OVERVIEW OF EXISTING CAPE SCIENCE SYLLABI

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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

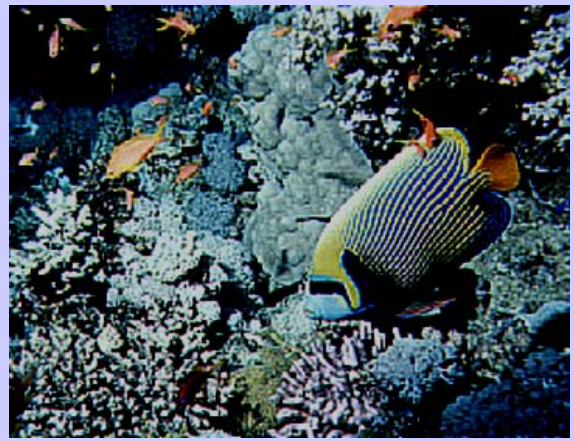
- Section on Sustainable Agriculture focuses heavily on Caribbean
  - agricultural systems
  - role of agriculture in Caribbean
  - technical/ economic and socio-environmental issues

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

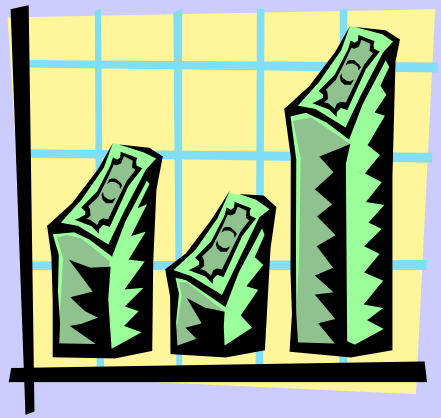
- Ecosystems and humans
  - named local/ regional examples
- Major natural resources in Caribbean
  - location/ distribution/ patterns in use
- Natural and man-made disasters
- Caribbean Development
  - Agriculture
  - Tourism
  - Industry

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