

The direct effect of interaction quality on learning quality the direct effect of interaction quality on learning quality

Eta Hazana Abdullah

Abstract

New information technology such as internet caused some changes in education system. So, new interaction between people has changed. Interaction has complex and mutual communication. This new information technology caused to appear the distance education systems such as virtual universities and educational institute .This is a descriptive – deductive study and statistical population included MA students of Tehran virtual university and 385 people were selected randomly. Pearson correlation test was used and found a direct significant relationship between interaction and learning quality in virtual university. Results showed that quality of interaction has direct effect on learning quality, so increasing quality in the virtual learning environment is result of interactions in these institutions. This study concluded that there is a direct and significant relationship between instructor-content interaction and quality of virtual university. Thus when the interaction in virtual universities is increased, the motivation of student will be increased accordingly

Key words: distance education, interaction, learning, virtual

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Introduction

Rapid growth of communication and information technology lead to some changes in education system in the world and we can mention that emerging technology such as internet, online interaction tools impose changes on educational system (Dijoodi). These technologies produce education environments that is independent from time and place and let teachers to teach Synchronously and Asynchronous lyand in the course or they can use them in a combined way. These environments facilitate people's accessibility who cannot present in the traditional classes and high registering in the electronic education show this fact (Alen, Kavanog, 2005, Foozdar, Komar, 2006, Alen, Se Man, 2008). Such an institution consider as an open education system and instead of their easy accessibility to the information, their interaction and communication feature are the important and fundamental aspects this interaction is far from a one dimension content transition and face the way we think in the relation between humans and things involving in the educational process with developmental terms. In fact we can mention that the thing that differentiate universities with traditional and virtual campuses is that the interaction took place by itself in relation with other people in the traditional educational system and we can see it intentionally or unintentionally in the traditional educational system but because one feature of these electronic and virtual education is that it separate the time and place dimension of student and instructor and by using these technological tools, everybody can communicate with other person in every times, interaction subjects are more complex than traditional education so experts in the area of electronic learning must pay lots of attention to this component, think full design and careful interaction opportunities in order to increase learning quality in the virtual campuses and universities is an essentiality for authorities and students and is one of the challengeable subjects in the electronic learning environment, this subject aware distance education experts to the necessity of examining the interaction in the electronic learning. Through the abovementioned subjects, the present research consider examining different kinds of interaction relation in the virtual campuses with learning quality in these campuses and researchers are look forward to recognize criteria in order to study the present situation of different kinds of interaction in the virtual campuses and deliver some suggestions on the purpose of increasing learning quality.

Interaction in the electronic learning environments:

Research texts regarding interaction refer to different kind of definition and the meaning of interaction is relation, correlation(Mollaian).Interaction in the traditional way concentrate on the face to face and class- based subjects between instructors and students but in the distant education, because there is a separation and distance regarding place and time dimension between student and instructor, interaction has complex and multidimensional concepts so as Wagner refer to defining the interaction is difficult but in spite of this he consider interaction as in distance education as a 2 lateral events that

minimally needs 2 person and attempts and believes that when events and things interact reciprocally with each other, interaction will happen. (Moore and Anderson, 2003) (Garrison 1993) define interaction as a reciprocal communication between 2 or more person in order to gain their goals and views. Anderson and Garrison consider interaction as a cooperative communication that facilitate meaning understanding. Also Anderson consider interaction as a reciprocal events needing minimally 2 attempts and things so believes that when events and things act reciprocally, interaction will happen. In this definition, interaction concepts expand with 2 lateral communication of students with peoples and things including interaction of student with content, other instructors and students.

Interaction research shows that most of them point to the key role of interaction in learning. So interaction is an important factor in success of electronic education systems and increasing learning quality in virtual campuses and universities. The following table shows some feature of electronic instruction in comparing with traditional instruction.

