

DEVELOPMENT AND EVALUATION OF A FIBRE OPTIC  
WEB-BASED LEARNING MODULE FOR TECHNOLOGY-BASED  
LEARNERS

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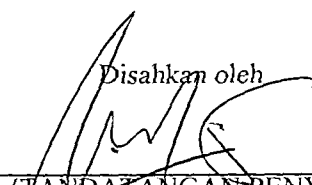


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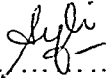
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For my beloved Parents, Sisters and little Brother

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## ABSTRACT

Web-based learning module provide integrated environments of various technologies to support and enhance learners learning process via the Internet. Therefore it was the interest of the researcher to develop a 'Fibre Optics Web-Based Learning' (FOWBL) module and evaluate its effectiveness. An instructional design model, ADDIE was followed throughout the development of the web-based learning module. Furthermore, design factors such as multimedia, which facilitate the web-based learning program were discussed. This paper reported the result from the research, which study the effectiveness of web-based learning module for technology-based learners. A sample of 24 respondents, which comprised of 12 Telekom Malaysia learners and 12 Kolej Latihan Telekom staff were selected. The findings were discussed based on the best design factors via-online web learning program, user-friendliness, satisfaction in learning strategies, content satisfaction, learners' ability of understanding the content, motivation, skill and knowledge enhancement and to investigate whether there is any significant differences in the learners' understanding among the beginner, intermediate and advanced learners. The learners' satisfaction towards the developed FOWBL module was highly rated through the overall mean scores obtained for this research and there was a significant difference between the learners' online quiz performance with their knowledge levels when accessing the learning program. This research was a survey research. The researcher implemented both qualitative and quantitative research. Therefore the questionnaires created utilized the Likert scale for valid statistical analysis. Furthermore, interview and online quiz were developed to support the research findings. The data collected pinpoint the weaknesses and strengths of the developed FOWBL program. The research closed with recommendations for the development and use of web-based learning tools that take into account the importance of usability issues in the choice of web-based learning tools and recognition of the situation of learners and educators within real life contexts.

## ABSTRAK

Program pembelajaran berasaskan web membekalkan persekitaran yang dipenuhi pelbagai teknologi untuk menyokong serta meningkatkan proses pembelajaran melalui Internet. Justeru itu, pengkaji berminat untuk membangunkan satu modul, '*Fibre Optics Web-Based Learning*' (FOWBL) serta menilai keberkesanannya. Satu model rekabentuk pengajaran, ADDIE telah dirujuk sepanjang pembangunan modul pembelajaran berasaskan web. Di samping itu, faktor-faktor rekabentuk, yakni multimedia, turut dibincangkan. Kajian ini melaporkan keputusan yang mengkaji keberkesanan modul pembelajaran berasaskan web terhadap pelajar yang berasaskan teknologi. Satu sampel, 24 responden yang terdiri daripada 12 pelajar dari Telekom Malaysia serta 12 kakitangan Kolej Latihan Telekom (KLT) telah dipilih. Item yang dikaji adalah faktor-faktor penting dalam pembangunan halaman web pembelajaran, mesra pengguna, kepuasan dalam strategi pembelajaran, kepuasan dalam maklumat yang disampaikan, kefahaman responden terhadap isi kandungan, motivasi, pengukuhan kemahiran and pengetahuan, serta mengkaji sama ada terdapat perbezaan dalam keputusan kuiz '*online*' responden dengan pengetahuan mereka semasa mengakses kepada FOWBL yang telah dibangunkan. Kajian menunjukkan bahawa responden berpuas hati terhadap FOWBL yang dibangunkan secara keseluruhannya berdasarkan skor min yang didapati, serta terdapat perbezaan dalam keputusan kuiz '*online*' responden dengan pengetahuan mereka. Kajian ini ialah sebuah kajian tinjauan yang melibatkan kedua-dua kaedah kualitatif serta kuantitatif. Oleh yang demikian, soalan-soalan yang dibentuk bagi tujuan pengedaran soal selidik adalah berdasarkan Skala Likert yang sesuai untuk analisis diskriptif statistik. Selain itu, kaedah temubual serta kuiz '*online*' dibangunkan untuk memantapkan lagi hasil kajian. Hasil kajian turut memfokus kepada kelemahan serta kebaikan FOWBL yang telah dibangunkan. Kajian ini diakhiri dengan cadangan untuk pembangunan serta penggunaan web pada masa akan datang

