The essential skills required by librarians to support medical virtual learning programs

Abstract

Background: With the recent spread of virtual learning programs in universities, especially in the field of medical sciences, libraries play a crucial role to support these programs. This study aimed at investigating the skills required by librarians to support virtual learning programs in Isfahan University and Isfahan University of Medical Sciences.

Methods: This was an applied survey study. The population of the study includes all librarians working in Isfahan University and Isfahan University of Medical Sciences. A sample of 89 librarians was selected by stratified random sampling. Data were collected by a researcher-made questionnaire, the validity of which was confirmed by specialists in the fields of librarianship and information sciences and virtual learning, and its reliability was determined to be 0.92, using Cronbach's Alpha. The questionnaire consisted of 51 items designed to evaluate the librarians' virtual learning skills using Likert scale. Descriptive and inferential statistics were used to analyze the findings.

Results: The findings of this study revealed that librarians had low level of skills with respect to the online reference services, and familiarity with virtual learning environment. They also showed low and average level of skills with respect to their general information technology, communication skills, ability to teach electronic information literacy and ability to create access to electronic resources. The results revealed no significant difference between the librarians of the two universities, or between male and female librarians. However, librarians with educational background in librarianship and information sciences were significantly more skillful and competent than their colleagues.

Conclusion: Despite the crucial role of libraries in supporting virtual learning programs, the librarians in Isfahan University and Isfahan University of Medical Sciences had low-level skills to play such an important role. Therefore, it is essential to provide on-the-job virtual training courses for librarians to improve their job performance and the quality of library services.

Keywords: Distant Learning, Virtual Learning, Librarians, Isfahan University, Isfahan University of Medical Sciences.

Introduction

Learning is one of the cornerstones of the human society, and is one of the domains that has been mainly affected by the advances in information and communication technologies. Holding virtual learning courses in various educational levels at universities and higher education institutions implies awareness of the benefits of incorporating information and communication technologies into learning. Nowadays, electronic and distant learning have turned into a growing industry. This type of learning has received a lot of attention from different individuals and organizations because it eliminates the constraints of time and location (1). Today, virtual learning has turned into favorite media in medical education. This new method of education can provide great opportunities for education,

especially in medical fields; its popularity started in 1990s, and its use varies among medical schools, but it is more common in the basic sciences than in the clinical sciences (2). Literature review in medical and non-medical sciences shows that students are more satisfied with virtual learning courses than the traditional ones (3). Qualitative and quantitative studies of blended learning in medical education show high levels of student satisfaction, academic achievement, self-awareness, comprehension and better fulfilment of educational goals by the students (3).

On the other hand, as with traditional education, libraries play an important role to support educational programs in virtual learning courses. Yang believes that quality education has an inseparable relationship with libraries (4). The increasing growth in virtual learning programs in universities and higher education institutions has created new challenges and opportunities for the libraries. Since the library users' needs in virtual learning programs are partly similar to those in traditional educational programs, libraries need to assume new roles and services to satisfy the needs of the new users (5). New information technologies and web-based tools have enabled library users to have access to the required information on their desktop without the librarian's help. In this regard, Cooper and Crum (2013), in their review study mentioned a variety of new roles for librarians in the field of medical education in the age of information technology, including the roles of a virtual learning librarian (6).

Kascus believes that the most important role of librarians in supporting distant learning programs is to guarantee access to the required information sources. Holowachuk also emphasizes that the key to success in distant learning programs is to have access to appropriate information sources. Therefore, academic librarians are responsible for selecting, collecting, organizing, supplying, providing access to and managing online information sources needed by students and instructors in virtual learning programs (7).

Ritterbush believes that most students lack the necessary skills to search library resources to access their required information for research purposes (8). Therefore, teaching electronic information literacy skills is one of the most important duties of the librarians and digital libraries in virtual learning programs (9). In academic libraries, appropriate reference services play an important role in attracting the students, and they are considered as determinants of education quality (10).

Parirokh and Ilkhani (2014) studied the basic skills required by librarians in Mashhad Ferdowsi University to launch electronic reference services. The results of their study revealed that librarians at Ferdowsi University could not use electronic reference services favorably (11).

