

contents

SECTION ONE

THE STATUS OF BIOLOGICAL EDUCATION

1

CHAPTER 1

The BSCS and Its Influence on
Biological Education

William V. Mayer

3

CHAPTER 2

The Golden Age of Biological
Education 1960-1975

Paul DeHart Hurd

28

SECTION TWO

THE TEACHING OF BIOLOGY

99

CHAPTER 3

Teaching Strategies and Styles

101

I

Reading Strategies

102

contents

II
Strategies for Laboratory Activities
111

III
Strategies for Instruction in the Field
131

IV
Questioning Strategies
153

V
Strategies for Discussion
158

VI
Objectives for Teaching Enquiry
Processes
195

VII
Evaluation Strategies
198

VIII
Strategies for Multimedia Use
256

IX
Strategies for Course Planning
273

contents

SECTION THREE

INVITATIONS
TO ENQUIRY
299

INDEX TO INVITATIONS
301

CHAPTER 4

The Nature and Use of Invitations to
Enquiry
305

INVITATIONS TO ENQUIRY, GROUP I

Simple Enquiry: The Role and
Nature of General Knowledge,
Data, Experiment, Control,
Hypothesis, and Problem in
Scientific Investigation
311

Subject and Topic Index to Group I
311

Invitations 1-4
312

Interim Summary 1:
Knowledge and Data
322

contents

Invitations 5-13
324

Interim Summary 2:
The Role of Hypothesis
353

Invitations 14-16A
356

INVITATIONS TO ENQUIRY GROUP II

The Conception of Cause in
Biological Enquiry: Causal Factors,
Multiple Causes, Time Sequences,
Negative Causation, Feedback
372

Subject and Topic Index to Group II
372

Invitations 17-25
373

Interim Summary 3:
The Concept of Causal Lines
400

contents

INVITATIONS TO ENQUIRY, GROUP III

Quantitative Relations in Biology:
Linear Relations, Exponential
Relations, Rate, Change of Rate,
Units, and Constants
404

Subject and Topic Index to Group III
404

Invitations 26-31
405

INVITATIONS TO ENQUIRY, GROUP IV

The Concept of Function: Evidences
for Inferring Function, the
Doubtfulness of Functional
Inferences, Argument from Design
versus Argument from Adaptation
434

Subject and Topic Index to Group
Four
434

Invitations 32-37
435

contents

Interim Summary 4:
The Concept of Functional Part
450

INVITATIONS TO ENQUIRY, GROUP V

The Self-Regulatory Organism:
Homeostasis, Dynamic
Equilibriums, Organismic Behavior,
Adaptive Change of Equilibriums,
Interconnections of Homeostases
456

Subject and Topic Index to Group V
456

Invitations 38-44
457

Interim Summary 5:
The Whole as Determiner of Its Parts
483

SECTION FOUR

CONTEMPORARY ISSUES
CONFRONTING THE
BIOLOGY TEACHER
489

CHAPTER 5

Contemporary Biology Issues
491

contents

CHAPTER 6

Values: A Brief Overview
502

CHAPTER 7

Careers
516

CHAPTER 8

Sex Education
533

CHAPTER 9

Evolution: Action and Reaction
543

SECTION FIVE

FUTURE COURSES FOR
BIOLOGICAL EDUCATION
563

CHAPTER 10

A Glimpse into the Future
565

Author Index
569

Subject Index
575