

**E-LEARNING MANAGEMENT SYSTEM FOR
KING SAUD UNIVERSITY**

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**KOLEJ SASTERA DAN SAINS
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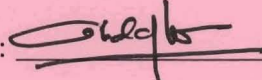
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E-LEARNING MANAGEMENT SYSTEM FOR KING SAUD UNIVERSITY

**A report submitted to Dean of the Awang Had Salleh Graduate School of Arts
and Science in partial fulfillment of the requirements for the degree Master of
Science (ICT) Universiti Utara Malaysia**

By

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ABSTRACT

The purpose of this study is to develop an e-learning management system for King Saud University to be as a basis to develop an e-learning management system and to assist the lecturers in managing the learning materials with the students. To develop such system, the general methodology has been used and developed using java programming (JSP) which facilitates good design and services. Questionnaire has been used as a usability technique for purpose of evaluating the system in terms of visibility of system statues and contents, learnability and accessibility, flexibility and efficiency of use, usefulness, and effectiveness and satisfaction. The evaluation reveals that 86.56% of the participants indicated that the prototype effectiveness and satisfaction which is high and agreed altitude.

Dedication

*This thesis is dedicated to
my beloved parents, husband and family
Thanks for all the encouragement and support*

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By the Name of Allah, the Beneficent and Merciful

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CHAPTER ONE

1. INTRODUCTION

The internet is the largest, most powerful computer network in the world. It encompasses several million computers with internet addresses that are used by millions of people around the world. As increasingly more colleges, universities, elementary and secondary schools, companies and private citizens connect to the internet, more possibilities are opened for distance educators to overcome time and distance to reach students. Through the internet, all sources of information on different subjects are available anytime and anywhere (Manochehr, 2006).

According to Alshehri (2010) E-Learning is the process where learning and teaching are imparted by using all sorts of electronically enabled technologies, both the Information and communication systems coordinate to impart E-Learning. E-Learning system generally is located logically at many locations. E-Learning systems allow multiple users or applications to download, upload and exchange distributed Information from different location of the world.

E-Learning comprises of applications which includes Web-based learning, computer-based learning, virtual classroom, and digital collaboration essentially the computer and network-enabled transfer of skills and knowledge (Manochehr, 2006). Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text,

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References

- Abdulkarim, M. R., & Hashim, Y. (2004). The Experience of the E-Learning Implementation at the Universiti Pendidikan Sultan Idris, Malaysia. *Malaysian Online Journal of Instructional Technology*, 1(1), 50-59.
- Abualieah, A. (2003). *Saudi's History*. Riyadh: Dar Almereak Publications.
- Acharya, A. A., Mohapatra, D. P., & Panda, N. (2010). Model Based Test Case Prioritization for Testing Component Dependency in CBSD Using UML Sequence Diagram. *International Journal of Advanced Computer Science and Applications-IJACSA*, 1(6).
- Ahmed, S., Buragga, K., & Ramani, A. (2011). Security Issues Concern for E-Learning by Saudi Universities. *ICACT2011*, 1579-1582.
- Aldraiby, O. (2010). E-learning and Its Effectiveness in Saudi Arabia. Retrieved February 5, 2012 from <http://www.scribd.com/doc/27032197/E-Learning-and-Its-Effectiveness-in-Saudi-Arabia>
- Algahtani, A. (2007) Library to Learning Resource Centre in Riyadh s Government Secondary Schools for Boys: An Evaluation of Whether Goals Have Been Met, from the Point of View of LRC Specialists , MA Dissertation, UK: Nottingham University.
- Alhageel, S. (1996). *System of Education Policy in Kingdom of Saudi Arabia* (9th ed.). Riyadh: King Fahad Library.

