

University of Wollongong - Research Online

Thesis Collection

Title: A heuristic framework for the determination of the critical elements in authentic assessment

Author: Kevin Hugh Ashford-Rowe

Year: 2009

Repository DOI:

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following: This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part of this work may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of the author. Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material.

Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

Unless otherwise indicated, the views expressed in this thesis are those of the author and do not necessarily represent the views of the University of Wollongong.

Research Online is the open access repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

2009

A heuristic framework for the determination of the critical elements in authentic assessment

Kevin Hugh Ashford-Rowe
University of Wollongong

Follow this and additional works at: <https://ro.uow.edu.au/theses>

University of Wollongong

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following: This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part of this work may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of the author. Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material.

Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

Unless otherwise indicated, the views expressed in this thesis are those of the author and do not necessarily represent the views of the University of Wollongong.

Recommended Citation

Ashford-Rowe, Kevin Hugh, A heuristic framework for the determination of the critical elements in authentic assessment, Doctor of Education thesis, Faculty of Education, University of Wollongong, 2009. <https://ro.uow.edu.au/theses/966>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

NOTE

This online version of the thesis may have different page formatting and pagination from the paper copy held in the University of Wollongong Library.

UNIVERSITY OF WOLLONGONG

COPYRIGHT WARNING

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

**A HEURISTIC FRAMEWORK FOR THE DETERMINATION OF
THE CRITICAL ELEMENTS IN AUTHENTIC ASSESSMENT**

**A thesis submitted in partial fulfilment of the requirements for the award of the
degree**

DOCTOR OF EDUCATION

FROM

UNIVERSITY OF WOLLONGONG

BY

**KEVIN HUGH ASHFORD-ROWE, BACHELOR OF ARTS
(HONOURS), POST GRADUATE CERTIFICATE IN EDUCATION,
GRADUATE DIPLOMA IN MULTIMEDIA, MASTER OF
PROFESSIONAL STUDIES, MASTER OF EDUCATION**

FACULTY OF EDUCATION

2009

DECLARATION

I, Kevin H. Ashford-Rowe, declare that this thesis, submitted in partial fulfilment of the requirements for the award of Doctor of Education, in the Faculty of Education, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Kevin H. Ashford-Rowe

23 January 2009.

TABLE OF CONTENTS

Declaration	ii
List of tables	vii
List of Figures.....	vii
Abstract	viii
Acknowledgments.....	ix
Chapter 1: Introduction.....	1
Background to the study — Authenticity in educational assessment.....	1
Assessment, authenticity and educational technology.....	4
Research questions and the study	8
The organisation of the thesis	10
Chapter 2: Authentic Assessment: A General review of the literature	12
Previous findings	12
Assessment	12
Assessment in higher education	17
What is authentic assessment	19
Assessment and educational technology	23
Characteristics of authentic assessment.....	31
Chapter 3: Research Design and Methodology.....	37
Introduction	37
Design-based research	37
PHASE 1: Exploration of the problem.....	43
PHASE 2: Development of a solution	44
PHASE 3: Implementation and evaluation	50
PHASE 4: Presentation of findings.....	58
Summary of the research plan	59
Conclusion	62
Chapter 4: An Effective Model for Task Design in Flexible Learning Environments.....	63
Analysis of the elements of authentic assessment	63
Practitioner feedback	66
Evolving and further developing the critical elements	69
1. Degree of challenge(s) presented to the assessed student.....	70
2. Performance, or product, as final assessment outcome.....	72
3. Transfer of learning (skills/knowledge/attitude) required.....	74
4. Critical reflection and self-assessment or evaluation required.....	75
5. Accuracy in product or performance, and fidelity of assessment environment, is displayed	76
6. Fidelity of assessment tools used	78

7. Discussion and feedback required	79
8. Collaboration required	80
Expert review	81
Expert Reviewer 1	82
Expert Reviewer 2	85
Expert Reviewer 3	88
Summary of feedback from expert reviewers	90
1. Degree of challenge(s) presented to the assessed student	91
2. Performance, or product, as final assessment outcome	92
3. Transfer of learning (skills/knowledge/attitude) required	92
4. Critical reflection and self-assessment or evaluation required	93
5. Accuracy in product or performance, and fidelity of assessment environment, is displayed	93
6. Fidelity of assessment tools used	94
7. Discussion and feedback required	94
8. Collaboration required	95
Revision of critical elements from expert review	95
From critical elements to critical questions — A summary	98
The critical questions	98

Chapter 5: Applying the Critical Questions of Authentic Assessment in the Design of a Learning Module 100

