Designing Lecture Presentations
Using Cognitive Load Theory and Visual Communication Principles

Chris Lawrence
BDes(Hons)

Master of Education
June, 2013
STATEMENT OF ORIGINALITY:

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968.

______________________
Chris Lawrence (Candidate)

ACKNOWLEDGEMENT OF COLLABORATION:

I hereby certify that the work embodied in this thesis has not been done in collaboration with other researchers, or carried out in other institutions.

______________________
Chris Lawrence (Candidate)

ACKNOWLEDGEMENT OF AUTHORSHIP:

I hereby certify that the work embodied in this thesis does not contain published papers or scholarly work, or work involving joint authorship. This written statement is endorsed by my supervisor and attests to my sole contribution to this scholarly work.

______________________
Chris Lawrence (Candidate)
## CONTENTS

1. Introduction 1

   Background 1
   Aim and Scope 2
   Overview of the Study 3

2. Instructional Design, Cognitive Load Theory & Teacher Clarity 5

   Introduction 5
   Overview of Relevant Research 6
   Conclusion 22

3. Graphic Design and Visual Communication Principles 24

   Introduction 24
   Overview of Relevant Research 25
   Conclusion 40

4. Methodology and Theoretical Perspective 43

   Introduction 43
   Hypothesis 43
   Methodology 45

5. Research Design and Methods 50

   Introduction 50
   Rationale 50
   Participants 52
   Instruments and Materials 53
   Program and Procedures 60
   Analysis 63
   Conclusion 65

6. Results Regarding Lecturer Use of Principles 66

   Introduction 66
   Implementation of Research Procedure 67
# Conclusion

## 7. Results Regarding Resistance to Change

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>107</td>
</tr>
<tr>
<td>Themes of Secondary Data</td>
<td>107</td>
</tr>
<tr>
<td>Conclusion</td>
<td>127</td>
</tr>
</tbody>
</table>

## 8. Discussion

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>129</td>
</tr>
<tr>
<td>Meaning of the Primary Results</td>
<td>129</td>
</tr>
<tr>
<td>Meaning of the Secondary Results</td>
<td>135</td>
</tr>
<tr>
<td>Implications for Future Study</td>
<td>143</td>
</tr>
<tr>
<td>Conclusions</td>
<td>146</td>
</tr>
</tbody>
</table>

## References

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A – Interview and Focus Group Schedules</td>
<td>164</td>
</tr>
<tr>
<td>Appendix B – Recruitment Poster Design</td>
<td>165</td>
</tr>
<tr>
<td>Appendix C – Lecture Announcement</td>
<td>166</td>
</tr>
<tr>
<td>Appendix D – Screen-Shots of the Workshop Presentation</td>
<td>167</td>
</tr>
<tr>
<td>Appendix E – Workshop Notes Hand-Out</td>
<td>172</td>
</tr>
<tr>
<td>Appendix F – Workshop Script (Video Version)</td>
<td>173</td>
</tr>
<tr>
<td>Appendix G – Lecture Slides Evaluation Form</td>
<td>176</td>
</tr>
<tr>
<td>Appendix H – Recruitment Emails to Heads of School</td>
<td>177</td>
</tr>
</tbody>
</table>
Abstract

In an effort to expand upon our existing understanding of how we go about designing instructional material, a union of certain principles and effects were proposed from both the disciplines of Graphic Design and Education. Several instructional design phenomenon articulated in the field of Cognitive Load Theory were matched with complementary principles used in visual communication. The marriage of these two sets of knowledge offered a more complete and clear understanding of instructional design decisions, particularly in regards to how they might be practically applied. To observe how readily an instructor might adopt and implement such principles, several university lecturers were invited to attend a workshop that explained and modelled them. While the workshop did have a positive and observable effect on the visual material they produced for their presentations, the impact was disappointingly muted. However, various themes that emerged from the interview data offered explanation for what may have interfered with the willingness and ability of participants to use the principles in question. What might have been regarded as a collection of sensible advice regarding quite superficial visual modifications was apparently overridden by a number of affective barriers and resistance to change within the instructors. Several naïve pedagogical assumptions arose, many given to a strong dependency on content rather than concepts. The reoccurrence of self-efficacy, confidence and ego-defence was also noted, along with some technological and circumstantial interferences. This study sheds light on the issues surrounding staff development regarding instructional design and demonstrates why a ‘How-to-use-PowerPoint’ seminar will not be effective in isolation.