THE EFFECT OF DISTANCE EDUCATION ON INFORMATION LITERACY CASE STUDY Iran

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Information literacy lies at the core of lifelong learning. It empowers people in all ages of life to seek, evaluate, use, and create information effectively on their personal, social, occupational, and educational goals. It is a fundamental human right in the digital world and promotes the social inclusion of all nations. The prime focus in this article is on views of the effect of the distance education system on the information literacy of higher education students at the University of Tehran. This article attempts to draw out some key themes and offer a systematic and comprehensive review of all the relevant literature.

INTRODUCTION

Global developments concentrated on information and knowledge which are accelerated by the presence and advance of information technology phenomenon. This phenomenon has originated from the military environment and moved to universities. The phrase "global brain" by Wales and "Global Village", the McLuhan's phrase soon came true as the ideal perspectives of technology world; technology swept down the boundaries of time and space and it broadly became worldwide (Andretta, 2005). The phenomenon of distance education was introduced in the 19th century, culminated in the 20th century and was the forefront in the 21st century.

The aim of any education program is the promotion of literacy, so literacy definitions also changed over time. Literacy points out the ability to identify, interpret, create, communicate and adding the written material or information related to a variety of content. The UNESCO official statement state that a person is literate who can with understanding both read and write a short, simple sentence on his everyday life. Multiple and multidimensional education were taken into account in this state-

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The Quarterly Review of Distance Education, Volume 21(2), 2020, pp. 23–47 ISSN 1528-3518

ment (Bawden, 2001). From the perspective of UNESCO, literacy is not just about reading and writing, but also it means that the many features and capabilities in which communication capabilities are at its heart. Information literacy was defined in many different forms. According to one definition, literacy is defined as a set of capabilities that requires people to find out when they need information and be able to locate, evaluate, and effectively use the needed information. One of the oldest and most accepted definitions of information literacy in the world was offered by the American Library Association in 1989. This definition described individuals gained information literacy as follows: "They recognize the need of information, they can access and effectively evaluate information; they are creative in the use of information and they are independent learners who are active in social responsibility (Association of College and Research Libraries, 2003).

Several definitions are presented in the various references for "information literacy" which the most important of them are:

- The selection of the appropriate information to obtain the required information through any possible method or media along with the complete awareness of the importance of the rational and correct use of the information.
- The ability to access, evaluate and use of information by the use of various sources.
- The ability to detect when using information, locate and evaluate the effective use of the information, and to transfer information in various forms.
- The skills related to the information problem solving.
- A set of capabilities that will enable people to recognize when information is needed and provide the ability to locate, evaluate and effectively use the needed information (Nicholson & Eva, 2011).

Information literacy is an essential provision for stepping into the substance of the information age refers to a set of capabilities that people by their help embark to recognize when information is needed and to locate, evaluate, and effectively use the needed information (Coral, 2008). The information literate individuals are those who have learned how to learn; because they know how information is organized, how information can be found, and how information can be used in a way that others can be able to learn from them. These people are prepared for lifelong learning because they can always find the information which they need in each task of decision. In general, information literate, are expected to have the following information skills (Daniel et al., 2006).

Recognize that accurate and complete information (textual, numerical, or graphical information) is the basis of intelligent decisionmaking;:

- exactly determine what the problem is, or what aspect of the problem must be solved;
- be able to define what information is required for a specific task in terms of resources, media type, and the data integrity;
- be able to set questions based on information needs;
- be able to identify sources of information by the first-hand, the second-hand and the third-hand values;
- design successful policies of the exploring, both in the field of information and electronic information to identify the second-hand sources;
- collect data and information by the use of experimental methods or second-hand data sources;
- organize and store information;
- interpret, analyze, synthesize, and evaluate the validity of gathered information and also criticize and inquire them;
- develop insights, judgments, and foresight;
- utilize effective and appropriate tools and methods to present and visualize data;
- adopt techniques and policies to publish the results and reports, and

- adjust cognitive and behavioral information policy, according to different situations and circumstances (Kimsey & Cameron, 2005).

The Association of College and Research Libraries grant to five major criteria in the field of information literacy. According to this Association, information literacy competency includes five standards and 22 performance indicators. These standards are focused on the needs of higher education students at all levels. Information literacy standards include:

- **Standard 1**. The information literate student detects the nature and extent of the information needed.
- **Standard 2**. The information literate student effectively and efficiently achieves the needed information.
- **Standard 3**. The information literate student critically evaluates information and its sources and integrates selected information based on the knowledge and its value system.
- **Standard 4**. The information literate student, individually or as a member of a group, utilizes the information to perform a specific purpose.
- **Standard 5**. The information literate student understands many issues of economic, legal and social related to the use of information, accesses to information, and uses them by observing the ethical and legal tenets (The Association of College and Research Libraries, 2003).

BACKGROUND AND IMPORTANCE OF THE STUDY

The information literacy concept was found as a result of developments and rapid changes in information technology. The skills which individual needs them to survive in the information society are called information literacy (Maughan, 2001). For the first time; Paul Zurkowski used the interpretation of information literacy. He explained the goals of access to information literacy in his proposal model offered to the National Science Library and Information Commission of the United States in 1974. He calls someone as the information literacy gained who is trained for the use of information resources and he can use the information to solve their problems (Behrens, 1994). Lee Burchinal (1976) found information literacy as the skill of finding and using the information to solve problems and to make decisions effectively and efficiently. Information literacy is related to three skills by the Burchinal definition: Finding, problem-solving, and decision making. He emphasized problem-solving skills as well as Zurkowski (Bawden, 2001; Behrens, 1994). Robert Taylor (1979) states information literacy is the ability to solve problems through the use of information resources. He believes that the cognition of resources and their location is a fundamental principle of information literacy to answer questions (The Association of College and Research Libraries, 2003).

In the 1980s, the technology element entered into the definition of information literacy. Information Industry Association, in 1952 stated that information literacy is a knowledge that helps people to know how and where to use information technology to obtain knowledge resources. In the same decade, William Demo, affected by innovations in technology in the processing, storage, retrieval, and transfer information provided a new definition of information literacy. He stated that Information literacy is the skill and the knowledge of the effective access to information and the evaluation of them when it is needed. Upon his opinion, information literacy has a direct relation to the thinking way. Perseverance, attention to detail, and accuracy in the adoption of the published opinions are traits that would help to develop this skill (The Association of College and Research Libraries, 2003). Information literacy was considered as education in the information society by another definition which was proposed in the 1980s. For example, Carol Kuhlthau (1987) quotes that infor-

mation literacy and functional literacy (ability to read and use in daily life, identifying information needs, search information for informed decision making) are very close to each other. The necessity of information literacy is the ability to control data generated by computers and the mass media. Social and technological changes require new skills and knowledge.

John Olson and Bill Kunz believed that information literacy is the understanding of the role and the power of the information, and the ability to find, extract, and use of information in decision making by the individual. And also the abilities to generate and manipulate data using electronic processes are skills that are part of the information literacy skills. Put in the shell, information literacy is the development of traditional education concept in response to the society that we live in. (Association of College and Research Libraries, 2003).

In the second half of the 1980s, the academic librarians used information literacy rather than literacy library, and the training library user's programs gradually were replaced by the promotion programs of information literacy.