- Aljumaah, A. (2010). Modeling Students Acceptance of E-Learning: A case of the KS university. *IEEE. Digital Information Management (ICDIM), 2010 Fifth International Conference on 5-8 July 2010*, 460 – 464
- Alshehri, A. (2010). E-learning in Saudi Arabia: To E or not to E, that is the question. *Journal of family and community medicine*, 17(3), 147-150.
- Atle, K. S. (2008). Extending UML Sequence Diagrams to Model Trust- dependent Behavior with the Aim to Support Risk Analysis, *Journal of Electronic Notes in Theoretical Computer Science*, 197(2) 15-29.
- Barclay, K., & Savage, J. (2004). *Object-Oriented design with UML and Java*. Burlington, USA: Elsevier Butterworth-Heinemann.
- Bennett, S., McRobb, S., & farmer, R. (2002). *Object-oriented System Analysis and Design 2nd Edition*. UK, McGraw Hill.
- Chung, L., & Leite, D. P. (2009). On non-functional requirements in software engineering. *Conceptual modeling: Foundations and applications*, 363-379.
- Cravener, P. (1998). UEducation on the Web: a rejoinder. *Computer internet watch*, 31(9), 107 - 108.
- Dennis, A., Wixom, B.H., & Tegarden, D. (2005). *System analysis and design with UML version 2.0: an object-oriented approach with UML*, 2nd edition. Hoboken, NJ: John Wiley and Sons, Inc.
- Edwards, R., & Usher, R. (2001). Lifelong Learning: A Postmodern Condition of Education?. *Adult Education Quarterly*, 51(4), pp. 273-287.

- Egeberg, M. (2006). *The mobile phone as a contactless ticket*. Master's thesis, Norwegian University of Science and Technology, Norway.
- Elaasar, M., & Labiche, Y. (2011). Diagram definition: a case study with the UML class diagram. *Model Driven Engineering Languages and Systems*, 364-378.
- Ellis, R. K. (2009). *Field Guide to Learning Management Systems*. American Society for Training & Development (ASTD). Retrieved January 24, 2012 from http://www.astd.org/NR/rdonlyres/12ECDB99-3B91-403E-9B15-E597444645D/23395/LMS_fieldguide_20091.pdf
- Jabarti, S., & Aboud ,G. (2004, December). Heavy School Bags Cause Distress to Children. Arabnews. Retrieved January 28, 2012 from <http://webcache.googleusercontent.com/search?q=cache:uCQTW5k6dYQJ:archive.arabnews.com/%3Fpage%3D1%26section%3D0%26article%3D55365%26d%3D1%26m%3D12%26y%3D2004+Jabarti,+Somayya+Heavy+School+Bags+Cause+Distress+to+Children+pdf&cd=1&hl=en&ct=clnk&gl=my>
- Johan, K. (2004). Information system analysis and design. Retrieved May 1, 2012, from <http://www.cs.toronto.edu/jm/3405/slides2/sequenceD.pdf>.
- Hallett, H. M., & Ho, H. W. (2008). Catch Me I'm Falling. Using technology to assist educationally disadvantaged students: A case study on the Western region of Melbourne, Australia. *International Journal of Education and Development using Information and Communication Technology*, 4(2), 47-59.

- Hasling, B., Goetz, H., & Beetz, K. (2008). *Model based testing of system requirements using UML use case models*. Paper presented at the 1st International Conference on Software Testing, Verification, and Validation, Lillehammer.
- Hoffer, J. A., George, J. F & Valacich, J. S. (2002). *Modern Systems Analysis and Design (3rd ed.)*. Upper Saddle River, New Jersey: Prentice Hall.
- Holzinger, A. (2005). Usability Engineering Methods for Software Developers. *ACM*, 48(3), 4.
- IEEE Std 830. (1998). IEEE Recommended practice for Software Requirements Specifications.
- Internet World Stats (2012). Saudi Arabia Internet Usage and Marketing Report. Retrieved 10th February, 2012 from: <http://www.internetworldstats.com/me/sa.htm>
- Jivan, E. & Gruner, S. (2009). Tool support for more precise use-case specifications. In *Proceedings of Warm-Up Workshop for ACM, WUP/ISS 2009*, held on April 1-3, 2009 at Cape Town, South Africa (pp. 29-32). Cape Town: ACM.
- Kandies, J., & Stern, M. (1999). Weaving the Web into the classroom: An evolution of Web enhanced instruction. *Society for Information Technology & Teacher Education International Conference (10th, San Antonio, TX, February 28-March 4, 1999)*. pp. 1-7.