Traditional instruction	Electronic instruction
Students meet each other	Students are separated regarding place and time dimension.
Students regularly interact with the instructor	Students seldom meet face to face instructor
Instructor must present in an environment that distance education determined	Regarding physical dimension, instructor can present every where
Kind of interaction is simultaneously	Interaction is not simultaneously
Time and space of interaction limited to class	There is an open time and space of interaction
Instruction concentrate on gaining knowledge of students	Instruction concentrate on delivering knowledge in an interactive way

Table1, comparing electronic instruction with traditional instruction, (Cook and Yeung)

Constructivism and interaction in electronic learning:

In the present era, traditional approach of inactive information transition face with interactive capacities and constructivism. (Garrison and Anderson 2003)from the view point of constructivism, student is an active person that through social interaction with the environment establish step by step his knowledge. (Veegoteski,1987, Jonason1999, Doolittle 1999, Booford, Haper2005) so in the learning environment depending on the constructive web that is existed in the virtual campuses, communication and interaction is horizontal not vertical so on this basis learning in the web environment is democratic and cooperative. (Lee 1999) so in this situation role of instructor and student is changed in other words in the electronic instruction, student is not inactive and expand its limit to ask question. Also using interactive facilities lead student to think critically and analytically and increase cooperative work, at this point we will see this change and student is not responsible to gather more information than instructor in his mind because in this step learners access to the information in a speed that instructor access to it, so level and magnitude of interaction in the electronic learning institute impose changes on the role of instructor from absolute wise (in the traditional education system) to instructor (in a virtual institute)

Different kinds of interaction in virtual campuses:

In the virtual campuses and universities most of learning attempts are done in 2 way: synchronous, Asynchronous. So interactions in virtual institute took place in 2 way: synchronous, Asynchronous. Synchronous interaction is an interaction that peoples (learners, instructors, experts,...) interact with each other in a special time through Video

Conference, virtual classes, communication rooms and..... face to face communicate and transfer their data and opinions to each other. Asynchronous interaction is an interaction that people can communicate with each other in every time and places by entering to the web through report groups, electronic posts, ...(resources). Figure 1 show an interaction in electronic learning environment.

In another view regarding participant factors in Learning-instructing attempts we can categorize different kinds of interaction. Moore for the first time recognize different kinds of interaction in distance education and are: interaction between instructor and student (student-instructor), interaction between student and student (student-student), interaction between student and content(student-content). In this categorizing, interaction consider as a level of quality that students communicate with an important learning factor. (Danli 2010) the following table shows these 2 interactions.

But through improving technology and emerging electronic learning, this list expand through Anderson and Garrison. So regarding 3 fundamental factors in electronic instruction, 6 kinds of interaction are recognized and are: (instructor-student, student-student, student-content, instructor-instructor, instructor-content, content, content).

Student-content interaction:

Student-content interaction: a conversation is an internal education and it took place when students communicate with information and beliefs in the texts. Because most of the distance education systems are student based, students in these kinds of systems dedicate most of their time to interact with different kinds of educational content and their learning will be increased so student-content interaction increase effectiveness of learning in the virtual campuses and universities.in the electronic educational system, content consist of electronic learning texts and sources delivering through different kinds of medias. Touyinen (2000) categorize these Medias in to 5 categories that includes graphic, videos, virtual facts and voice. He paid special attention to combine voice with each of these different Medias and conclude that combining voice with each of these Medias lead to deep learning.

Instructor interaction with instructor (instructor-instructor):

Security cases and high prices of travel lead to efforts in order to find cheap ways that can engage teachers in qualified interaction in the best way and minimize their physical travel (Garrison, Anderson, 2003). Instructor-instructor interaction lead to opportunities in order to support and occupational development of teachers through communicating with coworkers; also these interaction encourage them to obtain some information regarding improvement and knowledge discovery in scientific society (Anderson, Aloomi, 1385). Such interactions depending on the webs among instructors with each other are the fundamental basics in establishing learning association in the virtual education systems; these interactions are necessary for improving and quality and quantity development of learning in the electronic learning environments (Joorjiva, Toodoro, smrikro, 2003, Zang and chen, 2012).

Instructor interaction with content (instructor-content):

This interaction is concentrate on producing content and determining learning attempts through instructors and let them to manage continuously the attempts, resources and contents producing for students and updated them (Hoolmberg, 1985, Anderson and Aloomi, 1385). In the virtual learning environment, web based smart network provide suitable opportunities for instructors in order to produce learning materials that is updated (Anderson, 2003). So instructors in the instructor-content interaction seek information and contents through adaptive search tools in an effective ways and old contents is substituted by appropriate and new contents (Anderson,2003). This subject by itself update the delivered contents so we can say that through increasing the quality of interaction between instructor and content, quality of learning is increased in the virtual campuses (Joorjiva, Toodoro, smrikro,2003, fersen,2005, Salim, 2007). Increasing such an interaction leads to automation and another kind of interaction like content-content interaction.