**TABLE OF CONTENTS**

| <b>ITEM</b>                                  | <b>PAGE NUMBER</b> |
|--|--------------------|
| <b>TITLE PAGE</b>                            | <b>i</b>           |
| <b>TESTIMONY</b>                             | <b>ii</b>          |
| <b>DEDICATION</b>                            | <b>iii</b>         |
| <b>ACKNOWLEDGEMENT</b>                       | <b>iv</b>          |
| <b>ABSTRACT (ENGLISH)</b>                    | <b>v</b>           |
| <b>ABSTRAK (MALAY)</b>                       | <b>vi</b>          |
| <b>TABLE OF CONTENTS</b>                     | <b>vii</b>         |
| <b>TABLES USED IN THIS TEXT</b>              | <b>xiv</b>         |
| <b>FIGURES USED IN THIS TEXT</b>             | <b>xvi</b>         |
| <b>LIST OF TERMINOLOGY USED IN THIS TEXT</b> | <b>xviii</b>       |
| <b>LIST OF APPENDIX</b>                      | <b>xix</b>         |

**CHAPTER 1**

|  |     |
|--|-----|
| Introduction                               | 1   |
| 1.1 Research Background                    | 3   |
| 1.2 Problem Statement                      | 5   |
| 1.3 Research Questions                     | 6   |
| 1.4 Research Objectives                    | 7   |
| 1.5 Research Scope                         | 7   |
| 1.6 Theoretical Framework                  | 8   |
| 1.7 Significance of the Research           | 11  |
| 1.8 Limitation                             | 11  |
| 1.9 Conceptual and Operational Definitions | 12  |
| 1.9.1 Web-Based Learning                   | 12  |
| 1.9.1.1 Internet                           | 13  |
| 1.9.1.2 World Wide Web (WWW or W3)         | 13  |
| 1.9.1.3 Technology-Based Learners          | 14  |
| 1.9.2 Web Evaluation                       | 14  |
| 1.9.2.1 User -friendliness                 | 15  |
| 1.9.2.2 Satisfaction                       | 15  |
| 1.9.2.3 Learning Strategies                | 15  |
| 1.9.2.4 Ability In Understanding           | 156 |
| 1.9.2.5 Motivation                         | 16  |
| 1.9.2.6 Interactive Environment            | 17  |
| Summary                                    | 16  |

## CHAPTER II – Literature Review

|         |   |    |
|---------|---|----|
| 2.0     | Introduction  | 18 |
| 2.1     | The Web as a Facilitator of Learning  | 18 |
| 2.1.1   | Definitions of Web  | 19 |
| 2.1.2   | Web-Based Learning Benefits   | 19 |
| 2.1.3   | Web-Based Materials and Learning Styles                                     | 20 |
| 2.1.4   | Limitations in Web-Based Learning Module                                    | 23 |
| 2.2     | Design Factors Best Facilitate Via On-Line Web-Based Learning Module        | 24 |
| 2.2.1   | Simulations   | 25 |
| 2.2.2   | Hypermedia  | 25 |
| 2.2.2.1 | Content Organization  | 26 |
| 2.2.2.2 | Graphic Design  | 27 |
| 2.2.2.3 | Text Presentation   | 28 |
| 2.2.2.4 | Interface Design Issues and Learning  | 28 |
| 2.3     | Effectiveness of The Web-Based Learning Module                              | 29 |
| 2.3.1   | User-Friendliness   | 29 |
| 2.3.2   | Motivation  | 30 |
| 2.3.3   | Knowledge and Skill Enhancement   | 31 |
| 2.3.4   | Satisfaction of Learning Strategies   | 31 |
| 2.3.5   | Content Satisfaction  | 32 |
| 2.4     | Web-Based Learning Module Developed In Malaysia Continuing Education Centre | 32 |

