INTERACTIONS QUALITY IN MOODLE AS PERCEIVED BY LEARNERS AND ITS RELATION WITH SOME VARIABLES

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ABSTRACT

The aim of this study was to identify learners' perceptions of the quality of interaction in Moodle and investigate the effects of gender, grade point average (GPA), individualized learning experiences and their experiences in using Moodle factors in perceiving the quality of interaction. A questionnaire was used to collect data after being validated. It was distributed to 57 undergraduate students.

Results show that students perceived the quality of interaction positively and that there were no significant differences in the means for the four variables dealt with in this study which means that the wide diffusion of computers into educational fields and into the society at large in the last few years enabled students to develop more positive perceptions of information technology applications independent from their basic individual differences such as gender, GPA, computer experience, and individualized learning experience. In terms of ranking of interaction types learners show that their interaction with themselves comes in first, then with the instructors and finally with content. The study recommends that higher education institutions should continue using Moodle and encourage faculty members to adopt it in their teaching because of its distinctive features.

Keywords: **MOODLE, E learning, learners' perception**

INTRODUCTION

Learning through the Internet (Electronic learning) has grown dramatically over the past two decades as technology has been implemented extensively into education and training. Electronic learning may be defined as instruction delivered electronically via the Internet, Intranets, or multimedia platforms such as CD-ROM or DVD (Hall, 2003; O'Neill, Singh, & O'Donoghue, 2004). Since many users today have easy access to direct Internet connections, e-learning is often identified with web-based learning (Hall, 2003). There are various courseware tools available that provide educational and training programs to organize and disseminate information in a systematic, systemic and interactive matter either synchronously or asynchronously. Virtual learning environments (VLEs), open learning systems, web-based learning, constructivist learning environments, computer supported learning systems or course-based management systems may be used in conjunction with traditional classes (i.e., blended, hybrid, or web-enhanced courses) or as a standalone platform for distance learning purposes.

E-learning can be implemented in a variety of ways, such as through the use of self-paced independent study units, asynchronous interactive sessions (where participants interact at different times) or synchronous interactive settings (where learners meet in real time) (Ryan, 2001).

Researchers have demonstrated that a student's active involvement in the learning process enhances learning, a process often referred to as active learning (Benek-Rivera & Matthews, 2004; Sarason & Banbury, 2004).

Simply stated, active learning involves "instructional activities involving students in doing things and thinking about what they are doing" (Bonwell & Eisen, 1991, p. 5). Interactive instruction or "learning by doing" is not a new practice and has been found to result in positive learning outcomes (Picciano, 2002; Watkins, 2005). Because many new technologies and web based activities are interactive, online coursework has the potential to create environments where students actively engage with material and learn by doing, refining their understanding as they build new knowledge (Johnston, Killion & Omomen, 2005; Pallof & Pratt, 2003).

As Driscoll (2002) and Scardamalia (2002) observe, when students become active participants in the knowledge construction process the focus of learning shifts from covering the curriculum to working with ideas and using technology tools 'to think with' facilitates working with ideas and learning in the process.

Integrating technology for the sole purpose of using technology should not be the goal of any educational or training program that strives to provide substantial learning outcomes.

Integrating or using technology should be used as a tool and provide a platform for achieving objectives and standards (Reigluth, 1999). Using technology should enhance learning and the objectives and goals of any training or educational program and should be organized systematically and efficiently. Technology integration can provide the users or learners with more in-depth information, facilitate higher thinking skills and knowledge construction, differentiated based on one's needs and wants, as well as provide authentic materials and interactions with other individuals from various cultural and linguistic backgrounds (Smart and Cappel 2005).

The MOODLE (Modular Object- Oriented Dynamic Learning Environment) learning management system has certainly shown great development and has captured the attention of educators for two basic reasons. As a VLE it is built upon a particular and well-articulated educational philosophy (constructivism).

Additionally, and of great importance, is the fact that it is an Open Source and thus 'free', although it will still need support in the way in which it articulates with enrollment systems for example.

Moodle is the dream tool for teachers concerning course management features that it offers, integrating a wide range of resources and assessment strategies, and is powerful in content creation due to its built-in HTML editor. Particularly noteworthy is the module workshop, designed based on peer assessment.