Content-content interaction:

Computer experts are producing and developing programs and smart factors that are different from ordinary software and have some features such as: long term life, semi automation, active and adaptive (Garison and Anderson, 2003, Moor and Anderson, 2003), in fact content-content interaction is a new kind of interaction in the electronic learning that a content is programmed in a way in order to interact with other information resources and through gaining new capacities, these contents are updated continuously (Hoolmberg, 1985, Anderson and Aloomi, 1385). Accessibility to such a content that is according to the recent scientific and technological discoveries ia one of the factors that increase learning quality in the virtual universities (Joorjiva, Toodoro, smrikro,2003, Moohanti, 2009). Now we can find some of these smart programs having features such as capability of information recovery, capability of applying other programs and capability of

resource management in the network. Regarding future of content-content interaction, we can mention that in the near future and through improving the web 3, technologies will emerge that on their basis content can automatically obtain sensory input and updated themselves and will inform instructors and students after that the changes reach to the acceptable limit. One of the obvious of them is an internet search engine that search continuously different kinds of networks and send their discovery results to the central databases.

Quality in the virtual campuses

Results of different kinds of research show that quality of interaction process influence directly on learning quality, so increasing quality in the virtual learning environment is a combined application of different kinds of interactions in these institutions and in such a situation quality of virtual campuses and universities is guaranteed (youn,2005). But regarding quality we must point this note that quality is a general concept and because it is subjective, most of the time it is complex so on the purpose of making clear this concept, delivering an accepted definition of quality to the people in an organization is necessary. Ivancevich believed that the most important point is an opinion of audience, on this basis on the purpose of making clear the quality concept in the virtual universities, we introduce this as a fundamental part obtaining instructional services because all of the university system try to deliver service to university students and these users pay cost of using these services so considering their satisfaction in evaluating and determining quality of virtual university is according to Rajasingham,2011, Farsijani and Kiamehr, 1387, Khayamdar, 1389, Evansvich,2001, Zangane, 1387)

Method of research

The present research regarding its goal is an applied one and regarding gathering data is a descriptive- correlation one. Statistical society of this research includes all master of art student of Tehran virtual university and number of statistical society is 2179 and on the purpose of determining volume of statistical sample and through estimation formula of sample volume, 327 students were selected randomly that finally 385 people answered to the questionnaires.

Measurement tools:

In this research through studying valid scientific documents and opinions of experts, questionnaires codified in 2 parts on the basis of 6 degree Likert spectrum, first part includes demographic information and second part includes questions of questionnaire. On the purpose of index reliability and validity assessing, after planning the questions, the first questionnaire was delivered to some teachers and experts and we used their opinions. So on this basis, content and criterion validity of questionnaire is approved. Also on the purpose of examining validity as a technical feature of measurement tool, we use Cronbach Alfa coefficient and the results show that validity level of this test is 931 (which is above 0/7) and show accepted validity of research.

Research finding:

Analyzing data took place through descriptive and deductive statistical method that we will explain it more at the end.

Table 2 shows statistical sample of research. As we can see. Women and men respectively composed 51 percent of statistical sample of research and 49 percent of statistical sample of research. Also age spectrum of participants is showed in the table 1' as you can see, 8 percent of participants are between 18-25 ages,52 percent between 26-35, 15 percent between 36-45 and 21 percent between 46-55 and 4 percent is above 55 age. Also 72 percent of them are practitioner and 28 percent of them are non-practitioner. Among practitioners 46 percent have lower than 5 years background, 33 percent between 5-8 percent years background, 14 percent between 13-9 years background, 4 percent between 16-20 years background and 3 percent more than 20 years background.

Sexual	woman	197	51%
	man	188	49%
age	18-25	31	8%
	26-35 years	201	52%
	36-45 years	59	15%
	46-55 years	79	21%
	55 Higher than	15	4%
job	Practitioner	277	72%
	Non-practitioner	108	28%
Job background	Lower than	179	46%
	5-8 years	128	33%
	9-13 years	53	14%
	14 -20 years	15	4%
	Higher than 20 years	10	3%

Table 3 shows descriptive statistic of research factors. In this table all of the factors evaluated with six degree scale of Likert, among different factors in this table, student-student factor has the highest mean and content-content factor has the lowest mean.

Table4 shows results of Pearson correlation test on the purpose of examining the relation between variables (different kinds of interaction) and (quality of campuses).

