EXAMINING COMMUNITY OF INQUIRY MODEL IN INFLUENCING E-LEARNING USAGE AMONG FEMALE STUDENTS

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Abstrak

Penggunaan permainan sosial atas talian kini begitu mendapat tempat terutamanya dalam kalangan pelajar pengajian tinggi. Hal ini kerana permainan sosial secara atas talian memberikan mereka cara untuk berinteraksi antara satu sama lain dengan berkongsi minat yang sama tanpa mengira lokasi. Penggunaan peralatan permainan sosial atas talian dikenal pasti tinggi dalam kalangan pelajar perempuan. Sementara itu, persekitaran e-pembelajaran yang mempunyai ciri peralatan rangkaian sosial seperti permainan mempunyai potensi yang besar untuk membuat pembaharuan dan merangsang penggunaan e-pembelajaran secara berterusan dalam kalangan pelajar dengan menggalakkan interaksi sosial dan perkongsian pengetahuan. E-pembelajaran merupakan peralatan atas talian penting yang boleh digunakan untuk mencapai kualiti pembelajaran dan pengajaran dalam kalangan pelajar pengajian tinggi. Alat teknologi atas talian perlu mengekalkan penggunaan yang cekap, terutamanya dalam kalangan pelajar perempuan untuk memudahkan interaksi sosial kerana pelajar perempuan lebih selesa berkongsi idea antara rakan sebaya. Oleh itu, kajian ini berhasrat untuk mempertimbangkan andaian masyarakat terhadap model pertanyaan yang memaparkan tiga konstruk penting yang memberikan butiran teori untuk dipertimbangkan dalam kajian ini. Kajian ini secara khususnya mengkaji kesan kehadiran sosial, kehadiran kognitif dan kehadiran pengajaran permainan sosial atas talian dengan penggunaan e-pembelajaran dalam kalangan pelajar wanita di institusi pengajian tinggi. Tiga hipotesis dirangka berasaskan kajian yang telah dilakukan bagi mencapai objektif kajian ini. Dalam usaha mengkaji hipotesis ini, data dikumpulkan dalam kalangan pelajar perempuan di Pusat Pengajian Pengkomputeran, Universiti Utara Malaysia. Sampel kajian melibatkan 80 orang pelajar perempuan, iaitu data tertakluk kepada ujian kebolehpercayaan, statistik deskriptif, korelasi, dan analisis regresi berganda. Hasil kajian ini menunjukkan bahawa sifat-sifat permainan sosial atas talian, kehadiran kognitif dan kehadiran pengajaran mempunyai impak positif yang besar terhadap penggunaan E-pembelajaran. Manakala kehadiran sosial tidak mempunyai kesan yang signifikan terhadap penggunaan E-pembelajaran.

Kata kunci: Komuniti model pertanyaan, kehadiran sosial, kehadiran kognitif, kehadiran pengajaran

ABSTRACT

The use of online social games, nowadays, is so rampant especially among students of higher learning. This provides them with means to interact with one another by sharing the same interests irrespective of locations. The use of online social games tools is noticed to be high among female students. Meanwhile, an e-learning environment that has the features of social network tools such as games has great potential to innovate and stimulate the continual usage of E-learning among students, by fostering social interaction and knowledge sharing among the students. E-learning is an important online tool that can be used to achieve quality of learning and teaching among students in higher education.It is thus pertinent for any online technological tools that will maintain efficient usage, especially among female students to be able to facilitate social interaction, since female students are more comfortable sharing ideas among their peers.To this end, the study intend to consider the assumptions of community of inquiry model which highlights three important constructs that provide theoretical details for consideration in this study. To be specific, this research examines the impact of social presence, cognitive presence and teaching presence of online social games on E-learning usage among female students of higher institutions .To achieve these objectives, three hypotheses were formulated based on previous studies .In order to examine these hypotheses, data was collected among female students at school of computing, Universiti Utara Malaysia . While the sample size of the study was 80 female students and the data was subjected to tests of reliability, descriptive statistics, correlations, and multiple regression analysis. The findings of this study revealed that, the attributes of online social games; cognitive presence and teaching presence have positive significant impact on E-learning usage. Meanwhile, social presence does not have a significant impact on E-learning usage.

Keywords: Community of inquiry model , social presence , cognitive presence , teaching presence

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List of Abbreviations

LMS	Learning management system
ICT	Information and Communication Technology
H	Hypotheses
COI	Community of Inquiry Model
SPSS	Statistical Package for Social Science
SIV	Social Independent variable
CIV	Cognitive Independent variable
TIV	Teaching Independent variable
EDV	Electronic learning Depended variable
VIF	Variance Inflation Factor
M	Mean
SD	Standard Deviation

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CHAPTER ONE
INTRODUCTION

This chapter provides the general overview of the proposed study. This includes background of the study, problem statement, the research questions and objectives, significance of the study and the study scope that summarizes the focus of the study as well as the methodology to be adopted.

