

The study of students' computer knowledge in the Shahrekord University of Medical Sciences

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Abstract: Today's world is facing daily with advances in technology. Computer is one of the most important displays of such development. Nowadays, computers play a vital role in business, technical activities, and general fields of activity and the use of it has turned into an essential skill. The meaning of computer knowledge is the ability of a person to use a computer to get their required information for professional or general purposes. Just as literacy plays an important role in the individual and social life of people, computer knowledge is also unavoidable for students and computers are considered a change in the way of teaching. The purpose of this research was to study the level of students' computer knowledge of students and to aid in educational planning. This descriptive – analytic research carried out on 300 students in Shahrekord university of Medical Sciences. Data gathered using standard valid – questionnaires containing demographic data of the students, and questions about passing a training course and their inclination on passing a course in the future. The gathered data was processed analyzed by SPSS13, descriptive parameters, Chi- square test, independent t- test and ANOVA. Sixty five percent of the students were female and 35% were male. Sixty percent of them had a personal computer. Most of their usage was to search the internet for information, searching for information through Medline and computer games; while the least usage was for programming, using Excel, using statistical software, and chatting online. 57.7% had passed a computer training course. The biggest students' interest was to take part in classes for advanced searching and using Microsoft Office Word. The most computer knowledge belonged to the students of medicine and the least, to the family health students. This, of course, was directly related to owning a private computer. Computer knowledge was greater among native and daily students. This also was directly related to owning a private computer. There was not a significant difference between female and male student's computer knowledge. A significant difference between female and male didn't observe in having a passed computer course, possessing a private computer and computer knowledge score, whereas there was a significant difference between native and non-native students. The findings of this research indicates that the assessment and analysis of computer knowledge of students can determine the type and the content of the courses chosen for them, which is in turn essential for the improvement of their skill and knowledge of computer. Planning and putting an IT course is essential in the student's educational curriculum with emphasis on how to search for scientific sources in the internet.

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1. Introduction

The world confirmed the increasing advances in technology and computer is one of the most important displays of such development. Nowadays, computers play a vital role in public activities, commercial activities, professional, fields and the use of it turned into a skill. Computer literacy means the ability to use computers to obtain needed information or to perform daily normal activities in their careers (Morris D 1998). The individuals with computer literacy will not be a specialist in this field, but they are aware of basic information about computer system and are able to use it (Snder Robin 1998; winters sj, chudola km, & Gutel BA 1999). As literacy has considerable importance in personal and social development, computer literacy, in personal and social development, computer literacy, especially for students and medical students is inevitable and

computers are considered as tools in education. E-mail, computer tests, computer training aids, reference books and digital images, and information and valuable resources are available on the Internet and a basic learning tool for even first year students. Otherwise, subjects taught in a training course aren't enough and professional training is required by learning continuously learning throughout life (Gibson KE & Silverberg 2000). As the America Association of Medical Colleges (AAMC) recommends to doctors in twenty-one century that medical education must take steps towards the preparation of medical students to gain and use skills and information technology during their career. In this regard the computer is introduced as the primary instrument of medical education in new technology. Electronic writing, computer-based tests, text and digital images are considered as Internet resources

now, even for basic training the first year students (Marz R 2009). So teaching a computer how to use is detected the main qualification for training and practice of modern medicine (Sarabi A & Bahaaldini k 2005). Medical students who cannot get basic information technology skills of IT to the third year, they are not able to perform good at the end of clinical course (Seago BL, schelesinger JB, & Hampton CL 2002). If a strategy based on Benner's novice to expert theory is implemented, computer literacy among frontline users could be assessed and appropriate education and training programs can be developed. Ultimately, these programs would promote positive perception of the clinical information system, which would result in a better adoption rate of the electronic medical record (Turner MP 2010). So it seems medical students need computer skills and use of information management at the beginning of medical education (holander su 1999). Nowadays, most universities in America have come to the conclusion that the train equipment by the computer training program should be included. Due to this problem, AAMC recommends that IT should be a student's education curriculum in the reform process. Students should be able to use word processor WORD, e-mail and use the database and medical sources and search the information at the end of fourth year (Brain E & Smith JM 1997; Crowe P, howie C, & Thorpe M 1998). Despite this and changing rapidly the world, it is undeniable the importance of computer literacy. Reports show slowly motion of integration for computer curricula in training program. Studies, particularly in developing countries and African show the barriers to computer literacy development, budget shortage, lack of space, lack of faculty members believed important role in training students and lack of computer programming in long-term use of computers in education (Gibson KE & Silverberg 2000). At the Present, various studies indicate international attention to this matter and has been measurement in different forms the students' computer literacy and styles of program presentation. Review of ten years indicated that the highest computer knowledge of students was provided by University of Virginia in software applications for word processing, word, essay writing, using e-mail, computer games and search for information (Seago BL, schelesinger JB, & Hampton CL 2002). In another study in University of Illinois, student's computer literacy was word processing software, mail, and searching for information on the Internet (holander su 1999). College of Michigan and University of Australia reported the most familiar students with software word processor (Brain E & Smith JM 1997; Crowe P, howie C, & Thorpe M

1998). But African students' skills has been reported less than Europe and America students' skills (Nuriahan MI et al. 2000; Samuel M et al. 2004). In the study the Mashhad University of Medical Sciences on associate and bachelor degree students, eight were 54% level of operation and 9/4% in the advanced level were familiar with computers (Sarbaz M & Vahedian M 2006). A study Medical Students in the Kerman University in 2004 took 65% of their students had a private computer and 56% in total score were acquired computer literacy. The results of this study have shown that the highest use of medical sciences students was in computer mail, gaming, and search the web (Sarabi A & Bahaaldini k 2005). In Chahar Mahal and Bakhtiari province, to follow the whole country in recent years and to try increase education and Computer literacy in society, it has been considered in various fields *need for computer literacy training in Shahrekord University of Medical Sciences*. A study has been done about computer literacy among students to determine the appropriate educational policies and programming in this context.

