ONLINE INSTRUCTIONAL CONSULTATION (OICON) MODEL FOR HIGHER EDUCATION INSTITUITION

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Abstrak

Tujuan penyelidikan ini adalah untuk menyelesaikan masalah program telementoring yang terdiri daripada: (1) salah faham dalam komunikasi akibat daripada kekurangan kiu bukan lisan, (2) keperluan dan kecekapan dalam komunikasi bertulis dan kemahiran teknikal, dan (3) isu tentang rakaman, mendapat dan memain semula rakaman. Objektif utama kajian ini adalah untuk memperkenalkan model konsultasi (OICon) yang boleh dijadikan sebagai platform untuk melaksanakan konsultasi dalam talian bagi pelajar dan pensyarah di institusi pengajian tinggi. Objektif khusus bagi penyelidikan ini adalah untuk mengenalpasti komponen multimedia yang sesuai untuk diimplementasikan dalam model konsultasi, membangunkan model konsultatsi (OICon) berdasarkan prinsip dan garis panduan e-konsultasi, membangunkan prototaip, menguji dan menilai penerimaan pelajar dan pensyarah terhadap modul konsultasi secara atas talian ini di institusi pengajian tinggi. Model yang dihasilkan adalah berdasarkan fungsi-fungsi penting komponen komunikasi multimedia yang dikemukan oleh penyelidik terdahulu serta cadangan daripada pakar IT dalam bidang teknologi maklumat dan pendidikan. Model ini kemudian diterjemahkan ke dalam bentuk prototaip untuk diuji oleh 40 pelajar and 8 pensyarah dan tutor dari segi penerimaan teknologi dengan menggunakan modul TAM. Sebelas hipotesis diperolehi dari 7 faktor-faktor TAM dengan pemboleh ubah penggunaan sistem sebenar dikecualikan. Hubungan hipotesis di antara 4 faktor (kebergunaan Persepsi (PU), Kemudahan Persepsi Penggunaan (PEOU), Sikap, Niat Tingkah Laku (BI)) disokong kecuali PEOU tidak mempunyai hubungan yang positif dengan sikap seperti yang diramalkan. Kepentingan Persepsi Komponen Komunikasi dan Ciri-ciri mempunyai hubungan positif dengan PEOU. Pengguna bersikap positif ke arah pelaksanaan alat komunikasi multimedia dalam konsultasi di institusi pendidikan tinggi. Pengguna berpendapat bahawa komponen komunikasi adalah penting jika komponen mudah digunakan. Mereka bersetuju bahawa mereka akan menggunakan prototaip OICon pada masa akan datang dari segi PU dan Sikap.

Kata Kunci: Kiu bukan lisan, Kajian tindakan, Modul TAM, Keberkesanan diri

Abstract

The purpose of this research is to solve the problems of the existing telementoring program which are (a) the miscommunication due to lack of nonverbal cues, (b) the need or competency in written communication and technical skills, and (c) the issue regarding recording, retrieving, and playback of consultation recorded document. The main objective of this research is to develop an appropriate online consultation model for higher education institution. The specific objectives of this research are to identify suitable multimedia components to be implemented in the online instructional consultation (OICon) model, to develop a prototype, and to test and evaluate the acceptance of online instructional consultation (OICon) prototype by students and lecturers in higher education institution. OICon model was established based on the identification of multimedia communications components and features that were adapted and adopted from the existing online financial consultation, tele-medicine consultation model as well as major e-consultation components for public policy consultation. In addition, recommendations from the IT and Educationist experts were also taken into consideration. This model was then transformed into a prototype and tested on 40 students and 8 lecturers. Eleven hypotheses are derived from 7 factors of TAM with actual system variable excluded. The hypotheses relationships among these 4 factors (Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude, Behavioural Intention (BI) are supported except that PEOU does not have positive relationship with attitude as predicted. Perceived Importance of Communication Components and Features have positive relationship with PEOU. Users are relatively positive towards the implementation of multimedia communication tools for consultation in higher education institution. Users perceived the communication components as important if the components are easy to use. They agreed that they will use the OICon prototype in the future in term of PU and Attitude.