1.1 Background of Study

Learning is known as a process where new knowledge, skills and habits are gained (Kuhlthau, 2010). With the advent of information and communication technologies (ICT), learning process is witnessing a remarkable progress and advancement through the adoption of e-learning system (Olson, Codde , deMaagd , Tarkleson , Sinclair ,Yook &Egidio,2011; Almarabeh &Mohammad, 2013). E-learning may be regarded as an Internet technological tool used to provide a set of solutions at a distance to the acquisition and practical use of knowledge in the academic sphere(Amaral & Leal, 2006). This process being more supported by technological devices, offers various ways of communication among users engaging in sophisticated educational software applications (Hoic-Bozic , Mornar, &Boticki, 2009). The main advantage of this kind of tool is that, it can be used regardless of time and location.

However, one of the main limitation particular to this is that, it lacks the ability to stimulate its continual use among students (Rodrigues , Sabino& Zhou,2011; Lazim

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REFERENCES

Acuna, E., & Rodriguez, C. (2004). The Treatment of Missing Values and Its Effect in the Classifier Accuracy. Classification, clustering and data mining applications. Springer, Berlin, pp 639–648

Ahmad, M.A., Keegan, B., Sullivan, S., Williams, D., Srivastava, J. & Contractor, N. (2011). Illicit Bits: Detecting and Analyzing Contraband Networks in Massively Multiplayer Online Games. *SocialCom'11*.

Akyildiz, M., & Argan, M. (2012). Using online social networking: Students' purposes of Facebook usage at the University of Turkey. *Journal of Technology Research*, *3*, 1.

Akyol, Z., & Garrison, D. R. (2014). The development of a community of inquiry over time in an online course: Understanding the progression and integration of social, cognitive and teaching presence. *Journal of Asynchronous Learning Networks, 12: Issue 3-4*

Alahakoon, T., Tripathi, R., Kourtellis, N., Simha, R. & Iamnitchi, A. (2011). K-path Centrality: A new Centrality Measure in Social Networks. In *SNS 11*.

Albarrak, A. I. (2010). Designing E-Learning Systems in Medical Education: A Case Study. *International Journal of Excellence in Healthcare Management*, *3*(1), 1-8.

Aldrich, C. (2005). *Learning by doing: A comprehensive guide to simulations, computer games, and pedagogy in e-learning and other educational experiences*. San Francisco, CA: Pfeiffer, A Wiley Imprint.

Alexander, B. (2006). Web 2.0: A new wave of innovation for teaching and learning? EDUCASE Review, 41(2), 32-44. Retrieved from http://net.educause.edu/ir/library/pdf/ERM0621.pdf

Allen, I. E., & Seaman, J. (2007). *Making the grade: Online education in the United States, 2006*: ERIC.

Almarabeh, T.,& Mohammad, H. (2013). E-learning in the Jordanian Higher Education System: Strengths, Weakness, Opportunities, and Threats .Journal of American Science 2013;9(3) :281-287]. (ISSN: 1545-1003) . http:/ / www . jofamericanscience.org. 52

Amaral, L.,& Leal, D. (2006): 'From classroom teaching to e-learning: the way for a strong definition'. Proc. World Multi-Conf. on Systemics, Cybernetics and Informatics (WMSCI 2006), Orlando, Florida, SA.

Anderson , T. (2008) . The theory and practice of online learning . Athabasca University Press.

Andrew, C. (2010). Militants of Truth , Communities of Equality : Badiou and the ignorant schoolmaster.

Arunachalam, A.R. (2014). Bringing out the Effective Learning Process by Analyzing of E-Learning Methodologies . *Indian Journal of Science and Technology, Vol 7, No.S5, pp 41-43.*

Babbie, E. (2010).The practice of social research, *(12th ed.).*USA: Wadsworth.

Bader, L. & Zotter, V. (2012). Interdisciplinarity: Wishful Thinking? Experiences at the University of Graz. *Multicultural Education & Technology Journal, Vol. 6, No. 3, pp. 118-136.*

Baid, H., & Lambert, N. (2010). Enjoyable learning: The role of humour, games, and fun activities in nursing and midwifery education. Nurse Education Today, 30(6), 548-552.

Balakrishnan, V., & Loo, H. S. (2013). Social Media in E-Learning: An Empirical Analysis among Students and Academicians. *GSTF Journal on Computing (JoC)*, *2*(4), 145.

Bangert, A. (2008). The influence of social presence and teaching presence on the quality of online critical inquiry. Journal of Computing in Higher Education, 20(1), 34-61.

Barab, S., Thomas, M., Dodge, T., Carteaux, R., & Tuzun, H. (2005). Making learning fun: Quest Atlantis, a game without guns. Educational Technology Research & Development, 53(1), 86-107.

Bauerova, D., & Sein-Echaluce, M.L. (2007): 'Open dialog as a tool for university education'.29th Int. Conf. on Information Technology Interfaces (ITI 2007), Cavtat/Dubrovnik, Croatia, pp. 33–38.