- Kern, J., & Garrett, C. (2003). Effective Sequence Diagram Generation: Effective Use of Options with Borland Together Technologies. Retrieved May 7, 2012, from http://www.borland.com/resources/en/pdf/white_papers/20263.pdf
- Krishnan, H., & Samuel, P. (2010). Relative Extraction Methodology for Class Diagram Generation using Dependency Graph. In *Proceedings of the International Conference on Communication, Control and Computing Technologies, ICCCT 2010*, held on October 7-9, 2010 at Kanyakumari, Tamilnadu. pp. 815-820. Tamilnadu: IEEE.
- Lund, A. M. (2001). Measuring usability with the USE questionnaire. *STC Usability SIG Newsletter: Usability Interface*, 8(2).
- Maciaszek, L. A. (2007). *Requirement Analysis and System Design* (3 ed.). AddisonWesley: Pearson Education.
- Mangalwede, S. R. & Rao, D. H. (2009, January). Context-Aware Intelligent MultiAgent Technology in Knowledge Grid Environments for E-Learning Systems. *International Conference on Advances in Computing, Communication and Control (ICACr09)*. ICAC3'09, 257-263.
- Manochehr, N. (2006). The Influence of Learning Styles on Learners in E-Learning Environments: An Empirical Study. *Computers in Higher Education Economics Review*, 18(1). pp. 10-14.
- Merron, J. L. (1999). Managing a Web-based Literature Course for Undergraduates. Retrieved June 10, 2012 from

<http://www.webct.com/service/ViewContent?contentID=11751&communityID=-1&categoryID=-1&sIndex=0>

Mirza, A. (2008). Is E-Learning Finally Gaining Legitimacy in Saudi Arabia?.

Retrieved January 25, 2012

from http://www.google.com.my/url?sa=t&rct=j&q=elearning%20finally%20gaining%20legitimacy%20in%20saudi%20arabia%3F%20.doc&source=web&cd=1&ved=0CCIQFjAA&url=http%3A%2F%2Ffaculty.ksu.edu.sa%2Famirza%2FMyPublications%2FIs%2520elearning%2520finally%2520gaining%2520legitimacy%2520in%2520Saudi%2520Arabia.doc&ei=ZXs6T8aoCYHJrQfw8bnaCA&usg=AFQjCNFUsQXz0hE4nrX7FGPifg_xHch0Ng

Ministry of Education (MOE). (2008) *At Tawthig Attarbawi*, Riyadh: MOE press.

Nielson, J. (2006). Quantitative Studies: How many users to test Alertbox. Retrieved

April 28, 2012, from http://www.useit.com/alertbox/quantitative_testing.html.

Sait, S. M. (2003). Perceptions about eLearning in Saudi Arabia. King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, April 2003.

Retrieved February 12, 2012

from <http://faculty.kfupm.edu.sa/coe/sadiq/richfiles/rich/ppt/Perceptions%20about%20eLearning%20in%20Saudi%20Arabia.ppt>

Ministry of Higher Education (MOHE). (2009) *Saudi Arabia: Basic Higher Education Statistics .Saudi Arabia*, Riyadh: MOHE Press.

Rubin, H. J. & Rubin, I. S. (2005). *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage.

Satzinger, V. W., & Burd, S. D. (2005). *Object-Oriented Analysis and Design*: Thomson Course Technology.

Vaishnavi, V. & Kuechler, W. (2008). *Design science research methods and patterns innovating information and communication technology research in information systems*. New York: Auerbach.

Victoria University (2010). Learning and teaching portal. Retrieved June 11, 2012 from <http://tls.vu.edu.au/portal/site/technology/blackboard.aspx>

Whitten, J. L., Bentley, L. D. & Diltman, D.C. (2001). *System Analysis and Design Method* (5 ed.). Boston: McGraw-Hill Education.

Yi, T., Wu, F., & Gan, C. (2005). A comparison of metrics for UML class diagrams.

ACM SIGSOFT Software Engineering Notes, 29(5). 1–6.