

A Research of the Combine Multimedia System in the Computer Assisted Instruction

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ABSTRACT

With the progress of the technology, new demands and application increase constantly, and the static words and pictures can not make people content anymore. The vivid sounds, images, and video function are highly demanded day by day. Therefore, the multimedia that can satisfy the vision and hearing are more and more valued. Hence, through the Field Research, this study collected the data from the process of developing the integrated multimedia system, combined the human-computer interaction (HCI), designed the questionnaire according to the integrated principle, acquired the assessment basis of developing the system, and took the technology acceptance model (TAM) to be the indexes of utility and accessibility to evaluate a user's cognitive attitude for the integrated multimedia system. The result of the study is that, through the test and amendment of the system, the cognitive degree on the utility and accessibility heightens comparatively.

Keywords : Field Research ; Human-Computer Interaction, ; Technology Acceptance Model

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REFERENCES

- 一、中文部份 小松原明哲(1992), 對話型認知人間工學設計, 東京, 技報堂出版。朱延平(1995), 多媒體軟體的教學應用, 教育資料與研究, 3, 35-36。宋曜廷、張國恩、侯惠澤(2005), 資訊科技融入教學, 借鏡美國經驗, 反思台灣發展, 教育研究集刊, 51(1), 31-62。吳明隆(2000), SPSS統計應用實務, 松崗電腦圖書資料股份有限公司。沈亦珍(1957), 視聽教育的理論與實際, 台北市, 復興書局。徐新逸、吳佩謹(2002), 資訊融入教學的現代意義與具體作為, 教學科技與媒體, 59, 63-73。林宇玲(2003), 從行動者網絡理論來看電腦輔助教學教室--以性別與媒體課程的教室實踐為例, 教育科技與媒體, 66, 35-47。柯建志(2005), 情境設計與使用者中心設計於發展互動系統之比較性研究。國立交通大學傳播研究所碩士論文。張明裕、嚴清宏(2006), 電子商務與數位生活研討會, 知識管理、數位學習與其他相關課題--新媒體對於教室授課行為之影響。羅秀芬(1989), 緒論, CAI課程軟體編製技術手冊, 1-5。二、英文部份 Bass, L. & John, B. E. (2003). Linking usability to software architecture patterns through general scenarios. The Journal of Systems and Software, 66, 187-197. Beyer, H. & Holtzblatt, K. (1998). Contextual Design: Defining Customer-Centered Systems. San Francisco, California: Morgan Kaufmann

Publishers, Inc. Boivie, I., Aborg, C., Persson, J., & Lofberg, M. (2003). Why usability gets lost or usability in in-house software development. *Interacting with Computers*, 15, 623-639.

Butto, M., Cavallero, E., & Tonietti, A. (1991). Effectiveness of the Leaky Bucket Policing Mechanism in ATM Networks, *IEEE J. Select. Areas Commun.*, 9, 335-42.

Buur, J. & Bodker, S. (2000). From usability Lab to Design Collaboratrium: Reframing usability practice. *Proceedings of the conference on Designing interactive systems: processes, practices, methods, and techniques*. 297-307.

Carroll, J. M. (1997). Human-computer interaction: psychology as a science of design. *International Journal of Human-Computer Studies*, 46,501-522.

Carroll, J. M. & Thomas, J. C. (1982). Metaphor and the cognitive representation of computing systems. *IEEE Transactions on Systems, Man and Cybernetics*, 12, 247-255.

Cox, K. & Walker, D. (1993). *User interface design* (2nd, ed.), Pren-tice Hall.

Davis, F. D. (1989) Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13:(3), 319-340.

Dayton, T., Tudor, L., & Root, R. (1994). Bellcores user-centered design support center. *Behaviour & Information Technology*, 13 (1-2), 57-66.

Depaula, R.(2003). A new era in human computer interaction: the challenges of technology as a social proxy. *Proceedings of the Latin American conference on Human-computer interaction*, 219-222.

Dexter, S. L, Anderson, R. E., &Becker, H. J. (1999). Teachers views of computers as catalysts for changes in their teaching practice. *Journal of Research on Computing in Education*, 31(3), 221-239.

Dias, L. B. (1999). Integrating technology: some things you should know. *Learning & Leading with Technology*, 27 (3), 10-21.

Folmer, E. & Bosch, J. (2004). Architecting for usability: a survey. *The Journal of Systems and Software*, 70, 61-78.

Gary Marchionini (1995). *Information Seeking in Electronic Environments* New York: Cambridge University Press, 100.

Gefen, D. & Keil, M. (1998). The impact of developer responsiveness on perceptions of usefulness and ease of use: an extension of the technology acceptance model. *ACM SIGMIS Database*, 29(2), 35-49.

Hartson, H.R.(1998). *Human-computer interaction: Interdisciplinary roots and trends*. *The Journal of Systems and Software*, 43, 103-118.

