

Masters Research Handbook

Lucia Rapanotti and Jon Hall

March 15, 2024

Contents

Contents	1
1 So, you want to do a research project!	11
1.1 What is academic research?	11
1.1.1 Masters level research	12
1.2 What you will have achieved as a Masters' graduate	14
1.3 The role of your supervisor	15
1.4 What is expected of you	17
1.4.1 Self-direction	17
1.4.2 Critical thinking	18
1.4.3 Time and task management	19
1.4.4 Information management	20

1.5	Key skills	20
1.5.1	Active reading and note taking	21
1.5.2	Digital literacy and tools	22
1.5.3	Bibliographic management tools	22
1.5.4	Keeping track of your digital assets	23
1.5.5	Managing document versions	24
1.5.6	Choosing the right word processor	25
1.6	Takeaways	28
2	The 5-stage Masters project framework	30
2.1	What do we mean by framework?	30
2.2	The research process and its key activities	31
2.2.1	Identifying the research problem	32
2.2.2	Reviewing the literature	32
2.2.3	Setting your aim and objectives	33
2.2.4	Developing the research design	33
2.2.5	Gathering and analysing evidence	34
2.2.6	Interpreting and evaluating findings	34
2.2.7	Reporting	34
2.2.8	Reflecting	34
2.2.9	Planning work	35
2.2.10	Managing risk	35
2.2.11	How the activities relate to each other	35
2.3	The 5-stage framework for your research	37
2.4	Critical success factors	40
2.5	Takeaways	42
3	Stage 1: Scoping your project	43
3.1	Planning your work for Stage 1	45
3.1.1	Milestones, deliverables and tasks	46
3.1.2	Producing a project plan for Stage 1	46
3.1.3	Key practices for managing your time efficiently	48
3.2	Identifying the research problem	49

3.2.1	Choosing a topic for your project	49
3.2.1.1	Qualification fit	50
3.2.1.2	Professional fit	51
3.2.1.3	Personal fit	52
3.2.1.4	Organisational fit	53
3.2.2	What is a research problem	54
3.2.2.1	The context and phenomena of interest	55
3.2.2.2	The knowledge gap	57
3.2.2.3	The justification	58
3.2.2.4	Problem formulation	59
3.2.3	Types of research problems	60
3.2.3.1	Descriptive problems	60
3.2.3.2	Exploratory problems	61
3.2.3.3	Explanatory Problems	63
3.2.3.4	Predictive Problems	65
3.2.3.5	Evaluative Problems	66
3.2.3.6	Design problems	68
3.2.4	Masters-appropriate research problems	70
3.2.5	Formulating your initial research problem	73
3.3	Reviewing the literature	73
3.3.1	The role of the literature in research	73
3.3.2	How to access the literature	74
3.3.3	How to read an article	76
3.3.4	How to review the literature	78
3.3.4.1	Searching and gathering	80
3.3.4.2	Processing	86
3.3.4.3	Assimilating and analysing	91
3.3.4.4	Synthesising	99
3.4	Setting research aim and objectives	103
3.4.1	Articulating your research aim	105
3.4.2	Choosing a title	106
3.4.3	Articulating your research objectives	107
3.5	Developing the research design	109

3.5.1	Types of evidence and data	110
3.5.2	Classes of research methods	112
3.5.3	Ethics and regulations	113
3.5.3.1	The rights of human participants in your research	113
3.5.3.2	Personal data in research	114
3.5.3.3	Equity, Diversity and Inclusion in research	119
3.5.3.4	Research involving animals	121
3.5.3.5	Intellectual property	122
3.5.3.6	Use of generative AI in research	124
3.5.3.7	Use of AI in research	125
3.5.3.8	Bias in research	125
3.6	Managing risk	129
3.6.1	Research project risk	130
3.6.1.1	Technical skills	130
3.6.2	Study time	131
3.6.3	Resources	132
3.6.3.1	Ethics and regulations	133
3.6.4	Summarising your project risk	133
3.7	Reflecting	134
3.8	Reporting	137
3.8.1	Putting your research proposal together	137
3.8.2	Assessing and Iterating	137
3.9	Takeaways	140
4	Stage 2: Compiling your literature review and understanding research design	141
4.1	Writing a full draft of your literature review	143
4.1.1	Key skills for synthesising	144
4.1.2	Core practice for academic writing	150
4.1.3	Develop your arguments!	157
4.1.3.1	The BCW model	157
4.1.3.2	Arguments and narrative	160
4.1.3.3	Logical fallacies and cognitive bias	163
4.1.4	Developing your literature review from your theme summaries	165