Behera, S. K. (2013) . E-and M-Learning : A comparative study . *International Journal on New Trends in Education and Their Implications, 4*(3), 65-78.

Ben, K., Shaun, L., Conor, L., Francesco, M., Luciano G. & Andrea ,G. (2010). Improving Social Game Engagement on Facebook through Enhanced Socio-Contextual Information. *ACM, pp. 1754-1756.*

Bisson, C., & Lunckner, J. (1996). Fun in learning: The pedagogical role of fun in adventure education. *Journal of Experiential Education*, 9(2), 109-110.

Bonn, S. E., Lagerros, Y. T., Christensen, S. E., Möller, E., Wright, A., Sjölander, A., & Bälter, K. (2012). Active-Q: validation of the web-based physical activity questionnaire using doubly labeled water. Journal of medical Internet research, 14(1).

Bort, J.(2013). 8 million people play Zynga's Farmville 2 every day. *Retrieved on May, 8*.

Bridges, S. ,Chan, L. K. &Hmelo-Silver , C.E.(2015). *Educational Technologies in Medical and Health . Sciences Education* (Vol. 5). Springer.

Buchanan, D., & Bryman, A. (2007). Contextualizing Methods Choice in Organizational Research. Organizational Research Methods, 10(3), 483–501.

Chang, C.-C. (2013). Examining users′ intention to continue using social network games: A flow experience perspective. *Telematics and Informatics, 30*(4), 311-321.

Charles, M, Bustard, D., & Black, M. (2009) ."Game Inspired Tool Support for e-Learning Processes" Electronic Journal of e-Learning Volume 7 Issue 2, (pp101 - 110), available online at www.ejel.org.

Chatterjee, S., & Yilmaz, M. (1992). A review of regression diagnostics for behavioral research. *Applied Psychological Measurement, 16*(3), 209-227.

Chau, P. Y., & Hu, P. J. H. (2001). Information technology acceptance by individual professionals: A model comparison approach*. *Decision sciences,32*(4), 699-719.

Chaudhary, A. G. (2008). Digital game-based learning – future of education? Pranjana: The Journal of Management Awareness, 11(2), 1-15.

Checkland, P. (1999). Systems Thinking, Systems Practice (with 30-year retrospective), John Wiley & Sons.

Cobb, S. C. (2009). Social presence and online learning: a current view from a research perspective. *Journal of Interactive Online Learning*, *8*(3), 241-254.

Cohen J.(1988). Statistical Power Analysis for the Behavioral Sciences(2nd edn) , Hillsdale, NJ: Lawrence Erlbaum Associates.

Cole, H., & Griffiths, M. D. (2007). Social interactions in massively multiplayer online role-playing gamers. *CyberPsychology & Behavior*, *10*(4), 575-583.

Cordova, D.I. & Lepper, M.R. (1996) Intrinsic Motivation and the Process of Learning: Beneficial Effects of Contextualization, Personalization, and Choice, *Journal of Educational Psychology*, 88 (4), 715- 730.

Creswell, J. W. (2010). Mapping the developing landscape of mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), Sage handbook of mixed methods in social and behavioral research (2nd ed., pp. 45-68). Thousand Oaks, CA: Sage Publications, Inc.

Cunha, M., Raposo, A.,& Fuks, H. (2008): 'Educational technology for collaborative virtual environments'. 12th Int. Conf. on Computer Supported Cooperative Work in Design (CSCWD 2008), Xian, China, pp. 716–720.

Dalsgaard, C. (2006). Social software: E-learning beyond learning management systems. *European Journal of Open, Distance and E-Learning*,*9*(2).

Daniel, M. (2012). *Design Characteristics of Virtual Learning Environments: A Theoretical Integration and Empirical Test of Technology Acceptance and IS Success Research*. Springer Gabler, Germany.

David, C., & Robert, W.C. (2007). Designing and Constructing Instruments for Social Research and Evaluation. John Wiley & Sons, Inc.

Davis, D., & Cosenza, R. M. (2000). Business research for decision making. California: Duxbury Press Belmont.

Dawes, L., & Dumbleton, T. (2001). Computer games in education project. Retrieved December 18, 2003, from http:// www.becta.org.uk/ research/ research.cfm?section=1&id=2835 (Archived at http://web.archive.org/web/ 20031218001848/http://www.becta.org.uk/research/research.cfm?section = 1 & id=2835)

DeKanter, N. (2005). Gaming redefines interactivity for learning. TechTrends, 49(3), 26-32.

Denscombe, M. (2010). The good research guide : for small-scale social research

projects: for small-scale social research projects. New York: McGraw-Hill/Irwin

Desai, S. (2010).Role of Information Communication Technologies In Education Proceedings of the 4th National Conference; Computing For Nation Development, February 25 – 26, 2010BharatiVidyapeeth's Institute of Computer Applications and Management, New Delhi

Dickey, M. D. (2005). Three-dimensional virtual worlds and distance learning: two case studies of Active Worlds as a medium for distance education.*British journal of educational technology*, *36*(3), 439-451.