Keyword: Nonverbal cues, Action research, TAM model, Self-efficacy

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List of Abbreviations

ACL	Access Control List
AR	Action Research
AVI	Audio Video Interleave
BI	Behavioral Intention
CMC	Computer-mediated communication
EE	Effort Expectancy
EOU	Ease of Use
FC	Facilitating Conditions
FMS	Flash Media Server
GIF	Graphics Interchange Format
GSS	Group Support System
HCI	Human Computer Interaction
HEIs	Higher Education Institutions
HTTP	Hypertext Transfer Protocol
IBSTPI	International Board of Standards for Training, Performance and Instruction
ICT	Information Communication Technology
ICTs	Instructional Consultation Teams
ID	Identity
ID	Instructional Design
IS	Information System
JPEG	Joint Photographic Experts Group
K-12	Kindergarten through 12th grade in the United States and Canada
MP3	MPEG-1 or MPEG-2 Audio Layer III
OICon	Online Instructional Consultation
PDF	Portable Document Format
PE	Performance Expectancy
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
RSO	Remote Shared Object
RTMP	Real Time Messaging Protocol
SE	Self-efficacy
SME	Subject Matter Experts

SPSS	Statistical Package for Social Science
SWF	Shockwave File
TAM	Technology Acceptance Model
VOD	Video on Demand
WWW	World Wide Web

CHAPTER ONE
INTRODUCTION

Online consultation, one of the advancement of information and communication technology (ICT) in consulting services, is being extensively offered in various contexts such as medical teleconsultation (Costanzo & Monari, 2006), online consultation for medical curriculum (Ortega, Lessard, Burgun, & Beux, 2005), online financial service consultation (onlineconsultation.com) and public policy consultation (Fagan, Newman, Paul, & Murray, 2006). Consulting service is no longer time-bound and place-bound information delivery process. Many organizations have discovered ICT beneficially in solving distance problem and forming virtual team consultation which consists of staff that collaborate at geographically dispersed place (http://www.onpointconsultingllc.com). This consulting service would be offered with much more flexible information delivery ways through a plethora of multimedia technologies. Indeed, according to Newman (2005), conducting online consultation service helps to keep cost to a minimum while offering competitive service based on client's demand as well as enabling staff to work from client's location regardless of the distance.

At the early phase of conducting online consultation service, asynchronous technology such as e-mail and forum discussions are commonly applied as collaboration tools among virtual team staff compared to synchronous technology that enhances the collaboration at real time (Kinney & Panko, 1996). Nowadays, as the advantages of synchronous communication technology is acknowledged, many organizations have started to blend this advanced technology as part of their e-consultation that enables participants to communicate in synchronous and

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Berge, Z. L. (1995). The Role of the Online Instructor/Facilitator, in Facilitating Computer Conferencing: Recommendations from the Field. *Educational Technology*, 35(1), 22-30. Retrieved March 4, 2010, from http://www.emoderators.com/moderators/teach_online.htm

Berg, B. L. (2004). *Qualitative research methods*. (5th ed.). California State University: Pearson.

Brokes, A. *A process model of consultation*. (C.A. Parker, Ed.). (1975). *In Psychological consultation: helping teachers meet special needs*. Minneapolis: Leadership Training Institute, University of Minnesota.

Bruno, Augusto, T. M. D., Manoel, I. A. R.C., Evandro, T. E. A. N., Henrique, P.L.L., Leandro, M.D., & Marcello, A.D. (2007). An Open-Source Component-Based Toolkit to Support E-learning Multimedia Environments. *ICSNC '07 Proceedings of the Second International Conference on Systems and Networks Communications*.

Bovee,C.L., Thill, J. V., Mescon, M. H. (2007). Excellent in Business.

Bower, M. (2006). Virtual Classroom Pedagogy. *Proceedings of the 37th SIGCSE Technical Symposium on Computer Science Education.* Houston,USA: ACM Press.

Caplan, G. (1970). *Theory and Practice of Mental Health Consultation*. New York: Basic books.

