



# REDEFINING VIRTUAL TEACHING LEARNING PEDAGOGY

Edited by

Rohit Bansal, Ram Singh, Amandeep Singh,  
Kuldeep Chaudhary, and Tareq Rasul

 Scrivener  
Publishing

WILEY

# Contents

---

<b>Preface</b>	<b>xvii</b>
<b>1 Academic Burnout Predisposition in Latin American Public University Students Based on Personality Type</b>	<b>1</b>
<i>Edwin Hernan Ramirez-Asis, Jaheer Mukthar K.P., Rosario Margarita Yslado-Mendez, Nelson Francisco Cruz Castillo, Martha Esther Guerra-Muñoz and Guillermo Napoleon Pelaez-Diaz</i>	
1.1 Introduction	2
1.2 Review of Related Literature	3
1.2.1 Personality Types	3
1.2.2 Academic Burnout	4
1.2.3 Variables Associated with Academic Burnout	4
1.2.4 Variables of the Academic Context	5
1.2.5 Environmental and/or Social Context	5
1.2.6 Intrapersonal Variables	5
1.3 Method	6
1.4 Results	7
1.4.1 Model Measurement	7
1.4.2 Convergent Validity	7
1.4.3 Discriminant Validity	8
1.4.4 Cross Loads	11
1.4.5 Structural Model	12
1.5 Discussion	12
1.6 Conclusion	13
References	14
<b>2 Virtual Classroom Platform Development</b>	<b>17</b>
<i>Kodge B. G.</i>	
2.1 Introduction	17
2.1.1 Free and Open Source Software	18
2.1.2 Review of Literature	18
2.1.3 Methodology	20
2.2 User Login/Registration Processes	21
2.2.1 Students' Registration Process	21
2.2.2 Teachers' Registration Process	21



2.2.3 Administrator's Registration	23	4.6.1 Learning by Design	66
2.3 Students E-Classroom	23	4.6.2 Constructivism	66
2.4 Teacher's Control Panel	27	4.6.3 Interactive Learning Environment	67
2.5 Administrator's Control Panel	28	4.6.4 Collaborative Learning Environment	67
2.6 Live Videos Sessions	29	4.6.5 Spaced Learning Environment	67
2.7 Online Examinations	30	4.6.6 Flipped Classroom Learning	67
2.7.1 Examination Login	30	4.6.7 Self-Learning	68
2.7.2 Start Examination	31	4.6.8 Gamification	68
2.7.3 Examination Page	32	4.6.9 Real-World Learning	68
2.8 Conclusion	33	4.6.10 Relationship Learning	68
References	33	4.6.11 Cross-Over Teaching and Learning	69
<b>3 Assessment of Modern Methods for Remote Teaching in Some Selected Educational Institutions in Kolkata City of West Bengal, India</b>	<b>35</b>	4.7 Modern Innovative Tools	69
<i>Suhel Sen and Asutosh Goswami</i>		4.7.1 Multimedia Learning	69
3.1 Introduction	36	4.7.2 Mind Mapping	69
3.1.1 Scenario of COVID-19 Situation in West Bengal	37	4.7.3 Chunking Strategy Learning	70
3.2 Materials and Methods	40	4.7.4 Virtual Reality Learning	70
3.2.1 Basic Principles of Quantitative Strategic Planning Matrix (QSPM)	41	4.7.5 Z to A Learning	70
3.3 Results and Discussion	42	4.7.6 Mnemonics Approach	70
3.3.1 Various Applications Used for Online Teaching	42	4.7.7 Role Play	70
3.3.1.1 Google Meet	42	4.8 Conclusion	71
3.3.1.2 Zoom	43	References	72
3.3.1.3 Cisco Webex	43	<b>5 Efficacy of V-Lab for Engineering Students during COVID-19</b>	<b>75</b>
3.4 SWOT Analysis of Online Education in Kolkata	43	<i>Shiny Duella J., Umamageswari A., Raja K. and Suresh S.</i>	
3.4.1 Strengths	43	5.1 Introduction	75
3.4.2 Weakness	45	5.2 Materials and Methods: Sources and Importance of E-Learning and E-Teaching	76
3.4.3 Opportunity	46	5.2.1 Digital Platforms for Online Teaching	77
3.4.4 Threats	48	5.2.2 Virtual Platforms for Conducting Laboratory Online	80
3.5 Conclusion	56	5.2.2.1 Virtual Lab: An MHRD Initiative	81
References	57	5.2.2.2 Biotechnology and Biomedical Engineering Virtual Labs	81
<b>4 New Age Teaching Pedagogy: Innovative Teaching Methods and their Impact on Educational Performance of the Students</b>	<b>59</b>	5.2.2.3 Virtual Lab for Computer Science	82
<i>Anoop Pandey, Mehak Mittal, Kamal Ahmad and Vaibhav Sharma</i>		5.2.3 Collaborative Learning Environs and Computer Models	82
4.1 Introduction	60	5.2.3.1 OLabs	83
4.2 Teaching Pedagogy	61	5.3 Undergraduate Responses to COVID-19 Pandemic Crisis in India	84
4.3 Teacher Education in India	61	5.4 Methodology	84
4.4 Modern Innovative Teaching Pedagogy	62	5.4.1 Objectives	84
4.5 New Age Teaching Pedagogy: Need of the Hour	64	5.4.2 Hypotheses	85
4.5.1 Transition	65	5.4.3 Research Design	85
4.5.2 Technology	65	5.4.4 Data Collection	85
4.5.3 Innovative Tools	66	5.4.5 Data Description and Sampling Plan	86
4.5.4 Training	66	5.5 Difference in Opinions Towards Effectiveness of Virtual Lab During COVID-19 Pandemic Between Genders	87
4.5.5 Touch	66	5.5.1 Overall Interpretation	89
4.6 Modern New Age Teaching Pedagogy	66	5.6 Findings and Discussions	89

