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Zarghani, Maryam; Mohaghegh, Niloofar; Alibeik, Mohammad Reza; Motamed, Nima; and Dehnad, Afsaneh, "Evaluation of Digital Library Services at Virtual Faculties of Universities in Iran from the Perspective of Graduate Students" (2019). *Library Philosophy and Practice (e-journal)*. 3553.
https://digitalcommons.unl.edu/libphilprac/3553

Evaluation of Digital Library Services at Virtual Faculties of Universities in Iran from the Perspective of Graduate Students

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Abstract: This paper was conducted to evaluate digital library services of virtual faculties of Medical Universities in Iran from the perspective of graduate students of e-learning. This study was an applied survey conducted among graduate students studying in the virtual centers in Ministry of Health and Medical Education and Ministry of Science Research and Technology in 2017-2018. The instrument of the study was a questionnaire, the inter-item reliability of which was measured, by Cronbach's alpha coefficient (0.90). The reliability was measured by using Pearson correlation coefficient (0.79). A sample size of 378 students was selected through Cochran formula and Morgan table. The data were collected through email, online and in-person. The study was performed in 9 months (June to February 2018) and 257 completed questionnaires were analyzed by SPSS software version 18. The findings indicated 63.3 % and 36.2 % of participants belonged to MOHME and MOSRT .There were 44.7% of women and 54.9% of men. 79.3% of the virtual education centers of MOHME and 45.2% of the centers of MOSRT have been affiliated with the Central Library.The most used sources of information, in MOHME with 48.8% and in MOSRT with 63.4%, were databases. In MOHME with 31.1%, the main problem was the excessive amount of unrelated information on Internet sites, and in MOSRT with 53.8%, it was the limited availability and lending of resources from libraries with a significant level (pvalue>0.001). Students in both groups used library resources aimed at doing homework assignments (MOHME was 76.8% MOSRT 57.3%), and theses (MOHME with 57.9% and MOSRT with 51.6%. Considering the results, specific measures should be taken to improve the access to online library resources and services for students. Resources such as textbooks, theses, relevant websites and required information of virtual students should be taken into consideration.

Keywords: Digital library services, library resources, remote access to library service, virtual education

Introduction:

In the last two decades, the emergence of information technology has revolutionized the world, and made extensive changes in education. The advent of this technology and depth of this transformation is forming a modern emerging society in human life. In the rapidly evolving process of global development, communication has evolved rapidly and has transformed the face of the world(Bae, 2015) . Indeed, the magic power of the modern media has made them effective cultural instruments, with the definitely more share of the Internet than other media. One of the uses of the Internet is educational information interpreted as virtual education or virtual universities. Universities and higher education institutions have been among the first Internet users. These new media have had a great influence on the design and use of curriculum and educational resources. It has transformed traditional patterns of learning and provided the users with massive amounts of information, while the use of the Internet in education has been remarkably popular in comparison with traditional systems.

The digital library was the result of rapid technological changes in educational systems .library which the collection is stored in a digital format and accessible through a computer(Chang-Ping Hu, 2014) The term digital library is descriptive of the nature of this collection. Digital libraries are electronic libraries that can be used by many users in different regions to access their content and repositories. This type of library in terms of acquisition, provision, preparation and making accessible collections, is similar to a traditional library(Khan, 2017).

Libraries have three types of learning features: having a place to share rich information resources, keeping thoughts and supporting, facilitating and expanding education at the main organization (Abbasi, 2011) Given these roles, a digital   library has the following benefits: providing instant access to a range of resources and information that is not physically present, facilitating a learning process independent of time and space, and offering updated information(Ju, 2018). It provides opportunities for learning by delivering library resources at anytime and anywhere. The aim of study was conducted to assess the effectiveness of virtual libraries from the perspective of the graduate students of e-learning programs.

Research method

This study is an applied descriptive survey. In the first stage, an electronic questionnaire was prepared, and then the number of graduate students in virtual faculties was identified. In the next stage, a questionnaire consisting of 13 closed and open questions, which had been used previously in a research entitled "Study of the views of managers and students in virtual education centers in prioritizing the services of virtual libraries in Tehran's universities", was distributed. Its validity was confirmed by 10 experts and its reliability based on Pearson Correlation coefficient was measured (0.79)

With some minor changes, the questionnaires were distributed among 30 students of virtual education faculties/ centers in Tehran University of Medical Sciences and Shahid Beheshti, in order to measure the internal consistency by Cronbach's alpha which was 0.9. In the next stage, in correspondence with the virtual education centers of Ministry of Health and Medical Education (MOHME) and Ministry of Science Research and Technology (MOSRT), the questionnaire was sent to all graduate students studying at virtual faculties/ center.