At the end of the 1980s, the role of libraries in critical thinking teaching skills got into the education program of users. At the end of this decade, two books were published about the role of libraries in the teaching of information literacy skills. The first book, written by Patricia Breivik and E. Gordon Gee emphasized the role of libraries in the development of higher education; and the second book was the report of the American Library Association. Both books considered information literacy as a relevant issue to the professional librarian in education and training. According to the American Library Association, the importance of achieving a high level of information literacy in the community is emphasized and learning skills by relying on information sources are found essential (Drowns, 1993, 2007). The definition of this association about Information Literacy is one of the most reliable definitions. This definition points out "an individual to be literate in terms of information, he must be able to recognize when information is needed and can find, evaluate, and use it effectively" (Secker, 2004, pp. 53–74). Individuals are information literate who are learned how to learn. They know how to learn because they know how knowledge is organized and how to find the information needed and use information in a way that others can learn from it. People with information literacy are prepared for lifelong learning because they can always find the information needed and use for informed decision making (Secker, 2004).

Despite the emphasis of Zurkowski (as the drafters of the information literacy) on the importance of information literacy in the workplace, its main part of the expansion was informal education. Previous studies mostly were done in higher education and schools. Between 2003and 2005, the UNESCO hold World Conferences to support information literacy. These conferences emphasized on the fundamental role of information literacy in developing personal, economic, social and cultural aspects and engaged governments and others to support the serious investors in information literacy and lifelong learning strategies, as a general value and the underlying focus of the information society (Coral, 2008).

Information literacy is a well-studied subject that has been defined and studied in various ways. The community is expected to train self-confident learners to cope with the continued digitization of information and the use of new technologies. Also, students must control the widespread and continuous flow of new scientific information. Information literacy education is a key component of the academic curriculum and is believed to enhance student learning. (De Meulemeester et al., 2018).

The UNESCO Prague Declaration of 2003, which defines information literacy as:

> Awareness of one's concerns and information needs and the ability to identify, locate, evaluate, organize and create effectively, use and communicate information to resolve existing problems, and this is a key condition for effective participation. (Kelly, 2013).

Information literacy lies at the core of lifelong learning. It empowers people in all walks of life to effectively seek, evaluate, use and create information in pursuit of their personal, social, occupational and educational goals. It is a fundamental human right in the digital world and promotes the social inclusion of all nations.

The Chartered Institute of Library and Information Professionals provide a new definition that states:

> Information literacy is the ability to think critically and to judge judiciously any information we find and use. This allows us as citizens to reach conscious views and engage fully with society. (Stebbing et al., 2018)

Information Literacy and E-Learning

Kasowitz-Scheer and Pasqualoni (2002) note that information literacy is more frequently being offered online and that this is in response to an increased demand for rapid sharing of information and access to online resources.

Today, there are computers and electronic resources and their use by library users caused information literacy is called "digital information literacy." Digital information literacy is the ability to evaluate, location, composition information, and also the optimal use of information, communication networks, and electronic resources (Samiei, 2005).

Initially, information literacy was only included library or bibliographic skills. But in recent years, it includes critical thinking and analytical skills by the use of information and also the ability to create new ideas by using current data and previous knowledge. Essentially information literacy also included what children need to know, think, or do as a result of their efficiency (Dugan & Hernon, 2002).

Access to Internet information literacy helps people to effectively use the information and follow the search, evaluate, and produce information. Internet information sources, including databases, websites, and blogs are providing an environment that provides free and open research and it is used to facilitate the interpretation, the integration, and application of knowledge in all areas of learning (Jacobs, 2008). Research studies have shown that people, particularly in developed countries, use the Web and the internet to identify and solve the problem with educational, occupational and personal goals. Rastgo (2010) states that the widespread use of the internet, especially among adolescents and young peoples, are very high. They consider the internet as their main source of information (Rastgo et al., 2010).

Information literacy uses personal capacities to establish continual learning; it uses technology but ultimately acts independently (Mirzasafi et al., 2011). Information literacy practices information technology and strives for excellence in the search of information and the production of knowledge. In the age of digital information, the literate person should not only read words, but he should also understand the meaning behind each word.

Hence, the concept of literacy and information skills are beyond what is called the "library skills" and more emphasis on locating information and accessing it. Also, this concept is beyond the mechanical skills to concomitant with the concept of "information literacy." Due to the characteristics of e-learning, the learner of this educational system should be an independent leader to take advantage of this system. In the process of e-learning, self-learner undertakes the responsibility of schedule and this is the learner who controls the time and place of his or her learning (Ozgen & Baron, 2007). Regarding the positive impact of information literacy on the growth of lifelong learning skills, it seems that e-learner has a greater need for information literacy skills. As Puzziferro (2008) stated that distance learning courses require a high level of classmate's participation and workgroups which ask for the self-leadership and the active electronic learners in the learning process because part of the learning takes place independently and individually. Training information literacy skills in distance learning

environments are more important than traditional training. information literacy makes learners able to dominate on the content, be themselves leaders, and dominate on their learning process more and more (Puzziferro, 2008). Van de Vord (2010) states that while in the past, students had to go to the library to do their research home works, these days, students work at home and in the online environments which are more comfortable and familiar for them. In addition to information and communication technology facilitates the teaching and learning process, it constructs critical thinking conditions and prepares teamwork and collaboration as well as immediate access to educational materials and databases. Email, discussion branch, post assignments on behalf of the student-teacher, exams and evaluation by computer create an interactive e-learning environment among students and between teachers and students.

The use of the internet in the educational environment covers a wide range of activities that demand new skills. These are the same skills of information literacy. Information literacy skills form the basis of lifelong learning and they have to be homogeneous with library literacy, media literacy, computer literacy, Internet literacy, research literacy and critical thinking skills (Julien & Barker, 2009). The training of these skills should be practically and permanently integrated into the curriculum of distance education and offered to students in the form of courses. In the present study, researchers try to determine the information literacy level of the graduate distance education students of the faculty of entrepreneurship at the University of Tehran to improve the quality of e-learning in this university.

The Relationship Between Information Literacy and Entrepreneurship

Entrepreneurship means, persistently and forcedly exploit opportunities and comply with financial, psychological and social disturbances (Ahmadpur Dariyani, 2004). that is an important point that exploits opportunities primarily requires the understanding of the opportunities, and also required characteristics and skills to use these opportunities, and this understanding demands information gaining. Information literacy as a means of access to knowledge and information helps entrepreneurs to identify and exploit opportunities which is the common point of information literacy and entrepreneurship. In general, the relationship between the two components of information literacy and entrepreneurship can be examined from two perspectives:

1. The role and impact of information literacy on the development of personality traits that are considered essentials for entrepreneurship, such as creativity, risk-taking, persuasive achievement, and independence.
2. The role of information literacy in the process of carrying out an economic activity based on new technologies in the current information society, and contributing to the realization of the concept of knowledge-based entrepreneurship.

A Brief History of Distance Education

We can say that distance education has been around for a very long time. It could be argued that in the Christian religion, St. Paul's epistle to the Corinthians was an early form of distance education (AD 53–57). The first distance education program was presented by the University of London in 1858. This program was in correspondence. Readings were mailed to students and final exams were held at the university in person. If students could afford it, they hired a private tutor, but the Victorian novelist Charles Dickens called it the Peoples University because it provided access to higher education to students from lower classes of society. The program continues to this day but is now called the University of London, with more than 50,000 students in 180 countries (Bates, 2015).