5.7	Performance Assessment	91	8.3	Findings of the Study	140
5.7.1	Access Time and Number of Trials	91	8.3.1	Findings Related to Objective 1	140
5.7.2	Quality of Content Delivery	94	8.3.1.1	Hypothesis Testing	140
5.8	Conclusion	94	8.3.2	Findings Related to Objective 2	147
	References	94	8.3.3	Findings Related to Objective 3	147
6	<b>Significance of e-Learning in Indian Modern Higher Education System: A Review</b>	97	8.3.3.1	Major Challenges in Online Mode of Teaching	147
	<i>Pooja Chaturvedi Sharma and Anoop Pandey</i>		8.3.3.2	Effectiveness of Teaching Methods	148
6.1	Introduction	97	8.4	Discussion Based on the Study	151
6.2	Review of Literature	99	8.5	Conclusion	151
6.2.1	e-Learning	100		References	152
6.2.2	Learning Shift Toward Online	100	9	<b>Generation-Z Student Video-Based Learning Pedagogy Preference and Teaching Challenges</b>	155
6.2.3	e-Learning-Related Studies	102		<i>Manoj Kumar and Pradeep Mamgain</i>	
6.2.4	Importance of e-Learning	103	9.1	Introduction	156
6.2.5	Barriers or Disadvantages of e-Learning	103	9.1.1	Purpose of the Chapter	157
6.2.6	e-Learning and Higher Education	103	9.2	Generation Z Behavioral Feature	157
6.3	Conclusion	107	9.3	Video-Based Learning Motives (VBLM)	158
	References	107	9.4	Video-Based Learning Platform	160
7	<b>Homeschooling: A Case Study Based on Delhi, India</b>	111	9.5	Teachers Role Transformation	162
	<i>Neeru Sidana and Chitra Pandey</i>		9.6	Conclusion	164
7.1	Introduction	111	9.7	Limitation and Further Research Scope	164
7.2	Data Collection and Methodology	114		References	165
7.3	Literature Review	115	10	<b>Quantitative Monitoring and Analysis of Rare Symptoms of COVID-19 Infection: Application of a Text and Citation Management Software as a Tool</b>	169
7.4	Data Analysis and Major Findings	120		<i>Surajit Debnath</i>	
7.5	Survey	124	10.1	Introduction: The COVID Pandemic	169
7.5.1	Area	124	10.2	Materials and Methods	170
7.5.2	Income Distribution	124	10.2.1	REVMAN Software	170
7.5.3	Education Qualification	124	10.2.2	Data Input Pane	171
7.5.4	Earning Member of Family	125	10.2.3	Systematic Application of REVMAN on COVID 19 Rare Symptoms	171
7.5.5	Awareness About Homeschooling	125	10.2.4	Database Scrutiny	171
7.5.6	Likelihood to Adopt Homeschooling	126	10.2.5	Combining BOOLEAN and MeSH Terms for Optimizing the Application Software	171
7.6	Policy Recommendations	127	10.2.6	Secondary Data on Rare Symptoms of COVID-19	172
7.7	Regulation of Homeschooling in the USA	128	10.2.7	Data Extraction	172
7.8	Regulation of Homeschooling in the UK	128	10.2.8	Systematic Analysis	173
7.9	Roadmap for India	129	10.2.9	Statistical Analysis	174
7.10	Conclusion	129	10.3	Results and Discussion	175
7.11	Challenges and Recommendations	130	10.4	Conclusion	180
	References	131		References	180
8	<b>COVID-19: Preference for Online Teaching and Its Impact on Academic Performance</b>	135			
	<i>Shalini Wadhwa and Mahendra Parihar</i>				
8.1	Introduction	135			
8.1.1	Reasons for Undertaking Current Study and Methodology Adopted	139			
8.2	Sample and Population	139			