Farhangnejad and Bordbar (2013) conducted a study aiming at identifying and evaluating the information and communication technology skills required by librarians of public libraries in Yazd. It revealed that skillfulness in using specialized software applications, general software applications, communication and search skills and hardware skills are the most important skills needed by librarians, respectively (12). Furthermore, Esfandiari Moghadam and Zohdi (2012) carried out a study to investigate academic librarians' skills and competencies in libraries of Tabriz universities. It was indicated that librarians had low level of digital skills, but most of them were familiar with these digital skills. Their results also showed the mean of 180 for digital skill scale, the mean of 251.54 for importance degree, and the mean of 180.39 for using digital skills. In addition, 52% of the librarians had high levels of ability in digital skills, and 90% of them believed that these skills are necessary for the librarians (13).

Alinejad et al. (2011) in their study, entitled "Information Literacy and Its role in Electronic Learning Process of Students", found that not only students had low information literacy, but there was also a signif-

icant difference between different levels of information literacy. In addition, there was a significant positive relationship between students' information literacy and their academic performance (14).

Literature review revealed that despite the important and undeniable role of academic librarians in supporting virtual learning programs, few studies investigated their skills and abilities in this regard in Iran or abroad. Therefore, the goal of this study was to investigate the librarians' skills in Isfahan University of Medical Sciences (IUMS) and Isfahan University (IU) in six dimensions: General information technology skills, electronic communication skills, electronic reference skills, teaching electronic information literacy, providing access to online sources, and familiarity with virtual education environment.

Methods

The population of this applied cross- sectional study included all librarians working at Isfahan University and Isfahan University of Medical Sciences. Of whom, 89 were selected, using stratified random sampling method. Cochran sample size formula was used to determine the appropriate sample size. A researcher-made questionnaire, which consisted of 51 questions, was used for data collection. It was made by reviewing the related literature to determine the necessary skills required by the librarians to support virtual learning courses. A qualitative approach was used to determine the content validity. The questionnaire was assessed by nine specialists in the fields of distance education and librarianship and information sciences and its CVR (content validity ratio) = 0.81 and CVI (content validity index) = 0.84 were achieved.

To explore the underlying dimensions in the questionnaire, exploratory factor analysis was used and six categories were elicited (general information technology skills, electronic communication skills, electronic reference skills, teaching electronic information literacy, providing access to online sources and familiarity with virtual educa-

tion environment). To determine appropriate sample size and the correlation between the items in the questionnaire KMO and Bartlett's test was used. Cronbach's Alpha was used to measure the reliability of the questionnaire (0.92). The collected data were analyzed by descriptive and inferential statistics, using SPSS20, and $p<0.05$ was considered as statistically significant.

Results

Of all the librarians, 56% (n=50) worked in IUMS and 44% (n=39) in IU; 84% (n=75) were female and the rest were male; 76% (n=65) held librarianship and information science degree, 3.4% (n=3) had diploma, 6.8% (n=6) had post diploma; 52.3% (n=46) had a bachelor's degree and 37.5% (n=33) had a master's degree or higher. Furthermore, almost half of them had 10- 20 years of work experience, and 55% (n=42) had no practical experience about virtual learning programs.

To determine the mean of the librarians' six different skills and abilities needed for virtual learning, single-tailed t-test was used (Table 1). In Isfahan University of Medical Sciences, librarians' skills were above average, while their electronic reference skills and familiarity with virtual learning environment were at a low level. In contrast, in Isfahan University, the librarians' general information technology skills and electronic communication skills were at average level, while their ability to teach electronic information literacy, electronic reference skills, familiarity with virtual learning environment and providing access to information sources were at a low level. In general, the librarians' abilities and skills to support virtual learning courses and programs were below average.

Table 2 demonstrates the results of an independent t-test to compare the librarians' abilities and skills regarding their university, gender and field of study. No significant difference was detected in the six skills between the two universities or different genders ($p<0.05$). However, the ability to teach electronic information literacy, electronic

Table 1. The Librarians' Virtual Learning Skills and Abilities

Skills and Abilities	Benchmark Score = 3					
	Isfahan University of Medical Sciences (IUMS)			Isfahan University (IU)		
	M	t	P	M	t	p
General information technology skills	3.02	0.184	0.855	3.08	0.761	0.451
Electronic communication skills	2.85	-1.06	0.294	3.04	0.346	0.731
Electronic reference skills	2.55	-3.19	0.002	2.59	-3.29	0.002
Ability to teach electronic information literacy	2.73	-1.87	0.067	2.74	-2.36	0.024
Familiarity with virtual learning environment	2.42	-4.39	<0.001	2.46	4.65	<0.001
Providing access to information sources	2.81	-1.39	0.172	2.64	2.92	0.006
Total	2.79	-1.64	0.109	2.78	-2.25	0.031