Table4: Pearson Correlation coefficient matrix among different kinds of interaction with quality of virtual campuses

Meaningful level for all of the research variable is lower than acceptable error level, so through 99 percent validity, there is a meaningful relation between variables. Positivity of coefficients show direct relation. Among all of these variables student-content interaction has the most powerful relation and content-content interaction has the week relation with quality of virtual campuses.

Also in this research Non Parametric Friedman Test is used in order to categorize different kinds of interactions and their preference determined through peoples answer to statistical sample.

Table4: Freidman test in order to examine meaningful dimension in categorizing different kinds of interaction in virtual campuses.

Number	385
Test statistic	99.049
Free level	5
Meaningful level	0.001

As you can see in the above table, relevant number to the meaningful level of Friedman Test is lower than acceptable error level so it is recognized that through 99 percent possibility of categorizing among variable is meaningful and there is difference among different kinds of interaction in virtual campuses.

Table5: comparing categorizing different kinds of interaction in virtual campuses

Interaction	Mean rank	rank
Student-student	4.05	1
Student-instructor	3.79	2
Content-instructor	3.41	3
Content-student	3.35	4
Student-student	3.22	5
Content-content	3.18	6

Discussion and conclusion

Distance education institute from their emerge until now have compared with traditional educational institute (Casey,2008, Benson,2003) and also the quality of these institutes because of not having face to face interaction between instructor and student and place and time dimension separation is in doubt. But the thing that attracts lots of attention regarding these institutes is using capacity of web based network in the virtual universities and campuses, this high capacity leads to interactive learning on the basis of web and smart interactive learning in these learning environments, also these opportunities made people loving continuing their education refer to these institutes. A point that we must consider in recognizing the discrimination among traditional instruction with virtual learning is that against traditional educational classes that sitting member of class and teaching of teacher is one of an important learning phenomena, in the virtual environment, in addition to the teaching of teachers, generally content of lesson and other resources and being member of classes is not sitting in the class but it means conversation and interaction with each other.

Goal of the present research is examining relation of different kinds of interaction in virtual campuses with learning quality of these campuses, this research through recognizing different interactions having relation with quality of virtual campuses is aim to provide information for experts and designers of virtual learning environment in order to design more qualified no line learning environment. This research also provide information for programmers of these educational system in order to prevent from educational failures through rapid intervention.

Also research questions were delivered and on the purpose of examining them, descriptive statistic and deductive statistic test was used.

Questions of this research are:

Question 1- what is the relation of student-instructor interaction with learning quality in virtual campuses?

Results of Pearson correlation showed that meaningful level for student-instructor interaction is lower than acceptable error level for the test, so through 99 percent validity between this interaction and quality of virtual university, there is a direct and meaningful relation. In other words, powering and increasing student-teacher interaction lead to increasing quality in virtual campuses. This result is according to research results of valri and Lord,2000, Freedenberg, 2002, Loorenz and Moore,2002, Joorjia, Toodoor, Smrikro,2003, Salim,2007, Zang and Chen,2012, Jang,2012, Kantengloo, Toorkl, Altooniski, 2013). In fact we can say that student-teacher interaction is one of an important factor in improving learning quality in virtual campuses. This interaction lead instructor to have a facilitated role in learning-instructing process, also teacher can recognize student, his endeavor better through the kind of favor he did to him during interacting with student and delivered them more influential feedback regarding quality and quantity (as a kind of encouragement, judgment, revisory).

Question 2- what is the relation of student-student interaction with learning quality in virtual campuses?

Results of Pearson correlation test show that meaningful level for student-student interaction is lower than acceptable error level for test so through 99 percent validity, there is a meaningful and direct relation between student- student interaction and quality of virtual campuses. In other words, increasing and powering student-student interaction lead to increase quality in virtual campuses. Results of this research is according to the results of Loorenz and Moore2002,Joorjiva, Toodro,Smrikro,2003, Salim,2007, Moohanti,2009, Zangand Chen,2012, Jang,2012. In fact student-student interaction leads student of distance education system to recognize themselves as a member of students

group instead of the existed place dimension and through interaction improve their identity as an university student and on the purpose of continuing learning have sufficient motivation, this common feel among students leads them to meaningful their learning in a communal environment with other counterparts.

Question3- what is the relation of content-student interaction with learning quality in virtual campuses?

