

以科技接受模型探討應用MOODLE於自由軟體教學之學習滿意度及學習成效之研究

陳騰龍、晁瑞明

E-mail: 9606903@mail.dyu.edu.tw

摘要

資訊科技進步，數位學習興起，建立高滿意度的數位學習系統，提昇學習成效，已成教育的新趨勢。網路學習環境的學習滿意度及成效皆與教學平台、操作介面等特性息息相關，而網路教學設計更關乎於學習者的學習意願及成效，其重要性不言而喻。Moodle因為自由、開放及功能強大的特性，廣泛為高等教育所採用，並日漸為中小學所接受，因此，瞭解影響學習者對Moodle系統學習滿意度及學習成效之相關因素，為中小學教育單位所關注之重要議題。故本研究以學習者認知觀點的角度出發，運用科技接受模型理論並加入系統品質、教材品質、電腦自我效能作為研究架構之基礎，採立意抽樣，以351位國中學生為研究樣本，實施實驗教學及問卷調查法，以探討影響學習者在Moodle學習系統中影響學習滿意度及學習成效之關鍵因素。研究結果發現：(1)認知有用性為影響學習滿意度之關鍵因素；學習滿意度主要影響學習成效的情意成績；(2)教材品質為影響認知有用性之最重要因素；(3)性別對學習成效有顯著影響，女性學習者之學習成效明顯高於男性學習者；(4)有類似系統使用經驗之學習者之學習態度、學習滿意度、電腦自我效能均顯著高於無經驗之學習者。

關鍵詞：科技接受模型；學習滿意度；學習成效

目錄

中文摘要	iii	英文摘要	iii
iv 誌謝辭	v	內容目錄	v
vi 表目錄	vii	圖目錄	vii
x 第一章 緒論	1	第一節 研究背景與動機	1
1 第二節 研究目的	4	第三節 研究範圍與限制	4
5 第四節 研究流程	6	第二章 文獻探討	6
7 第一節 數位學習(e-learning)	7	第二節 自由軟體(Free Software)	7
10 第三節 Moodle 數位學習系統	14	第四節 科技接受模型(Technology Acceptance Model, TAM)	17
21 第六節 學習態度(Learning Attitude)	28	第五節 外部變數	17
30 第八節 學習成效	31	第七節 學習滿意度	17
32 第一節 研究模型與研究假設	32	第三章 研究方法	31
37 第三節 問卷設計	38	第一節 研究模型與研究假設	32
43 第五節 統計分析與方法	49	第二節 變數定義與衡量	37
52 第四章 研究結果分析	55	第三節 研究實驗設計	43
55 第二節 因素分析與信度分析	58	第四節 前測施行與結果分析	52
65 第四節 差異分析	76	第五章 樣本基本資料分析	55
79 第五節 小結	79	第一節 路徑分析與假設檢定	65
81 第一節 研究發現與結論	81	第二節 小結	79
85 第三節 後續研究建議	86	第五章 結論與建議	81
88 附錄 A 研究問卷	98	第一節 研究發現與結論	81
		第二節 管理與實務意涵	85
		第三節 後續研究建議	86
		參考文獻	86

參考文獻

江世勇(2004)。L D A P 分散式認證架構下之開放原始碼教學網站建置與導入-以高職為例，雲林科技大學資訊管理系碩士論文。余泰魁、楊淑斐(2005)。線上學習系統使用意向之模式建構與比較分析研究，台灣管理學刊，5(2)，311-338 李青蓉、魏丕信、施郁芬、邱昭彰(1998)，人機介面設計，臺北:空大。李美慧(2001)。科技接受模式在非同步網路學習系統使用意向之應用，國立中正大學資訊管理系碩士論文。周斯畏、孫思源、朱思明(2000)。遠距教學的應用-進修推廣教育教師與學員的探索性研究，中華管理評論，第2期，第123-134頁。林寶山(1995)。教學論 理論與方法。台北市:五南。林寶貴、錡寶香(1991)，高職階段聽障學生學習態度成就動機及其學業成就之相關研究，台灣師範大學特殊教育研究所碩士論文。馬芳婷(1989)。社教機構短期研習班教師教學行為與學生學習滿意度之研究，國立台灣師範大學社會教育研究所碩士論文。高廣孚(1995)。教學原理。台北:五南。張春興(1989)。張氏心理學辭典。台北市:東