|         |  |    |
|---------|--|----|
| 2.4.1   | Web-Based Learning in Kolej Latihan Telekom Melaka                             | 33 |
| 2.4.2   | Analysis of Organizational Training Needs in<br>Kolej Latihan Telekom Malaysia | 34 |
| 2.5     | Theoretical Framework  | 35 |
| 2.5.1   | An Overview of the ADDIE phases  | 36 |
| 2.5.1.1 | Analyze  | 36 |
| 2.5.1.2 | Design   | 36 |
| 2.5.1.3 | Develop  | 36 |
| 2.5.1.4 | Implement and Evaluate   | 37 |
|         | Summary  | 37 |

### **CHAPTER III – Research Methodology**

|       |                         |    |
|-------|-------------------------|----|
| 3.0   | Introduction            | 38 |
| 3.1   | Research Design         | 38 |
| 3.2   | Research Location       | 40 |
| 3.3   | Research Sample         | 41 |
| 3.4   | Data Collection         | 42 |
| 3.5   | Research Instruments    | 42 |
| 3.5.1 | Interview               | 43 |
| 3.5.2 | Attitude Questionnaires | 43 |
| 3.5.3 | Online Quiz             | 45 |
| 3.5.4 | Pilot Test              | 46 |

|         |  |    |
|---------|--|----|
| 3.6     | Data Analysis  | 47 |
| 3.7     | Research Assumption                                  | 48 |
| 3.8     | Research Chronology                                  | 49 |
| 3.8.1   | Consideration Developing a Web-Based Learning Module | 49 |
| 3.8.1.1 | Didactical Design                                    | 50 |
| 3.8.1.2 | Technical Options                                    | 50 |
| 3.8.1.3 | Subjects Outlines / Module Materials                 | 51 |
| 3.8.1.4 | The Learners   | 51 |
|         | Summary  | 52 |

#### **CHAPTER IV – Product Design and Evaluation**

|         |  |    |
|---------|--|----|
| 4.0     | Introduction                                     | 53 |
| 4.1     | Web-Based Learning Module Development Background | 53 |
| 4.2     | Product Design                                   | 54 |
| 4.2.1   | Product Framework                                | 54 |
| 4.2.2   | Product Styles and Characteristics               | 64 |
| 4.2.2.1 | Design Documents                                 | 69 |
| 4.2.2.2 | Navigation Map                                   | 70 |
| 4.2.3   | Web Development Chronology                       | 70 |
| 4.2.4   | Problems Faced in the Product Development        | 71 |
| 4.2.5   | Material, Cost and Time in Developing Product    | 72 |
| 4.3     | Evaluation Instrument                            | 72 |
|         | Summary  | 73 |

**CHAPTER V – The Findings of The Research**

|       |  |    |
|-------|--|----|
| 5.0   | Introduction                           | 74 |
| 5.1   | Demographic Information                | 75 |
| 5.1.1 | Demographic of Interviewed Respondents | 78 |
| 5.2   | Data Analysis Procedures               | 78 |
| 5.2.1 | Interview                              | 79 |
| 5.2.2 | Attitude Questionnaires                | 79 |
| 5.2.3 | Online Quiz                            | 80 |
| 5.3   | Data Findings and Results              | 81 |
| 5.3.1 | Research Question 1                    | 81 |
| 5.3.2 | Research Question 2                    | 83 |
| 5.3.3 | Research Question 3                    | 84 |
| 5.3.4 | Research Question 4                    | 86 |
| 5.3.5 | Research Question 5                    | 87 |
| 5.3.6 | Research Question 6                    | 89 |
| 5.3.7 | Research Question 7                    | 90 |
| 5.3.8 | Research Question 8                    | 92 |
| 5.4   | Comments and Suggestions               | 93 |
|       | Summary                                | 95 |