The questionnaires were provided to students   by emails, online forms and in-person. The students' e-mail addresses were received from the universities and the questionnaire were sent to

them by the researchers. Moreover, the questionnaire link was sent to the students. The students also received questionnaires in-person at the educational centers in Tehran. The study population included all graduate students studying at the virtual education faculties/ centers of the MOHME and MOSRT that included 25 centers.

In this study, simple random sampling method was used. Since we did not have community variance in this study, Morgan table was used to determine the sample size, which was calculated by using the Cochrane formula. In this formula, P and q were 0.5, z was 96/1, and d was 0.05. The population of the study was 25050 e-learning graduate students who were studying in the two ministries (MOHME and MOSRT), in 2017-2018. The participants of the study consisted of 378 students. During a period of 9 months, 257 questionnaires were completed (from June to February 2018). The collected data were analyzed by SPSS software and presented in the form of result tables. Descriptive statistics (frequency, percentage, mean and standard deviation) were used to determine frequency distribution tables and calculate central indicators and dispersion. Then, Chi-square test was used to determine if information was meaningful or not.

Results:

The results showed 63.3% of the students were from the MOHME and 36.2% from the MOSRT. The participants consisted of 44.7% women and 54.9% men.

Less than one third of the students were in their fourth year of study (29.1%), about half of them (41.2 %) were in the age range of 20 – 30, and the majority of undergraduate students were 90.9%.

Table1. Frequency distribution of digital libraries in virtual education centers

		Ministry of Health..		Ministry of science..		Significance level
		Frequency	Percent	Frequency	Percent	
Digital library in virtual education centers	dependent on the central libraries	130	79.3	42	45.2	>0.001
	independent of the central libraries	16	9.8	10	10.8	>0.001
	No	18	11	41	44.1	>0.001
	Total	164		93		

Table 2.Frequency distribution of duration of using the library by respondents (the first purpose of research)

Duration of using the library	Ministry of Health		Ministry of science	
	Frequency	Percent	Frequency	Percent

Less than 6 months	61	37.2	36	38.7
Between 6-12 months	45	27.4	27	29
Between 1-2 years	28	17.1	15	16.1
Between 2-4 years	25	15.2	13	14
More than 4 years	5	3	2	2.2
Total	**164**	**100**	**93**	**100**
	257			

Most respondents used library resources for a period of less than 6 months (37.2% at MOHME and 38.7% at MOSRT). According to the results of Chi-square test, there was no significant difference between the duration of the time using the library and the type of university, at MOHME and MOSRT (p value= 0.986)

Table 3.Frequency distribution of used information resources, problems in access to resources, essential library services to support virtual education, based on two categories of MOHME and MOSRT