Dominguez, A., Saenz-de-Navarrete, J., De-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J. J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education*, *63*, 380-392.

Dron, J.,& Bhattacharya, M. (2009): 'Lost in the Web2.0 jungle'. Seventh IEEE Int. Conf. on Advanced Learning Technologies (ICALT 2007), Niigata, Japan, pp. 895–896.

Dumitrica, D.D. (2011). An Exploration of Cheating in a Virtual Gaming World. *Journal of Gaming & VirtualWorlds, pp 234.*

Edwin,R.V.,&Vanora ,H. (2001) . The importance of pilot studies . *Social Research Update, 35,* 49-59.

Essam, S., & Al-Ammary, J. (2013) . The Impact of Motivation and Social Interaction on the E-Learning at Arab Open University , Kingdom of Bahrain.*Creative Education*, *4*(10), 21.

Ferdig, R. E. (2006). Assessing technologies for teaching and learning: Understanding the importance of technological pedagogical content knowledge. British Journal of Educational Technology, 37(5), 749-760.

Figl , K., Kabicher , S.,& Toifl , K. (2008) . ' Promoting social networks among computer science students'. 38th Ann. Frontiers in Education Conf. (FIE 2008), Saratoga Springs, New York, pp. S1C-15–S1C-20.

Friborg, O., & Rosenvinge, J. H. (2013). A comparison of open-ended and closed questions in the prediction of mental health. Quality & Quantity, 47(3), 1397-1411.

Friesen, N. (2009). Re-thinking e-learning research: Foundations, methods and practices. New York: Peter Lang.

Gachter, S., Daniel, N. & Martin S. (2012). Peer Effects in Pro-social Behavior: Social Norms or Social Preferences. *Journal of the European Economic Association, Vol. 11, pp 548-573.*

Galamoyo, M. & Colin, P. (2011). Enhancing the Quality of E-learning Through Mobile Technology. *Campus-Wide Information Systems, Vol. 28, Issue 5, pp. 331-344.*

Garrison, D. R., M. Cleveland-Innes, M. Koole & Kappelman, J. (2006). Revisiting methodological issues in the analysis of transcripts: Negotiated coding and reliability. The Internet and Higher Education 9(1): 1–8.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The internet and higher education*, *2*(2-3), 87-105.

Garrison, D.R., & Anderson, T. (2003). E-learning in the 21st century. A framework for research and practice. London: RoutledgeFalmer.

Garrison, D. R. (2007). Online Community of Inquiry Review: Social, Cognitive, and Teaching Presence Issues. *Journal of Asynchronous Learning Networks, 11*(1), 61-72.

Garrison, D. R. (2011). *E-learning in the 21st century: A framework for research and practice*: Taylor & Francis.

Gåsland, M. M. (2011). Game mechanic based e-learning: A case study.

Gee, J. P. (2003).What video games have to teach us about learning and literacy.New York, NY: Palgrave Macmillan.

Gee, J. P. (2005). Learning by design: Good video games as learning machines, E-Learning , 2(1), 5-16.

Governors State University, Center for Online Learning and Teaching. (2008). E-learning glossary. Retrieved from www.govst.edu/elearning/default.aspx.

Green, M., & McNeese, M. N. (2007). Using edutainment software to enhance online learning. International Journal on E-Learning, 6(1), 5-16.

Griffiths, M. (2002). The educational benefits of videogames. *Education and Health,* 20(3), 47-51.

Gros, B. (2007). Digital games in education: The design of games-based learning environments. *Journal of Research on Technology in Education,* 40(1), 23-38.

Guri-Rosenblit, S. (2005). 'Distance education 'and 'e-learning': Not the same thing. *Higher Education,* 49(4), 467-493.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate data analysis (7th ed.). Englewood Cliffs: Prentice Hall.

Hair, J. F., Ringle, C. M., &Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of Marketing Theory and Practice, 19, 139 - 151.

Hair, J. F., Hult, G. T. M., Ringle, C. M. & Marko, S. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM).* United State of America: Sage Publication, Inc.

Henderson, L. (2002). Playing video games and cognitive effects: Teenagers' thinking skills and strategies. In P. Barker & S. Rebelsky (Eds.), Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications (pp. 759-760). Chesapeake, VA: Association for the Advancement of Computing in Education.

Hernandez, B., Montaner, T., Sese, F. J., & Urquizu, P. (2011). The role of social motivations in e-learning: How do they affect usage and success of ICT interactive tools? *Computers in Human Behavior, 27*(6), 2224-2232.

Hicks, A. (2011). Towards Social Gaming Methods for Improving Game-based Computer Science Education. *ACM, pp. 1-3.*

Hoic-Bozic, N., Mornar, V., Boticki, I. (2009): 'A blended learning approach to course design and implementation', IEEE Trans. Education, 52, (1), pp. 19–30.

