

**INTERACTIVE WHITEBOARD:
Adoption and the Impact of its Utilization on
Student Learning in
South Australian Secondary Schools**

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Declaration

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Contents

List of Figures	xvi
List of Tables	xix
Abstract	xxiii
Acknowledgements	xxvi
Chapter 1: Introduction	1
1.1 Background/Context of the Study	2
1.1.1 Information and Communication Technology (ICT)	2
1.1.2 ICT in Education	2
1.1.3 Scenario of ICT in Australian education system	3
1.1.4 ICT educational research: a broad picture	4
1.1.5 Introduction of IWB in Australian education system	5
1.1.6 What is Interactive Whiteboard?	6
1.1.7 IWB educational research	8
1.1.7.1 IWBs and teachers/teaching	9
1.1.7.2 IWBs and learners/learning	11
1.2 Statement of Research Problem	13
1.2.1 Issues in ICT Educational Research	14
1.2.2 Issues in IWB Educational Research	14
1.2.2.1 Lack of IWB studies in Australian context	14
1.2.2.2 Lack of large-scale quantitative research studies	15
1.2.2.3 Lack of studies to investigate the impact of IWB use on student learning	15
1.3 Aims of the Research	16
1.4 Key Research Questions	17
1.5 Importance of the Research	19
1.6 Limitations of the Research	20
1.7 Description of the Chapters of the Thesis	21
1.8 Summary	23

Chapter 2: Literature Review for Theoretical Framework	24
2.1 Introduction	24
2.2 Theoretical Framework	24
2.2.1. The Development of the Theoretical Framework	25
2.2.1.1 Adoption of ICT in education: in-sights from the literature	26
2.2.1.1.1 Theories and Models	27
2.2.1.1.2 Teachers: the key to success	30
2.2.1.1.3 Students: the ultimate end-users	33
2.2.1.2 Classroom Environment: setting for educational activity	34
2.2.1.2.1 Theories of Learning- Constructivism	35
2.2.1.2.2 Learning Environment - Educational Activity Setting Framework	36
2.2.1.2.3 Educational activity setting with IWB as a tool	39
A. IWB and classroom interactivity	41
B. Stages of IWB use by teachers	42
2.2.1.3 Student Learning: the educational end-product	40
2.2.1.3.1 Students Approaches to Learning (SAL) theory	43
2.2.1.3.2 3-P model of learning process	44
2.2.1.3.3 Taxonomy of Learning Objectives- the cognitive domain	46
2.2.2 The Explanation of the Theoretical Framework	48
2.3 Summary	51
Chapter 3: Data Collection: Methods and Methodology	52
3.1 Introduction	52
3.2 Research Design	52
3.2.1 Data Collection Methods	52
3.2.2 Sample	53
3.2.3 Preparation of Instruments for Data Collection	54
3.2.3.1 Survey Questionnaires	54

3.2.3.1.1	Teacher Questionnaire	55
3.2.3.1.2	Student Questionnaire	61
3.2.3.1.3	School Questionnaire	66
3.2.3.2	Interviews	66
3.2.3.2.1	Preparation of the Interview Questions	67
3.3	Ethical Considerations	68
3.4	Pilot testing of the instruments	69
3.4.1	Pilot data analysis	71
3.4.2	Finalising the Instruments	72
3.5	Final Data Collection procedure	73
3.5.1	Selection of schools, teachers and student participants	73
3.5.2	Administration of the survey Questionnaires	74
3.5.3	Conducting the Interviews	76
3.6	Summary	77
	Chapter 4: Data Preparation and Descriptive Analysis	78
4.1	Introduction	78
4.2	Data Preparation	78
4.2.1	Summary of the items used in research questionnaires	79
4.2.1.1	Summary of items used in Teacher Questionnaire	79
4.2.1.2	Summary of items used in Student Questionnaire	83
4.2.2	Missing Data	88
4.3	Descriptive analysis	89
4.3.1	Mean, Variance and Standard deviation	89
4.3.2	Test for Normality of Data	90
4.4	Summary	91
	Chapter 5: Demographic Information on Participants	92
5.1	Introduction	92
5.2	Schools	92
5.3	Teacher participants	94
5.3.1	Type of Schools	94