Table 2. Comparing the Librarians' Abilities and Skills Based on University, Gender and Field of Study

Skills and Abilities	University		Gender		Field of Study	
	t	P	t	P	t	P
General information technology skills	-0.328	0.743	-0.913	0.364	1.204	0.232
Electronic communication skills	-1.005	0.304	0.043	0.966	1.202	0.233
Electronic reference skills	-0.17	0.859	0.312	0.756	2.187	0.032
Ability to teach electronic information literacy	-0.085	0.932	0.384	0.702	2.818	0.006
Familiarity with virtual learning environment	-0.211	0.828	0.147	0.884	2.524	0.014
Providing access to information sources	0.921	0.343	0.362	0.718	2.866	0.005
Total	0.065	0.948	-0.164	0.87	2.027	<0.001

reference skills, familiarity with virtual learning environment and providing access to information sources were significantly affected by the librarians' field of study. In other words, librarians with educational background in librarianship and information science had higher scores compared to their colleagues.

Discussion

Education, the cornerstone for the development of knowledge, has had increased growth both quantitatively and qualitatively because of the emerging information technology. Nowadays, due to advances in science and technology, electronic learning has become an inseparable part of human learning. However, the main concern of the authorities in this regard is how to support these virtual learning programs. This study aimed to determine the skills required by the librarians in Isfahan University of Medical Sciences and Isfahan University to support virtual learning programs.

Findings of this study revealed that librarians had average skill levels in information technology and electronic communications. These results are similar to those reported by Esfandiari Moghadam and Zohdi (13). One of the unique characteristics of virtual learning is method of communication and interaction in these programs. Unlike tradi-tional education programs in which face to face communication is used, in virtual learning programs, communication between the participants and supporters is carried out, using new information and communication technologies and online and offline methods. Therefore, lack of proper skills by the librarians to deal with information and communication technologies can result in poor communication with the library users in distant learning programs.

According to the results of the study, librarians had below average skills in using technologies related to electronic reference services. This is similar to the results reported by Esfandiari Moghadam and Zohdi (13) as well as those mentioned by Parirokh and Ilkhani (11). Since students of virtual learning programs need to have access to reference services without time limits, libraries need to use various internet-based methods. In digital reference services, librarians act as information media and answer the students' questions, using various internet-based tools (7). Digital reference services for virtual learning programs can be either synchronous or asynchronous (15). Therefore, it can be implied that librarians in IUMS and IU are not skillful enough to provide proper digital reference services.

The research findings showed that librari-

ans in both universities had average skill levels. This is similar to the results reported by Alinejad et.al. Information literacy is one of the important criteria for independent, self-managed and lifelong learning and is one of the essential requirements of a literate society in today's world. Information literacy is important for academic success of the students and leads to better results in higher education (7). Information literacy can be defined as the ability to access, evaluate, organize and use various information sources. A person with appropriate information literacy knows when and where to look for information, how to evaluate the credibility and usefulness of information and how to use the gathered information. In the age of technology, information technology literacy is needed to complement traditional information literacy. It is defined as the ability to use communication and information technologies to access, use, store, organize, protect and display information and create new knowledge. Results of various studies show a direct relationship between information literacy and academic success of the students (14,16-18). Therefore, given their current level of skill, librarians in IU and IUMS are unable to teach electronic information literacy.

Finally, the results revealed that librarians had lower than average familiarity with virtual learning environment and below average ability to provide access to information sources. Since the process of selecting electronic resources differs from the process of selecting printed books and journals, librarians need to assume a more active role in selecting electronic resources because faculties and students are mostly well aware of their special electronic resources. On the other hand, managing electronic resources differs from managing printed resources since electronic resources do not need weeding, repairing and bookbinding, instead they need to be regularly updated, be more user-friendly, have richer content and be more cost effective to provide better services for students and instructors (15).

Conclusion

The results of this study did not show a very desirable situation when it comes to the librarians' skills levels required to support virtual learning programs. To provide new services and fulfill their supportive role in virtual learning programs, academic libraries need to use librarians and experts with different set of skills compared to traditional librarians. These librarians use their knowledge and digital skills to act as important media to fulfill library goals and bridge the gap between users and digital resources (13). In addition, the dynamic nature of digital environment had increased the importance of paying enough attention to expert human resources and managing their skills and competencies (19). Therefore, it is suggested that librarians of IU and IUMS participate in virtual training programs along with on-the-job training programs to gain adequate experience about these programs and understand the difference between traditional and digital learning environments.

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