Ilias , K., & Nor, M. M. (2012) . Influence of teacher-student interaction in the classroom behavior on academic and student motivation in teachers' training institute in Malaysia . *Academic Research International, 2*(1), 580.

Iahad, N., Dafoulas, G. A., Kalaitzakis, E., & Macaulay, L. A. (2004). Evaluation of online assessment: The role of feedback in learner-centered e-learning. Paper presented at the Proceedings of the 37th Hawaii International Conference on System Sciences, Hawaii, US.

Iowa State University (2013), "eLearner – computer-based learning", available at: www.dso.iastate.edu/asc/academic/elearner/index.html .

Jarmo, K., & Jonna, H. (2010). Shared-screen social gaming with portable devices. In *Proceedings of the 12th international conference on Human computer interaction with mobile devices and services . ACM , pp. 317-326.*

Jeremy, B., Ramanuja, S., Nicolas, K.,Xiang, Z., Matei,R., John, S.&Adriana, I. (2012). Branded with a scarlet C: cheaters in a gaming social network. In *Proceedings of the 21st international conference on World Wide Web. ACM, pp. 81-90.*

John, R. (2011). Emiratizing the Education Sector in the UAE: Contextualization and Challenges Education. *Business and Society: Contemporary Middle Eastern Issues, Vol. 4, Issue 2, pp. 134-14.*

Jonassen, D. H. (1999). Designing constructivist learning environments. In C. M. Reigeluth (Ed.), Instructional design theories and models: A new paradigm of instructional theory (Vol. 2, pp. 215- 239). Mahwah, NJ: Erlbaum.

Jonassen, D. & Land, S. (2000). Theoretical foundations of learning environments, Lawrence Erlbaum, Mahwah, NJ.

Jong, M. S. Y., Shang, J., Lee, F.-L., & Lee, J. H. M. (2008). Harnessing computer games in education. *International Journal of Distance Education Technologies,* 6(1), 1-9.

Josephine C. & Jennifer E. (2013). Strategies for Impact: Enabling E-learning Project Initiatives. *Campus-Wide Information Systems, Vol. 30, Issue 3, pp. 165-173.*

Jovanovic, M. (2013). Localization in E-learning Semantics (DSi Model Approach). *ACM, pp1-7.*

Junco, R., Heiberger, G., & Loken, E., (2010). The effect of Twitter on college student engagement and grades. Journal of Computer Assisted Learning, 27(2), 119-132. doi:10.1111/j.1365-2729.2010.00387.x

Kakasevski, G., Mihajlov, M., Arsenovski, S. & Chungurski, S. (2008):'Evaluating usability in learning management system moodle'. 30th Int. Conf. on Information Technology Interfaces (ITI 2008), Cavtat/ Dubrovnik, Croatia, pp. 613–618.

Kanuka, H., & Garrison, D. R. (2004). Cognitive Presence in Online Learning. *Journal of Computing in Higher Education*, 15(2), 30-49.

Kaplan, A.M. & Haenlein, M. (2010). Users of the World, Unite! The Challenges and Opportunities of Social Media. *Business Horizons, Vol. 53, pp. 59-68.*

Kerlinger, F. N. (1986). Foundation of behavior research. San Francisco: Holt, Rinehart and Winston.

Klopfer, E., Osterweil, S., Groff, J., & Haas, J. (2009). The instructional power of digital games, social networking, simulations, and how teachers can leverage them. Cambridge,MA: The Education Arcade, Massachusetts Institute of Technology.http://education.mit.edu/papers/GamesSimsSocNets_EdArcade . pdf

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice Hall.

Kritz, W. C., & Hense, J. U. (2006). Theory-oriented evaluation for the design of and research in gaming and simulation. Simulation & Gaming, 37(2), 268-283.

Krosnick, J. A.,& Fabrigar,L.R.(1997). Designing rating scales for effective measurement in surveys . *survey measurement and process quality, 141-164*.

Kuhlthau, C. C. (2010). Guided Inquiry: School Libraries in the 21st Century, *School Libraries Worldwide*, Volume 16, Number 1, pages 17-28.

Lambert, J. L., & Fisher, J. L. (2013). Community of inquiry framework: Establishing community in an online course. *Journal of Interactive Online Learning*, *12*(1), 1-16.

Lattin, J. M., Carroll, J. D., & Green, P. E. (2003). Analyzing multivariate data. Wageningen: Thomson Brooks/Cole Pacific Grove.

Lazim, A.,Hafriz, N. A.,Yazid , S., Noor, M. M. N.&Wan ,A. W. A. (2013). The use of Web 2.0 in e-learning: evidence From a public university in Malaysia. *3rd International Conference For e-learning & Distance Education.*

Lee, R. & Faulkner, M. (2010). The roles of extrinsic factors in a community of inquiry model of e-learning.*2010 Occasional Papers on Learning and Teaching at UniSA*, 1-13.