The Second, the third and the fourth purposes of the research		Ministry of Health			Ministry of science			Significance level
		Low	Average	High	Low	Average	High	
Question no.3: Information resources used by users	Book	73(44.5)	51(31.1)	40(24.4)	24(25.8)	32(34.4)	37(39.8)	0.006
	Journal	57(34.8)	48(29.3)	59(36)	30(32.3)	32(34.4)	31(33.3)	0.698
	Relevant databases	46(28)	38(23.2)	80(48.8)	16(17.2)	18(19.4)	59(63.4)	0.059
	Newspaper articles	82(50)	42(25.6)	40(24.4)	37(39.8)	24(25.8)	32(34.4)	0.185
	Conference articles	65(39.6)	51(31.1)	48(29.3)	30(32.3)	35(37.6)	28(30.1)	0.439
	Websites	45(274)	46(28)	73(44.5)	17(18.3)	17(18.3)	59(63.4)	0.014
	Research report	59(36)	57(34.8)	48(29.3)	29(31.1)	31(33.1)	33(35.5)	0.560
	Theses	50(30.5)	62(37.8)	52(31.7)	22(23.7)	29(31.2)	42(45.2)	0.164
	Encyclopedias	95(57.9)	56(34.1)	13(7.9)	42(45.2)	29(31.2)	22(23.7)	0.002
	Provided compact discs by university	92(56.1)	47(28.7)	25(15.2)	55(59.1)	23(24.7)	15(16.1)	0.794
Question 6: The reasons for not using information resources.	Not having enough time for research / study	68(41.5)	54?(32.9)	42(25.6)	25(26.9)	38(409)	30(32.3)	0.065
	Sufficient textbooks	68(41.5)	74(45.5)	22(13.4)	41(44.1)	38(40.9)	14(15.1)	0.796
	Lack of required information resources	91(55.5)	45(27.4)	28(17.1)	43(46.2)	31(33.3)	19(20.4)	0.361
	I have not been allowed to use the university library	114(69.5)	41(25)	9(5.5)	51(54.8)	25(26.9)	17(18.3)	0.003
	Distance from the library	94(57.3)	49(29.9)	21(12.8)	40(43)	32(34.4)	21(22.6)	0.045
	Lack of access to information technology and the Internet	110(67.1)	44(26.8)	10(6.1)	57(61.3)	23(24.7)	13(14)	0.104
	High cost of access to resources	87(53)	68(41.5)	9(5.5)	32(35.5)	36(38.7)	24(25.8)	0.001>
	Lack of adequate training to use resources	96(58.5)	51(31.1)	17(10.4)	44(47.3)	38(40.9)	11(11.8)	0210
Question 7: The problems that users encounter in accessing resources.	Lack of time to search for resources	62(37.8)	64(39)	38(23.2)	35(37.6)	30(32.3)	38(30.1)	0.395
	Lack of knowledge of how to search	75(45.7)	52(31.7)	37(22.6)	34(36.6)	38(40.9)	21(22.6)	0.273
	Excessive irrelevant information on Internet sites	51(31.1)	62(37.8)	51(31.1)	26(28)	28(28)	41(44.1)	0.111
	Not finding a library that has relevant information	65(39.6)	53(32.3)	64(28)	14(15.1)	36(38.7)	43(45.2)	0.001>
	Lack of equipment and facilities in the library at work	76(46.3)	52(31.7)	36(22)	23(24.7)	25(26.9)	45(48.4)	0.001>
	Spend a lot of time in order to access resources	61(37.2)	57(34.8)	46(28)	23(24.7)	32(34.4)	38(40.9)	0.055

	Limited access and lending resources from libraries	70(42.7)	63(38.4)	31(18.9)	16(17.2)	27(29)	50(53.8)	0.001>
	High costs (Copy / Buy Resources)	69(42.1)	54(32.9)	41(25)	18(19.4)	28(30.1)	47(50.5)	0.001>
	Lack of work hours	82(50)	55(33.5)	27(16.5)	25(26.9)	33(35.5)	35(37.6)	0.001>
	Long distance	65(39.6)	59(36)	40(24.4)	33(35.5)	28(30.1)	32(34.4)	0.223
Question 8: Digital library requirements for virtual training support	Web design for the library	12(7.3)	19(11.6)	133(81.1)	5(5.4)	8(8.6)	80(86)	0.602
	Remote access to full text electronic journals	11(6.7)	19(11.6)	134(81.7)	3(3.2)	4(4.3)	86(92.5)	0.060
	A list of websites related to the field of study	7(4.3)	32(19.5)	125(76.2)	2(2.2)	13(14)	78(83.9)	0.327
	The existence of a librarian to search for information resources	14(8.5)	32(19.5)	118(72)	6(6.5)	20(21.5)	67(72)	0.733
	A list of libraries that are permitted for use by students	13(7.9)	32(19.5)	119(72.6)	5(5.4)	13(14)	75(80.7)	0.357
	Learning how to use the Internet to find the sources of required information	14(8.5)	32(19.5)	118(72)	5(5.4)	14(15.1)	74(79.6)	0.312
	Better access to university libraries for virtual students	16(9.8)	31(18.9)	117(71.3)	5(5.4)	7(7.5)	81(87.1)	0.014
	Electronic transferring of articles requested by users via email / post	10(6.1)	27(16.5)	127(77.4)	6(605)	10(10.4)	77(82.8)	0.456
	A list of books / collections / articles related to each field	14(8.5)	37(22.6)	113(68.9)	3(3.2)	13(14)	77(82.8)	0.071
	Postal lending books or articles service	27(16.5)	41(25)	96(58.5)	15(16.1)	19(20.4)	59(63.5)	0.486
	Traditional library services for people who do not have Internet access	29(17.7)	35(21.3)	100(61)	16(17.2)	23(24.7)	54(58.1)	0.526
	Copies of books that are available online	22(13.4)	41(25)	101(61.6)	12(12.9)	22(23.7)	59(63.4)	0.957
	Providing tips on how to find information and use the Internet and libraries	17(10.4)	41(25)	106(46.6)	11(11.8)	15(16.1)	67(72)	0.254
	Access to the university library	17(10.4)	41(25)	106(64.6)	8(8.6)	20(21.5)	65(69.9)	0.712
	Providing Interlibrary Loan Services	14(8.5)	53(32.3)	97(59.1)	11(11.8)	20(21.5)	62(66.7)	0.162
	Telephone reference service or email (Voice over IP (voIP))	12(7.3)	48(29.3)	104(63.4)	10(10.8)	17(18.3)	66(71)	0.125
	Continuous access to university databases	12(7.3)	26(15.9)	126(76.8)	3(3.2)	7(7.5)	83(89.2)	0.049
	Providing RSS services	24(14.6)	60(36.6)	80(48.8)	14(15.1)	30(32.3)	49(52.7)	0.777
	Providing alert services	26(15.8)	69(36)	79(48.2)	14(15.1)	28(30.1)	51(54.8)	0.638