In North America, historically many universities, such as Penn State University, the

University of Wisconsin, and the University of New Mexico in the USA, and Memorial University, the University of Saskatchewan and the University of British Columbia in Canada, have a long history in this field. As a result, these institutions have a long history of offering distance education programs. These programs have now been expanded to cover undergraduate and professional masters' students. Australia is another country with an extensive history of postsecondary distance education. Today, distance education is being used as a new teaching tool alongside traditional education in many universities around the world. The use of hybrid and blended teaching, simulators, virtual reality, gamification, open education and the emergence of MOOCs are new symbols of distance education in recent years (Bates, 2019).

METHODOLOGY

Research Goal and Questions

This study sought to investigate the effect of two kinds of distance education and traditional educations on the development of information literacy and measure which type has more impact on it. The main goal of tis research was to answer, what is the information literacy level of distance education students at the University of Tehran? Five specific questions were addressed:

1. What is the level of the determination of the nature of the information of distance education students at the University of Tehran?
2. What is the level of effective access to information about distance education students at the University of Tehran?
3. What is the level of critical assessment of distance education students at the University of Tehran?
4. What is the level of targeted use of Information on distance education students at the University of Tehran?

- What is the level of the understanding of the legal and economic information of distance education students at the University of Tehran?

Instruments and Methods

The design of this study is quasi-experimental. To undertake the study, pretest and posttest were used in experimental and control groups. Fifty students comprised the control group and fifty students were assigned in the experimental group. Considering the design of this study, which is a quasi-experimental, stratified random sampling, was used for this purpose. The syllabus of courses in entrepreneurship faculty, education and extension field and in management faculty, government management field were compared together both in traditional and distant education types in the winter semester of 2016. The government management is the field of study in management faculty and in entrepreneurship faculty, education and extension field from which students who study in attendant and virtual classes were selected as the samples of this study. Twenty-six students from traditional students and 23 from DE students (management faculty) and 24 students from traditional students and 27 from DE students (entrepreneurship faculty) in the winter semester comprised the participants.

To measure information literacy a questionnaire was utilized which is used by Siamak and Davarpanah (2009) in a study as the validation of the standard tool of the information literacy measurement. Questions of this section are designed base on the five standards of the College & Research Libraries Association. It deals with components or standards of information literacy in the form of 49 items. The number of questions in each standard is as follows: 8 questions on Standard 1, 12 questions about Standard 2, 8 questions about Standard 3, 11 questions from Standard 4, and 10 questions about Standard 5.

If the respondent does not answer a question with a correct answer, score 0 will be

assigned, if the respondent answers a question with a correct answer, a score 1 will takes. Therefore, according to the number of questions in the questionnaire and its correct choice, the maximum score for an information literate student is 49 and the minimum score for an information literate student is 0, and 50 percent point has accounted for a score of 24.5.

In each of the information literacy test scales, the scores of each component were aggregated and then divided into the number of questions. The scores on these expressions were zero and one (Siamak & Davarpanah, 2009). To matching more questions of the questionnaire to the information literacy skills of students of entrepreneurship faculty at the University of Tehran, under the supervisor's observation, this questionnaire has been changed and the number of questions was reduced to 49 questions. Remove and add related to some of these questions and re-edition of some others led to evaluate again the validation of this tool. (See Appendix 1.)

The independent variable of this study was the instructional mode of course. There were two categories of the instructional mode: Traditional education and online education. The dependent variable of this study is information Literacy as measured by the information literacy Scale. In the first semester, and information literacy questionnaire was given to both groups (traditional and online education). Both groups took their courses within the educational system itself during the semester. After the end of the semester, and information literacy questionnaire was distributed for both groups (see Figure 1). The content validity index for the whole test of 49 items of information literacy was 0.74 which is an acceptable index compared to similar works. To calculate the reliability of the information literacy variable, Cronbach's alpha was used. The reliability index for the total test was 0.78 which showed that most of the referees considered that the items of the questionnaire were necessary for measuring information literacy which is at an acceptable level in comparison to similar studies. SPSS version 16 was used in all steps of the data analysis. To analyze data, the following features were measured: frequency, percentage, standard deviation, *T*, covariance analysis, Kolmogorov-Smirnov test. Regarding the aforementioned sections, the main purpose of this study is to investigate the effect of the distance education system on the information literacy of higher education students at the University of Tehran.

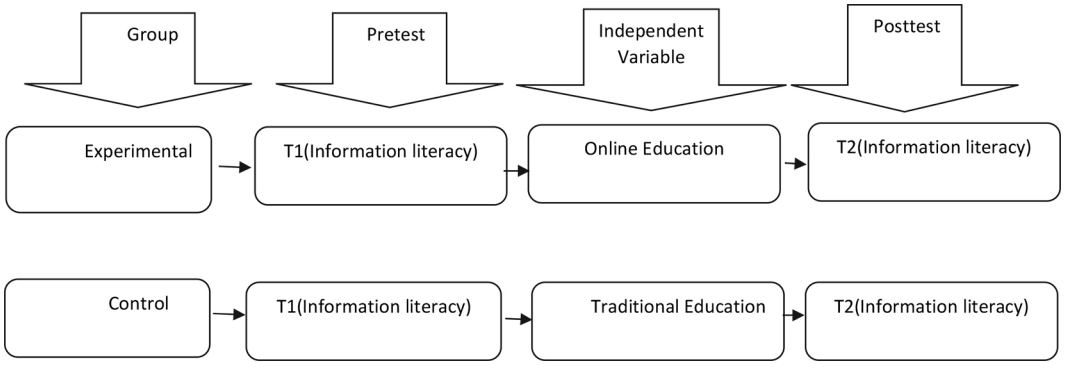

FIGURE 1
Pretest and Posttest With Control Group Without the Use of Random Selection

Findings

Findings are presented in three sections. In the first section, the variables of sampling of the population are described, in the second section, the research variables are explained and in the last section, data will be analyzed based on the hypotheses of the study. Regarding the type of university, 49 out of 100 (49%) of the population were MA students of management faculty and 51 out of 100 (51%) were MA students of entrepreneurship of Tehran University. Considering students' age, 40% of the participants were younger than 25 years old and 37% of them were between 25–30 years old, and 23% were elder than 30 years old. As seen in Table 1 and Figure 2, the distribution of the samples is shown based on the gender of the participants in this study. The *P* value of chi-square is 0.001 which is fewer than the P = 0.05, so there is a statistically significant difference between the frequency of the participants regarding their gender. Twenty-three out of 100 participants are female (23%) and 77 are male (77%).