These assessment types can be made time and password restricted, and set to allow for limited or multiple retakes. Learning tasks or projects can be designed to allow for cooperation between instructor and students or among students, using various formats of social interaction. Students can be divided into subgroups, interact with each other synchronously in chat rooms, or engage in asynchronous discussions in Wikis and forums (Brandi, 2005). One of the most striking features of the favored design approach by Moodle is the ease with which course materials can be developed and refined in an iterative fashion.

Definitions of interaction encountered within different contexts (socially-based contexts, distance education, museum education, etc.), illustrate the fact that interaction remains a vaguely defined concept, despite its implicit "hands-on" or "physical" nature. Nevertheless, there have been a number of attempts to provide a structure by identifying types, levels, varieties, or degrees of interaction in an effort to better define the role of interaction and interactivity within computer-mediated learning environments. At a minimal level, most of these attempts recognize gradations of interactivity, with some actions being more or less interactive than others, and the underlying assumption being that the higher the level of interaction, the better the outcome. For this research, a working definition of interaction which defines it as the process that actively involves the learner physically (i.e. kinesthetically) and intellectually, is adopted. This refers to more than a one-to-one call-and-response and instead implies multiple decisions and components on different levels: on one end, spatial navigation, considered to be the lowest possible form of interactive activity, manipulation of the environment or parameters of the environment as the basic middle level of interactive activity, and, on the top end, the ability to alter the system of operation itself as the highest form of interactivity.

Similarly, Pares and Pares (2001) have defined interactivity as explorative, manipulative, and contributive, categories which essentially correspond to the definition that I have adopted. In examinations of interaction, the concept of "presence" or a sense of being in a place and belonging to a group also has received attention. A student's physical presence in a face-to-face course assumes that she or he has a sense of belonging to the class or group of students enrolled in the course. He or she listens to the discussion and may chose to raise a hand to comment, to answer or to ask a question. Furthermore, this same student may develop a relationship with other students in the class and discuss topics related to the class during a break outside the classroom. However, this is an assumption and is not always true. For a variety of reasons, some students can also feel alienated in a face-to-face class and not feel part of a group. Being present in an online course has been the subject of a number of articles redefining and categorizing this concept. In an online course, the simplest definition of presence refers to a student's sense of being in and belonging in a course and the ability to interact with other students and an instructor although physical contact is not available.

However, as this concept is studied, the definition is expanding and being refined to include telepresence, cognitive presence, social presence, teaching presence, and other forms of presence. The term "community" is related to presence and refers to a group of individuals who belong to a social unit such as students in a class. In an online course, terms such as communities of inquiry, communities of learners, and knowledge-building communities have evolved.

Smart and Cappel (2006) presented an investigation that employed a large, repeated, representative and quantitative survey of academic staff and students that included a common core of question items relating to perceptions of the elements of an online learning environment (OLE). They suggested that instructors should be selective in the way they integrate online units into traditional, classroom-delivered courses. This integration should be carefully planned based on learner characteristics, course content, and the learning context.

For most participants of the study (83 percent), this was their first experience completing an online learning activity or module. In addition, the largest dissatisfaction factor reported among the participants was the time. Palmer and Holt (2009) found that students were found to give higher importance and satisfaction ratings to elements of the OLE than staff.

Students were also more likely than staff to agree that the OLE enhanced their learning. Song and McNary (2011) indicated that there was considerable variability in students' postings. Students' postings were found mostly heterogeneous across students and across modules.

Their study suggested no correlation between the number of posts and students' success. Understanding students' online interaction is important because interaction influences the quality of online learning (Trentin, 2000). According to Flottemesch's review (2000), students tend to judge the quality of distance education based on their perceived interaction in the distance education course. In addition, interactions among students in online classes can help motivate them to commit to learning (Gabriel, 2004; Rovai & Barnum, 2003). Students are motivated to be a part of the interaction and to contribute to the online interaction (e.g., online discussion) because it helps them to work collaboratively online with their peers (Gabriel, 2004; Song & Hill, 2009). To help facilitate students' online interaction for effective learning, it is important that we understand its unique characteristics. Moore (1989) defined interaction in distance education into three types: learner-content, learner-instruction, and learner-learner. This definition has served as an important framework for scholars to understand students' interaction in distance education. In studying online learning success, Swan (2002) identified that the student instructor interaction and student-student interaction positively influenced students' success. Swan (2002) further explained that discussion among students contributed to students' success, implying the importance of the quality of student-student interaction in online discussion. The importance of online interaction to students' learning experience seems clear; however, a sound theoretical foundation for determining what good quality interaction is and how it affects students' learning success is lacking (DeWever et al., 2006). To accomplish this, it is important that we have a good understanding of students' perceptions of the quality of online interaction in MOODLE.