5.3.2 Gender distribution of Teacher Participants	95
5.3.3 Age of the Teacher Participants	96
5.3.4 Teaching experience of the Teacher Participants	97
5.3.5 Teaching Qualifications of the Participants	98
5.3.6 Subject-areas taught by the participants using IWB	98
5.3.7 Year level to which the participants teach using IWB	100
5.3.8 Access to Computer and Internet by teacher participants	100
5.3.9 Computer Literacy of teacher participants	100
5.3.10 Frequency of classroom computer use by teacher participants	102
5.3.11 Computer Training of teacher participants	102
5.3.12 Access to IWB by teacher participants	103
5.3.13 Frequency of IWB use by teacher participants	103
5.3.14 Type of IWB related training of teacher participants	104
5.3.15 IWB related support from School for teacher participants	104
5.3.16 Competence of teacher participants at working with IWB	105
5.3.17 IWB Confidence level of teacher participants	105
5.3.18 IWB Experience level of teacher participants	106
5.4 Student participants	107
5.4.1 Number of Students from each School	107
5.4.2 Types of the Schools	107
5.4.3 Gender of the student participants	107
5.4.4 Year level of the student participants	108
5.4.5 Subject-areas learnt using IWB by student participants	109
5.4.6 Access to Computer and Internet by student participants	111
5.4.7 Frequency of Computer Use at School by student participants	111
5.4.8 Frequency of Computer Use by student participants away from School	111
5.4.9 Computer Literacy Level of student participants	112
5.4.10 IWB installed in Classrooms of student participants	114

5.4.11 Frequency of IWB use by teachers of student participants	115
5.4.12 Competence and confidence levels of student participants in using IWB	115
5.5 Summary	118
Chapter 6: Validation of the Teacher Questionnaire Scales	119
6.1 Introduction	119
6.2 Statistical techniques used in instrument validation	119
6.2.1 Reliability	119
6.2.2 Validity	120
6.2.2.1 Content Validity	121
6.2.2.2 Criterion-related validity	122
6.2.2.3 Construct validity	122
6.2.2.3.1 Factor analysis	122
6.3 Use of SPSS software for the validation of the scales	124
6.4 Use of AMOS software for the validation of the scales	124
6.5 Structural Equation Modeling (SEM)	124
6.6 Confirmatory Factor Analysis for the current study using AMOS	125
6.7 Findings	128
6.7.1 Scale 1: Attitudes towards ICT (AICT)	128
6.7.1.1 Reliability of the Scale	128
6.7.1.2 Factor Analysis using SPSS	128
6.7.1.3 Final Reliability of the Scale	129
6.7.1.4 Factor Analysis using SPSS	130
6.7.1.5 Confirmatory Factor Analysis using AMOS	131
6.7.2 Scale 2: Attitudes towards IWB (AIWB)	134
6.7.2.1 Reliability of the Scale	134
6.7.2.2 Factor Analysis using SPSS	134
6.7.2.3 Final Reliability of the Scale	134
6.7.2.4 Final Factor Analysis using SPSS	136
6.7.2.5 Confirmatory Factor Analysis using AMOS	136
6.7.3 Scale 3: General Approach towards Teaching (ATT)	140

6.7.3.1 Reliability of the Scale	140
6.7.3.2 Factor Analysis using SPSS	140
6.7.3.3 Final Reliability of the Scale	140
6.7.3.4 Factor Analysis using SPSS	142
6.7.3.5 Confirmatory Factor Analysis using AMOS	142
6.7.4 Scale 4: Classroom Interactions using IWB (CIIWB)	145
6.7.4.1 Reliability of the Scale	146
6.7.4.2 Factor Analysis using SPSS	146
6.7.4.3 Final Reliability of the Scale	146
6.7.4.4 Factor analysis using SPSS	146
6.7.4.5 Confirmatory Factor Analysis using AMOS	147
6.8 Summary	150
Chapter 7: Validation of the Student Questionnaire Scales	151
7.1 Introduction	151
7.2 Scale 1: Attitudes towards ICT (AICT)	151
7.2.1 Reliability of the Scale	152
7.2.2 Factor Analysis using SPSS	153
7.2.3 Confirmatory Factor Analysis using AMOS	154
7.3 Scale 2: Attitudes towards IWB (AIWB)	157
7.3.1 Reliability of the Scale	158
7.3.2 Factor Analysis	158
7.3.3 Final Reliability Analysis using SPSS	158
7.3.4 Factor Analysis using SPSS	158
7.3.5 Confirmatory Factor Analysis using AMOS	159
7.4 Scale 3: Classroom Interactions using IWB (CIIWB)	162
7.4.1 Reliability of the Scale	163
7.4.2 Factor Analysis	163
7.4.3 Confirmatory Factor Analysis using AMOS	163
7.5 Scale 4: Learning Approaches using IWB (LA)	166
7.5.1 Reliability of the Scale	166
7.5.2 Factor Analysis using SPSS	166