Carlson, P. J. & Davis, G. B. (1998). An investigation of media selection among directors and managers: from "self" to "other" orientation. *Business Administration*, 22(3), 335-362.

Caulat, G., & Haan, E. D. (2006). Virtual Peer Consultation: How Virtual Leaders Learn. *Organization & People*, 13(8), 24-32.

Chan, D. W. (2000). The development of mentorship programs at the Chinese University of Hong Kong. Roeper Review, 23 (2), 85-88.

Chao, G. T.,Walz, P.M., & Gardner, P. D. (1992). Formal and informal mentorships: A comparison on mentoring functions and contrast with nonmentored counterparts. *Personnel Psychology*, 45, 619-36.

Christina, L. (2007). Mentoring during university practicum: Perceptions of teacher mentors and student teacher trainees.

Corey, S. M. (1953). Action research to improve school practices. New York: Teachers College Press.

Costanzo, G., & Monari, P. (2006). Experience with asynchronous medical teleconsultation in the Alliance of the Italian Hospitals Worldwide. *Jounal Telemed Telecare*, 12, 382-386.

Clive, S. (2000). The real-time online tutor. Retrieved August 8, 2010, from http://www.fastrakconsulting.co.uk/features/realtime/realtime.htm

Cronbach, L. J. , Gleser, G. C., Nanda, H., & Rajaratnam, N., (1972). *The dependability of behavioral measurements: Theory of generalizability for scores and profiles*. New York: Wiley.

Daft, R. L., & Lengel, R. H. (1984). *Information richness: a new approach to managerial behavior and organizational design.* In: Cummings, L.L., & Staw, B.M. (Eds.). Research in organizational behavior 6, (191-233). Homewood, IL: JAI Press.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, 32(5), 554-571

Damme, S. (1998). The "outcomes" challenge: An action research approach to evaluation in community program development. Retrieved August 8, 2010, from http://www.aepro.org/inprint/conference/damme.html

Davies, I. (1975). Some aspects of a theory of advice: the management of an Instructional developer-client, evaluator-client relationship. *Instructional Science*, 3, 351-373.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly,* 13(3), 319–340.

Deshpande, A.,Khoja,S., McKibbon, A., & Jahad, A. R.(2008).*Overview of assessments of real-time (synchronous) and asynchronous telehealth*. Ottawa: Canada Agency to Drugs and Technologies in Health.

Diana Nur. M. K., Ariff b. A., Yasmin N. Z., (2007). The Perception of PISMP Students towards the Mentor-Mentee Programme in IPBA.

Dolen, W. M. V., & Ruyter, K. D (2002). Moderated group chat: An empirical assessment of a new e-service encounter, *International Journal of Service Industry Management*, 13 (5), 496-511.

Doll, W., Hendrickson, A. & Xiandong, D. (1998). Using Davis's Perceived Usefulness and Ease-of-Use Instruments for Decision Making: A Confirmatory and Multi-Group Invariance Analysis, Decision Sciences, 29(4), 839-869.

Ensher, E., Heun, C., & Blanchard, A. (2003). Online mentoring and computer-mediated communication: New directions in research. *Journal of Vocational Behavior*, 63, 264-288.

Elton, L. (2001), 'Research and teaching: conditions for a positive link', Teaching in Higher Education, 6(1), 43-56.

Fagan., G. H., & Newman, D. R. (2006). E-consultation: evaluating appropriate technologies and processes for citizens' participation in public policy. Retrieved August 12, 2009, from http://eprints.nuim.ie/468/1/ecrp_report.pdf.

Ferrance, E. (2000). Action Research, Northeast and Islands Regional Educational Laboratory at Brown University, 15-25.

Fulk, J., Schmitz., & Steinfeld, C. W. (1990). A social influence model of technology use. In: Fulk, J. and Steinfeld, C.W., editors. Organizations and communication and Communication Technology. Newbury Park, CA: Sage, pp.117-140.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference*.

Glenn, D. I. (1992). Determining Sample Size. Retrieved March 3, 2010, from http://edis.ifas.ufl.edu/pd006

Gagne, R., Briggs, L., & Wager, W. (1992). Principles of Instructional Design (4^{th} Ed.). Fort Worth, TX: Harcourt Brace Jovanovich, Publishers.