Results of Pearson correlation test show that meaningful level for content-student interaction is lower than acceptable error level for the test, so through 99 percent validity there is a meaningful and direct relation and with a normal intensity between content-student interaction and quality of virtual university. In other words increasing and powering content-student interaction with normal intensity lead to increase quality in virtual campuses. Results of this research are according to results of Valri and Lord,2000, Freedenberg, 2002, Loorenz and Moore,2002, Joorjia, Toodoor, Smrikro,2003, Salim,2007, Zang and Chen,2012, Jang,2012, Kantengloo, Toorkl, Altooniski, 2013). as we have mentioned before, because virtual campuses and universities are kinds of learner-based education system, so students educating in such systems dedicated most of their time to interact with instruction content, this interaction with exploiting from web-based high technological environment can include collecting, analyzing data, hypothesis test, test design and conclusion so powering level of student-content interaction increase learning quality.

Question4- how is the relation of instructor-instructor interaction with learning quality in virtual campuses?

Results of Pearson correlation test show that meaningful level for instructor-instructor interaction is lower than acceptable error level for test, so through 99 percent validity, there is a meaningful and direct relation and with normal intensity between instructor-instructor interaction and quality of virtual university. In other words, powering instructor-instructor interaction with normal intensity leads to increase quality of virtual campuses. Results of this research is according to the results of Joorjia, Toodoro, Smrikro,2003, Zang and Chen 2012. So the way teachers interact with each other leads to update their knowledge in their field through web-based technology and also lead to economize their time and travel cost and improve their student knowledge in their field and through this learning quality will increase in virtual campuses.

Question5- how is the relation between content-content interaction and learning in virtual campuses?

Results of Pearson correlation coefficient show that meaningful level for content-content interaction is lower than an acceptable error level for test, so through 99 percent validity, there is a meaningful and direct relation and with weak intensity between content-content interaction and quality of virtual campuses. Results of this research are according to the results of Joorjia, Toodor, Smrikro, 2003, Moohanti,2009. So the more content is rich and its flexibility and adjustability is according to the recent relevant gains to the improvement in the knowledge of world, its quality will increase that this case by itself increase learning quality in virtual campuses. We must note that content-content interaction is highly depend on improvement and changes in the web so through developing generation 3 of web, capability of content-content interaction will increase, because contents look like each other can interact with each other in smart way and accomplish each other.

Question6- how is the relation between content-instructor interaction and learning quality in virtual campuses?

Results of Pearson coefficient show that meaningful level for student-content interaction is lower than acceptable error level so through 99 percent validity, there is a meaningful and direct relation between content instructor interaction and quality of virtual campuses. In other words, powering student-content interaction with normal intensity leads to increase quality in virtual campuses. Result of this research is according to the result of Joorjiva, Smrikroo, 2003, Fersen, 2005, Salim,2007. Regarding the subjects that we have mentioned, teachers can manage content of lesson before entering to the new lessons and assure regarding its validity and updated and if there is a defects in each of them can update the content or add contents in order to accomplish them.

Our basic question is that how is the relation of different kinds of interaction with quality of learning in the virtual campuses?

In general, results of Pearson correlation coefficient test shows that meaningful level for different kinds of interaction in the virtual campuses is lower than an acceptable error level, so through 99 percent validity, there is a direct and meaningful relation between instructor-content interaction and quality of virtual campuses. Among this student-student interaction has the most powerful relation and content-content interaction has the weakest relation with virtual campuses. Also Freidman test result that is used in order to categorize different kinds of interaction showed that student-student interaction is

equal to 405 and showed that importance and mean of content-content interaction is equal to 318 showing the least importance among different kinds of interaction in virtual campuses. These results are according to the results of Sang,2004, Fersen, 2005, Salim,2007, ternetin, 2009, Danli, 2010, Jang 2012, Zang and Chen, 2012, Cantagloo, Toorkel(2013). Regarding the subject that we have mentioned, interaction is one of the important and necessary factor of learning in all of the institutional systems this subject because of the place and time distance between student and instructor and not having face to face communication in the distance education system like virtual universities and campuses becomes more important. So the more different kinds of interaction in virtual campuses and universities increased, assurance and motivation of student will increase.

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Eta Hazana Abdullah

Manchester Centre for Education, School of Psychological Sciences,
Manchester Academic Health Science Centre, University of
Manchester, Coupland Street, Oxford Road, Manchester