The most used resources of information in both users of MOHME and MOSRT were "databases". The study showed 48.8 % of students of the MOHME and 63.4 % of students of the MOSRT used databases, which are collections of articles, books, and images and there was no significant difference between the two groups (p value = 0.059).

Regarding the reasons for not using library resources, the results of the study showed 25.6 % of students of the MOHME and 32.3 % of students of the MOSRT responded that they did not have enough time to study and research; there was no significant difference between the two groups.

The problems that students reported in accessing resources were extensively different in the two groups. Excess of irrelevant information in the Internet sites with 31.1% in the MOHME was said to be the main problem. In MOSRT, the availability and lending of resources from libraries was 53.8% which is assigned with a significant level (p value> 0/001).

Regarding the question on the requirements of a digital library, 81.7% of the students at the MOHME and 92.5%, of the students from MOSRT believed that remote access to the full texts of electronic journals was essential. Moreover, 81.7% of the learners from MOHME and 86% from MOSRT said that Web design was important. A list of websites related to the field of study was reported to be important for 76.2% at MOHME and 83.9%, at MOSRT. Continuous access to university databases was said to be important by 76.8% at MOHME and 89.2% at MOSRT. There was no significant difference between the two groups.

Table4. Frequency distribution of the purpose of using resources

The fifth purpose of the research	Ministry of Health		Ministry of science		Significance level
	Frequency	Percent	Frequency	Percent	
Promotion of specialized information	92	56.1	63	67.7	0.154
Doing assignment	126	76.8	70	75.3	0.717
Publication of scientific works	45	27.4	31	33.3	0.238
Preparing a dissertation	95	57.9	48	51.6	0.590

The main reason for using digital library resources in both groups of respondents at MOHME with 76.8 % and at MOSRT with 57.9 % was for doing homework assignments. There was no significant difference between the two groups (pvalue=0. 154)

Table 5. Frequency distribution of library services provided in virtual form.

Library services provided in virtual form	Ministry of Health		Ministry of science		Significance level
	Frequency	Percent	Frequency	Percent	
online Reference Services (web2)	34	20.7	15	16.1	0.284
Accessing databases outside the main	84	51.2	31	33.3	0.006

gateway of the university (access to resources at home or outside the university)					
Allowing to download and save textbooks	112	68.3	55	59.1	0.139
Linking to information and resources simultaneously	78	47.6	36	38.7	0.170
Linking to other virtual libraries	55	33.5	38	41.3	0.215
Linking to other faculties and virtual schools	39	24.4	26	28.3	0.497

Most students expected to deliver digital library services. The students in both MOHME (51.2%) and MOSRT (33.3%) preferred the databases outside the main portal of the university (Off-campus access to resources).There was no significant difference between the two groups (p= 0.006)

Discussion and conclusion

Most students at MOHME (37.2%) and MOSRT (38.7 %) used library resources for less than 6 months. Erfanmanesh (2011) states in his article that learning library skills and getting familiar with the library is effective in reducing students' anxiety and other problems regarding the access and use of resources(Erfanmanesh M A, 2011). Lack of familiarity with the services and access to resources was reported as one of the major problems for the students in our study. To overcome the challenges students may face at the beginning of their academic life, it is necessary to have some action plans. About one third of them stated that they had used library services for less than 6 months. Their reluctance to use resources suggests their lack of familiarity with library services and how to use resources. This problem can be resolved by offering training courses, or library tours at the beginning of the course which would lead to competency in using library resources. Xu & Tia Du (2018) concludes in their study that the quality of services and familiarity with them have a direct impact on the effective use of the library(Xu, 2018).