**CHAPTER VI – Discussions, Conclusions and Recommendations**

|       |   |     |
|-------|---|-----|
| 6.0   | Introduction  | 96  |
| 6.1   | Discussion and Summary  | 97  |
| 6.1.1 | Design Factors Best Facilitate via On-line<br>Learning Module         | 97  |
| 6.2   | Effectiveness of The Developed FOWBL Module                           | 98  |
| 6.2.1 | User-friendliness   | 98  |
| 6.2.2 | Learning Strategies Satisfaction                                      | 99  |
| 6.2.3 | Content Satisfaction  | 101 |
| 6.2.4 | Ability in Understanding The Content of The<br>Developed FOWBL Module | 102 |
| 6.2.5 | Motivation  | 103 |
| 6.2.6 | Knowledge and Skills Enhancement                                      | 104 |
| 6.3   | Suggestions and Recommendations                                       | 105 |
| 6.3.1 | Web Presentations   | 105 |
| 6.3.2 | Using Multimedia On The Web   | 106 |
| 6.3.3 | Internet Tools  | 107 |
| 6.3.4 | Online Learner Assessment   | 107 |
| 6.3.5 | Future Technologies   | 108 |
|       | Summary   | 109 |
|       | References  | 111 |
|       | Appendix  | 117 |

## TABLES USED IN THIS TEXT

| Table no. | Title   | Page No. |
|-----------|---|----------|
| 2.1       | Events of Instruction and Associated Mental Processes   | 23       |
| 3.1       | Results of The Reliability Analysis According to Main Items   | 46       |
| 3.2       | Data Collection For 8 Research Questions  | 48       |
| 4.1       | Outline of Design Document  | 69       |
| 5.1       | Frequency and Percentage of Respondents Based on Gender, Age Group, Level of Skill and Knowledge in Fibre Optics and Its Application, Job Title and Years of Working Experience | 76       |
| 5.2       | Demographic of The Interviewed Respondents To Answer Research Question 1  | 78       |
| 5.3       | Mean Range For The Result Obtained Through Attitude Questionnaires  | 80       |
| 5.4       | The Level of Understanding According to Marks Range   | 80       |
| 5.5       | Mean Descriptive Statistic for User-Friendliness  | 83       |
| 5.6       | Mean Descriptive Statistic for Learning Strategies Satisfaction   | 85       |

|      |  |    |
|------|--|----|
| 5.7  | Mean Descriptive Statistic for Content Satisfaction            | 87 |
| 5.8  | Quiz Results for 24 Respondents                                | 88 |
| 5.9  | Mean Descriptive Statistic for Motivation                      | 89 |
| 5.10 | Mean Descriptive Statistic for Knowledge and Skill Enhancement | 91 |
| 5.11 | Kruskal Wallis Test Results                                    | 93 |
| 5.12 | Comments and Suggestions on The Developed FOWBL Module         | 94 |

## FIGURES USED IN THIS TEXT

| Figure No. | Title   | Page No. |
|------------|---|----------|
| 1.1        | ADDIE model (Driscoll, 2002)  | 9        |
| 1.2        | Modified Research Stages  | 10       |
| 2.1        | Mediated Learning is a faculty-guided, learner-centred approach that individualizes the learning environment. | 22       |
| 2.2        | Linear Design   | 26       |
| 2.3        | Tree Structure  | 26       |
| 2.4        | Network Structure   | 27       |
| 2.5        | Popular navigation metaphors  | 29       |
| 2.6        | ADDIE model   | 35       |
| 3.1        | Example of Modified Likert Scale  | 44       |
| 4.1        | Framework of The Web Development  | 55       |
| 4.2        | Lesson Outlines: Introduction to Fibre Optics   | 57       |
| 4.3        | Lesson Outlines: Types and Properties of Optical Fibres   | 58       |
| 4.4        | Lesson Outlines: Light Sources, Transmitters and Receivers  | 59       |
| 4.5        | Lesson Outlines: Repeaters, Regenerators and Optical Amplifiers   | 60       |
| 4.6        | Lesson Outlines: Connectors and Splices   | 61       |

