CONTENTS

Facultad Nacional de Inger

Page

0	18/28	1	(32)
67	ha.	J. 18	20 B

PART I INTRODUCTION G. Rex Meyer	1
Constraints on Effectiveness	3
Photographs 1 to 6	8
PART II TRENDS AND RECOMME G. Rex Meyer	ENDATIONS 13
2. Cultural Factors	15
Traditional values Family relationships Status of women and sex stereo Ethnic diversity Attitudes to the living world Sex education Drugs and drug abuse	ityping

3. The Natural Environment

education

The anti-science movement

Changing attitudes to formal education Lifelong learning and growth of informal

The pseudosciences

Range of habitats
School grounds and places near the school
Seasonal factors
Diversity of living things
Attitudes to field studies
Techniques of field study
Resources for field studies
Alternatives to field work
Conservation education
Environmental education
Reference

4.	Tanahina	Mathadalaa	
4.	reacminu	Methodolog	·Y

41

Historical background
Appropriate methodology
Criteria for selecting teaching methods
Small group work - types and techniques
Group workshop - a new approach to the
traditional laboratory
Simulations, dramatic and semi-dramatic
methods
Experiential (on-job) activities
Independent learning and self paced systems
Individualized instruction
Conclusion
References

5. Teacher Education

57

Selection of teachers
Types of teacher education institutions
Types of preservice programs
Biology curricula in preservice programs
Appropriate pedagogy
View of science
Science facilities
General educational skills
Demographic issues
Inservice education of classroom teachers
Staff development of teacher educators
Postgraduate programs
Concluding comment

6. Examinations

69

The role of examinations
Influence on the curriculum
Range of objectives tested
Practical examinations
Standardization
Selection of examiners
Technical issues
Grading (marking) examinations
Influence on the community
Alternatives to public examinations
The non-formal and informal sectors

·	
Teacher Characteristics	81
Recruitment criteria Industrial factors Teaching styles Attitudes to students Attitudes to science Attitudes to concepts in biology Increasing range of competencies Sex ratio Part-time (casual) employment Teachers in disadvantaged schools The expatriate teacher Self diagnosis of professional needs	
Organizational and Administrative Aspects	95
Centralization versus decentralization Bureaucratic policies Administering the curriculum Classroom management Leadership styles Flexibility and organizational renewal Teachers' conditions of employment Evaluation of performance Maximizing resources Community involvement in administration Conclusion Reference	
Curriculum Issues	107
The place of biology in the school curriculum College and university curricula The changing philosophy of biology curricula at school level School-based curriculum development Changing outcomes The purpose of biology The experiential approach Non-formal and informal educational programs in biology Alternative education	
	Recruitment criteria Industrial factors Teaching styles Attitudes to students Attitudes to science Attitudes to concepts in biology Increasing range of competencies Sex ratio Part-time (casual) employment Teachers in disadvantaged schools The expatriate teacher Self diagnosis of professional needs Organizational and Administrative Aspects Centralization versus decentralization Bureaucratic policies Administering the curriculum Classroom management Leadership styles Flexibility and organizational renewal Teachers' conditions of employment Evaluation of performance Maximizing resources Community involvement in administration Conclusion Reference Curriculum Issues The place of biology in the school curriculum College and university curricula The changing philosophy of biology curricula at school level School-based curriculum development Changing outcomes The purpose of biology The experiential approach Non-formal and informal educational programs in biology

iii

Other issues

10.	Resources and Facilities		117
	The laboratory The classroom Scientific equipment Audio-visual equipment Textbooks Teachers' guides Computers Facilities for keeping living organisms Grounds of the school or college Clerical resources The library Facilities for field excursions and visits References		
	Photographs 7 to 10		134
11.	Fiscal Issues		137
	Reduction in funds for education Alternative sources of money Salary and employment issues Budget priorities Catering for innovative and forward planning Responsive budgeting Developed and less-well developed countries International aid Conclusions		
12.	The Learners		147
	Catering for different types of learner Responding to individual differences Dealing with expectations Overcoming the biases of learners Catering for differing interests Considering developmental stages Taking home background into account Overcoming language difficulties		
13.	Research and Development		157
	Who should undertake research? Funding for research Research themes		a

iv

Development Dissemination of research findings

Training for research

	Photographs 11 to 18		165
PA	RT III REGIONAL PATTERNS	ì	171
14.	Africa, Asia and the Pacific G. Rex Meyer		173
a	General issues Specific constraints Conclusion Acknowledgements		
15.	Arab States Mohammed Subbarini		185
	General issues Specific constraints Conclusion References		
16.	The Caribbean Region Winston K. King		195
	General issues Specific constraints Conclusion References	В	-
17	. Europe G. Rex Meyer		203
	General issues Specific constraints Conclusion		
18	8. North America and Latin America G. Rex Meyer		211
	General issues Specific constraints Conclusion		
	Photographs 19 to 22		22]

)

PARTIV	COUNTRY REPORTS		225
Africa			
19.	Gabon and other francophone Sidy Lamine Gueye	e countries	227
20.	Ghana S.J. Nyarko		235
21.	Kenya Henry A. Muthui		237
22.	Liberia Robert D. Coleman		239
23.	Mauritius Michael Atchiu		243
24.	Republic of South Africa Director of Education, G.A. Hosking, Natal	Cape Province	251
25	Seychelles P.J.M. Beaven John L.G. Adam		257
26.	Zimbabwe J. Zesaguli		263
Asia and	the Pacific		
27.	Australia G. Rex Meyer A. Clayton Terry Quong		267
28.	India Science Staff NCERT	a san	279
29.	Japan Kozo Imahori Yujiro Nakajima		283
30.	Kuwait Mohammed S. Subbarini		297
31.	Malaysia M.R. Baskaran		303
32.	New Zealand L.F. Ferris	-	307
	G		

33.	Philippines Delores Hernandez Lucille C. Gregorio Norma Villanueva		309
34.	Singapore A.N. Rao		317
35.	Sri Lanka Valentine Basnayake		321
Europe			*3
36.	Belgium R. Roose		325
37	Denmark O.E. Hele F. Hansen		327
38.	The Netherlands N.A. van der Cingel G. van der Kroft		333
39	Sweden Inger Jone		339
40.	Switzerland Herve Treu Pierre Tschumi		343
41.	United Kingdom A.J. Pritchard R.A. Kille		347
Latin /	America	**	
42.	Brazil Myriam Krasilchik		359
43.	Mexico Leonor Meneguzzi		363
44.	Peru 340 Ruben Dario Gomez Peralta Lila Tincopa Calle Marco Eric Villanueva Marco Villegas Vargus Victor Alvarez Davelouis Juan Figueroa Alegre		367
45.	Countries of the Caribbean Winston K. King	v 2	377

North America (except Mexico)	
46. Canada Tony Rusnek E. Soprovieh H. Murray Lang Truman M. Layton	393
47. United States of America Paul deHart Hurd John C. Cairns Jack A. Gerlovich Roger Tharp John J. McDermott	407
Photographs 23 to 26	416
PART V CONCLUSION	419
48. Two Critical Issues William V. Mayer The problem of money Time constraints Conclusion	421
49. New Perspectives Paul DeHart Hurd Introduction Emphasis on technology Improvement in "quality" Questions of value, ethics and morality Decision-making Future orientation Central curriculum Conclusion	427
50. Towards the Two Thousands G. Rex Meyer	433
Photographs 27 to 32	438
Index of Names	445
Index of Places	451
Subject Index	456