Development of — <i>Evaluating Educational Multimedia</i>	100
Introduction	100
The re-design of <i>Evaluating Educational Multimedia</i>	101
1. To what extent does the assessment activity challenge the assessed student?	105
2. Is a performance, or product, required as a final assessment outcome?	106
3. Does the assessment activity require that transfer of learning has occurred, by means of demonstration of skill?	107
4. Does the assessment activity require that metacognition is demonstrated, by means of critical reflection, self-assessment or evaluation?	108
5. Does the assessment require a product or performance that could be recognised as authentic by a client or stakeholder?	110
6. Is fidelity required in the assessment environment? And in the assessment tools (actual or simulated)?	114
7. Does the assessment activity require discussion and feedback?	115
8. Does the assessment activity require that students collaborate?	116
9. Description of how the critical questions were applied in the design and structure of the learning outcomes and assessment criteria of Module 10	117
The role of formative assessment in the redesign of the module	133
The application of the elements to the learning environment	135
Conclusion	136

Chapter 6: Learners' Responses to Authentic Assessment 139

Learning Module Implementation	140
Learning Module Evaluation and Analysis	140

Method of implementation	140
The method of analysis	141
Applying the constant comparative method	142
Analysis of responses	143
Researcher's observation on students' responses by data source	144
Interview	144
Observation	145
Video	146
Notes on students' performance made on observation during the delivery of the module	147
Notes on student's performance made on researcher review of the video content recorded during the delivery of the module	150
The student's response to the critical questions	152
1. To what extent does the assessment activity challenge the assessed student?	152
2. Is a performance, or product, required as a final assessment outcome?	155
3. Does the assessment activity require that transfer of learning has occurred, by means of demonstration of skill?	157
4. Does the assessment activity require that metacognition, is demonstrated, by means of critical reflection, self-assessment or evaluation?	159
5. Does the assessment require a product or performance that could be recognised as authentic by a client or stakeholder?	160
6. Is fidelity required in the assessment environment? And the assessment tools (actual or simulated)?	162
7. Does the assessment activity require discussion and feedback?	163
8. Does the assessment activity require that students collaborate?	165
Summary of the student's response to the application of the critical questions in the redesign of Module 10	167
The student's response to the assessment activity	170
Discussion	172
Chapter 7: Discussion	181
Research questions — Data analysis	183
1. To what extent does the assessment activity challenge the assessed student?	186
2. Is a performance or product required as a final assessment outcome?	188
3. Does the assessment activity require that transfer of learning has occurred, by means of demonstration of skill?	189
4. Does the assessment activity require that metacognition is demonstrated by means of critical reflection, self-assessment or evaluation?	190
5. Does the assessment require a product or performance that could be recognised as authentic by a client or stakeholder?	191
6. Is fidelity required in the assessment environment? And the assessment tools (actual or simulated)?	193
7. Does the assessment activity require discussion and feedback?	194
8. Does the assessment activity require that students collaborate?	195

Summary of student response and impact on the critical questions.....	199
Chapter 8: Conclusion	201
Introduction	201
Summary and review of process.....	201
PHASE 1: Exploration of the problem.....	204
PHASE 2: Development of a solution	204
PHASE 3: Implementation and evaluation	206
PHASE 4: Presentation of findings.....	207
Description of the principles.....	207
Findings of the study	209
Principal research question	210
Subordinate research question 1.....	211
Subordinate research question 2.....	215
Conclusion	217
Limitations of the study	218
Recommendations for further research.....	219
References	221
APPENDIX 1 Expert Reviewer Interview Questionnaire	239
APPENDIX 2 Student Evaluation Questionnaire	243
APPENDIX 3 Student interview Questionnaire	247
APPENDIX 4 Computer Based Learning Practitioners Course — Module 10 — Evaluating educational multimedia	252

LIST OF TABLES

Table 3.1:	The way in which the stages of the design-based research process are applied in this study.....	42
Table 3.2:	Summary of the research plan.....	61
Table 4.1:	Researcher's synthesis of the elements of authentic assessment from the literature.....	64
Table 4.2	Researcher's translation of characteristics to critical elements of authentic assessment with practitioner feedback	67
Table 4.3:	Revision of critical elements from expert reviewer feedback to produce the critical questions	96
Table 5.1:	Proposed application of the critical questions to the re-design of Module 10	104
Table 6.1:	Student Feedback on the Critical Elements.....	179
Table 7.1:	Consideration of the students' responses with reference to the research questions.....	183
Table 7.2:	Student Feedback on the Critical Questions.....	198
Table 8.1:	Stages of the design-based research process in this study.....	203