Table 2 shows the descriptive statistics and the distribution of Information literacy and shows that the mean score of pretest in both control and experimental groups do not have a statistically significant difference, but the difference between the mean score of these groups became significantly different after the experiment (15 scores). Standard deviation and standard error of measurement of the

TABLE 1
Distribution of the Participants Based on Their Gender

Sex	*Frequency*	*Relative Frequency*	*Chi-Square Test*	
			Score	*Significance Level*
Female	23	23%	26/16	0.001
Male	77	77%		
Total	100	100%		

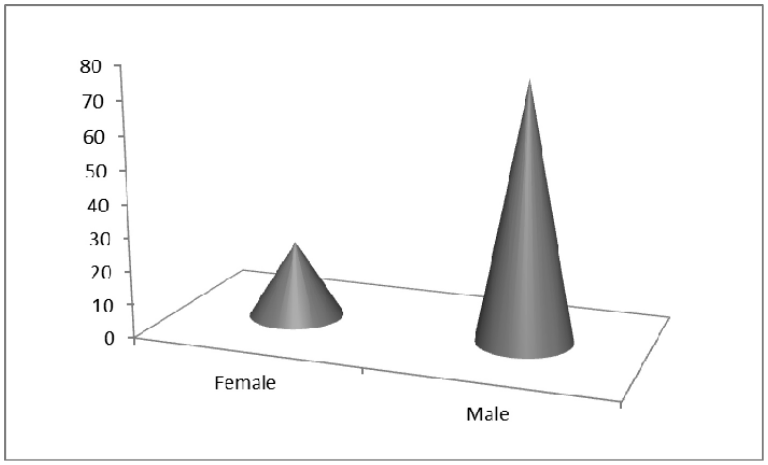

FIGURE 2
The Distribution of the Participants Based on Their Gender

TABLE 2
Descriptive Statistics (Dispersion and Central Index)
of Information Literacy Variable in Control and Experimental Groups

Scale	*Group*	*Mean*	*SD*	*Maximum*	*Minimum*	*No.*	*SE of Mean*
Pretest	Control	8/12	2/11	1	0	50	0.30
	Experimental	8/89	2/31	1	0	50	0.33
Posttest	Control	32/88	2/76	1	0	50	0.39
	Experimental	36/32	3/15	1	0	50	0.45

TABLE 3
The Results of the Levene Test for Homogeneity of Variance Error

Variable	Df_w	df_b	*F*	*Significance Level*
Information literacy	98	1	2/22	0.041

TABLE 4
Kolmogorov-Smirnov Test

Variable	*Significance Level*
Information literacy	0.175

information literacy variable in both control and experimental groups are approximately at the same level. In pretest and posttest design with the control group, the scores in the pretest are used to control the differences at the beginning of the study, but there was no significant difference was detected in the pretest of this study. To study the homogeneity of error of variance, Levene test, homogeneity of error of variance was used (Table 3).

The results of Table 3 reveal the homogeneity of error of variance which rejects the null hypothesis in the information literacy variable (Sig=0/041) but the directional hypothesis (abnormal distribution) is not rejected. It can be generally stated that the error of variance of the variable is Somewhat inhomogeneous. But due to the sample size of 100 people and the matching of the annoying variables, it does not create any interference results.

Keeping the distribution normal, the Kolmogorov-Smirnov test was used. The analysis of the data is shown in Table 4.

Data analysis of the Kolmogorov-Smirnov test with ($\alpha = 0.05$) revealed that there is no significant difference for the information literacy variable (*Sig* = 0.175), so the null hypothesis (normal distribution) is not rejected, but the directional hypothesis (abnormal distribution) is rejected. Based on the information presented above, it can be claimed that the distribution of the variable is normal. Keeping in mind that no distribution is exactly as normal as what we see in the normal curve, the distribution in this study is similar to normal curve distribution and scores are scattered between –2 to +2 *SD*. Therefore, the rules of a parametric test are obeyed and analysis is possible in these conditions. The distribution of the variable is compared with the normal distribution in Figure 3.

As seen in the graph above, the distribution of the variable in this study is almost normal and has a little deviation from the normal distribution. So the primary requirements for covariance analysis exist and the condition for

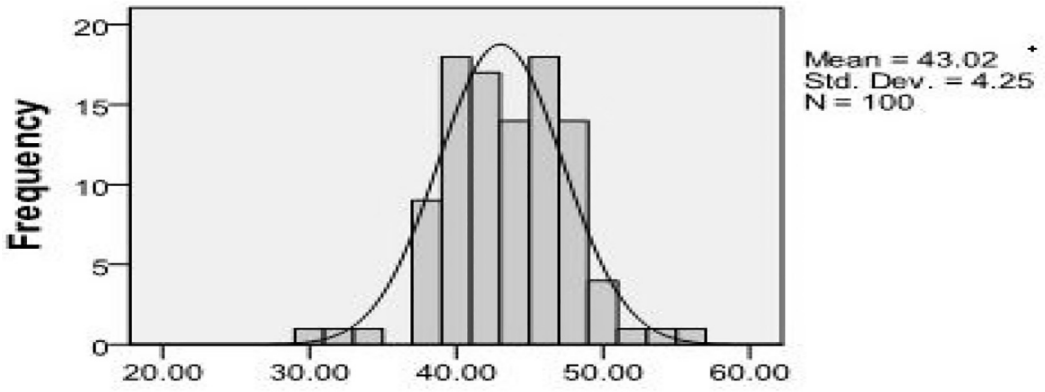

FIGURE 3
The Distribution of Information Literacy Variable

TABLE 5
Results of Covariance Analysis in Four Different Types in Control and Experimental Groups

	Source of Variance	*Value*	*F*	*Degrees of Freedom*	*Error of Df*	*Significance Level*
Interactive	Pillai's Trace	0.99	7072/91	2	97	0.001
	Wilks' Lambda	0.007	7072/91	2	97	0.001
	Hotelling's Trace	145/83	7072/91	2	97	0.001
	Roy's Largest Root	145/83	7072/91	2	97	0.001
Intergroup	Pillai's Trace	0.25	16/79	4	97	0.001
	Wilks' Lambda	0.74	16/79	4	97	0.001
	Hotelling's Trace	0.35	16/79	4	97	0.001
	Roy's Largest Root	0.35	16/79	4	97	0.001

covariance analysis is the convenient and parametric test can be administered. In the following, the main hypothesis of this study (there is a significant effect of studying DE on information literacy) will be studied. Table 5 demonstrates the results of covariance analysis in four different types.

Data analysis in Table 5 shows that the $P = 0.001 < 0.05$, so the null hypothesis is rejected, but the directional hypothesis is not rejected. It is concluded that there is a significant difference between the information literacy of control (traditional) and experimental (distance) groups. In other words, the finding reveals that the mean scores of two groups are different therefore, the impact of the variable is statistically significant. The effect of the independent variable on the dependent variable in groups is different. In other words, the impact of the type of teaching on information literacy between two groups is significantly different.

The results of Table 6 depict that the interactive impact of the information literacy variable between experimental and control groups is significant. This shows that there are relationships between the two groups regarding information literacy. A significant difference has been reported in the posttest of information

TABLE 6
The Test of the Effect of Within Variables

Dependent Variable	*Sum of Squares IV3*	*Df*	*Mean Squares*	*F*	*Significance Level*	*Source*
Posttest	295.84	1	295.84	33.70	0.001	Correctional model
Pretest	0.160	1	0.160	0.033	0.857	
Posttest	119,716.0	1	119,716.0	13639.52	0.001	Intergroup
Pretest	7,089.64	1	7,089.64	1452.92	0.001	
Posttest	295.84	1	295.84	33.71	0.001	Group
Pretest	0.160	1	0.160	0.033	0.857	
Posttest	860.160	98	8.77	—	—	Error
Pretest	478.200	98	4.88	—	—	
Posttest	120,872.0	1	—	—	—	Total
Pretest	7,568.0	1	—	—	—	
Posttest	1,156.0	99	—	—	—	Correctional total
Pretest	478.36	99	—	—	—	

TABLE 7
The Results of Analysis for *T* Test

Variable	*Mean Difference*	*SD*	*T*	*Significance Level*	*Degree of Freedom*
Pretest	0.80	0.44	1.45	0.91	49
Posttest	3.44	0.59	5.81	0. 001	49

literacy between two groups. To investigate any significant difference, data will be analyzed in the following.