Although e-learning (and various blended approaches that integrate online components into traditional classes) continues to grow rapidly, it still remains at an early stage of full utilization. Consequently, developers and deliverers of online learning need more understanding of how students perceive and react to elements of e-learning and their relation with other variables (since student perception and attitude is critical to motivation and learning) along with how to apply these approaches most effectively to enhance learning (Koohang & Durante, 2003).

This research assesses the perceived quality of the use of online learning modules by Moodle LMS in an undergraduate university elective course TECH (1000) study skills offered in the fall semester of 2011by the Department of Instructional and Learning Technologies at the College of Education of Sultan Qaboos University (SQU). The research questions are as follows:

- **How do students perceive the quality of interaction in Moodle?**
- **Do their perceptions of the quality of interaction in Moodle vary according to gender, grade point average, individualized learning experiences and their experiences using computer?**
- **How do students rank interactions in Moodle (student-to-student, student-to-content, and student-to-teacher)?**

THE THEORITICAL ROOTS OF MOODLE

All VLEs contain features that are designed to encourage student interaction, cooperation and participation as well as individualized learning i.e. students learning at their own pace. The theoretical bases behind Moodle have constructed a VLE explicitly built on an explicit learning theory which is called constructivism. The tenants of this theory are illustrated in five principles generated by Dougimas (2006) as follows:

- **All of us are potential teachers as well as learners - in a true collaborative environment we are both.**
- **We learn particularly well from the act of creating or expressing something for others to see.**
- **We learn a lot by just observing the activity of our peers.**
- **By understanding the contexts of others, we can teach in a more transformational way (constructivism)**
- **A learning environment needs to be flexible and adaptable, so that it can quickly respond to the needs of the participants within it.**

Dougiamas (2006) expands his view of the ways in which the designers and advocates of Moodle are consciously attempting to create and adapt the software to follow the needs of the learners. This educational philosophy means that Moodle is much less 'tool-centric' than other VLEs.

For example, Moodle will allow you to organize a course chronologically by week, conceptually by topic or socially with a 'big forum' as essentially a free format structure. There is much less emphasis upon static content and a correspondingly greater emphasis on tools for extending discussions and constructing artifacts. This can be shown as indicated by Cole (2005) when he compared Moodle with BlackBoard and WebCT. He found four more features in Moodle that do not exist in either BlackBoard or WebCT.

These features are student peer review, self-assessment of submissions, student journals, and an embedded glossary. An important principle is that Moodle is Open Source Software. This means that the source code is freely available to be modified by end-users and there is a world-wide community to help solve problems and implementations. Colleges and universities are increasingly making use of this cost-effective solution.

THE IMPORTANCE OF INTERACTION ON MOODLE

Students' perceptions of course interactions can influence their assessment of online course quality (Klesius, Homan, and Thompson 1997; Zirkin and Sumler 1995). Studies suggest that students who succeed in an online course do so because the course allows them to be active participants (Verneil and Berge 2000) and promotes collaborative learning (Miller and Miller 1999; Berge 1995). Fulford and Zhang (1993) found that students who perceive a course to be highly interactive will derive more satisfaction from the instruction than students who perceive the course to be less interactive. To ensure that their courses promote effective interaction, instructors need to confirm that students understand the instructor's expectations, that course content is easy to follow, and that opportunities for feedback among students and instructor exist (LaMonica 2001).

Moore and Kearsley (1996) describe three categories of interactivity: student-instructor, student-student, and student-course content. Each category can be further subdivided to account for the specific character of an interaction—that is, where it occurs, who initiates it, and in what time frame it is achieved. Interactions may happen in public places like discussion boards and in more private spaces like e-mail; a student may initiate interaction with an instructor or vice versa; and interactions may occur synchronously (e.g., through instant messaging) or asynchronously (e.g., through listserv posting).

Sher (2009) Indicated that the positive and significant relationship between interaction dynamics and student learning and satisfaction outcomes illustrates the importance of learner-instructor, and learner-learner interactions. It is imperative that Web-based distance learning programs provide students with what is valued in education: interaction with instructors and other students.

CONTEXT AND PARTICIPANTS

The context of the study was an undergraduate level university elective online course (TECH 1000, Study Skills) that was delivered via Moodle in the fall semester 2011. The course is offered by the department of Instructional and Learning Technologies at the College of Education of Sultan Qaboos University.