7.5.3 Final Reliability Analysis using SPSS	168
7.5.4 Factor Analysis using SPSS	168
7.5.5 Confirmatory Factor Analysis using AMOS	169
7.6 Scale 5: Learning Outcomes using (LO)	172
7.6.1 Reliability of the Scale	174
7.6.2 Factor Analysis	174
7.6.3 Dropping the Items	174
7.6.4 Final Reliability Analysis using SPSS	174
7.6.5 Factor Analysis using SPSS	175
7.6.6 Confirmatory Factor Analysis using AMOS	175
7.7 Summary	179
Chapter 8: Single Level Path Analysis: Teacher Level	180
8.1 Introduction	180
8.2 Path Analysis	180
8.2.1 Model Specification using a Path Diagram	181
8.2.2 Trimming the path model	183
8.3 Variables used in the Teacher Level Path Analysis	183
8.4 Results of Teacher Level Path Analysis	187
8.4.1 Structural Model results at the teacher level	187
8.4.1.1 Computer Literacy	190
8.4.1.2 IWB Literacy	190
8.4.1.3 Teaching Experience	191
8.4.1.4 Attitudes towards ICT (AICT)	191
8.4.1.5 Attitudes towards IWB (AIWB)	192
8.4.1.6 Conceptual Change/Student Focused Teaching Approach (ATI_CCSF)	193
8.4.1.7 Information Transmission/Teacher Focused Teaching Approach (ATI_ITTF)	194
8.4.1.8 Classroom Interactions using IWB (CIWB)	195
8.4.2 Model Fit Summary for Student Level Path Model	197
8.5 Summary	197

Chapter 9: Single Level Path Analysis: Student Level	199
9.1 Introduction	199
9.2 Variables used in the Student Level Path Analysis	199
9.3 Results of Student Level Path Analysis	202
9.3.1 Measurement model results at the student level	203
9.3.1.1 Attitudes towards ICT (AICT)	204
9.3.1.2 Attitudes towards IWB (AIWB)	204
9.3.1.3 Classroom Interactions using IWB (CIIWB)	204
9.3.1.4 Surface Learning Approach using IWB (SLA)	205
9.3.1.5 Deep Learning Approach using IWB (DLA)	205
9.3.1.6 Learning Outcomes using IWB (LO)	205
9.3.2 Structural Model results at the student level	205
9.3.2.1 IWB installed in classroom	209
9.3.2.2 Frequency IWB Use by Teacher	210
9.3.2.3 Frequency Computer Use School	210
9.3.2.4 Frequency Computer Use away from school	211
9.3.2.5 Computer Literacy	211
9.3.2.6 IWB confidence	212
9.3.2.7 IWB competence	213
9.3.2.8 Attitudes towards ICT (AICT)	214
9.3.2.9 Attitudes towards IWB (AIWB)	215
9.3.2.10 Classroom Interactions using IWB (CIIWB)	216
9.3.2.11 Surface Learning Approach using IWB (SLA)	218
9.3.2.12 Deep Learning Approach using IWB (DLA)	219
9.3.2.13 Learning Outcomes using IWB (LO)	220
9.3.3 Model Fit Summary for Student Level Path Model	222
9.4 Summary	223
Chapter 10: Hierarchical Linear Modeling	225
10.1 Introduction	225
10.2 Hierarchical Linear Modeling (HLM)	226
10.2.1 Model Building and Specification in HLM	227