LIST OF FIGURES

Figure 3.1:	Design-based research (2006, p. 59)	39
Figure 5.1:	Apply the process of educational multimedia evaluation to the Army's Training Technology Centre developed Computer Based Learning Practitioners Course	110
Figure 5.2:	Apply the process of educational multimedia evaluation to a TTC developed CBLP — Trainees will construct their own	113
Figure 5.3:	Process of multimedia evaluation model assessment activity	117

ABSTRACT

Higher Education is currently undergoing a period of significant challenge and transformation. It is likely that these challenges will, in a comparatively short period of time, lead to changes in the ways in which the higher education experience is both mediated and accessed. These changes have arisen as a result of a number of factors, including the information revolution, and the consequent pace of technological innovation, the increased demand from both employers and government for a more highly skilled workforce and the desire to increase and make more accessible the higher education experience to an increasing proportion of the overall population.

All of this has impacted upon the ways in which the higher education experience is represented, and in turn, by which students gain access to the knowledge and skills that will underpin their ability to both learn and perform. Higher education is increasingly being challenged to demonstrate its continued value to the broader community, especially employers, by ensuring that it provides capable, competent and informed citizens adequate to the challenges of a twenty-first century lifetime. If these principles are considered drivers for change, then it is important that the higher education sector can continue to demonstrate its ongoing value to the students who undertake it.

It is against this background that this study was developed with the purpose of identifying from the literature, and then to codify into an applicable framework, the critical elements that would determine an assessment as being authentic. The study took as its starting point the importance, in the current educational context, of being able to determine the elements that define an educational experience as being an authentic one. The research commenced with a review of the literature to identify and collate those elements that had been identified by previous researchers in the field. Next these elements, once refined iteratively in practice, were developed into a framework that could be applied by the designer of instruction and assessment, in order to ascertain whether such a framework could be used to support the design of a more authentic assessment experience. This framework was then applied in practice and the student's response to the learning and assessment designed according to these elements was evaluated, and the elements were further reviewed and revised upon the basis of this data. Thus the study was conducted in four phases, in the first of which the researcher explored the problem, in the second the researcher sought the development of a solution, and in the third phase this solution was implemented and evaluated, the findings were presented in the final phase.

The findings of this study suggest that not only is it possible to codify those elements critical to the determination of authenticity into such a framework, but moreover, it is possible to systematically apply them in the design of assessment activity. Thus the implication of this research for educators and educational designers who seek to meet a requirement for workplace relevance in the design of their education and assessment activities is that they will have a better opportunity to both identify and then apply specific design principles that will assist them in the better development of assessment outcomes with a clearer workplace applicability.

ACKNOWLEDGMENTS

In the completion of this work, I acknowledge the help, guidance and assistance freely given to me by a number of people over many years, from both within and outside of the field of education.

First, and foremost, I thank my wife, Tina, for her love and unstinting support, and my children, Holly, Jamie and Sam, for their continued interest and the questions that have ensured that I saw this through. I also thank all of them for the understanding that has enabled me to sacrifice time with them to the completion of this study.

I thank my parents Ken and Catherine whose love, support, guidance and belief ensured that both I, and my brothers, Jeremy, Alan and Ian, have been adequate to the joys and challenges that a life can present.

From an educational perspective, I acknowledge the inspiration and assistance given to me by many people, in particular, Robert Pepper and Lotte Deeble, Bosvigo County Primary, Cornwall (1971–1974), Rosemary King, Penweathers County Secondary and Richard Lander Comprehensive, Cornwall (1974–1979) and Margaret Garland and David Worley of Cornwall College, Cornwall (1979–1982).

I also sincerely acknowledge the assistance and advice of Professor John Hedberg and Professor Barry Harper.

Finally, I am deeply indebted to, and thank, my supervisors Associate Professor Jan Herrington and Doctor Christine Brown, who have provided me with both support and guidance over the last several years, and without whose vision and the means to express it, I would not have come close to completing this work.

I dedicate this work to my father, Leslie Kenneth Rowe, Kernowyon, (1931–1992) who understood the true value and importance of education as the enabler that can allow us to fulfil our potential and raise ourselves up.

My thanks to Jill Ryan for her excellent assistance in proof reading this thesis.

'Then said a teacher, Speak to us of Teaching.

And he said:

No man can reveal to you aught but that which already lies half asleep in the dawning of your knowledge.

The teacher who walks in the shadow of the temple, among his followers, gives not of his wisdom but rather of his faith and his lovingness.

If he is indeed wise he does not bid you to enter the house of his wisdom, but rather leads you to the threshold of your own mind.' (Khalil Gibran, 1923, p. 74)