Gefen & Straub. (1997). Gender Difference in the Perception and Use of E-Mail: An Extension to the Technology Acceptance Model," MIS Quarterly 21(4), 389-400.

Gefen, D. & Straub, D. (2000). The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of Ecommerce Adoption, *Journal of the Association of Information Systems*, 1(8).

Gefen, Karahanna & Straub. (2003): "Trust and TAM in Online Shopping: An Integrated Model," MIS Quarterly, 2003, 27(1), 51-90.

Galusha, J. M. (1997). Barriers to learning in distance education. *Interpersonal Computing and Technology*, 5(3-4), 6-14.

Garrison D. R., Anderson, T. & Archer, W. (2000). Critical thinking in a text-based environment: Computer conferencing in higher education. *Journal of Internet and Higher Education*, 11(2), 1-14. Retrieved August 12, 2009 from

http://auspace.athabascau.ca:8080/dspace/bitstream/2149/739/1/critical_inquiry_in_a_text.pdf

Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *The American Journal of Distance Education,* 11(3), 8-26.

Giacomo, G, Brian, L., Joey, L., Robert, R., & Justin, W. (2005). *Flash Communication Server*. O'Reilly Media; 1 edition (March 1, 2005)

Greenberg, A. (2004). Navigating the sea of research on videoconferencing-based distance education: A platform for understanding research into the technology's effectiveness and value. Retrieved October 24, 2010, from http://www.wainhouse.com/files/papers/wrnavseadistedu.pdf

Hostetter, C., & Busch, M. (2006). Measuring up online: The relationship between social presence and student learning satisfaction. *Journal of Scholarship of Teaching and Learning*, 6(2), 1-12.

Hersch, Russ. (1998). FAQs about FAQs. Retrieved 14 March, 2010 from http://www.faqs.org/faqs/faqs/about-faqs/

Heeter, C. (1992). Being there: The subjective experience of presence. *Presence* 1(3), 262-271.

Hightower, R., Sayeed, L., Warkentin, M., & McHaney, R. (1997). Information exchange in virtual work groups.

Hadi, A. A. R. & Weay, A. L. (2010). Enhancing Multimedia Communication Components in Instructional Consulting Service Online: Students' Perspectiveand Perception. *Advances in Multimedia - An International Journal (AMIJ),* 1(2), 12-23.

Harris, R. J. (1985). *A primer of multivariate statistics* (2nd ed.). New York: Academic Press.

Haslina, S. H & Khadijah, M. T. (2007). Towards A Quality Support Service: The Academic Advising System: A Lesson from the FSS Mentor-Mentee System. Retrieved September 23, 2010, from http://www.calm.unimas.my/calm_arc/insite_v10/article2.html.

Havelock, R. (1973). *The Change Agent's Guide to Innovation in Education*. Englewood Cliffs, N.J., Educational Technology Publications.

Hamilton, B. A. & Scandura T. A. (2003) E-Mentoring: Implications for Organizational Learning and Development in a Wired World. *Organizational Dynamics*, 31(4), 388-402

High, R. (2000). Important factors in designing statistical power analysis studies. *Computing News, Summer issue,* 14-15.

Horn,V. S. M., & Myrick, R. D. (2001). Computer technology and the 21st century school counselor. *Professional School Counseling*, 5(2), 124-131.

Hopkins, W.G . (2002). A New View of Statistics. Retrieved March, 20, 2011, from http://www.sportsci.org/resource/stats/pvalues.html.

Isaac, S. & W.B. Michael (1995). Handbook in Research and Evaluation.**(**3rd ed.). San Diego, CA: EdITS.

Jaimes, A., Omura, K., Nagamine, T & Hirata, K. (2004). Memory cues for meeting video retrieval. *International Multimedia Conference- Proceedings of the the 1st ACM workshop on Continuous archival and retrieval of personal experiences.*

James, W. K & John, M. J. (2000) Personalized Instruction: Changing Classroom Practice. Eye on Education, Larchmont, New York.