|      |   |    |
|------|---|----|
| 4.7  | Lesson Outlines: Optical Coupler and Switches     | 62 |
| 4.8  | Lesson Outlines: Optics in Communication Services | 63 |
| 4.9  | The Main Menu                                     | 64 |
| 4.10 | The Log On Screen Tutorial                        | 65 |
| 4.11 | The Quiz  | 66 |
| 4.12 | Quiz Summary                                      | 67 |
| 4.13 | The Video Clips                                   | 68 |

**LIST OF TERMINOLOGY USED IN THIS TEXT**

|       |   |  |
|-------|---|--|
| ADDIE | - | Analyze, Design, Develop, Implement & Evaluate |
| CD    | - | Compact Disc                                   |
| FAQ   | - | Frequently Asked Question                      |
| FOWBL | - | Fibre Optics Web-Based Learning                |
| HTML  | - | Hypertext Markup Language                      |
| HTTP  | - | Hypertext Transfer Protocol                    |
| ISP   | - | Internet Service Provider                      |
| OEQ   | - | Open-Ended Question                            |
| PC    | - | Personal Computer                              |
| R     | - | Respondent                                     |
| SPSS  | - | Statistical Package for Social Science         |
| URL   | - | Uniform Resource Location                      |
| VRML  | - | Virtual Reality Modelling Language             |
| WWW   | - | World Wide Web                                 |

**LIST OF APPENDIX**

|  |     |
|--|-----|
| Appendix A : Attitude Questionnaires                       | 117 |
| Appendix B : Results of Pilot Testing Reliability Analysis | 125 |
| Appendix C : Analysis Data (Descriptive Statistics)        | 130 |
| Appendix D : Kruskal-Wallis Test Result                    | 131 |
| Appendix E : Needs Analysis Interview Transcript           | 133 |
| Appendix F : Interview Transcript for Research Question 1  | 136 |
| Appendix G : Online Quiz                                   | 139 |
| Appendix H : Pilot Implementation Checklist                | 147 |

## CHAPTER I

### Introduction

Today, most people think of the World Wide Web as an ideal environment for information publishers. Why use the web? “The Internet is a network that links together computer situated across the world. This is introduced as a development in computer network technology.” (Eaglestone & Ridley, 2001, pg. 20) Driscoll (2002) strongly mentioned that studies suggest that web-based training will be central to the design and delivery of workplace learning in the 21<sup>st</sup> century. “The harsh reality for the 21<sup>st</sup> century if you don’t have access to PCs and the Internet, you won’t participate in communication, education, entertainment and commerce.” (Einstein, 1998, quoting Mark Benioff, senior vice president at Oracle in Beer, 2002). Benioff’s comment is a call to action for educators to implement web-based learning environment to the traditional learning environment. Universities used it to disseminate administrative and marketing information to faculty, students and alumni. Commercial used of the WWW is growing phenomenally as companies, large and small marketing their products and services.

But the WWW, in combination with other Internet tools such as Usenet Newsgroups, Email and Telnet, can be an interactive learning environment as well. And the creative implementation of these tools makes the WWW and ideal environment for distributed learning and provides individualized self-paced learning. It promises dramatic changes in the way we learn and teach, the way we interact as a society. In higher education, most students have access to Internet resources. In organization, Internet is used as a medium to deliver training and learning sources to staff. Although on-line learning is not actually new – it has been around since the 1960s. It is the Internet’s user-friendly interface, coupled with improved technology, that has brought the Web into the mainstream of current culture. (Stone