Table 7 shows that $P = 0.91 > 0.05$ regarding the Information literacy variable, so the directional hypothesis is rejected, but the null hypothesis is not refuted. Therefore, it can be concluded that there is no significant difference between the pretest of control and experimental groups. The other results reveal that there is a statistically significant difference ($P = 0.001 < 0.05$) in the posttest of information literacy between control and experimental groups, so the null hypothesis is rejected, but the directional one is not. Therefore, it can be concluded that the difference between information literacy between control and experimental groups is significant. Data analysis of Table 7 shows that the information literacy variable has more impact on the experimental group in the posttest in comparison to the control group. The results show that the variable rate of information literacy in the posttest of the experimental group is more than the control group. In other words, the results show that the variable rate of information literacy in the control group that is trained in face to face is lower than the distance education. Therefore, the control group whose students have received traditional training is less strong in information literacy than the students who have experienced distance education.

As seen in Figure 4, in the experimental group which has received a distance education program, information literacy has been increased. In the control group, which has

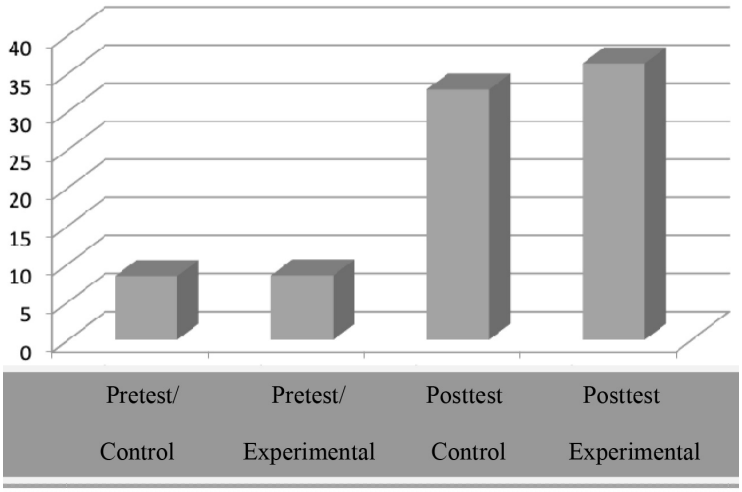

FIGURE 4
The Comparison of Pretest and Posttest for Information Literacy in Control and Experimental Groups

received TE, there was a slight increase compared to the experimental group. Therefore, it can be claimed DE (distance education) has a more impact on information literacy.

The results of the data analysis of Table 8 show that in the variable information literacy scales a significant percentage was obtained on the scales of the first standard "ability to determine the extent and nature of information" (0.19), the second standard "effective access to information" (0.001), the third standard "ability to critically evaluate on information" (0.038), the fourth standard "ability to purposefully use information" (0.041) were lower than the critical level value for this sample ($\alpha = 0.05$).

So the null hypothesis can be rejected, but the directional assumption cannot be rejected. Therefore, it can be concluded that between the different scales of information literacy the first standard scale: "the ability to determine the extent and nature of information," the second standard: "effective access to information," the third standard: "the ability to critically evaluate information," fourth standard: "ability to use of purposeful information" was a significant difference between the experimental group (distance education) and the control group (traditional education). In the first, second, third, and fourth standard, posttest more upgrades in the experimental group, and distance learning had a significant impact on information literacy.

But the significant percentage obtained on the scale fifth standard "ability to understand legal and economic items related to information use" (0.75) is greater than the critical level value for this sample ($\alpha = 0.05$), so for this scale, the assumption of directional can be rejected, but the assumption of zero cannot be rejected. Therefore, it can be concluded that the difference between the two groups on the scale of the fifth standard is not significant. The lowest mean in the fifth standard indicates that distance and traditional education did not affect on the fifth standard.

CONCLUSION AND DISCUSSION

The Likert scoring method has also been used to evaluate information literacy components at five levels (very weak, weak, middle, strong, very strong). Likert has suggested that the

TABLE 8
The Analysis of Factors of Information Literacy Variable

Variables	*Group*	*Test*	*Mean*	*Convert the Mean to the Likert Scoring Range*		*SD*	*SE*	*T*	*Significance Level*
Ability to determine the nature of information	Experimental	Pretest	0.38	1.90	Weak	0.10	0.08	2.87	0.019
		Posttest	0.75	3.75	Strong	0.09			
	Control	Pretest	0.39	1.95	Weak	0.13			
		Posttest	0.48	2.40	Weak	0.14			
Ability to effectively access information	Experimental	Pretest	0.39	1.95	Weak	0.14	0.07	4.23	0.001
		Posttest	0.85	4.25	Strong	0.10			
	Control	Pretest	0.35	1.75	Weak	0.11			
		Posttest	0.48	2.40	Weak	0.21			
Ability for critical information evaluation	Experimental	Pretest	0.22	1.10	Very weak	0.10	0.11	2.61	0.038
		Posttest	0.72	3.60	Strong	0.08			
	Control	Pretest	0.29	1.45	Very weak	0.07			
		Posttest	0.42	2.10	Weak	0.04			
Ability for targeted use of data	Experimental	Pretest	0.43	2.15	Weak	0.06	0.06	2.12	0.041
		Posttest	0.83	4.15	Strong	0.10			
	Control	Pretest	0.39	1.95	Weak	0.18			
		Posttest	0.49	2.45	Weak	0.14			
Ability for understanding of legal and economic items related to information	Experimental	Pretest	0.22	1.10	Very weak	0.17	0.05	0.79	0.75
		Posttest	0.56	2.80	Medium	0.12			
	Control	Pretest	0.21	1.05	Very weak	0.07			
		Posttest	0.52	2.60	Medium	0.13			

average score 0.5 to 1.5 is in the very weak class, the average between 1.5 to 2.5 in the weak class, and the average between 2.5 to 3.5 in the middle class; the average between 3.5 to 4.5 in the strong class and between 4.5 to 5.5 in the very strong class. In each of the information literacy test scales, the scores of each component are summed up and then divided by the number of questions and on the other hand, the scores of these expressions and statements are zero and one, which is why all the information literacy variable averages are between zero and one. To convert this scale to the Likert scale, the mean obtained by multiplying the following formula:

$$Mean = \frac{\text{Number of questions}}{\text{Total score of items}} \times 5$$

Table 8 shows that the mean pretest and posttest of the first standard in the experimental group were (1.90) and (3.75), respectively, which were at a poor and strong level of Likert. This increase indicating that distance education has significantly improved the first standard scale in the posttest. The mean pretest and posttest of the control group in the first standard "determine the extent and nature of information literacy" were (1.95) and (2.40), respectively, which are at a weak level of literacy, respectively. That is means that traditional training has not succeeded in upgrading to the

first standard scale and remains at the same basic level.

The mean pretest and posttest of the experimental group of the second standard "ability to access information effectively in information literacy" were (1.95) and (4.25), respectively, which are at a weak and strong level of literacy. That shows that distance education has significantly enhanced the second standard scale in the posttest. The mean pretest and posttest of the control group on the "second standard of effective access to information" scale were (1.75) and (2.40), respectively, which are at weak and weak levels of literacy respectively. Therefore, traditional training has not been effective in upgrading to the second standard scale and it remains at the same basic level.