Leiyu, S. (2008). *Health Services Research Methods*. 2nd Edition, Delmar learning, USA.

Lena, B. & Marlene K. (2013). E-learning from a student's view with focus on Global Studies. *Multicultural Education & Technology Journal, Vol. 7, Issue 2/3, pp. 176 – 19.*

Lewis, P. J. (1992). Rich picture building in the soft systems methodology, *European Journal of Information Systems*, 1(5), 351-360.

Li, M.,& Liu, Z. (2009): 'The role of online social networks in students' e-learning experiences'. Int. Conf. on Computational Intelligence and Software Engineering (CiSE 2009), Wuhan, China, pp. 1–4.

Lepper , M. R., & Cordova , D. L. (1992) . A desire to be taught : Instructional consequences of intrinsic motivation. Motivation and Emotion, 16(3), 187-208. doi:10.1007/BF00991651

Mahama, E.S. (2012). Disability and Development: The Role of Language and E-Learning. *Multicultural Education & Technology Journal, Vol. 6, Issue 3, pp.162-176.*

Mahmood, J., Dahlan, H. M., & Hussin, A. R. C. (2013a, December). Enhancement of e-learning system by using social network features. In *e-Learning, e-Management and e-Services (IC3e), 2013 IEEE Conference on*(pp. 24-29). IEEE.

Mahmood, J. B., Dahlan, H. M., & Hussin, A. R. C. (2013b). Enhancing Knowledge Sharing in e-learning by Incorporating Social Network Features.*Journal of Information Systems Research and Innovation*.

Mawaddah, M. (2013). Factors Affecting the Success of Nanotechnology Product Commercialisation in Malaysia. Universiti Utara Malaysia.

McFarlane, A., Sparrowhawk, A., & Heald, Y. (2002). On the Educational Use of Games. Cambridge: Teachers Evaluating Educational Media.

Mihaela, B., Vlad. P., Alexandru, V. & Alexandru, L. (2011). An Analysis of Social Gaming Networks in online and Face to Face Bridge Communities. *ACM, pp 35-42*.

Muntean, C. I. (2011). *Raising engagement in e-learning through gamification.* Paper presented at the Proc. 6th International Conference on Virtual Learning ICVL.

Murray, M. C., Pérez, J., Geist, D. B., & Hedrick, A. (2012). *Student interaction with online course content: Build it and they might come*. DigitalCommons@ Kennesaw State University.

Murugesan, S. (2007): 'Understanding Web 2.0', IT Professional, 9, (4), pp. 34–41.

Nasser, R., Cherif, M., & Romanowski, M. (2011). Factors that impact student usage of the learning management system in Qatari schools. *The International Review of Research in Open and Distributed Learning*, *12*(6), 39-62.

Namisiko , P. , Mindila , R. , Chepkoech , E., & Nyeris , R. (2014) . A Review of Application of Web 2.0 and Open Source Softwares in E-learning: A Baseline Survey in a Private University, Kenya . *International Journal of Computer Science Issues (IJCSI), 11*(2), 190.

Nee , A. Y. H. , & Gim, Y. G. (2015) . Use of Social Media to Enhance Personal Learning Environment in Learning of Statistics.

Neo , M ., & Neo, T. K. (2009). Engaging Students in Multimedia-mediated Constructivist Learning-Students' Perceptions. *Educational Technology & Society* , *12*(2), 254-266.

Neuman , W. L. (2007) . *Basics of Social Research Qualitative and Quantitative Approaches*,(2nd Ed.). Pearson Education, Inc.; Boston.

Norusis , M .J. (2011) . IBM SPSS Statistics 19 guide to data analysis : Pearson Education.

Oblinger, D. (2006). Games and learning digital games have the potential to bring play back to the learning expereince. *Educause Quarterly,* 5-7.

Ofori-Dwumfuo, G. O. & Paatey, E. (2011). The design of an electronic voting system. *Research Journal of Information Technology, Vol.3,No.2, pp.91-98.*

Oliver, R., & Omari, A. (2001). Student responses to collaborating and learning in a web-based environment. *Journal of Computer Assisted Learning*, 17(1), 34-47.

Olson, J., Codde, J., deMaagd, K., Tarkleson, E., Sinclair, J., Yook, S.& Egidio, R. (2011). An Analysis of e-Learning Impacts & Best Practices in Developing Countries *With Reference to Secondary School Education in Tanzania.*

Oriogun, P. K. (2003). Towards understanding online learning levels of engagement using the SQUAD approach to CMC discourse. *Australian Journal of Educational Technology,* 19(3), 371-387.

Paechter, M., Maier, B. & Macher, D. (2010). Students' Expectations and Experiences in E-learning: their Relation to Learning Achievements and Course Satisfaction. *Computers & Education, Vol. 54, pp. 222-229.*

Pallant, J. (2013). SPSS survival manual: A step by step guide to data analysis using SPSS. New York: McGraw-Hill International.