The course consisted of eleven modules (time management, note taking, concentration and listening, scientific research, information searching, instructional communication, preparing for tests, critical thinking, working in group, self regulation, and psychological stress management).

For each module, students were asked to complete topic related readings and participate in asynchronous online discussion in the main discussion board in the course Moodle site.

At the end of each module, students were asked to write a learning journal to reflect and evaluate their learning experience for that module. Students' learning journals were posted in the private group page that was set for each group to which only the student and the instructors had access. Students received a grade for each module and the final project.

The primary means of communication among students and the instructor took place in the course Moodle site. Email was used when students had specific individual questions for the instructor, but was not considered in this study.

Course contents are placed in the Moodle course resources before the start of each class. Students can browse the contents through the Internet.

At the end of class, students can review the content, discuss with peers, or pre-visit resources for the new class in the Moodle e-learning platform anytime and anywhere. There were 57 students in the class, and 56% were female (N=32) and 44% were male (N=25).

INSTRUMENT

The instrument was a questionnaire Liker-type with a five point scale ranging from strongly agrees (5) to strongly disagree (1). It consisted of two parts one part for demographic information about students and the second part of the instrument contains twenty items. The first eight items for measure learner-instructor interaction, the second four items measure learner-content interaction and the rest of the items measure learner -to-learner interaction (see Appendix 1 for these items). The instrument was developed from the available literature. It was given to a panel of SQU faculty members for face validation. The internal consistency of the instrument was found to be 0.87 as measured by alpha Cronbach and this value is sufficient for the purpose of this study. After collecting the data, it was analyzed by the use of the statistical package for social sciences (SPSS).

RESULTS AND DISCUSSIONS

To answer the first question of this study which states "How do students perceive the quality of interactivity in Moodle ?, descriptive statistics was used to find the means and standard deviations for each item. Table (1) below shows the results obtained from the analysis. It is clear from the table that the students' perceptions for the items range from 4.47 for item 1 which states "*The teacher helped to guide on-line discussions between students*" to 1.87 for item 6 which states, "*I didn't receive enough helpful on-line feedback from my teacher*." In addition to that, it is observed from the table that 16 items scored above 4.0 which mean that the students' perceptions for the quality of interaction with instructor are positive.

The overall mean for the items is 3.88.This result is supported by the fact that Moodle has the power to support students' participation and collaboration in the learning process. Students' positive perceptions of Moodle in this study is not surprising as Melton (2006) also pointed that Moodle conforms to many of the conventions for usability: it has a simple interface, uses a minimal number of words, features rollovers providing extra information, and often includes simple icons with the words to aid users.

These features could have contributed to the positive perceptions of the students in the case study. The findings of this study are consistent with that of Kirner, Custodio, and Kirner (2008) who concluded that the Moodle system had a satisfactory level of usability as perceived by a group of teachers that had used it in their classes.

Table: 1
Descriptive Statistics for students' perception

Std. Deviation	Mean	Maximum	Minimum	N	Items
.62977	4.4737	5.00	2.00	57	it1
.95971	3.8421	5.00	1.00	57	it2
.81841	4.3860	5.00	2.00	57	it3
.79116	4.2632	5.00	1.00	57	it4
.74118	4.3214	5.00	2.00	56	it5
.98326	1.8772	5.00	1.00	57	it6
.76253	4.2456	5.00	1.00	57	it7
1.03557	4.0179	5.00	1.00	56	it8
.74903	4.1429	5.00	2.00	56	it9
1.05696	3.9123	5.00	1.00	57	it10
.71985	4.2500	5.00	2.00	56	it11
.86790	2.2857	5.00	1.00	56	it12
.76233	4.2182	5.00	2.00	55	it13
1.20697	2.1579	5.00	1.00	57	it14
.64036	4.0893	5.00	2.00	56	it15
.95193	3.6964	5.00	2.00	56	it16
.71146	4.4464	5.00	2.00	56	it17
.62878	4.4561	5.00	2.00	57	it18
1.01985	4.1754	5.00	1.00	57	it19
.65322	4.4211	5.00	3.00	57	it20
.29917	3.8838	4.45	2.95	57	sum1

To answer the second question of this study which states, "Do students' perceptions of the quality of interactivity in Moodle vary according to gender, grade point average, individualized learning experiences and experiences using computer"? The T test for independent samples was used to test for differences in the gender variable and one way analysis of variance was used to test for variability in grade point average, individualized learning experiences and experiences using computer. The following tables show the results.