Joseph, P., & Manon, A. (2009). E-Consultation:Enabling Democracy between Elections. 15(1). Retrieved March 19, 2011, from http://www.irpp.org/choices/archive/vol15no1.pdf

Joyce, Y. (2011). Telementoring and Project- Based Learning: An Integrated Model for 21st Century Skills. Retrieved 12 December, 2010 from http://www.irma-international.org/viewtitle/46293/

Judy V. B., & Karen, R. (2009). Distance Education as enabler in crossing the digital divide: Will the Phoenix Fly? *Proceedings of the 3rd International IDIA Development Informatics Conference 28-30 October 2009*

Kampwirth, T. J. (2005). Collaborative consultation in the schools: Effective practices with learning and behavior problems.

Kaiser, H. F. (1974). An Index of Factorial Simplicity. *Journal of Psychometrika*, 39, 31-36.

Othman A. Karim, Kamarudin Abu Taib, Suraya Sharil, Roszilah Abdul Hamid, Noraini Hamzah, Nur Izzi Mohd Yusoff, Azrul Abdul Mutalib, Khairul Nizam Abdul Maulud & Shahrizan Baharom.2005. *Pembudayaan ilmu dan perlaksanaan sistem*

mentor mentee di Jabatan Kejuruteraan Awam dan Struktur-satu analisis, Pascasidang Seminar Pengajaran & Pembelajaran Berkesan2005. Pusat Penerbitan dan Percetakan UKM, (8-11).

Kember, D. (2002), 'Long-term outcomes of educational action research projects', *Educational Action Research*, 10(1), 83-103

Kurtz, G. & Friedman, B. (1999). A Holistic, Individual, Technologically-Mediated Learning Environment at the Open University of Israel. *ICDE Conference, Vienna*

Kinney, S. T., & Panko, R. R. (1996). Project teams: Profiles and member perceptions-Implications for group support system research and products.

Kock, N. & McQueen, R. J. (1998), An Action Research Study of Effects of Asynchronous Groupware Support on Productivity and Outcome Quality of Process Redesign Groups, *Journal of Organizational Computing and Electronic Commerce*, 8(2), 149-168.

Kruse, K. (2002). Creating Rapid Prototypes for e-Learning. E-Learning Guru. Retrieved March 6, 2010,
from http://www.e-learningguru.com/articles/art2_4.htm

Kurpius, D. J. & Brubaker, J. C. (1976). *Psycho-education Consultation:Definitionsfunctions- preparation*. Bloomington, Indiana: Indiana University.

Kemshal-Bell, G (2001). The Online Teacher, Final report prepared for the Project Steering Committee of the VET Teachers and Online learning Project, ITAM ESD, TAFENSW. Retrieved March 3, 2011 from http://cyberteacher.onestop.net

Knotek, S. E., Rosenfield, S., Gravois, T. A., & Babinski, L. (2003). The process of orderly reflection and conceptual change during instructional consultation. *Journal of Educational and Psychological Consultation*, 14, 303–328.

Lee, J.-S., Cho, H., Gay, G., Davidson, B., & Ingraffea, A. (2003). Technology Acceptance and Social Networking in Distance Learning. *Educational Technology & Society*, 6(2), 50-61, Retrieved March 19, from http://ifets.ieee.org/periodical/6-2/6.html

Lewis, C. W. (2002). International Telementor Program (ITP) report: Evaluation results from teacher surveys, May 2000 – March 2002. Retrieved April 17, 2010, http://www.telementor.org/research/Research-2002-1.pdf

Mark, J. M. (2006). College Student's Acceptance of Tablet Personal Computers a Modification of the Unified Theory of Acceptance and Use of Technology Model.

Malhotra, Y. & Galletta, D.F. (1999). Extending the Technology Acceptance Model to Account for Social Influence: Theoretical Bases and Empirical Validation. *Proceedings of the 32nd Hawaii International Conference on System Sciences*.

Ma, M., & Agarwal, R. (2007). Through a Glass Darkly: Information Technology Design, Identity Verification, and Knowledge Contribution in Online Communities. *Information Systems Research*, 18(1), 42-67.

