
- Better dialogue between teachers within each school
- Better dialogue between schools
 - Geography/ Environmental Sciences Teachers' Association
- Teaching environmental studies may be made more effective if schools encouraged to be involved in environmental extra-curricula activities

Some ideas about help required..

Syllabi

- Some aspects of the syllabi require revision
 - Clarification of:
 - Terms
 - Depth of information required
 - Updated resource lists (including website)
 - Better co-ordination of syllabi with examination questions
 - Repackaging some aspects of the Environmental Sciences syllabus???

Thank you