Heinich, R., Molenda, M., & Russell, J. D. (1988). A Survey on IST use in the world. A Paper presented at AECT Convention in New Or-leans. On Jan. 16.

Holcomb, R. & Tharp. (1991). What users say about software usability. *International Journal of Human-Computer Interaction*. 3, 49-78.

Irestig, M., Eriksson, H. & Timpka T. (2004). The Impact of participation in information system design: A comparison of contextual placements. *Proceedings of the eighth conference on Participatory design: Artful integration: interweaving media, materials and practices - Volume 1*.

Jain, R. (1990), *Congestion Control in Computer Networks: Issues and Trends*, *IEEE Network*, 24-30, May.

Kantner, L., Sova, D. H. & Rosenbaum, S. (2003). Alternative methods for field usability research. *ACM 21st International Conference on Computer Documentation*, 68-72.

Kensing, F., Simonsen, J. & Bodker, K. (1998). MUST: A method for participatory design. *Human-Computer Interaction*, 13, 167-198.

Kujala, S. (2003). User involvement: a review of the benefits and challenges. *Behavior & Information Technology*, 22(1), 1-116.

Lederer, A. L., Maupin, D. J., Sena, M. P., & Zhuang Y. (1998). The role of ease of use, usefulness and attitude in the prediction of World Wide Web usage. *Proceedings of the 1998 ACM SIGCPR conference on Computer personnel research*, 195-204.

Maresca, P. & Guercio, A. (2000). Logical approach for the construc-tion of tool for multimedia representation and simplifica-tion. *World Multiconference on Systemic, Cybernetic and information*, (July), 23-26, Orlando Florida.

Mayer, R. E., Steinhoff, K., Bower, G., & Mars, R. (1995). A generative theory of extbook design: Using annotated illustrations to foster meaningful learning of science text. *Educational Technology Research and Development*, 43(1), 31-43.

Mayer, R. E. (1997). Multimedia learning: Are we asking the right questions? *Educational Psychologist*, 32(1), 1-19.

Mehaoua, A., & Boutaba, R. (1997) A Hybrid VBR/ABR Service for Scal-able MPEG2 Video Networking: ASimulation-based Analy-sis, *Proc. IEEE BSS '97*, 88-95, Taipei, Taiwan, Dec.

Mehlinger, H. D. (1996). School reform in the information age. *Phi Delta Kappan*, 77(6), 400-407.

Moursund, D. (1996). *The technology coordinator*. Eugene, Oregon: International Society for Technology in Education.

Nielsen, J. (1993). *Usability Engineering*. Academic Press, London.

Nielsen, J. (1993). *Usability Engineering*. Boston, MA: Academic Press.

Pancha, P., & El Zarki, M. (1992) Prioritized Transmission of Variable Bit Rate MPEG Video, *Proc. Of GLOBECOM '92*, 1135-9, Orlando Florida, Dec.

Preece, J., Rogers, Y., & Sharp, h. (2002). *Interaction Design : Beyond Human-Computer Interaction*, New York. Robert Heinich & Michael Molenda & James D. Russell, *Instructional Media and the New Technologies of Instruction*, 1999.

Rosenbaum, S., Wilson, C. E., Jokela, T., Rohn, J. A., Smith, t. B. & Vredenburg, K. (2002). Usability in practice session: User experience lifecycle- evolution and revolution. extended abstracts on Human factors in computing systems.

Schneiderman, B. (1992). *Designing the User Interface*. AddisonWesley, Reading, MA. 471-500.

Tanner, P. P. & Buxton, W. A. S. (1985). Some issues in future user interface management system(UIMS) development. In G. E. Pfaff, Ed. *User Interface Management Systems: Proceedings of the Workshop on User Interface Management Systems*, Seehiem, FRG, November 1-3, 67-79. New York: Springer.

Vredenburg, K., Mao, J., Smith P. W. & Carey, T. (2002). A survey of user-centered design practice, April 20-25, Minneapolis, Minnesota.

Winograd, T. (1997). From computing machinery to interaction design. In P. Denning & R. Metcalfe (eds.), *Beyond Calculation: the Next Fifty Years of Computing*. Stringer-Verlag: Amsterdam, Netherlands, 149-162.

Wixon, D., Holtzblatt, K. & Knox, S. (1990). Contextual design: An emergent view of system design. *Proceedings of the SIGCHI conference on Human factors in computing systems: Empowering people*, ACM Press, 329-336.

Wixon, D. R., Ramey, J., Holtzblatt, K., Beyer, H., Hackos, J., Rosenbaum, S., Page, C., Laakso S. A & Laakso, K. P. (2002). Usability in practice: Field methods evolution and revolution. extended abstracts on Human factors in computing systems.

Wodsworth, R. H. (1983). *Basics of audio and visual systems design*. Washington, D.C: National Audio-visual.