<b>11 Role and Impact of ICT on Rapidly Advancing New Age Teaching Pedagogy in Higher Educational Institutions in Oman</b>	<b>185</b>
<i>Rubina Ashmi Nabin</i>	
11.1 Introduction	186
11.1.1 Evolution of ICT in the Field of Higher Education in Oman	186
11.1.2 ICT Tools Used for Teaching	186
11.2 ICT Methodologies Adopted for Teaching	186
11.3 Gaps Between Deliverables and Delivered	187
11.3.1 Types of Gaps	188
11.3.2 Product/Market Gap	188
11.3.3 Performance Gap	188
11.3.4 Manpower Gap	188
11.4 Causes of the Technological Gaps	188
11.5 Ways to Fill in the Gaps	189
11.5.1 SWOT Analysis	189
11.5.2 Fishbone – Cause and Effect Analysis of ICT in Education	190
11.5.2.1 Language Barriers	190
11.5.2.2 Ease of Access	191
11.5.2.3 Privacy	191
11.5.2.4 Technology	191
11.5.3 McKinsey 7S Model	192
11.6 ICT Training	193
11.7 Importance of ICT Training in the Field of Education	193
11.8 Updating ICT from Time to Time and Means of Growth in the Field of Education	193
11.9 People Involved to be Trained for ICT	193
11.10 Adapting to Changes	193
11.11 Institutional Changes and ICT in Teaching	194
11.12 Global Changes and ICT in Teaching	194
11.13 Nationwide Changes and ICT in Teaching	194
11.14 Climatic Changes and ICT in Teaching	194
11.15 Types of Teaching Using ICT in Higher Educational Institutions	195
11.15.1 On Campus Teaching	195
11.15.2 Online Teaching	195
11.15.3 Blended or Hybrid Mode Teaching	195
11.15.3.1 Understanding Blended Learning	195
11.15.3.2 Measures to be Followed in Order to Ensure Effective Blended Learning	195
11.16 Analysis of ICT	195
11.17 People that Use ICT in the Field of Education	196
11.17.1 Teachers and their Use of ICT	196
11.17.2 Students and their Use of ICT	197
11.17.3 Department Heads and their Use of ICT	198
11.17.4 IT Support and their Use of ICT	198
11.18 Ease of Use of ICT	199

11.19 Problems Encountered During ICT-Based Class	199
11.19.1 Technical Problems	199
11.19.2 Non-Technical Problems	200
11.20 Recommendations	200
11.21 Conclusion	201
References	201
<b>12 Digital Tools for Interactive E-Content Development</b>	<b>203</b>
<i>Raja Kannusamy</i>	
12.1 Introduction	204
12.2 Digital Learning	204
12.3 Theories of Learning	205
12.4 HTML5 Package (H5P)	206
12.4.1 Course Presentation	207
12.4.2 Branching Scenario	211
12.4.3 Interactive Video	216
12.4.4 Slack	220
12.4.5 Camtasia	221
12.4.6 Accordion	221
12.4.7 Agamotto	222
12.4.8 Documentation Tool	222
12.4.9 Image Hotspots	225
12.4.10 Image Juxtaposition	226
12.4.11 Image Sequencing	227
12.4.12 Interactive Book	227
12.5 Conclusion	228
References	229
<b>13 Analysis of Changing Landscape of Virtual Learning in India</b>	<b>231</b>
<i>Dheva Rajan S. and M. G. Fajlul Kareem</i>	
13.1 Introduction	232
13.2 Affecting Elements in Organizations	232
13.3 Dealing with Exceptional Youngsters	238
13.4 ICT Tools in VL for Flipped, Blended Learning and its Pitfalls	240
13.5 Conclusion, Further Discussion and Recommendations	246
References	249
<b>14 The Real-Time Problems and Solutions in Online Classes for Students and Parents</b>	<b>253</b>
<i>P. Gayathiri</i>	
14.1 Introduction	253
14.2 Objectives	255
14.3 Problem Definition	256
14.4 Contribution	256
14.5 Related Methods	257