Pallant, J. (2011). SPSS Survival Manual (4th ed., p. 359). British library. Retrieved from http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle: SPSS +Survival+Manual#7.

Pallant, J. (2001). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS for Windows (Versions 10 and 11): SPSS Student Version 11.0 for Windows*. Milton Keynes, UK, USA: Open University Press.

Parise, S., & Crosina, E. (2012). How a mobile media game can enhance the educational expereince. *MERLOT Journal of Online Learning and Teaching,* 8(3), 209-222.

Park , H.M.(2008). Univariate analysis and normality test using SAS, Stata , and SPSS . *The University Information Technology Services (UITS) Center for Statistical and Mathematical Computing , Indiana University* .

Phan, M. H., Jardina, J. R., Hoyle, S.& Chaparro, B. S.(2012). "Examining the Role of Gender in Video Game Usage, Preference, and Behavior". Proceedings of the Human Factors and Ergonomics Society Annual Meeting. 56 (1): 1496-1500

Picciano, A. G. (2002). Beyond student perceptions: issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Networks,,* 6(1), 21-40.

Posea, V., Balint, M., Dimitriu, A. & Iosup, A. (2010). An Analysis of the BBO Fans Online Social Gaming Community. *In RoEduNet, IEEE, p 1-6.*

Powell, E. M., Finkelstein, S., Hicks, A., Phifer, T., Charugulla, S., Thornton, C., Barnes, T., & Dahlberg, T. (2010). SNAG: Social Networking Games to Facilitate Interaction. In *Proceedings of the 28th of the internationalConference Extended Abstracts on Human Factors inComputing Systems,pp* 4249-4254.

Premagowrie, S., Kalai, V. R. & Ho, R. C. (2014). Online forum: a platform that affects students' learning?'. *American International Journal of Social Science, 3*(7), 107-116.

Prensky, M. (2006). Don't bother me Mom - I'm learning. Paragon House

Prensky, M. (2001). Digital game-based learning, New York, NY: McGraw-Hill.

Ricci, K. E., Salas, E. & Cannon-Bowers J. A. (1996). Do computer games facilitate knowledge acquisition and retention. *Military Psychology*, 8(4), 295-307.

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.

Rodrigo de Oliveira., Mauro, C. & Nuria, O. (2010). MoviPill: Improving Medication Compliance for Elders Using a Mobile Persuasive Social Game. *ACM, pp. 251-260.*

Rodrigues, J. J., Sabino, F. M., & Zhou, L. (2011). Enhancing e-learning experience with online social networks. *IET communications, 5*(8), 1147-1154.

Roither, M. (2012). Beim e-learning sind viele Stu ¨hle leer, *Salzburger Nachrichten, p. 46.*

Rovai, A. P. (2002). Building sense of community at a distance [Electronic Version]. *International review of research in open and distance learning,* 3, 1-16.

Roy, K. (2006). The impact of learning styles on interactivity in asynchronous e-learning. *Performance Improvement,* 45(10).

Royle, K. (2008). Game-based learning: A different perspective. Innovate: Journal of Online Education, 4(4). Retrieved from http://www .innovateonline. info/ pdf /vol4_issue4/Game-Based_Learning- __A_Different_Perspective.pdf

Sabino, F. M. R. (2010). Contributions of online social networks for e-learning. *Dissertation Abstracts International* ,1-54.

Safran, C., Gütl, C. & Helic, D. (2007). The Impact of Web 2.0 on Learning at a Technical University - A usage survey. In T. Bastiaens & S. Carliner (Eds.), *Proceedings of E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 436-443)

Salkind, N. J. (2009). *Exploring Research,* (7th Ed.). Pearson Education, Inc.:USA.

Salomon, G. (2002). Technology and pedagogy: Why don't we see the promised revolution ? Educational Technology, 42(2), 71-75.

Sangra, A. Vlachopoulos, D. & Cabera, N. (2012). Building an Inclusive Definition of E-Learning: An Approach to the Conceptual Framework. *The International Review of Research Open and Distance Learning*, 13(2), 145-159.

Schmidt, M. E., & Vandewater, E. A. (2008). Media and attention, cognition, and school achievement. The Future of Children, 18(1), 63-85.

Sekaran, U. (2000). Research methods for business: A Skill Building Approach. Third Ed. New York :John Wiley&Sons,Inc.,p.288.

Sekaran, U. (2003). Research methods for business . Hoboken: NJ: John Wiley & Sons.

Sekaran, U., & Bougie, R. (2010). Research methods for business: A Skill Building Approach (5th. ed.). John Wiley & Sons Ltd., United Kingdom.

Sekaran, U., & Bougie, R. (2013). Research Methods for Business: A Skills-Building Approach.(6th Ed). John Wiley & Sons, Inc.