Mark, T., Barbara, K., Pearl, B., Stuart, M. C., & David, B. (2010): Does the technology acceptance model predict actual use? A systematic literature review. *Information & Software Technology*, 52(5), 463-479.

Marchewka, J. T., Liu, C. & Kostiwa, K. (2007). An application of the TAM model for understanding student perceptions using course management software. *Communication of the IIMA*, 7, 93-104.

Margaret, L.(1999). Telementoring on the Web is a Webtour Tour. Retrieved November 13, 2010, from http://www.iearn.org/circles/mentors.html

Marcoulides, G. A. (1993). Maximizing power in generalizability studies under budget constraints. *Journal of Educational Statistics*, 18 (2), 197-206.

Mashal & Ehab, A. R. H. (2008). Online Collaboration for UUM Students.

Maslin, M. (2007). Technology Acceptance Model and E-learning. *Proceedings of the 12th International Conference on Education*, Sultan Hassanal Bolkiah Institute of Education.

Masters, J.(2000). The History of Action Research. Retrieved November 13, 2010, from http://www2.fhs.usyd.edu.au/arow/arer/003.htm

McLoughlin, C., Brady, J., Lee, M.J.W. & Russell, R. (2007). Peer-to-peer: an e-mentoring approach to facilitating reflection on professional experience for novice teachers. *Proceedings of the 2007 Australian Association for Research in Education (AARE) Conference.* Fremantle, WA.

Michelle, L. H. (2007). The Development and Evaluation of a Custom-built Synchronous Online Learning Environment for Tertiary Education in South Africa.

Morison & Newman. (2001). Psychoeducational Consultation. Retrieved July 4, 2009, from http://www.indiana.edu/~deanfac/blfal01/educ/educ_g645_5807.html

Muller, C. B., & Single, P. B. (1999). Encouraging women students to persist in engineering and science through industrial mentoring using electronic communications. *Proceedings of the Annual Frontiers in Education (FIE) Conference.*

Newman, P. (2005). *Consultation.* Retrieved June 16, 2009, from http://www.rppc.net/

Ng, K. H. (2001). Kajian Tindakan - Satu Pengertian. Retrieved June 16, 2009, from http://www.teachersrock.net/kajian%20tindakan.htm

NongLuck, M. (2008). The Importance of Undergraduate's Computer Competency and Information Literacy Skills: Marketing Faculty's Perspectives in Thailand. Retrieved March 5, 2010, from https://mospace.umsystem.edu/xmlui/bitstream/handle/10355/5588/research.pdf?sequence=3

Norshuhada, S., & Shahizan, H. (2009). *Design Research in Software Development-Constructing and Linking Research Question, Objectives, Methods and Outcomes*.

Nelson, R., Todd, P., & Wixom, B. (2005) Antecedents of Information and System Quality: An Empirical Examination within the Context of Data Warehousing. *Journal of Management Information Systems*, 21 (4), 199-235.

Nan, C.,Wang, T., & Xu, S. (2010). The Influence of Social Presence on Consumers' Perceptions of the Interactivity of Web Sites. Retrieved February 12, 2011, from http://jiad.org/article138

Oliver. (2006). Consultation – making it work for you. Retrieved October 11, 2010, from http://www.voluntaryarts.org/uploaded/map3744.pdf

Omar., H. B. D. (2004). Persepsi Pelajar-pelajar terhadap Sistem Mentor-mentee di Universiti Utara Malaysia, Sintok: Universiti Utara Malaysia.

Omatseye, J. N. (1999). Teachingthrough tele-conferencing: Some curriculum challenges. *College Student Journal*. 33(3), 346-353.

Ortega, E. M., Lessard, Y., Burgun, A., & Beux, P.L. (2003). Designing a Collaboration and Multimedia Learning Environment for Medical Simulation-based Training.

Ortega, E.M., Lessard, Y., Burgun, A., & Beux, P.L. (2005). Virtu@l Consult@tion: an Interactive and Multimedia Environment for Remote Clinical Reasoning Learning in Cardiology.

Oravec, J. A. (2002). Bookmarking the world: Weblog applications in education. *Journal of Adolescent & Adult Literacy*, 45(7), 616-621.

