

# Contents

1	<b>Educational Reforms, Learning-Centred Education and Digital Resources for Learning</b> . . . . .	1
1.1	Introduction to Digital Resources for Learning . . . . .	1
1.2	Digital Resources and Learning-Centred Education . . . . .	4
1.3	Classification of Digital Resources for Learning . . . . .	10
	References . . . . .	17
2	<b>Information Display Resources</b> . . . . .	19
2.1	What Is an Information Display Resource? . . . . .	19
2.2	A Single Interactive Screen for Display of Information . . . . .	22
2.3	Examples of Interactive and Visual Information Displays . . . . .	26
2.4	Designing an Information Display Digital Resources for Learning? . . . . .	31
	References . . . . .	35
3	<b>Concept Representation Resources</b> . . . . .	37
3.1	What Is a Concept Representation? . . . . .	37
3.2	What Is a Concept? . . . . .	39
3.3	Concept Learning . . . . .	42
3.4	Designing and Developing a Concept Representation Resource . . . . .	47
3.4.1	Identify/Determine a Concept for the Design . . . . .	47
3.4.2	Specify Concept's Particulars . . . . .	48
3.4.3	Design a Storyboard Specifying How a Concept's Content Will Be Represented . . . . .	48
3.4.4	Develop a Prototype of the Concept Representation Resource and Evaluate It . . . . .	50
3.4.5	Develop the Final Concept Representation Resource . . . . .	51
3.5	Examples of Concept Representation Resources . . . . .	53
3.5.1	Maximizing Content Presentable in a Minimal Screen Space: Machining Parameters . . . . .	53
3.5.2	Concept Representation Resources in Non-conceptual Domain: Tenses and Four Tones . . . . .	54

3.5.3	Difficult to Visualize Domains: Algebra Blocks and Multiplication of Fractions . . . . .	56
3.5.4	Teaching Young Learners to Generalize: Drying Rate . . . . .	58
3.5.5	Simulations and Concept Learning . . . . .	59
3.6	A Study of Design of Concept Representation Resources . . . . .	59
3.6.1	The Study of Presentation Design . . . . .	61
3.6.2	Recommendations for Presentation Design . . . . .	65
3.6.3	An Example of a Concept Representations Resource Design Reflecting the Recommendations . . . . .	68
3.6.4	Call for Further Empirical Studies . . . . .	69
	References . . . . .	71
<b>4</b>	<b>Presentation Resources . . . . .</b>	<b>75</b>
4.1	What Is a Presentation Resource? . . . . .	75
4.2	An Instructional Presentation Resource . . . . .	77
4.3	Presentation Resource for Self-learning . . . . .	80
4.3.1	Video Presentation . . . . .	81
4.3.2	E-Book Presentation . . . . .	81
4.3.3	Computer-Based Instructional Presentation . . . . .	82
4.3.4	Learning Object . . . . .	82
4.4	Theoretical Perspectives of Uses of Visuals and Interactive Representations in Instruction . . . . .	90
	References . . . . .	102
<b>5</b>	<b>Practice Resources . . . . .</b>	<b>105</b>
5.1	What Is a Practice Resource? . . . . .	105
5.2	Drill & Practice Resources . . . . .	106
5.3	Procedure and Practice Resources . . . . .	109
	References . . . . .	114
<b>6</b>	<b>Data Display Resources . . . . .</b>	<b>117</b>
6.1	What Is a Data Display Resource? . . . . .	117
6.2	Examples of Data Display Resource Designed Specifically for Learning Purposes . . . . .	121
6.3	Designing Data Display Resources . . . . .	126
<b>7</b>	<b>Using Digital Resources for Learning in a Learning Activity . . . . .</b>	<b>133</b>
7.1	An Idea of a Learning Design . . . . .	133
7.2	A Concept of a Human Activity . . . . .	135
7.3	A Learning Activity and a Learning Design . . . . .	136
7.4	Learning Resources and Tool Mediation . . . . .	140
7.5	Learning Design Model and Uses of Digital Resources for Learning . . . . .	142
7.5.1	Resources . . . . .	144
7.5.2	Learning Activity . . . . .	144

7.5.3	Support . . . . .	150
7.5.4	Evaluation . . . . .	150
7.6	An Example of Digital Resource for Learning Used Within an Activity . . . . .	151
	References . . . . .	157
<b>8</b>	<b>Repository of Digital Resources for Learning . . . . .</b>	<b>159</b>
8.1	Repository of Digital Resources for Learning . . . . .	159
8.2	Web 2.0 Paradigm and the Social Web . . . . .	161
8.3	An Example of a System Based on Web 2.0 Ideas that Can Serve as a Model for a Repository of Digital Resources for Learning . . . . .	164
8.4	What Is Useful from RISAL in Relation to a Repository of Digital Resources for Learning Presented in This Book? . . . . .	171
	References . . . . .	174
<b>9</b>	<b>Mobile Technologies and Digital Resources for Learning . . . . .</b>	<b>175</b>
9.1	Introduction to Mobile Learning . . . . .	175
9.2	Affordances of Mobile Technology . . . . .	177
9.3	Digital Resources for Small Screens of Mobile Devices . . . . .	180
9.4	Design for Learning Uses . . . . .	188
9.5	iPads and other Tablets in Education . . . . .	202
9.6	A Case of Design of an App Resource: From a Small-Screen Mobile Device to a Tablet Version . . . . .	208
9.6.1	Development of a Resource for Mobile Learning . . . . .	209
9.6.2	Development of iMobilese for iPod Delivery . . . . .	212
9.6.3	Tablet Version of iMobilese Digital Resource for Learning . . . . .	220
	References . . . . .	222
<b>10</b>	<b>Emerging Possibilities for Design of Digital Resources for Learning . . . . .</b>	<b>227</b>
10.1	New and Emerging Developments . . . . .	227
10.1.1	Emerging Representation Technologies . . . . .	228
10.1.2	New Forms of Interactivity . . . . .	232
10.1.3	Other Relevant Technological Developments . . . . .	234
10.2	Emerging Developments and Digital Resources for Learning? . . . . .	237
10.3	Summary of Main Ideas from This Book . . . . .	240
	References . . . . .	243

This book provides a guide for the development of digital resources for learning. It also presents a set of practical recommendations for the uses of these resources in education. This book is a useful reference material for teachers, educational leaders, and researchers in the field of learning and teaching.