The mean pretest and posttest of the test group of the third standard "critical information evaluation in information literacy were (1.10) and (3.60) respectively, which are at a very weak and strong Likert scale, respectively. This shows that distance education has significantly improved the third standard scale in the posttest. The mean pretest and posttest of the control group on the third standard "the ability to critically evaluate information" were (1.45) and (2.10), respectively, which are at very weak and weak levels of literacy, respectively. On this scale, traditional training has had little effect. impact distance education has been greater than the control group.

The mean of pretest and posttest of the experimental group of the fourth standard "scale of information ability for purposeful use of information" was obtained (2.15) and (4.15), respectively, which are at the weak and strong level of Likert. Distance education has significantly improved the fourth standard scale in the posttest. The mean pretest and posttest of the control group on the fourth standard were (1.95) and (2.45), which are at the weak and weak levels of literacy, respectively. traditional education did not affect upgrading to the fourth standard scale and remained at the same elementary level.

The mean of pretest and posttest of the experimental group on standard fifth "ability to understand legal and economic issues related to information use" in information literacy was (1.10) and (2.80), respectively, which were at weak and middle levels of Likert scale and averages indicating that distance education has not led to the promotion of the fifth standard and has had a significant impact on the promotion of the fifth standard. The mean pretest and posttest of the control group on the scale of the fifth standard for understanding the legal and economic issues related to the use of information were obtained (1.05) and (2.60), respectively, which were at a very weak and middle level of literacy, respectively. The results indicate that traditional training had little effect on the promotion of the fifth standard. The results showed that both distance learning and traditional training were equally effective in the fifth standard and their effect on the pretest was poor and the posttest was upgraded to a moderate level of Likert, which is not a significant effect.

In general, to summarize the analysis of this hypothesis, it can be said that face-to-face training has a significant effect on the fifth standard on the ability to understand legal and economic matters related to the use of information. After the distance education has reached the intermediate level. But distance education has a more significant impact on the scales of Standard 1: the ability to determine the scope and nature of information, Standard 2: effective access to information, Standard 3: critical evaluation ability, Standard 4: the ability to apply targeted information.

The findings of this research are confirmed by the same findings of others researchers in this part such as Alishan Karami et al. (2003), which is quoted by Siamak (2010), Qasemi (2006), Siamak and Davarpanah (2009), Parirokh (2003), and Siamak (2010). In the total and according to management principles and results, it can be noted that the research findings are along with the findings of Tayyebniya (2006), Qasemi (2006), Pandpazir and Sohrabi (2009), Abazari (2007), Parirokh and

Hassan Zadeh (2001), Bakhtiarizadeh (2002), Julahy Saravi (2006) quoted by Abazariand and Purnaghi (2008), and Moghadaszadeh (2006) quoted by Pandpazir and Sohrabi (2009), Kimsey and Cameron (2009) which they are evaluated the information literacy level of the students at acceptable levels. The results of this study showed that distance learning has a significant impact on the growth of the information literacy of students. Regard to the characteristics of today's world it takes the most importance and urgency to encourage the skills of information literacy in the training process. These characteristics include the exponential growth of knowledge, the production of the high volume of information without quality and appropriate credit, the spread use of the internet and other forms of sharing and data transfer, changing the teaching process to the teaching-learning process, proliferating the popularity of digital culture and the need to have a global perspective and communicate with different cultures. Also, due to the differences that e-learning has got in comparison to traditional teaching, it is important and argent to focus more and more on information literacy. These differences include the separation of the tutor and the learner, job and family obligations, limited direct access to traditional libraries and experts, controlling the learning process by the learner, and the kind of technology interaction and the content is inside the learning. According to the principle of independence in e-learning, e-learner must identify their information needs; process them after evaluating and selecting, and integrate them with their prior knowledge. Also, e-learners must be able to interact with other factors of the educational process; especially with the universe of the knowledge outside of the classroom.

If information literacy is imagined as an umbrella that encompasses other types of knowledge, including media literacy and technology literacy, it might be mentioned information literacy skills as means of barriers of learning convert to opportunities and the application of information literacy skills in e-learning could be obvious. Increasing the information literacy level is essential in the growth of independent learning skills and lifelong learning and the individual learner must control its learning process to be a success in the e-learning and be active and self-director in this process. The learner should take advantage of information literacy skills. Finally, regarding to the information literacy importance, it is recommended that the administrators and curriculum designers in case of setting objectives and educational content, teachers in case of the selecting the teaching methods concentrate on the enhancing of information literacy skills, and researchers study the application of these skills in the area of distance and direct education.

RESEARCH RECOMMENDATIONS

Information literacy helps students as a means of access to knowledge and information to identify opportunities and take advantage of them. According to the results of research and the fairly desirable information literacy level of students and regarding to review literature and results which present the positive effect of information literacy on the education and learning development, it is suggested which information literacy course as an essential prerequisite of research should be considered a basic necessity for all scientific disciplines and the extensive research should be carried out to measure the information literacy of student of the different scientific disciplines. In recent years related lessons to information literacy are proposed as compensational and optional courses for some of the academic disciplines by the Ministry of Health and Ministry of Science which is promising better conditions in a wide range of disciplines and it is a sign of attention to this matter by adding the lesson of "information systems" to graduate student's curriculum. Several threats in terms of the information literacy can be mentioned as instability in case of access to digital resources and changing in the providing policies of the

resources. Every year access to resources particularly access to digital resources undertakes significant changes. It is suggested along with educational and research goals at universities, students pass the workshops on the identification with the library and digital resources at the beginning of classes or semesters.

RESEARCH LIMITATIONS

1. Due to faculty entrepreneurship courses at Tehran University being nondirect, getting access to students and the data collection was very difficult and time-consuming.
2. The effects of intervening variables as students were completing questionnaires (internet outage during the online completing of the questionnaire)
3. The number of questions in the questionnaire (49 questions were a lot).

Acknowledgment: This article is adapted from a PhD dissertation with the title "The Impact of the Distance Learning System on Multiple Literacies at the University of Tehran."

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APPENDIX 1

Information Literacy Questionnaire According to the American College and Research Libraries Association standard

We are grateful for your participation and assistance in answering this questionnaire. We would like to know something about your information literacy, knowledge, and skills. Your responses will be treated in strict confidence and will not be identified in any report or publication. Please answer all questions as accurately as you can.

SECTION I

For each question, please mark your response with a tick (√), unless otherwise indicated. For other responses, provide a brief response.

Q1. Sex

___ Male
___ Female

Q2. Age

___ 25 years old
___ between 25 to 30 years old
___ More than 30 years old

Q3. Faculty

___ Management
___ Entrepreneurship

SECTION II

The following questions cover the general areas of information literacy knowledge. You may not know the answers to all questions, but please attempt to answer them without asking others or referring to books. Please choose the best answer for each question and put a tick (√) in the box at the appropriate spot: "1," "2," "3," "4," or "5." Please tell the level of your users about the following issues.

1. What is the most important reason for choosing your research topic (Select one option)?
   __ Watch a TV show on that topic.
   __ Study article in a weekly magazine.
   __ Personal interest in the subject and its relevance to your course.
   __ Relationship with your thesis.