10.2.2 Model Trimming in HLM	228
10.3 Conceptual HLM models	230
10.4 Variables Used in Three-level HLM Models	230
10.5 Hypothesised Models	233
10.6 Three-Level Model Results	234
10.6.1 Three-Level Deep Learning Approach using the IWB Model	235
10.6.1.1 Null Model	236
10.6.1.1.1 Level-1 Model	236
10.6.1.1.2 Level-2 Model	237
10.6.1.1.3 Level-3 Model	237
10.6.1.1.4 Variability of Outcome variable	238
10.6.1.2 Final Model	239
10.6.1.2.1 Final Level-1 Model	239
10.6.1.2.2 Final Level-2 model	239
10.6.1.2.3 Final Level-3 Model	240
10.6.1.2.4 Final Three-Level Model	240
10.6.1.3 The Cross-Level Interaction Effects	244
10.6.1.3.1 Interaction Effect of age of the teachers (AGE) with students' perceived classroom interactions using IWB (CIIWB)	244
10.6.1.3.2 Interaction Effect of IWB literacy of the teachers (IWB_LITE) with students' perceived classroom interactions using IWB (CIIWB)	247
10.6.1.3.3 Interaction Effect of computer literacy of the teachers (COMP_LIT) with students' perceived classroom interactions using IWB (CIIWB)	249
10.6.1.3.4 Interaction Effect of Students' full access to software and hardware (SASH) with students' perceived classroom interactions using IWB (CIIWB)	252
10.6.1.4 Estimates of Variance components	254
10.6.2 Three-Level Learning Outcomes using IWB Model	255

10.6.2.1 Null Model	256
10.6.2.1.1 Level-1 Model	256
10.6.2.1.2 Level-2 Model	257
10.6.2.1.3 Level-3 Model	257
10.6.2.1.4 Variability of Outcome variable	258
10.6.2.2 Final Model	259
10.6.2.2.1 Final Level-1 Model	259
10.6.2.2.2 Final Level-2 model	260
10.6.2.2.3 Final Level-3 Model	260
10.6.2.2.4 Final Three-Level Model	260
10.6.2.3 The Cross-Level Interaction Effects	266
10.6.2.3.1 Interaction Effect of teachers' computer Literacy (COMP_LIT) with students' perceived classroom interactions using IWB (CIIWB)	267
10.6.2.3.2 Interaction Effect of teachers' gender (GENDER_T) with students' perceived deep learning approach using IWB (DLA)	269
10.6.2.3.3 Interaction Effect of frequency of access to software and hardware for students (SASH) with the gender of the students (GENDER)	271
10.6.2.4 Estimates of Variance components	274
10.7 Summary	275
Chapter 11: Qualitative Findings	277
11.1 Introduction	277
11.2 Data Analysis	277
11.2.1 Data Preparation	277
11.2.2 Coding	278
11.2.3 Theme generating	278
11.3 Sample	279
11.4 Findings	280
11.4.1 Positive factors contributing to the adoption of IWB by teachers	280

11.4.1.1 Availability of IWB	281
11.4.1.2 Perception of teachers about IWB to improve Teaching and Learning	282
11.4.1.2.1 Perceived Improvement in Teaching (Teacher-focused)	283
11.4.1.2.2 Perceived Improvement in Learning (Student-focused)	287
11.4.1.3 Encouragement, Training and Support to use IWB	289
11.4.1.3.1 Encouragement by the schools	290
11.4.1.3.2 Training to use IWB	291
11.4.1.3.3 Peer support	294
11.4.1.4 Other factors	295
11.4.1.4.1 Expectations of others	296
11.4.1.4.2 Behaviour Management	297
11.4.1.4.3 Unique Factors	297
11.4.2 Classroom Interactions/Student involvement	298
11.4.3 Gradual evolvement of the use of IWB	304
11.4.4 Impact on Student Learning	307
11.4.4.1 Learning Approach/Attitudes	307
11.4.4.2 Learning Outcomes	312
11.4.5 Negative issues related to IWB use by teachers	316
11.4.5.1 Barriers/Constraints of using IWB	316
11.4.5.2 Negative aspects of IWB use	320
11.4.5.3 Overcoming Barriers	322
11.4.6 Future Use of IWB by teachers	324
11.4.7 Recommendations for novice IWB users	327
11.5 Conclusion	330
Chapter 12: Discussion and Conclusion	333
12.1 Introduction	333
12.2 Achieving the Research Aims	333
12.3 ICT and IWB related facilities	335
12.4 Adoption of IWB by teachers	335

12.5 Attitudes towards ICT	338
12.5.1 Teachers	338
12.5.2 Students	339
12.6 Attitudes towards IWB	341
12.6.1 Teachers	341
12.6.2 Students	343
12.7 Teaching Approaches	345
12.7.1 Conceptual Change/Student Focused Teaching Approach	345
12.7.2 Information Transmission/Teacher Focused Teaching Approach	346
12.8 Classroom Interactions using IWB	347
12.8.1 Teachers	347
12.8.2 Students	352
12.9 Student Learning Approaches	353
12.9.1 Teachers	354
12.9.2 Students	355
12.9.2.1 Deep Learning Approach	355
12.9.2.2 Surface Learning Approach	358
12.10 Student Learning Outcomes	359
12.10.1 Teachers	359
12.10.2 Students	360
12.11 Theoretical and Practical Implications	365
12.12 Limitations and Further Research	367
12.13 Summary	368
12.14 Final Conclusion	372