Sejzi, A. A., & Arisa, B. (2013). Learning Management System (LMS) and Learning Content Management System (LCMS) at Virtual University. In *2nd International Seminar on Quality and Affordable Education (ISQAE), Johor, Malaysia. http://www. isqae. com.*

Shea, P. J., Fredericksen, E. E., Pickett, A. M., & Pelz, W. E. (2003). A preliminary investigation of "teaching presence" in the SUNY learning network. *Elements of quality online education: Practice and direction*, *4*, 279-312.

Sher, A. (2009). Assessing the relationship of student-instructor and student-student interaction to student learning and satisfaction in web-based online learning environment. *Journal of Interactive Online Learning*, *8*(2), 102-120.

Silva, E. (2010). Gamifying learning with social gaming mechanics. *The Masie learning center perspectives*, 61-62.

Soer, R., Reneman, M. F., Vroomen, P. C., Stegeman, P., & Coppes, M. H. (2012). Responsiveness and minimal clinically important change of the pain disability index in patients with chronic back pain. Spine, 37(8), 711.

Sophie, E.P., Elizabeth, B. & Mohammad, D. (2010). Adaptable Personalised E-Learning Incorporating Learning Styles. *Campus-Wide Information Systems, Vol. 27 Issue 2, pp. 91-100.*

Spears, L. R. (2012). Social Presence, Social Interaction, Collaborative Learning, and Satisfaction in Online and Face-to-Face Courses.

Squire, K. & Jenkins, H. (2004). Harnessing the power of games in education, *Insight*, (3)1, 5-33.

Smith, J. D. (2012). Single-case experimental designs: a systematic review of published research and current standards. Psychol Methods, 17(4), 10.

Steckbauer, S. E. (2005). An Analysis of Social Presence in Online Learning. *Month*.

Sukanlaya, S., Cameron, N.& Kieren , J. (2013). Increasing Learners' Satisfaction Intention to Adopt more E-learning. *Education and Training, Vol. 55, Issue 1, pp. 83-105.*

Susan, R.M. & Bradley J.C. (2010). Transformative learning: UAE, Women and Higher Education. *Journal of Global Responsibility, Vol. 1, Issue 1, pp. 127-148.*

Swan, K., Shea, P., Richardson, J., Ice, P., Garrison, D. R., Cleveland-Innes, M., & Arbaugh, J. B. (2008). Validating a measurement tool of presence in online communities of inquiry. *E-mentor*, *2*(24), 1-12.

Swan, K., & Shih, L. F. (2005). On the nature and development of social presence in online course discussions. *Journal of Asynchronous learning networks*, *9*(3), 115-136.

Szell, M. & Thurner, S. (2010). Measuring Social Dynamics in a Massive Multiplayer Online Game. *Social Networks, Vol.32, pp 313-329.*

Tabachnick, B. G., &Fidell, L. S. (2007). Using multivariate statistics (5th ed.). Boston, MA: Allyn & Bacon.

Thomas, D., & Brown, J. S. (2011). A new culture of learning: Cultivating the imagination for a world of constant change. North Charleston, SC: CreateSpace.

Trepte, S., Reinecke, L., & Juechems, K. (2012). The social side of gaming: How playing online computer games creates online and offline social support. *Computers in Human Behavior, 28*(3), 832-839.

Van den Broeck ,J.,&Fadnes, L.,T.(2013).Data Cleaning Epidemiology:Principles and Practical Guidelines (pp.389-399):Springer.

Vassileva, J. (2008). Toward social learning environments. *Learning Technologies, IEEE Transactions on, 1*(4), 199-214.

Water.org ,About Farmville2 and safe water , Accessed http://water.org/post/farmville-2-and-safe-water/ ,on 26 January ,2016.

Wei, X., Yang, J. ,Adamic, L. , Ara´ujo, R. &Rekhi , M. (2010). Diffusion Dynamics of Games on Online Social Networks. In *WOSN 10*.

Weintraub, D., Mamikonyan, E., Papay, K., Shea, J. A., Xie, S. X., & Siderowf, A. (2012) . Questionnaire for impulsive-compulsive disorders in Parkinson's Disease–Rating Scale. Movement Disorders, 27(2), 242-247.

Wikia, About FarmVille, Accessed http://farmville.wikia.com/wiki/FarmVille, on 30th January, 2016

Wikipedia, About FarmVille, Accessed https://en.wikipedia.org/wiki/FarmVille,on 5 February, 2016.

Xiao, E. & Daniel, H. (2011). Classification of Natural Language Messages Using a Coordination Game. *Experimental Economics, Vol.14, No. 1, pp 1–14.*

Xu, Y., Cao, X., Sellen, A., Herbrich, R. & Graepel, T. (2011). Sociable Killers: Understanding Social Relationships in an Online First-person Shooter Game. *In CSCW 11, pp.197-206.*

Zikmund, W. G. (2003). Business research methods (7th ed.). Ohio: Southwestern Educational Publishing.