Contents

1 Introduction – Setting the scene 1
Ron Jones
The background 2
The problem 3
Identifying new skills 4
Towards a structure 7
Future requirements 7
Summary 8

2 Structured reinforcement 11
Don Walton
Drill and practice 13
Interactive drill and practice 14
SPELLRACE 14
Practice in a meaningful context 16
MAP RESCUE 16
Operations and techniques: Electronic workcards 18
The WORKCARD program 18
Reinforcement of concepts and ideas 21
VENNMAN 21
Summary 22

3 Information-handling skills 25
Alistair Ross
Analyzing the problem 27
Data-handling packages 28
What is a file? 28
Stage 1: Collecting data 29
Stage 2: Entering data 30
Stage 3: Interrogating data 30
A way into history 31
Stage 1: Transferring data 33
Stage 2: Investigation 34
The children's findings 35
Summary 42

4 Problem structuring and solving skills 1: Turtle maths 45
Beryl Maxwell
The micro's 'extra potential' 47
Introducing Turtle 47
The square problem 49
The octagon problem 49
The boat problem 50
The flower problem 50
Deciding strategies: A World Cup mug 51
Deciding strategies: Drawing a circle 53
Group decision making 54
Hypothesizing 54
From floor to screen: Building procedures 55
Experimentation: Building patterns 57
What is being learned? 59
Summary 59

5 Problem structuring and solving skills 2: Simulations 61
Ian Whittington
Simulation 1: SAQQARA 62
What is being learned? 63
The follow-up 64
Simulation 2: MARY ROSE 64
Background to the project 64
Program 1: The search 66
Program 2: The dive 66
Motivation 67
A word of caution 67
Simulation or game? 68
Considerations 68
Children's attitudes 69
The teacher's role 69
Summary 70

6 Problem structuring and solving skills 3: Control technology 71
Graham Bevis
Electronics and control technology in the primary school 73
The new emphasis on technology 73
What is control technology in the primary school? 75
Noteworthy developments in primary ECT 76
Control technology, BBC Buggy style 77
Bigtrak 79
Electronics, Alsager County Primary School style 80
A simple computer control program 82

Technological problem-solving activity: Comparison 84
Summary 84

7 Towards the future 86
Ron Jones
Emerging technologies 86
Interactive video 87
The emerging structure 88
Structured reinforcement 88
Information technology 89
Problem structuring and solving 89
The school and the community 90
Future trends 91
Summary 93

References 94

A route through the jargon 95