Appendices **373**

Appendix A: The Pilot Study Teacher Questionnaire	374
Appendix B: The Pilot Study Student Questionnaire	390
Appendix C: The Final Teacher Questionnaire	402
Appendix D: The Final Student Questionnaire	414
Appendix E: The School Questionnaire	427

Appendix F: Information Sheet for the School	430
Appendix G: Information Sheet for the Teacher Participants	432
Appendix H: Information Sheet for the Student Participants	434
Appendix I: Information Sheet for the Parents	436
Appendix J: Consent Form	438
Appendix K: Parent Consent Form	440
Appendix L: Complaint Form	442
Appendix M: Interview Questions for Teacher Participants	444
Appendix N: Interview Transcription Sample	447
Appendix O: Ethics Approval from the University of Adelaide	455
Appendix P: Ethics Approval from DECS	457
Appendix Q: Ethics Approval from Catholic Association	459
Appendix R: Descriptive analysis results for teacher data (Teacher Questionnaire)	463
Appendix S: Descriptive analysis results for student data (Student Questionnaire)	467
Appendix T: Skewness and Kurtosis values for variables on Teacher Questionnaire	471
Appendix U: Skewness and Kurtosis values for variables on Student Questionnaire	475
Appendix V: Summary Statistics of Missing data for Teachers	479
Appendix W: Summary Statistics of Missing data for Students	485
Appendix X: Standardised Results of Confirmatory Factor Analysis (CFA) (Teachers)	491
Appendix Y: Standardised Results of Confirmatory Factor Analysis (CFA) (Students)	512
Bibliography	542

List of Figures

Figure	Title	Page
Figure 1.1:	Different Components of a typical IWB	7
Figure 2.1:	Tripartite Model of Attitudes	27
Figure 2.2:	Technology Acceptance Model	28
Figure 2.3:	Theory of Planned Behaviour	29
Figure 2.4:	Biggs' 3-P model of learning process	45
Figure 2.5:	Bloom's Taxonomy	46
Figure 2.6:	Bloom's Revised Taxonomy	47
Figure 2.7:	Theoretical Framework: Impact of the use of Interactive Whiteboard (IWB) on the secondary school students' learning in South Australia	50
Figure 3.1:	Measurement Model	55
Figure 3.2:	Instrumentation	65
Figure 5.1:	Distribution of type of schools of teacher participants	94
Figure 5.2:	Gender of the Teacher Participants	95
Figure 5.3:	Age of the Teacher participants	96
Figure 5.4:	Teaching Experience of the Participants	97
Figure 5.5:	Teaching Qualifications of the Participants	98
Figure 5.6:	Year levels to which teachers teach using IWB	100
Figure 5.7:	Computer experience level of teacher participants	101
Figure 5.8:	Computer Competency of teacher participants	101
Figure 5.9:	Computer Confidence of teacher participants	102
Figure 5.10:	Frequency of IWB use by teacher participants	103
Figure 5.11:	IWB competence level of teacher participants	105
Figure 5.12:	IWB Confidence level of teacher participants	106
Figure 5.13:	IWB Experience level of teacher participants	106
Figure 5.14:	Distribution of the number of student participants based on the types of schools	108
Figure 5.15:	Distribution of the student participants based on their year level	109