Palloff, R. M., & Pratt, K. (2003). Building learning communities in cyberspace: Effective strategies for the online classroom.

Perren,L. (2003). The role of e-mentoring in entrepreneurial education and support: a meta-review of academic literature, *Education + Training*, 45(8/9), 517 – 525.

Ramizi, M., Aini, H., Salina, A.S., Hilmi, S., Azah, M. & Marzuki, M. M. (2004). *Penilaian Keberkesanan Sistem Mentor-mentee di Jabatan Kejuruteraan Elektrik, Elektronik dan Sistem*. Retrieved April 4, 2010 from http://pkukmweb.ukm.my/~upak/pdffile/2005/4~JKEES%20Mentor_Mentee%20_Ramizi.pdf

Richardson, J. C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, 7(1), 68-88.

Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (2001). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education*. Retrieved February 3, 2011 from http://cade.athabascau.ca/vol14.2/rourke_et_al.html

Rice, R. E. (1984). Mediated group communication. In R. E. Rice & Associates (Eds.). *The new media: Communication, research, and technology*, 129-156.

Richard, L. B, (1999). Investigating information systems with action research. *Computer Information Systems Department*. 2, Article 19. Retrieved October 12, 2009, from http://www.cis.gsu.edu/~rbaskerv/CAIS_2_19/CAIS_2_19.html

Rory, O. (1998). *An Overview of the Methodological Approach of Action Research.* Retrieved December 2, 2010, from http://www.web.net/~robrien/papers/arfinal.html

Rosenfield., S. A., & Gravois, T. A. (1987). Instructional consultation teams. *Lawrence Erlbaum*.

Rosenfield, S., & Gravois, T. A. (1996). *Instructional consultation teams: Collaborating for change*. N.Y.: Guilford Press.

Rosenfield, S. (2002). Developing instructional consultants: From novice to competent to expert. *Journal of Educational and Psychological Consultation*, 13, 97–111.

Rosenfield. S., & Gravois, T. A. (2008). The effect of instructional consultation teams on teacher outcomes. *American Psychological Association Meeting, Boston.*

Ragins, B. R. (1999). Mentor functions and outcomes: a comparison of men and women in formal and informal mentoring relationship. *Journal of Applied Psychological*, 84 (4), 529-549.

Pedersen, P.E. & Nysveen, H. (2003). Usefulness and self-expressiveness: extending TAM to explain the adoption of a mobile parking service. Presented at the 16th Electronic Commerce Conference, Bled, Slovenia, June 9-11. Retrieved October 12, 2010 from http://ikt.hia.no/perep/bled_pep_format.pdf ay 3 January 2010

Sabella, R. A., & B. L. Booker. (2003). Using technology to promote your guidance and counseling program among stake holders. *Journal of Professional School Counseling*, 6, 206-214.

Schein, E. H. (1999). *Process Consultation revisited: Building the helping relationship*. Reading, MA: Addison-Wesley-Longman.

Sanchez, B., & Harris, J. (1996). *Online mentoring: A success story. Learning and Leading With Technology*, 23(8), 57-60.

Schein, E. H. (1969). *Process Consultation. Reading*. Massachusetts; Addison-Wesley Publishing Co., Inc.

Schein, E. H. (1978). The role of the consultant: content expert or process facilitator. *The Personnel and Guidance Journal*, 56, 339-343.

Sekaran, U. (2000). *Research methods for business: A skill-building approach* (3rd ed). John Wiley & Sons, Inc.

Shen, C. C, & Chuang. H.M. (2009). An Investigation on User Communication Behavior in an Interactive Whiteboard Technology Environment. *Journal of Wseas Transctions on Communications* . 1(8)

Straub, D. W., & Welke, R. J. (1998). Coping with systems risk: Security planning models for management decision making. *MIS Quarterly*, 22(4), 441-469.

Steele, F. (1975). *Consulting for organizational change*. Amherst: University of Massachusetts Press.