Table: 2
Independent sample t- test for gender variable

Sign.(two tailed	T value	Degree freedom	S.D.	Means	Number	Gender
0.77	0.30	55	0.33	3.89	25	Male
			0.27	3.87	32	Female

It is clear from the above table (2) that there is no significant difference in means of the students' perception of the quality of interactivity in MOODLE due to gender factor. Male and female students give similar ratings for the overall quality of interactivity in Moodle. This means that the gender variable has no effect on the way of looking at the quality of interactivity.

Concerning the other variables the following table shows the results of ANOVA for the three variables

Table: 3
Summary of ANOVA tables for the three variables

Significant	F value	Variables
0.85	0.17	Grade Point Average
0.71	0.35	Experience in learning with MOODLE
0.80	0.17	Experience in individualized learning

As indicated in the above table, there is no significant difference in students' perceptions of the quality of interaction with respect to the three variables, which means that the GPA, experience in learning with Moodle and experience in individualized learning have no effect on the way of perceiving and looking at the quality of interaction by students who use Moodle. From this result, it seems that according to Pektas and Demirkan (2011) the widespread utilization of computers in educational settings and into the community at large in the recent years enabled students to develop more positive perceptions of information technology implementation independent from their basic individual differences such as gender, GPA, computer experience, and individualized learning experience. The above results agree with Pektas and Demirkan (2011) and contradict Gefen, Karahanna & Straub (2003) who suggested that computer users' prior experience with technology affects their attitudes about technology in general. The greater amount of experience users have with technology the higher the levels of users' satisfaction in learning to use new technology . These results suggest that students with more experience with technology and e-learning rate it more positively.

To answer the third question of this study which states, "How do students rank interactions in Moodle (student - to - student, student - to - content, and student - to - teacher)? Descriptive statistics were used as shown below in table (4). From the data it is clear that the means of the three categories of interaction in table (4) are to some extent equal with very few differences.

One can rank them in this order student to student interaction which comes first with a mean of 3.88, then student to instructor interaction with a mean of 3.86 and finally student to content interaction with a mean of 3.72.

This result could be explained by the fact that students may feel more comfortable when communicating and interacting with each other than interacting with their instructors due to many factors e.g., age, experience, interest and so on.

In addition to that, students may prefer interacting with their instructors who could explain the content to them rather than interacting with the content itself which might be difficult for them to understand by themselves.

Table: 4
Descriptive Statistics for the three interactions

Std. Deviation	Mean	Maximum	Minimum	Interaction
.39187	3.8596	4.50	2.50	Student-instructor interaction
.42517	3.7184	4.60	2.80	Student-content interaction
.42157	3.8844	5.00	2.71	Student-student interaction

CONCLUSION

The students who are using the Internet for learning purposes and have a significant positive relationship with the usage of Internet and Virtual Learning Environment, they perceive it positively. Most of the students view Virtual Learning Environment as a useful tool; because of the usefulness of VLE most of them are using it. Developing positive perception towards using the Internet and computers in a virtual learning environment will be an important goal for administrators of academics in higher education.

The aim of the study was to identify the learners' perception of the quality of interaction in Moodle and investigate the relationship of gender, grade point average, individualized learning experiences and their experiences using computer as factors in perceiving the quality of interaction. Results show that there are no significant differences in the means for the four variables dealt with in this study which means that the widespread penetration of computers into educational fields and into the society at large in the recent years enabled students to develop more positive perceptions of information technology applications independent of their basic individual differences such as gender, computer experience, and individualized learning experience. In terms of preferences of interaction types learners show that their interaction with each other comes first, then with the instructors, and finally with content.

These results suggest that faculty members should be encouraged to adapt the use of Moodle in their teaching.

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REFERENCES

Benek-Rivera, J., and Matthews, V. E. (2004). Active learning with jeopardy: Students ask the questions. *Journal of Management Education*, *28*, 104-118.

Berge, Z. (1995). The role of the online instructor/facilitator. *Educational Technology* 35 (1): 22-30.

Bonwell, C. C., and Eisen, J. A. (1991). *Active learning: Creating excitement in the classroom* (ASHE-ERIC Higher Education Report No. 1). Washington, DC: George Washington University.