Figure	Title	Page
Figure 5.16:	Frequency of Computer Use by student participants at school	112
Figure 5.17:	Frequency of Computer Use by student participants away from school	112
Figure 5.18:	Computer use experience of student participants	113
Figure 5.19:	Computer competency level of student participants	113
Figure 5.20:	Computer confidence level of student participants	114
Figure 5.21:	IWB installed in classrooms of student participants	114
Figure 5.22:	Frequency of IWB use by teacher	115
Figure 5.23:	IWB Competence level of student participants	116
Figure 5.24:	IWB Confidence level of student participants	117
Figure 6.1:	1 Factor model for AICT scale of Teacher Questionnaire	133
Figure 6.2:	Hierarchical model for AIWB scale of Teacher Questionnaire	139
Figure 6.3:	2 Orthogonal Factor Model for ATI scale of Teacher Questionnaire	144
Figure 6.4:	Hierarchical Model for CIIWB scale of Teacher Questionnaire	149
Figure 7.1:	Hierarchical model for AICT scale of Student Questionnaire	156
Figure 7.2:	Hierarchical model for AIWB scale of Student Questionnaire	161
Figure 7.3:	Hierarchical model for CIIWB scale of Student Questionnaire	165
Figure 7.4:	Hierarchical models for DLA and SLA scales of Student Questionnaire	171
Figure 7.5:	Hierarchical model for the LO scale of Student Questionnaire	178
Figure 8.1:	A general structural equation model	182
Figure 8.2:	Hypothetical Model at Teacher Level	184
Figure 8.3:	Single Level Path Model at Teacher Level	188
Figure 9.1:	Hypothetical Path Model at the Student Level	200

Figure	Title	Page
Figure 9.2:	Student Level Path Model at Student Level	206
Figure 10.1:	Three-Level Deep Learning Approach using IWB Model	229
Figure 10.2:	Three-Level Learning Outcomes using IWB Model	229
Figure 10.3:	The hypothesised variables of the three-level Deep Learning Approach using IWB model	234
Figure 10.4:	The hypothesised variables of the three-level Learning Outcomes using IWB model	235
Figure 10.5:	Three-Level Model of Deep Learning Approach using IWB	243
Figure 10.6:	Interaction Effect of age of the teachers (AGE) with students' perceived classroom interactions using IWB (CIIWB)	246
Figure 10.7:	Interaction Effect of IWB literacy of the teachers (IWB_LITE) with students' perceived classroom interactions using IWB (CIIWB)	248
Figure 10.8:	Interaction Effect of computer literacy of the teachers (COMP_LIT) with students' perceived classroom interactions using IWB (CIIWB)	251
Figure 10.9:	Interaction Effect of Students' full access to software and hardware (SASH) with students' perceived classroom interactions using IWB (CIIWB)	254
Figure 10.10:	Three-Level Model of Learning Outcomes using IWB	265
Figure 10.11:	Interaction Effect of teachers' computer literacy (COMP_LIT) with students' perceived classroom interactions using IWB (CIIWB)	269
Figure 10.12:	Interaction Effect of teachers' gender (GENDER_T) with students' perceived deep learning approach using IWB (DLA)	271
Figure 10.13:	Interaction Effect of frequency of access to software and hardware for students (SASH) with the gender of the students (GENDER)	273

List of Tables

Table	Title	Page
Table 3.1:	Cronbach's Alpha values for different scales of Student Questionnaire	72
Table 3.2:	Table showing description of the number of participants	74
Table 4.1:	Scale 1: Attitudes towards ICT (AICT)	79
Table 4.2:	Scale 2: Attitudes towards IWB (AIWB)	80
Table 4.3:	Scale 3: Approaches towards Teaching (ATI)	81
Table 4.4:	Scale 4: Classroom Interactions using IWB (CIIWB)	82
Table 4.5:	Scale 1: Attitudes towards ICT (AICT)	83
Table 4.6:	Scale 2: Attitudes towards IWB (AIWB)	84
Table 4.7:	Scale 3: Classroom Interactions using IWB (CIIWB)	85
Table 4.8:	Scale 4: Learning Approaches (LA)	86
Table 4.9:	Scale 5: Learning Outcomes (LO)	87
Table 5.1:	General Information about participating Schools	93
Table 5.2:	Cross-tabulation of Teachers by Type of the School and School ID	95
Table 5.3:	Gender of the Teacher Participants	95
Table 5.4:	Cross-tabulation of Age by Gender of the Teacher participants	96
Table 5.5:	Teaching Experience of the Teacher Participants	97
Table 5.6:	Other teaching qualifications specified by the teacher participants	98
Table 5.7:	Subject-areas taught by teachers using IWB	99
Table 5.8:	Other subject areas specified by the teacher participants	99
Table 5.9:	Frequency of Classroom Computer use by teacher participants	102
Table 5.10:	Type of computer training of teacher participants	103
Table 5.11:	Type of IWB Training of teacher participants	104
Table 5.12:	IWB related support for teacher participants	104
Table 5.13:	Distribution of number of student participants from each School	107