4.1.4.1	Developing the main body of your literature review	166
4.1.4.2	Choosing headings and sub-headings	171
4.1.4.3	Writing your review introduction and critical summary	172
4.1.5	Assessing your literature review	172
4.1.5.1	Your own assessment	173
4.1.5.2	Getting others to help you	174
4.1.6	Widening your literature review	175
4.2	Developing your understanding of research design	177
4.2.1	Research methods	178
4.2.1.1	Data collection methods	179
4.2.1.2	Data analysis methods	181
4.2.1.3	Modelling methods	183
4.2.1.4	Summary of methods	186
4.2.2	Research strategies	186
4.2.2.1	Summary of research strategies	193
4.2.3	Philosophical traditions	193
4.2.4	Understanding research methods and strategies in articles you have reviewed	199
4.3	Reflecting and reporting in Stage 2	200
4.4	Takeaways	203
5	Stage 3: Second research increment	205
5.1	Introducing stage 3	205
5.2	Research design	207
5.3	Researcher mindsets	208
5.4	Research design and knowledge contribution	213
5.4.1	Research Design	214
5.5	Defending your claim of new knowledge	215
5.5.1	Addressing weaknesses	218
5.5.2	Novelty weakness	219
5.5.3	Validity weaknesses	219
5.5.4	Reliability weaknesses	220
5.5.5	Bias	220
5.5.5.1	Addressing research weakness: critical literature review	222

- 5.5.5.2 Addressing research weakness: triangulation 222
 - 5.5.5.3 Addressing research weaknesses: reflexivity 224
- 5.6 Your initial research strategy candidate list 225
 - 5.6.1 Research strategy introduction 225
 - 5.6.2 Survey research 227
 - 5.6.2.1 Knowledge contribution 228
 - 5.6.2.2 Data Generation 228
 - 5.6.2.3 Evaluation 228
 - 5.6.2.4 Is the survey research strategy right for me? 229
 - 5.6.3 Design and creation research 230
 - 5.6.3.1 Knowledge contribution 230
 - 5.6.3.2 Data Generation 231
 - 5.6.3.3 Evaluation 231
 - 5.6.3.4 Is the design and creation research strategy right for me? 231
 - 5.6.4 Experimental research 232
 - 5.6.4.1 Knowledge contribution 233
 - 5.6.4.2 Data Generation 233
 - 5.6.4.3 Evaluation 233
 - 5.6.4.4 Is this strategy right for me? 234
 - 5.6.5 Case study research 235
 - 5.6.5.1 Knowledge contribution 235
 - 5.6.5.2 Variants 235
 - 5.6.5.3 Data Collection 236
 - 5.6.5.4 Evaluation 236
 - 5.6.5.5 Is this strategy right for me? 237
 - 5.6.6 Action research 238
 - 5.6.6.1 Knowledge contribution 238
 - 5.6.6.2 Data Generation 238
 - 5.6.6.3 Evaluation 239
 - 5.6.6.4 Is this strategy right for me? 239
 - 5.6.7 Ethnography 240
 - 5.6.7.1 Knowledge contribution 240
 - 5.6.7.2 Data Generation 241

- 5.6.7.3 Evaluation 241
- 5.6.7.4 Is this strategy right for me? 242
- 5.6.8 Systematic research reviews 243
 - 5.6.8.1 Knowledge contribution 243
 - 5.6.8.2 Focus 243
 - 5.6.8.3 Data Collection 243
 - 5.6.8.4 Evaluation 243
 - 5.6.8.5 Is this strategy right for me? 244
- 5.6.9 Grounded theory 245
 - 5.6.9.1 Knowledge contribution 246
 - 5.6.9.2 Data Collection 246
 - 5.6.9.3 Evaluation 246
 - 5.6.9.4 Is this strategy right for me? 249
- 5.6.10 Phenomenology 250
 - 5.6.10.1 Knowledge contribution 250
 - 5.6.10.2 Data Generation 250
 - 5.6.10.3 Evaluation 251
 - 5.6.10.4 Is this strategy right for me? 252
- 5.6.11 Simulation 253
 - 5.6.11.1 Knowledge contribution 254
 - 5.6.11.2 Variants 254
 - 5.6.11.3 Data Generation 254
 - 5.6.11.4 Evaluation 254
 - 5.6.11.5 Is this strategy right for me? 255
- 5.6.12 Mathematical and logical proof 256
 - 5.6.12.1 Knowledge contribution 256
 - 5.6.12.2 Data Generation 256
 - 5.6.12.3 Evaluation 256
 - 5.6.12.4 Is this strategy right for me? 256
- 5.6.13 Mixed methods research 257
 - 5.6.13.1 Knowledge contribution 257
 - 5.6.13.2 Data Generation 258
 - 5.6.13.3 Evaluation 258