Stephens, S et al. (2006) "On the Road from Consultation Cynicism to Energising e-Consultation" *The Electronic Journal of e-Government* 4(2), 87 - 94, Retrieved January 19, 2011, from http://www.ejeg.com

Steven, C. (2002). Online Consultations and Events - Top Ten Tips for Government and Civic Hosts. Retrieved November 22, 2010, from http://www.publicus.net/articles/consult.html

Strauss, H. (2000).What is a portal Anyway. Interview in TechTalk, January Series. Retrieved November 22, 2010, from http: //www.cren.net/know/techtalk/trans/portals_1.html

Susman G. I & Evered, R. D. (1978). An assessment of the Scientific Merits of Action Research. *Administrative Science Quarterly*. 23(12), 582-603.

Shen, K.N., & Khalifa, M. (2008). Exploring Multidimensional Conceptualization of Social Presence in the Context of Online Communities. Retrieved March 4, 2010, from http://www.informaworld.com/smpp/content~db=all~content=a903086390

Shen, K. N. & Khalifa, M.(2007). Exploring Multi-dimensional Conceptualization of Social Presence in the Context of Online Communities. *Proceedings of the Human-Computer Interaction*, Part IV, (Jacko, J. Ed.), 999-1008.

Steinfield, C. W. (1986). Computer-mediated communication in an organizational setting: Explaining task-related and socio emotional uses. *In M. L. McLaughlin (Ed.), Communication yearbook 9*, 777-804.

Sun, H., & Zhang, P. (2006). The role of moderating factors in user technology acceptance. *International Journal of Human-Computer Studies (IJHCS)*, 64(2), 53-78.

Talmadge, G. (2004). Telementoring: Shaping Mentoring Relationships for the 21st Century.

Tanaka, T.; Koga, A.; Mizuno, H.; Yajima, H. (1999). Design of User Interface for Tele-consultation system over the Web. *SMC '99 IEEE International Conference on Systems Man and Cybernetics.*

Taylor, S. & Todd, P. (1995). Understanding Information Technology Usage: A Test of Competing Models, *Information Systems Research*, 6(2), 144-177.

Gilmore, T., Krantz, J. & Ramirez, R. (1986). *Action Based Modes of Inquiry and the Host-researcher Relationship, Consultation*.

Thomas, S. T., & Jacqueline, N. S. (2004). *Human Interface Design Department, Fidelity Center for Applied Technology Fidelity Investments. A Comparison of Questionnaires for Assessing Website Usability.*

Vivian, S. (1999). E-learning Orientation. Chancellor's Office for the California Community College Distance Learning Consortium, 1999-00. Retrieved March 4, 2010, from http://www.foothillglobalaccess.org/orientation/pre_assessment.htm

Venkatesh,V. (2000). Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model. *Information Systems Research*, 11(4).

Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research*, 19, 52-90.

Wang, W. H. (2009). Attitude, Behavioral Intention and Usage: An Empirical Study of Taiwan Railway's Internet Ticketing System. Retrieved March 19, 2011, from http://www.swdsi.org/swdsi2009/Papers/9C04.pdf

Wang, M., & Lindvall, C. M. (1984). Individual differences and school learning environments. *Rev. Res. Educ*., 11, 161–225.

Walker, M. (ed.) (2001). *Reconstructing Professionalism in University Teaching – Teachers and Learners in Action. Buckingham: The Society for Research into Higher Education & Open University Press*.

Whittaker, S., Tucker, S., Swampillai, K., and Laban, R. (2008). Design and Evaluation of Systems to Support Interaction Capture and Retrieval.

Wong, A. T. & Premkumar, K. (2007). Source: An Introduction to Mentoring Principles, Processes and Strategies for Facilitating Mentoring Relationships at a Distance. Retrieved April 19, 2011, from http://www.usask.ca/gmcte/drupal/?q=resources

Yamane. (1967). *Statistics, An Introductory Analysis* (2nd ed.). New York: Harper and Row.

Zikmund, W. G. (2000). *Business research methods* (6th ed.). Orlando, US: Dryden Press.

Zuber-Skerritt, O. (1996). *Professional Development in Higher Education – A Theoretical Framework for Action Research*. London: Kogan Page