Table	Title	Page
Table 5.14:	Cross-tabulation of Student participants by Type of School and Gender	108
Table 5.15:	Subject areas learnt by student participants using IWB	110
Table 5.16:	Other Subject-areas specified by student participants	110
Table 5.17:	Student participant's access to Computer and Internet at and away from School	111
Table 5.18:	Competence level of student participants at working with IWB	116
Table 5.19:	Confidence level of student participants at working with IWB	117
Table 6.1:	Summary of AICT scale on Teacher Questionnaire	129
Table 6.2:	Cronbach's alpha coefficient for each sub-scale of AICT scale	130
Table 6.3:	Factor loadings for AICT scale	130
Table 6.4:	Fit Index: Model Fit Summary for AICT scale	131
Table 6.5:	Factor loadings for 1 factor model for AICT scale	132
Table 6.6:	Summary of the AIWB scale of Teacher Questionnaire	135
Table 6.7:	Factor loadings of AIWB scale	136
Table 6.8:	Fit Index: Model Fit Summary for AIWB scale	137
Table 6.9:	Factor Loadings for Hierarchical model of AIWB scale	138
Table 6.10:	Summary of items in ATI scale used in Teacher Questionnaire	141
Table 6.11:	Factor Loadings for ATI scale	142
Table 6.12:	Fit Index: Model Fit Summary for ATI scale	143
Table 6.13:	Factor loadings for 2 Orthogonal factor model for ATI scale	143
Table 6.14:	Summary of items used in CIIWB scale in Teacher Questionnaire	145
Table 6.15:	Cronbach's alpha coefficient for each sub-scale of CIIWB Scale	146
Table 6.16:	Factor loadings for CIIWB scale	147
Table 6.17:	Fit Index: Model Fit Summary for CIIWB scale	148

Table	Title	Page
Table 6.18:	Factor loadings for Hierarchical model for CIIWB scale	148
Table 7.1:	Summary of AICT scale on Student Questionnaire	152
Table 7.2:	Cronbach's Alpha Coefficients for each sub-scale of AICT Scale	153
Table 7.3:	Factor Loadings for AICT scale	153
Table 7.4:	Fit Index: Model Fit Comparison for AICT scale	155
Table 7.5:	Factor Loadings for Hierarchical model of AICT scale	155
Table 7.6:	Summary of AIWB scale of Student Questionnaire	157
Table 7.7:	Cronbach's alpha coefficient for each sub-scale of AIWB Scale	158
Table 7.8:	Factor Loadings of AIWB scale	159
Table 7.9:	Fit Index: Model Fit Comparison for AIWB scale	160
Table 7.10:	Factor loadings for hierarchical model of AIWB scale	160
Table 7.11:	Summary of CIIWB scale of Student Questionnaire	162
Table 7.12:	Factor loadings for CIIWB scale	163
Table 7.13:	Fit Index: Model Fit Comparison for CIIWB scale	164
Table 7.14:	Factor loadings for hierarchical model of CIIWB scale	164
Table 7.15:	Summary of LA scale of Student Questionnaire	167
Table 7.16:	Cronbach's alpha coefficient for each sub-scale of LA scale	168
Table 7.17:	Factor loadings for Learning Approaches using IWB (LA) Scale	169
Table 7.18:	Fit Index: Model Fit Summary for LA scale	170
Table 7.19:	Factor loadings for Deep Learning Approach using IWB (DLA) scale	172
Table 7.20:	Factor loadings for Surface Learning Approach using IWB (SLA) scale	172
Table 7.21:	Summary of sub-scaling for Learning Outcomes using IWB Scale	173
Table 7.22:	Summary of the Cronbach's Alpha Coefficients for sub-scales of LO scale	175
Table 7.23:	Factor loadings for Learning Outcomes using IWB (LO) Scale	176