華。張春興(1992)。現代心理學，臺北：五南。許正妹(2005)。如何看網路大學教學平台之設計——建構式的觀點。國立雲林科技大學設計論壇，003，2005年11月20日，取自 http://72.14.203.104/003/pdf/003_002.pdf 黃翊軒、許邦彥、張百棧、鐘雲恭，(民92)。非同步www多媒體遠距教學環境的建置。第十四屆物件導向技術及應用研討會。黃興燦(2003)。建構數位化學習的教育環境，國家政策季刊，第二卷 第一期(2003.3)，第115-130頁。黃繼弘(2002)。線上學習內容提供業者的經營風險與因應策略，元智大學資訊傳播研究所碩士論文。楊惠合(2004)。以科技接受模型探討數位學習滿意度之研究，大葉大學資訊管理研究所碩士論文。謝靜慧(民90)。國民中小學教師之電腦焦慮、電腦自我效能、電腦因應策略與電腦素養之相關研究。國立中山大學教育研究所碩士論文。譚景平(民92)。數位學習概論。數位學習最佳指引(頁1-1 1-24)。資策會教育處。Agarwal, R. and Prasad, J. (1998), The antecedents and consequents of user perceptions in information technology adoption. *Decision Support Systems*, Vol. 22, pp. 15-29. Bailey, J. E. and Pearson, S. W. (1983), Development of a Tool for Measuring and Analyzing Computer User Satisfaction. *Management Science*, Vol. 29, pp. 530-545. Bandura, A. (1997). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review* (84), 191-215. Bandura, A., Self-efficacy: Toward a Unifying Theory of Behavior Change, *Psychological Review*, 84, 1977, 191-215. Bandura, A., *Social Foundations of Thought and Action: A Social Cognitive Theory*, Englewood Cliffs, New Jersey: Prentice-Hall, 1986, 390-453. Binner, P. M., Dean, R. S., and Millinger, A. E. (1994), "Factors underlying distance learner satisfaction", *The American Journal of Distance Education*, Vol. 4, pp. 232-238. Burns, J., Clift, J., and Duncan, J. (1990), "Understanding of Understanding: Implications for Learning and Teaching", *British Journal of Educational Psychology*, Vol. 61, pp. 276-289. Casarotti, M., Filipponi, L., Pieti, L., and Sartori, R. (2002) "Educational Interaction in Distance Learning: Analysis of a One-Way Video and Two-Way Audio System", *PsychNology Journal*, Vol.1. <http://www.psychology.org/casarotti.pdf> Cassarino, C. (2003), "Instructional design principles for an eLearning Environment A call for definitions in the field", *The Quarterly Review of Distance Education*, 4(4), pp.455-461 Collis, B. (1995). Anticipating the impact of multimedia in education: Lessons from the literature. *Computers in Adult Education and Training*, 2(2), 136-149. Compeau, D. R., and Higgins C. A. (1995a). Application of social cognitive theory to training for computer skill. *Information Systems Research*, 6(2), 118-143. Compeau, D. R., & Higgins, C. A. (1995b). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, 19, 189-211. Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(2), 297-334. Cronbach, L. J., & Snow R.E. (1997). *Aptitude and Instructional Methods: A Handbook for Research On Interaction*, New York: Irvington. Davis, D. L., & Davis D. F. (1990). The Effect of Training Techniques and Personal Characteristics on Training End Users of Information Systems. *Journal of Management Information System*, 7(2), 93-110. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 319-340. DeLone, W. H., & McLean, E. R. (1992). *Information Systems Success: The Quest for the Dependent Variable*. *Information Systems Research*, 3(1), 60-95. Devellis, R.F. (1991). *Scale Development Theory and Applications*. New York: SAGE. Fishbein, M., & Ajzen, I. (1972). Attitudes and normative beliefs as factors influencing behavioral intentions. *Journal of Personality & Social Psychology*, 21, 1-9. Gist, M. E., & Mitchell, T. R. (1992). Self-efficacy: A theoretical analysis of its determinants and malleability. *Academy of Management Review*, 17(2), 183-211. Gist, M. E. (1987). Self-efficacy: Implications for organizational behavior and resource management. *Academy of Management Review*, 12(3), 472-485. Gist, M. E., Schwoerer, C., & Rosen, B. (1989). Effects of alternative training methods on self-efficacy and performance in computer software training. *Journal of Applied Psychology*, 74(6), 884-891. Goodhue, D. L., and Thompson, R. L. (1995), "Task-Technology Fit and Individual Performance", *MIS Quarterly*, Vol. 19, pp. 213-236. Govindasamy, T. (2002), "Successful implementation of e-Learning pedagogical considerations". *Internet and Higher Education*, 4(3/4), pp.287-299. Hamby, C. S. (1986), "A study of the effects of computer assisted instruction on the attitude and achievement of vocational nursing students", *Computers in Nursing*, Vol. 4, pp. 109-113. Hill, K. H. J., *Adult Computer Literacy*. ERIC Document Reproduction Service, No. ED 264376, 1985. Hill, T., Smith, N. D., & Mann, M. F. (1987). Role of efficacy expectations in predicting the decision to use advanced technologies: The case of computers. *Journal of Applied Psychology*, 72(2), 307-313. Holmberg, B. (1983), "Guided didactic conversation in distance education", In Sewart, D. et al. (eds.): *Distance Education. International Perspectives*, London: Croom Helm. Hong, K.-S., Ridzuan, A. A., & Kuek, M.-K (2003). Students' attitudes toward the use of the Internet for learning: A study at a university in Malaysia. *Educational Technology & Society*, 6(2), 45-49 Igbaria, M. and J. Iivari (1995a). "The effects of self-efficacy on computer usage", *Omega*, 23(6), pp.587-605. Jonassen, D. H. (1999). Designing constructivist learning environment. In C. M. Reiguluth (Ed.), *Instructional design theories and models: A new paradigm of instructional theory*. Mahwah, NJ: Lawrence Erlbaum Associates. 215-239 Kaiser, H.F., "An index of factorial simplicity", *Psychometrika* [39], 1974, 31-36. King, F., Nelson, J. G., and Restauri, S. (2002), "Reaching the Distant Learner: The Evolutionary Process", *Education*, Vol. 122, pp. 667-370. Moore, M. G. (1989), "Three types of interaction, A presentation of the NUCEA Forum: Issues in Instructional", *Interactivity*, National University Continuing Education Association Annual Meetings. Knowles, M. S. (1970). The modern practice of adult education: Andragogy versus pedagogy and the learning organization: examining the connection between the individual and the learning environment. *Human Resource Development Quarterly*, 9(4), 365-375 Koohang, A. A. (1989), A Study of the Attitudes toward computers: anxiety, confidence, liking, and perception of usefulness. *Journal of Research on Computer in Education Computing Research*, 22(2), 237-250 Marakas, G.M., Yi, M.Y. and Johnson, R.D. (1998), "The Multilevel and Multifaceted Character of Computer Self-efficacy: Toward Clarification of the Construct and An Integrative Framework for Research. *Information System Research*, (9:2), pp.126-163. Marilyn E. Gist, Catherine Schwoerer & Benson Rosen, Effects of Alternative Training Methods on Self_Efficacy and Performance in Computer Software Training, *Journal of Applied Psychology*, 1989, Vol.74, No.6, 884-891. Martin, C. L. (1988). Enhancing children's satisfaction and participation using a predictive regression model of bowling performance norms. *The Physical Educator*, 45(4), 196-209 Mathieson, K. (1991), "Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior", *Information Systems*