2. If one of the lecturers asks you to write an analytical essay on "FAO" if you are not familiar with it which of the following sources gives you the best background or background information? (Select one option)
   __ Book.
   __ Thesis.
   __ New scientific article.
   __ Professional Encyclopedia.
   __ European Economic Development Magazine.
   __ Websites.
3. If you need to narrow down your research topic (examining the relationship between self-efficacy and organizational entrepreneurship), who is the most qualified person to consult? (You can select more than one option)
   __ Classmates.
   __ Someone who puts books on the shelf in the library.
   __ The one who manages the reference desk in the library.
   __ Teacher of the lesson.
4. Which are the best keywords to search the following query and find the results in Word format? (Select one option)
   __ "Is imprisonment in Iran's penal system harming the children of female prisoners?"
   __ Children, negative, mother.
   __ Mother, negative, crime.
   __ Children, mothers, prison.
   __ Iran, the penal system, kids.

5. Which of the following is relevant to the official stages of publishing an idea? (You can select more than one option)
   __ Reporting to a small group within the organization (university, college, class).
   __ Presenting research results at international and national forums.
   __ Reflection on the abstracts of conference papers.
   __ Take notes for yourself.
   __ Publication of an article in scientific journals.
6. Which of the following sources of knowledge are generally organized to facilitate access to the information? (Select one option)
   __ Subject, field, academic scope.
   __ Field, Subject, academic scope.
   __ Academic scope, field, Subject.
7. Which of the following sources can be used as the most appropriate source for identifying journal articles? (Select one option)
   __ Glossary, encyclopedia, manuscripts.
   __ Profiles and abstracts.
   __ Annual Reviews.
   __ Bibliographies.
   __ List of the sheet.
   __ These databases.
8. Management Knowledge Research Journal is a publication of the Institute of Public Administration. In this work, research papers on the topic of public administration are published. Specify the type of this work. (Select one option)
   __ Book.
   __ Governmental document.
   __ Public Journal.
   __ Business / Professional Journal.
   __ Scientific Journal.
9. Which of the following sources selects, arranges, and presents relevant information from texts in a particular field? (Select one option)
   __ Encyclopedia.
   __ Indexes and abstracts.
   __ Guides.
   __ Unedited sources.
   __ Reliable sources.
10. If you need a book that only has one copy in the library and one copy has been borrowed into another someone, how can you borrow another copy? (Select one option)
   __ The other version is usually not available.
   __ The person who borrows the book brings the book and you get the book from him.
   __ Your library borrows a copy of the book from another library.
   __ You can buy the book by going to bookstores.
   __ You can buy books by searching the book sale websites.
11. If the book you want is borrowed by someone else and you need bibliographic information. What works best at this time? (Select one option)
   __ Find the person who borrowed the book and get the book from that person.
   __ Refer to the book sale sites.
   __ Request books from another library.
   __ Search the library directory.
12. To help you with your search on the topic of "Strategic Planning" there are many articles that cover different aspects of this topic. What is the best thing at this time? (Select one option).
   __ Extension of Search term.
   __ A full change of search term.
   __ Making Limit search term.
   __ No manipulation search term.
13. Which of the following tools should you choose when identifying valid journal articles on the subject of EFQM? (Select one option)
   __ Search the pages of magazines.
   __ Using the articles database.
   __ Using web search engines.
   __ Use the library directory.
   __ Using bibliographies.
14. By searching the science direct database, a list of more than 250 abstracts has been

obtained and shows twenty articles simultaneously. What is the best and fastest way to access and review this list in the next steps (You can select more than one option)?
__ Manually write the complete list.
__ Save the new directory to your computer.
__ Send the list of articles to your e-mail.
__ Move the directory to a new file that you can save to your computer.
__ Reading of information on the list.

15. Two weeks have passed since the beginning of the semester. Your teacher has given you a task to write a 10-pages article with a specific title. Which one of the following is the most effective way to get started if you decide to go to the library? (You can select more than one option).
__ Request help from a reference librarian.
__ Reading books.
__ Find magazines and start searching for them.
__ Use of databases.
__ Use the library directory to find books.
16. Choose the best set for the student concept. (Select one option)
__ Faculty, University, Academic Society.
__ Graduate students, New students, Second-year students.
__ University, adult learners.
__ Young, old, elderly people.
__ Students, young people, adult learners.
17. How can you find appropriate subject terms for your article title "Investigating the Impact of Using Information and Communication Technology on Enhancing the Productivity of Employees in Iran Khodro Company" in a database? (You can select more than one option).
__ Review of thematic keywords in a related article.
__ Using the index of a book.
__ Using yahoo's subject classifications.
__ Using database thesaurus.
18. Which operator do you use if you want to search for a concept that has different synonyms? (Select one option)
__ And
__ Near
__ Not
19. In the Google search engine, we have searched for the term "school of human relations." Almost 1,400 results have been obtained. How do you limit your search results to articles published from 2015 to next and in English? (Select one option)
__ The search starts with the terms "school of human relations and = 2015."
__ Search start with the terms "school of human relations and 2015 and 2016."
__ Search The pages in chronological order to get articles from 2015 to next.
__ In the advanced search section, you use options search engine constraint for publishing data and language.
__ There is no way to this limit.
20. You're writing an article about Taylor, and your professor says there is a other books about Taylor. Which part of the new book will direct you to the page associated with Taylor? (Select one option)
__ Book bibliography.
__ Footnotes.
__ Preface.
__ Title page.
21. If you find an article citation in an electronic journal, but the full text of the article is not available electronically, what is the first and best way to obtain an article? (Select one option)
__ Contact the author of the article and request a copy.
__ Search the library directory for the article title.
__ Checking whether the library has a version of the journal.
__ I can't get an article.
22. Books in the university library are sorted by the number which of the following is the best description for books with the

same and similar guide number? (Select one option)
__ They have similar topics.
__ They are the same size.
__ The library ordered them at the same time.
__ They are written by an author.

23. What information do you need to identify the book 'Transformational Leadership' on the library shelf? (Select one option)
__ Book guide number.
__ Book title.
__ Author Name.
__ ISBN.

24. What is the fastest way to get the following article? (Select one option)

Title: Pennsylvanian public-private partnership formed to curtail pregnant women smoking.

Source: Health & Medicine WeekLK: 8/16/2004, p1214, 3p

Document Type: Article
Formats: Citation PDF full text (209K).
__ Click on the citation option to get the full text.
__ Click on the source or title of the journal to get the full text.
__ Click on the PDF full-text option.
__ Search the library catalog for a magazine title and obtain it in information in the library.

25. You are writing a 20-page scientific article. You have obtained three article titles by doing a word or phrase search. What's the best thing now (just select one option)?
__ Do not repeat the search because the number of articles is appropriate.
__ Repeat the search for less article retrieval.
__ Repeat the search to retrieve more articles.

26. You want a copy of the magazine article that is available in the library which is the best way to get it? (Select one option)
__ Digital Camera.
__ A microform.
__ Copy devise.
__ Scanner devise.
__ Audio /visual equipment

27. The following bibliographic specifications belong to which option; Yahaghi, Mohammad Jafar; Naseh, Mohammad Mehdi. Proofread and editing guide. Mashhad: Astan Qods Razavi, 1985.
__ Book.
__ Part of Book.
__ Encyclopedia article.
__ Newspaper article.
__ Journal article.