- 5.6.13.4 Is this strategy right for me? 258
- 5.7 What to do now 258
 - 5.7.1 For your chosen research strategy 259
- 5.8 Generating raw research data 263
 - 5.8.1 Modern standards 264
 - 5.8.2 Sampling: what, who (and how) to choose 264
- 5.9 Data gathering tools and techniques 267
 - 5.9.1 Observations 267
 - 5.9.1.1 Observation tools 267
 - 5.9.1.2 Workflow 268
 - 5.9.1.3 Other things to think about 270
 - 5.9.2 Interviews 271
 - 5.9.2.1 Interview Tools 272
 - 5.9.2.2 Workflow 272
 - 5.9.2.3 Other things to think about 274
 - 5.9.3 Journalling 276
 - 5.9.3.1 Journalling tools 276
 - 5.9.3.2 Workflow 276
 - 5.9.3.3 Other things to think about 277
 - 5.9.4 Questionnaires 278
 - 5.9.4.1 Tools for creating (maintaining, and analysing) questionnaires 280
 - 5.9.4.2 A simple questionnaire design workflow 280
 - 5.9.5 Documents 282
 - 5.9.5.1 Document tools 282
 - 5.9.5.2 Workflow 284
 - 5.9.5.3 Other things to think about 285
 - 5.9.6 Focus groups 286
 - 5.9.6.1 Focus group tools 286
 - 5.9.6.2 Workflow 287
 - 5.9.6.3 Other things to think about 288
 - 5.9.7 Field work 289
 - 5.9.7.1 Field work tools 289
 - 5.9.7.2 Workflow 290

- 5.9.7.3 Other things to think about 290
- 5.9.8 Computational thinking 291
 - 5.9.8.1 Computational thinking tools 292
 - 5.9.8.2 Workflow 293
 - 5.9.8.3 Other things to think about 294
- 5.9.9 Mathematical thinking 294
 - 5.9.9.1 Mathematical thinking tools 295
 - 5.9.9.2 Workflow 296
 - 5.9.9.3 Other things to think about 296
- 5.9.10 Statistical thinking 297
- 5.9.11 Reflexivity 297
 - 5.9.11.1 Reflexivity tools 298
 - 5.9.11.2 Workflow 298
 - 5.9.11.3 Other things to think about 298
- 5.10 Sampling: what, who (and how) to choose 298
- 5.11 Managing your raw data 300
- 5.12 Common analysis methods 301
 - 5.12.1 Using tables to analyse data 302
 - 5.12.2 Statistical analysis 306
 - 5.12.2.1 Descriptive statistics 306
 - 5.12.2.2 Inferential statistics 313
 - 5.12.3 Quantitative analysis resources 319
 - 5.12.4 Qualitative analysis 319
 - 5.12.4.1 Coding qualitative data 319
 - 5.12.4.2 Presenting qualitative data 321
- 5.13 Writing up your analysis 322
- 5.14 Interpreting and evaluating data 323
- 5.15 Drafting an abstract for your project 324
- 5.16 Reflecting and reporting in Stage 4 325
- 5.17 Takeaways 326
- 5.15 Completing your research 299
- 5.16 Assessing your research 299
- 5.17 Finalising and submitting your dissertation 301

<i>CONTENTS</i>	10
5.17.1 Compiling a full draft of your dissertation	301
5.17.2 Revising your draft for compliance to requirements	301
5.17.3 Final check and submission	303
5.18 How your dissertation will be assessed	306
5.19 Takeaways	307
6 Closing	310
6.1 Concluding remarks	310
7 Glossary	311
8 References and further reading	314