The most widely used information resources in both groups were the databases, which are a collection of articles, books, and images. Xu & Tia Du (2018) have remarked that the quality of information, systems and services and easy access to them are very important to users, and as a result, librarians should have an attempt to improve library services and enhance their knowledge in managing and providing information (in digital libraries(Xu, 2018). According to the results of Zaraghani, et al. (2014), both groups of managers and students use "textbooks" and "databases" as the first priority of virtual library resources in virtual education centers(Zarghani M, 2014).

 About one third of the students at MOHME (31.1%) were most concerned about the excessive amount of irrelevant information on the Internet sites and more than half of the students of MOSRT (53.8%) were concerned with limited access to library resources and borrowing procedures. As with the students at MOHME, 28 % reported, spending many hours on searching resources, 23.2 %, said lack of time to search, and 22.6 % believed lack of knowledge of how to

search were the major problems. In khase's research (2010), the most important problem for students was inadequate access to resources, lack of libraries with relevant resources, and insufficient time for students to study additional resources(Khase A, 2010) Telyr (2011) have noticed that online computer literacy and knowledge of digital libraries were effective factors in user satisfaction, and in reducing the problems of using library services(Tyler K, 2011) .Some of the students mentioned lack of enough time to study and research was the reason for not using library resources and services. Students of MOHME with 25.6% and MOSRT with 32.3% considered time limitation as an effective factor for not using library resources. Despite the problems of distance and other problems mentioned above students of MOHME with 49.4% and MOSRT with 36.6%, were more inclined to obtain the information needed from resources of university libraries, suggesting that a digital library with reliable resources and without information pollution is an important factor in solving students' problems. Databases were one of the most used sources of information by students of the MOHME with 37.8% and MOSRT with 47.3%. Ju (2018) confirms the supportive role of digital libraries in virtual education, and maintains that a digital library is one of the most important factors in distance learning courses(Ju, 2018). majidi (2011) also emphasized the importance of a digital or virtual library to support virtual education(Majidi, 2011). Mufutau(2012) states the importance of the virtual library through various sources included and mentions these libraries play an extremely important role in the education development and student support systems(Mufutau D, 2012) and Afresh (2009) also emphasizes the libraries supportive role in e-learning and suggests that the use of information technology services, library services and digital libraries be promoted in virtual education(Alfrish F.M, 2009).

According to students, resources which have a supportive role in their academic and research work should be provided in digital libraries. Distance access to the full text of electronic journals in MOHME with 81.7% and in MOSRT with 92.5%, continuous access to university databases in MOHME with 76.8% and MOSRT with 89.2% were also considered important. There was no significant difference between the two groups of respondents. Yaghoubi (2009) States that a digital library which provides the services and resources for virtual students, is categorized as a factor in the support of virtual teaching and it should be tailored to the needs of the students(Yaghoubi, 2009). nkiru (2011) focuses on the new role of digital and virtual library, which has been emphasized in e-learning for the development of teaching and the role of library(NKiru, 2011). Gbadmusi (2011) has stated that in automated virtual libraries, access to full-text resources, virtual reference services, and training for information seeking skills is necessary(Gbadamosi, 2011) and Chang (2104) has stated that the most important source of information for e-learning students is the Internet and the main motive for using the Internet is the easy and quick retrieval of information(Chang-Ping Hu, 2014).

One of the important factors in keeping up with virtual education is providing library services that can support students during the course of study in order to get effective results. By changing the way of teaching from traditional to virtual, library services are being provided to these students whose needs have changed in the new era,. Virtual teaching centers should either design virtual websites for the library, or upgrade services and facilities of the existing library

websites so that virtual students can take the best advantage of the services.kyag (2015) recommended to development library sevices to consider user's needs(Bae, 2015).

Acknowledgment

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