14.6	Methodology	259	16.2.2	Researches in the Field of Cryptographic Security	302
14.6.1	Data Collection	262	16.2.3	Researches in the Field of Data Compression	303
14.7	Results and Discussion	263	16.3	Problem Statements	305
14.7.1	Student Survey Report	263	16.4	Methodology Used in Proposed Work	305
14.7.2	Parent Survey Report	265	16.4.1	Internal Working of Proposed Work	306
14.8	Advantages and Disadvantages of Online Classes	269	16.4.2	Data Compression Using Huffman Mechanism	306
14.8.1	Advantages of Online Classes	269	16.4.3	Comparison of AWS, Azure and Google Based Services	306
14.8.2	Disadvantages of Online Classes	269	16.5	Implementation	308
14.9	Conclusion	272	16.5.1	Simulation for Time/Error/Packet Size	309
	References	273	16.5.1.1	Time Consumption	309
<b>15</b>	<b>An Investigation on Remote Teaching Approaches and The Social Impact of Distance Education</b>	<b>275</b>	16.5.1.2	Error Rate	310
	<i>Parul Dubey, Pushkar Dubey and Kailash Kumar Sahu</i>		16.5.1.3	Packet Size	311
15.1	Introduction	275	16.5.2	MATLAB Simulation for Comparative Analysis of Security	312
15.2	Literature Review	277	16.5.2.1	Man in Middle	312
15.3	Online Classes	279	16.5.2.2	Brute Force Attack	312
15.4	Enhancing Online Meetings via the Use of Screen Sharing	283	16.5.2.3	Denial of Services	313
15.4.1	Enhance Comprehension	283	16.5.2.4	Application-Level Attack	314
15.4.2	Ensures Everyone is on the Same Page	283	16.5.2.5	Attack by Malicious Insider	316
15.4.3	Facilitates Team Brainstorming	283	16.6	Conclusions	317
15.4.4	Making a Real Team Effort Out of a Meeting	284	16.7	Scope of Research	318
15.4.5	Provides Assistance for People Who are Based Remotely	284		References	318
15.5	e-Learning with New Tools and Practices	284	<b>17</b>	<b>Perceptions of Teachers and Students on the Use of Google Classroom in Teaching-Learning Process</b>	<b>321</b>
15.6	Societal Effects of Remote Learning	287		<i>Subhadip Das and Santosh Kumar Behera</i>	
15.6.1	Impact of e-Learning on Children and Families	287	17.1	Introduction	321
15.6.2	Children's Development as a Result of Online Education	288	17.2	Literature Review	324
15.6.3	Social Growth	289	17.3	Objectives of the Study	325
15.6.4	Emotional Issues	290	17.4	Hypotheses and Research Questions	325
15.6.5	The Effects of Online Education on Family Life	290	17.5	Methodology	326
15.7	Conclusion	291	17.5.1	Delimitations	326
	References	291	17.5.2	Population	326
<b>16</b>	<b>Performance and Security Issues Management During Online Classes</b>	<b>295</b>	17.5.3	Sample and Sampling Procedure	326
	<i>Ashu Tomar, Vandana B. Patil, Raja M., Anagha Mahajan and Shubhendu Shekher Shukla</i>		17.5.4	Instrument	326
16.1	Introduction	296	17.5.5	Statistical Techniques	327
16.1.1	Network Environment	296	17.6	Result and Discussion	327
16.1.2	Network Environment in Online Class	296	17.7	Limitations	337
16.1.3	Challenges	297	17.8	Educational Implications	337
16.1.4	Security Issues in Online Class	297	17.9	Conclusion	338
16.1.5	Data Encryption Standard	300		References	338
16.1.6	Huffman Coding	300	<b>18</b>	<b>Critical Review of Computer-Based Technology and Student Engagement</b>	<b>341</b>
16.1.7	Paper Organization	301		<i>Ankita Pathak and Sunil Mishra</i>	
16.2	Related Work	302	18.1	Introduction	341
16.2.1	Researches in Area of Network Environment in Online Classes	302	18.2	Student Engagement	343
			18.3	Influence of Technology on Student Engagement	345