Brandl, K (2005). "Are you ready to "MOODLE""? *Language Learning & Technology, 9*(2),.16-23, http://llt.msu.edu/vol9num2/review1/, Accessed 30 January, 2012.

Cole, J. (2005). *Using Moodle: Teaching with the Popular Open Source Course Management System,* O'Reilly Community Press, Sebastopol, CA

DeWever, B., Schellens, T., Valcke, M., and Van Keer, H. (2006). Content analysis schemes to analyze transcripts of online asynchronous discussion groups: A review. *Computers & Education, Volume 46*(1), 6-28.

Dougiamas, M. (2006) 'Pedadgogy' (blog) from http://docs.moodle.org/en/Pedagogy

Driscoll, M. (2002). How people learn (and what technology might have to do with it). ERIC Clearinghouse on Information and Technology Syracuse, NY. Retrieved 5 January 2006 from http://www.ericdigests.org/2003-3/learn.htm

Flottenmesch, K. (2000). Building effective interaction in distance education: A review of the literature. *Educational Technology, 40*(3),

Fulford, C. P., and Zhang, S. 1993. Perceptions of interaction: The critical predictor in distance education. *American Journal of Distance Education* 7 (3): 8-21.

Gabriel, M. A. (2004). Learning together: Exploring group interactions online. *Journal of Distance Education, 19*(1), 54-72.

Gefen, D., Karahanna, E., and Straub, D. W. (2003). Inexperience and experience with online stores: The importance of TAM and trust. *IEEE Transactions on Engineering Management, 50*(3), 307-321.

Hall, B. (2003). FAQs about e-learning. Retrieved August 15, 2003, from www.brandonhall.com/public/faqs2/faqs2.htm

Johnston, J., Killion, J., & Oomen, J. (2005). Student satisfaction in the virtual classroom. *The Internet Journal of Allied Health Sciences and Practice*. *3*. Retrieved January 26, 2006, from http://ijahsp.nova.edu/articles/vol3num2/Johnston%20%20Printer%20Version.pdf

Kirner, T. Custodio, C., & Kirner, C. (2008). Usability evaluation of the Moodle system from the teachers' perspective. *in* Miguel Baptista Nunes & Maggie McPherson, ed., 'e-Learning', *IADIS*, pp. 371-378 .

Klesius, J., S. H., & T. Thompson. (1997). Distance education compared to traditional instruction: The students' view. *International Journal of Instructional Media* 24 (3): 207-220.

Koohang, A., & Durante, A. (2003). Learners' perceptions toward the web-based distance learning activities/assignments portion of an undergraduate hybrid instructional model. *Journal of Informational Technology Education* 2, 105-113. Available at http://jite.org/documents/Vol2/v2p105-113-78.pdf

LaMonica, L. (2001). The role of the instructor in Web-based instruction: Are we practicing what we preach? Reterieved December 1, 2012 http://www.usoe.k12.ut.us/curr/ednet/training/resources/ednetRes/Role_Instructor.pdf

Melton, J. (2006). The LMS Moodle: Auseability evaluation. *Languages Issues 11*/12 (1) 1-24.

Miller, S. M., and K. L. Miller. 1999. Using instructional theory to facilitate communication in Web-based courses. *Educational Technology & Society* 2 (3). http://ifets.ieee.org/periodical/vol_3_99/miller.html (reterieved December 31, 2011)

Moore, M. G., and G. Kearsley. 1996. *Distance education: A systems view*. Belmont, CA: Wadsworth Publishing Company.

Moore, M. G. (1989). Three types of interaction. *The American Journal of Distance Education, 3*(2), 1-6.

O'Neill, K., Singh, G., and O'Donoghue, J. (2004). Implementing elearning programmes for higher education: A review of the literature. *Journal of Informational Technology Education, 3*, 313-323. Available at http://jite.org/documents/Vol3/v3p313-323-131.pdf

Pallof, R., and Pratt, K. (2003). *The Virtual Student: A Profile and Guide to Working with Online Learners.* San Francisco, CA: Josey-Bass Publishers.

Palmer,S. and Holt, D. (2009). Staff and student perceptions of an online learning environment: Difference and development. *Australasian Journal of Educational Technology, 25(3), 366-381*

Pares, N. and Pares, R.(2001). Interaction-Driven Virtual Reality Application Design. A Particular Case: El Ball del Fanalet or Lightpools. *PRESENCE: Teleoperators and Virtual Environments*,10,. 236-245.