Research, Vol. 2, pp. 173-191. Moore, M. & Kearsley, G. (1996). Distance education: A system view. Belmont, CA: Wadsworth Publishing Company. Murphy, C.A., D. Coover, and S.V. Owen (1989). "Development and validation of the computer self-efficacy scale," Educational and Psychological Measurement, 49, pp.893-899. Nunally, J. C. (1978). Psychometric Theory, 2nd ed. New York : McGraw-Hill. Piccoli, G., R. Ahmad, and B. Ives (2001), "Web-based virtual learning environments: A research framework and a preliminary assessment of effectiveness in basic IT skills training", MIS Quarterly, 25(4), pp.401-426. Radner, R. & Rothschild, M. (1975). On the Allocation of Effort. Journal of Economic Theory, 10,358-376. Rossett, A. (Ed.). (2002). The ASTD e-Learning Handbook: Best Practices, Strategies, and Case Studies for an Emerging Field. New York: McGraw Hill. Reynolds R. (2004). XplanaZine. Retrieved March 27, 2005. Form <http://www.xplanazine.com/> Schiffman, L. G., & Kuauk L. L. (1994). Consumer Behavior. Englewood Cliffs : Prentice - Hall, Inc. Schifter, C. C., "Faculty participation in asynchronous learning networks: A case study of motivating and inhibiting factors". JALN, 4(1), (2000). [Online]. Available: http://www.aln.org/alnweb/journal/Vol4_issue1/schifter.htm. Taylor, J. C. (1996), "Perspectives on the Education Uses of -101- Technology", Vol. 2, pp. 18-26. Trace, A. U., and Cornelia, C. W. (2000), "Corporate e-learning : exploring a new frontier", WR Hambrecht Co. Venkatesh, V., & Davis, F. D.(1996)A model of the antecedents of perceived ease of use: Development and test. Decision Sciences, 27(3), 451. Webster, J., and Hacklery, P. (1997), "Teaching Effectiveness in Technology Mediated Distance Learning" , Academy of Management Journal, Vol. 40, pp. 1282-1309. Webster, J., and Hacklery, P. (1997), "Teaching Effectiveness in Technology Mediated Distance Learning", Academy of Management Journal, Vol. 40, pp. 1282-1309. Webster, J., Martocchio, J.J., 1992. Microcomputer playfulness: development of a measure with workplace implications. MIS Quarterly 16 (2), 201-226. Weinstein, C. E. (1982), "Training students to use elaboration learning strategies", Contemporary Educational Psychology, Vol.7, pp. 301-311. Woodrow, J. E. J. (1992), "The influence of programming training on the computer literacy and attitudes of preservice teachers", Journal of Educational Computing Research, Vol. 25, pp. 165-187. Zona Research (1999), "The Economic Impacts of Unacceptable Web-Site Download Speeds", Zona Research, Inc.