18.3.1	Web-Conferencing	345	20.4.3	Learning Management System (LMS)	380
18.3.2	Blogs	346	20.4.4	Virtual Labs (VL)	380
18.3.3	Wikis	346	20.4.5	G-Suite for Education	380
18.3.4	Social Networking Sites	347	20.4.6	Microsoft Office 365 for Education	381
18.3.5	Facebook	347	20.4.7	Video Recording Apps	381
18.3.6	Twitter	348	20.5	Challenges	382
18.3.7	Digital Games	348	20.6	Conclusion	383
18.4	Discussion and Implications	349		References	384
18.4.1	Methodological Limitations	349			
18.4.2	Areas for Future Research	350			
18.5	Recommendations for Practice	351			
18.6	Conclusion	352			
	References	352			
<b>19</b>	<b>Mediated Learning of the Writing Skill via Zoom by EFL Students</b>	<b>359</b>			
	<i>Le Pham Hoai Huong</i>				
19.1	Introduction	359	<b>21</b>	<b>Impact of Information and Communication Technology on Rural Economy: With Special Reference to Uttar Pradesh</b>	<b>387</b>
19.2	Literature Review	360		<i>Aman Roshan, V. C. Sharma and Ram Singh</i>	
19.2.1	Cultural Artifacts in Sociocultural Theory	360	21.1	Introduction	388
19.2.2	Previous Studies	361	21.2	ICT and its Linkages with Rural Economy	389
19.3	Methodology	362	21.3	Infrastructural Facilities	390
19.3.1	The Participants	362	21.4	Need of the Study	391
19.3.2	Data Collection and Analysis	363	21.5	Research Methodology	392
19.4	Findings	363	21.6	Objectives of the Study	392
19.4.1	Mediated Learning of the Writing Skill with Peers via Zoom	363	21.7	Hypothesis of the Study	392
19.4.2	Mediated Learning of the Writing Skill with Instructors via Zoom	365	21.8	Data Analysis and Interpretation	393
19.4.3	Mediated Learning of the Writing Skill via Other Features of Zoom	366	21.9	Conclusion	397
19.5	Discussion and Implications	366	21.10	Limitations	398
19.6	Conclusion	368	21.11	Future Scope of the Research	398
	References	368		References	398
<b>20</b>	<b>ICT Tools for Efficient Implementation of Blended and Flipped Learning Models</b>	<b>371</b>	<b>22</b>	<b>Prioritizing the Critical Success Factors of E-Learning Systems by Using DEMATEL</b>	<b>401</b>
	<i>Raghavendra C. K. and Madhuri M.</i>			<i>Kiran Mehta and Renuka Sharma</i>	
20.1	Introduction	371	22.1	Introduction and Background	401
20.2	Blended Learning	372	22.2	Review of Literature	405
20.2.1	Why Blended Learning?	372	22.2.1	Discussion/Dialogues (Student-Student, Instructor-Student)	405
20.2.2	Types of BL Models	373	22.2.2	Course Design/Structure	405
20.2.3	Roles of Teachers and Learner	374	22.2.3	Students' Motivation	406
20.2.4	Blended Learning in Use	375	22.2.4	Instructor	406
20.3	Flipped Learning	375	22.2.5	Self-Regulation	407
20.3.1	Types of Flipped Learning	376	22.3	Data Inputs and Research Methodology	408
20.3.2	Flipped Learning in Use	377	22.4	Discussion of Results	409
20.4	ICT Tools	379	22.4.1	Creating Matrix of Direct Effect	409
20.4.1	Massive Open Online Course (MOOC)	379	22.4.2	Normalizing the Matrix of Direct-Influence	410
20.4.2	SWAYAM	379	22.4.3	Preparing the Matrix of the Total-Relation	411
			22.4.4	Creating Map of Impact Relationship Among Factors	411
			22.4.5	Cause and Effect	413
			22.5	Conclusion, Recommendations and Scope for Future Research	414
				References	416

<b>23 Online Education Goes Viral – A Phantom Over Mental Peace</b>	<b>421</b>
<i>Lovleen Gupta, Srishti Jain and Abhin Narula</i>	
23.1 Introduction	421
23.1.1 Benefits of ‘Home Schoolivery’	422
23.1.2 Disparate Impact of E-Learning – Indirect Discrimination	423
23.1.3 Mental Health – A Cog in the Wheel	424
23.1.4 Walking Through the Old Lanes	424
23.1.5 Woeful Inadequacy of Resources to Disseminate	425
23.2 Review of Literature	426
23.3 Research Methodology	427
23.3.1 Objective	428
23.4 Analysis and Interpretation	428
23.5 Discussion of the Model	429
23.6 Conclusion and Recommendation	433
23.6.1 Questions in Pursuit of Answers	433
References	435
<b>Index</b>	<b>437</b>