28. Which feature of an article is usually more reliable in scientific research? (Select one option)
__ Available in an academic library.
__ It is indexed in a research database.
__ Published on the web.
__ Written by a faculty member.
__ Has been reviewed by experts for publication.

29. Which of the following websites do you usually use to find valid information for your research topic? (Select one option)
__ Edu.
__ Org.
__ Gov
__ Com.

30. When searching the web for a controversial topic such as "targeting subsidies", which of the following statements is most appropriate for creating a bias? (Select one option)
__ Bias can only be revealed by reading the content on a particular website and comparing it with the content of other sources.
__ If the information on a site contains numerical data or statistics, there is no bias.
__ The information is oriented on the web.
__ Information is not orientated on the web.

__ The territory of the website refers to its orientation or nonorientation. For example, "Edu territory" is unbiased. While "Com" is biased.

31. Which of the following sources often provide one-sided views and views instead of reality? (You can select more than one option).
    __ Weblogs.
    __ Newsgroups.
    __ Newspaper editors.
    __ Commercial or personal websites.
    __ Articles in scientific journals.
32. Which of the following do you need to find published articles on a topic such as Production Planning? (Select one option)
    __ Search a research database in the subject area.
    __ Search several research databases in the subject area.
    __ Search in several web search engines.
    __ Search the library list.
    __ Web search.
33. Answer the following question using the information provided. (Select one option)
    The force is back. (cover story) D. Kamp. Il Pors vanity fair no462 p 118– 32 f99 of myth and men (interview) B. Moyers. il Pors time v153 no 16 p 90- 4 ap 26 99.
    Who is the author of The Force is back?
    __ Moyers
    __ Corliss.
    __ Kamp.
    __ Vanity Fair.
34. If you need to write an article on "Pregnancy during adolescence," which of the following databases can provide articles with the content you need? (You can select more than one option)
    __ Architectural database
    __ Educational science database
    __ Health database
    __ Mathematics database
    __ Psychology database
35. You want to communicate directly with management professionals. How can you communicate with them? (You can select more than one option)
    __ Call them.
    __ Contact them by e-mail.
    __ Read the articles they have published.
    __ Arrange an interview with them.
    __ Use the e-discussion group to talk to them, or visit the Iranian Management Association website.
36. You are about to write an article on "Understanding Cultures and the International Community." Your search for the term "knowing cultures and the international community" in a research database yields thousands of results. What is the best strategy for dealing with these results? (Select one option)
    __ Add another word or phrase to the search term.
    __ See all sources.
    __ Delete one of the search terms.
    __ Select a new database.
37. You have just finished reading a new article on "Information security in the electronic superhighway." Where can you quickly find a list of articles related to this title? (Select one option)
    __ By contacting one of the authors of the article in this subject area and requesting a list of sources and references.
    __ On the internet.
    __ In the library database system.
    __ In the desired library list.
    __ Resources and references/citations of the articles.
38. If you're going to write an article on the "structure of work failure," what do you do first to determine the content of your article? (You can select more than one option)
    __ Write a table of contents or article headings.
    __ Writing sources and references of the subject under consideration.
    __ Consult with the subject matter experts.
    __ Take notes of the sources found and arrange them.
    __ Developing a theoretical framework for the content of the paper.

39. If you have a text file for the topic you are looking for, how do you make the changes, corrections, or additions you want? (Select one option)
    __ The digital source cannot be modified.
    __ Shape (format, font, color, size, etc.) can be changed at source but cannot be changed in content.
    __ Some digital formats and files can be modified.
    __ Both the content and the shape of the digital source can be changed.
40. If you have recovered a file on the subject of your search on the internet, which of the following files will be easier to modify, modify, and add? (Select one option)
    __ HTML
    __ PDF
    __ FTP
41. If you have a list of resources to study, which of the following can be best used to maintain, add, subtract, and modify it? (You can select more than one option)
    __ Make a list of them in the Notebook.
    __ Using Note Cards.
    __ Use software like WordPad or Word.
    __ Using a Spreadsheet Database
42. Which is more important to revise and refine the search process? (Select one option)
    __ Providing a backup file.
    __ Save the record and provide and maintain search history.
    __ Save retrieved results.
    __ The meta-search process to a search engine.
43. How do you deal with the class research paper you have prepared at the end of the semester? (You can select more than one option)
    __ After the semester is over, you throw it away.
    __ For the sake of studying others, you are posting on a weblog or site.
    __ You send to magazines to information.
    __ Present it at a conference or seminar.
    __ Email and share with related groups and friends.
44. What is important to you when presenting your research in class? (You can select more than one option)
    __ Using software and hardware such as PowerPoint and Video Projector.
    __ The proportion of the volume of content with the time of research presentation.
    __ The concept of content.
    __ Complex content presentation.
    __ Paying attention to classmates' feedback.
45. How to contribute to the advancement of science (You can select more than one option)
    __ Performing class assignments.
    __ Authoring and translating a book or article.
    __ Doing research.
    __ Copy of published works.
    __ Prepare a review article and review.
46. Which of the following indicates the immorality of submitting reports of borrowing resources to other individuals or government agencies? (just select one option)
    __ Access to information.
    __ Spiritual freedom.
    __ Intellectual property.
    __ Private rights.
    __ Copyright.
47. You search for articles on "information literacy" using a search engine such as Google or a Database. Which one of the following options is most likely to be recovered by Google? (You can select more than one option)
    __ Lawson, Mollie D. (1999). Assessment of a college freshman course in information resources, *Library Review*, Vol. 48, No. 2, pp. 73–78.
    __ Maughan, Particia Davitt. (2001). Assessing Information Literacy Among Undergraduates: A Discussion of the Literature and the University of California-Berkeley Assessment Experience, *College Research Libraries, 62*(1), 75.

__ O'Connor, Lisa G., Carolyn J. Radcliff, and Julie A. Gedeon. (2001). Assessing Information Literacy Skills: Developing a Standardized Instrument for Institutional and Longitudinal Measurement, in *Crossing the Divide: Proceedings of the Tenth National Conference of the Association of College and Research Libraries* (Chicago: ACRL, 2001): 163-174, <http://www.ala.org/Content/NavigationMenu/ACRL/Events_and_Conferences/oconnor.pdf>

__ ACRL. (2000). Information Literacy Competency Standards for Higher Education. Chicago: Illinois. [online], Available at: http://www.ala.org/ala/acrl/acrlstandards/standards.pdf

48. Which of the following terms would make it unjustifiable for libraries and government agencies to restrict or prohibit your access to the information available and of your interest? (just select one option)
    __ Access to Information.
    __ Fair dealing.
    __ Intellectual Property.
    __ Private Rights.
    __ Copyright.

49. If you would like to quote from the following paragraph Computer Encyclopedia in the research article, which of the following illustrates the appropriate use of this work? (Select one option)

    Viruses are a special type of malicious code that requires you to perform specific operations to infect the system. These types of programs require users to help them achieve their malicious goals. "Opening an attachment with an e-mail or viewing a specific web page are examples of user collaboration to expand this type of malicious code."
    __ Viruses enter the computer by opening an attachment with an e-mail and viewing a specific web page.
    __ Viruses are a specific type of malicious code that requires users to log in.
    __ Viruses are a special type of malicious code that requires you to perform specific actions to infect the system.
    __ These types of programs require the help of users to achieve their malicious goals.
    __ Users need the help of viruses to achieve their malicious goals.