Pektas, S. and Demirkan, H. (2011). Experiences with MOODLE as a communication tool for design teamwork: A users' perspective. *Journal of the faculty of architecture* 28 (2) 227-241.

Picciano, A. G. (2002). Beyond student perceptions: Issues interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Networks, 6*, 20-41.

Reigluth, C. M. (1999). *Instructional design theories and models, A new paradigm of instructional theory volume 11,* Lawrence Erlbaum Associates, Publishers, Mahmah, N. J.

Rovai, A. P., & Barnum, K. T. (2003). On-line course effectiveness: An analysis of student interactions and perceptions of learning. *Journal of Distance Education, 18*(1), 57-73

Ryan, S. (2001). Is online learning right for you? *American Agent & Broker, 73*(6), 54-58

Sarason, Y. & Banbury, C. 2004. Active learning facilitated by using a game-show format or who doesn't. *Journal of Management Education*; *28* (4), 509-518.
Scardamalia, M. (2002, April). Creative work with ideas: A luxury? Paper presented at the annual meeting of the *American Psychological Association*, New Orleans, LA.

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*

Song, L. & Hill, J. R. (2009). Understanding adult learners' self regulation in online environments: A qualitative study. *International Journal of Instructional Media, 36*(3), 263-274.
Song, L., and McNary. S. (2011). Understanding Students' Online Interaction: Analysis of Discussion Board Postings. *Journal of Interactive Online Learning, 10(1),1-14.*

Smart, K. and Cappel, J. (2006). Students' Perceptions of Online Learning: A Comparative Study. *Journal of Information Technology Education, (5) 201-219.*

Swan, K. (2002). Building learning communities in online courses: The importance of interaction. *Education, Communication & Information*, *2*(1), 23-49

Trentin, G. (2000). The quality-interactivity relationship in distance education. *Educational Technology, 40*(1), 17-27

Verneil, M., and Berge, Z. (2000). Going online: Guidelines for faculty in higher education. *Educational Technology Review* 6 (3): 13-18.

Watkins, R. (2005). Developing interactive e-learning activities. *Performance Improvement, 44*, 5-7.

Zirkin, B. G., and Sumler, D. E. (1995). Interactive or non-interactive? That is the question!!! An annotated bibliography. *Journal of Distance Education* 10 (1): 95-112. http://cade.athabascau.ca/vol10.1/zirkinsumler.html Retrieved December 31, 2012

APPENDIX: 1

Sultan Qaboos University
College of education Department of Instructional and Learning Technologies

Please answer the questions below. Your response will be used for research purposes only and will be treated confidentially.

First: General information:

Put (X) on your choice

Gender: ☐ **male** ☐ **female**

GPA: ☐ **more than 3** ☐ **between 2 and 3** ☐ **less than 2**

Experience in learning with MOODLE: ☐ **good** ☐ **average** ☐ **no experience**

Experience in individualized learning: ☐ **good** ☐ **average** ☐ **no experience**

APPENDIX: 2

Please Put √ on your choice for each item from the following

S. disagree	Disagree	Uncertain	Agree	S. agree	Item	s. number
					The teacher helped to guide on-line discussions between students.	1
					The teacher gives us immediate feedback	2
					The immediate feedback from the teacher helps us to learn more	3
					The teacher used the on-line environment to regularly update students about relevant unit of study information	4
					The teacher's interaction with me on-line encouraged me to get the most out of my learning.	5
					I didn't receive enough helpful on-line feedback from my teacher.	6
					The teacher helped to focus on-line discussions between students	7
					The on-line activities helped me to understand the face-to face activities in this unit of study	8
					The on-line teaching materials are designed to really try to make topics interesting to students	9

					The on-line activities are designed to get the best out of students	10
					The workload for the on-line component of this unit of study is too heavy.	11
					The on-line teaching materials in this unit of study are extremely good at explaining things.	12

					students' on-line submissions encouraged me to investigate further sources of knowledge.	**13**
					students' on-line submissions were not useful and effective.	**14**
					students' on-line submissions encouraged me to evaluate my learning in a good way.	**15**
					students' on-line submissions encouraged me to interact with them regardless of their scientific value.	**16**
					students' on-line submissions helped me understand my ideas from a new perspective.	**17**
					I interacted with students' on-line postings/submissions even if they weren't assessed	**18**
					I do not feel embarrassed from my submissions and ideas	**19**
					We had a good time for discussion among ourselves	**20**