Table	Title	Page
Table 7.24:	Fit Index: Model Fit Summary for Learning Outcomes using IWB (LO)	176
Table 7.25:	Factor loadings for Learning Outcomes using IWB (LO) Scale	177
Table 8.1:	Variables used in the teacher level path model	185
Table 8.2:	Results of structural model at the teacher level	189
Table 9.1:	Latent variables used in the student level path model	201
Table 9.2:	Other Observed variables used in the student level path model	202
Table 9.3:	Results of measurement model at the student level	203
Table 9.4:	Results of structural model at the student level	207
Table 10.1:	List of Variables used in Three-Level HLM models	231
Table 10.2:	Null Model Results: Three-Level Deep Learning Approach using IWB Model	238
Table 10.3:	Final Model results: Three-Level Model of Deep Learning Approach using IWB	242
Table 10.4:	Estimation of the Variance Components: Three-Level Deep Learning Approach Model	255
Table 10.5:	Null Model Results: Three-Level Learning Outcomes using IWB Model	259
Table 10.6:	Final Model Results: Three-Level Model of Learning Outcomes using IWB	263
Table 10.7:	Estimation of Variance Components: Learning Outcomes using IWB	275
Table 11.1:	Subject-areas taught by the participating teachers using IWB	279
Table 11.2:	IWB Experience of the participating teachers	280

Abstract

This research study explored the adoption and utilization of Interactive Whiteboard (IWB) technology by teachers and students of secondary schools in South Australia, Australia and investigated the impact of its use on the student learning (learning approaches and quality of learning outcomes). This research was conducted using a mixed method design which was comprised of both the quantitative (predominant) and qualitative (supportive) approaches for collecting and analysing data. Three different survey questionnaires were used for the quantitative phase during which data were collected at school (12), teacher (30) and student (269) levels. Interviews were used to collect qualitative data from 16 teachers.

The school questionnaire had some general questions to collect some information regarding the kind of Information and Communication facilities present at the schools; the teacher questionnaire included four scales which were Attitudes towards ICT (AICT), Attitudes towards IWB (AIWB), Approaches towards Teaching (ATI) and Classroom Interactions using IWB (CIWB); and the student questionnaire was comprised of five scales which were Attitudes towards ICT (AICT), Attitudes towards IWB (AIWB), Classroom Interactions using IWB (CIWB), Learning Approaches using IWB (LA) and Learning Outcomes using IWB (LO).

The Cronbach's alpha values and Confirmatory Factor Analysis (CFA) techniques were used to establish the reliability and validity of all these scales. Single Level Path Analysis (SEM) technique was used to examine the relationships among the variables present at teacher and student levels separately. To examine the relationships among the nested variables at three levels (school-teacher-student) and the cross-level interaction effects on the outcome variable, Hierarchical Linear Modeling (HLM) was used. The interview data were hand analysed using open-coding technique.

The findings from the teacher level path analysis revealed that the classroom interaction level of teachers using IWB was positively influenced by their attitudes

towards IWB, the IWB related support they received from schools, their student-focused teaching approach and their age. The results from student level path analysis showed that the students' perceived classroom interactions using IWB were positively associated with their perceived deep learning approach (direct association) and their perceived quality of learning outcomes (indirect association through deep learning approach). Students' attitudes towards IWB also had significant positive influence on their perceived deep learning approach, their perceived classroom interactions using IWB and their perceived quality of learning outcomes.

The three-level (HLM) model of deep learning approach using IWB indicated that perceived classroom interactions using IWB (student-level factor), IWB support (teacher-level factor) and ICT integration level in classrooms (school-level factor) had direct positive influence on their perceived deep learning approach. The three-level model of learning outcomes using IWB revealed that students' perceived learning outcomes when using IWB were directly influenced by their perceived classroom interactions, their attitudes towards IWB, their perceived deep and surface learning approaches, their gender (all student-level factors) and the age of the teacher (teacher-level factor).

Overall, it was evident that the students who had experienced an interactive and enhanced interactive classroom environment using IWB, and those who had more positive attitudes towards IWB tended to adopt a deeper learning approach and the quality of their learning outcomes improved. This association between these important factors provides clear evidence that the IWB technology, when used in an interactive or enhanced interactive way by the teachers and the students, can make the students more inclined towards adopting deeper approach to learning along with improving the quality of their learning outcomes.

The major contribution of this study is in the form of providing the much needed evidence of the impact of the use of IWB on the learning of the secondary school students along with the understanding of the inter-relationships among various other important factors at school, teacher and student levels. In future, more exclusive studies can be done to explore the issues of learning approaches and

learning outcomes using IWB in separate studies using longitudinal or other suitable research methods.

Keywords: Information and Communication Technology (ICT), Interactive Whiteboard (IWB), IWB adoption, IWB use, ICT attitudes, IWB attitudes, classroom interactions using IWB, learning approaches using IWB, learning outcomes using IWB, student learning, teaching approaches, mixed-method research, secondary school teachers, secondary school students, secondary schools, South Australia, Australia.

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