2. Material and Methods

This cross-sectional descriptive-analytic study performed on the statistical population of. Students in three colleges, the night course and containing all entrances. Sampling conducted using multiple- stages (stratified and randomly) from different schools and students based on sample size set in each school. Sample size was calculated 300 students based on p obtained in the pilot study totally. In this study, computer literacy levels of students detected using the items raised in the questionnaire in using computer. This is only that individuals never performed received scoring one, twice scoring two and more than three times scoring three. Inclusion criteria determined being a student of university of medical sciences and was not participated guests in the study. Data collection instruments was applied valid and reliable standard questionnaire used in the universities of America that is also used to study in Kerman (Gibson KE & Silverberg 2000; sarabi A & Bahaaldini k 2005). The questionnaire was translated, they adjusted to the University conditions, and some of the questions were not used. The student questionnaire contained demographic information, questions about training courses, assessment questions of computer literacy, students tend to spend training courses. Questionnaire rendered by trained interviewers to the university students to complete. Data collected were analyzed through software parameters spss13 using descriptive and chi square tests, t-test and independent analysis of variances.

3. Results

The average age of subjects included 21.3±3.15. 65% of cases were female, 35% of them were male and 69.4% and 30.6% attended in day and night courses respectively. They determined 58% native and 41% non- native of this province. Mean average calculated 16±1.25. Students studied in the fields of Family Health, Associate and Bachelor degree of Health, Anesthesia Technician, Associate Midwifery, Associate Disease, Laboratory Sciences Technician, Operating Room Technician, Radiology Technician, and Associate degree of Nursing fields. 57.7% of subjects from this group had completed the computer training courses. 40.3% had trained privately, 41.7% in universities, 12.2% in schools, and 5.8% in other cases. Students training conducted

95.6% in the software field, 2.9% in the hardware field and 1.5% in the design and analysis system field. 60% of the subjects had a personal computer. In general, the most grade level doing daily work through a personal computer is pertained to required texts in computer 2.48%, search required information in Medline database 2.35%, computer game 2.19% and lowest cases related to Programming 1.24%. The use of Excel software 1.49, and using statistical software program 1.51% and participate in a chat program 1.51. Table 1 displays Mean scores and percentage of personal tasks identified by computer.

Table 1: The rate of computers activities of students

Computer activities	Never (%)	Once or twice (%)	More than twice (%)	Mean score (%)
Writing a text by word software	32	25.3	42.7	85±2.1
Send or receive email	51	16.6	32.4	89±1.81
Participation to discussion groups about email	67.2	12.9	19.9	8±1.52
Computer game	29.8	21.2	49.2	86±2.19
Search for subjects and required text	16.2	19.1	64.7	75±2.48
Search for subjects and required texts by help of librarian and informed individuals	35.5	35.1	29.3	8±1.93
The use of information database program for information organization	75.1	19.2	23.8	83±1.66
The use of statistical software	62.2	23.7	14.1	73±1.51
Having a computer program	82.1	10.8	6.7	56±1.24
The use of excel	64.7	20.7	14.5	73±1.49
Review of subjects in internet	40.2	23.2	36.5	87±1.96
Search for required information	20.4	23.3	56.3	8±2.35
Participation to communication groups	65.6	17	17.4	77±1.51
downloading	51.5	17.8	30.7	88±1.79

The intend of participation in workshops and training classes detected searching for medical sources via the Internet 9.6% and then the use of word processing software 80.4% respectively (Table 2).

Table 2: The rate of students' inclination for participation for workshops and training class

Computer activities	Tendency %	Non- tendency%
Word processor	80.4	19.6
Search for medical sources by internet	90.6	9.4
Search for texts through information database, Medline	77.4	22.6
e-mail	71.2	28.8
The use of news parts	74.3	25.7
Search WEB	82	18

A comparison Based on the amount of computer use showed that the highest degree of computer-related fields was respectively, Medical Laboratory Sciences, Anesthesiology, and Bachelor degree of Environment Health. Table 3 indicates the status of computer activity levels in various courses and training courses and the percentage ownership of

the computer. There was not significant between passing computer training courses and life location, although the most percentage of non-native students have passed computer training than native students. (60% vs. 50%. A significant relation was not found between age.sex, day and night courses and passing training computer courses.64.6% day students and

48% night students had a computer that was statistically significant(p=0.015). Computer ownership among students, native and non-native ingredient students, was a significant difference that the highest rate of computers belonged to medical field (93.4%) and the lowest rate to family health (31%). (p=0.001).Table 2. Among individual computer activities were required only texts search and software internet download assisting librarians and informed persons. Girls mean score (82.2%±

2.10) was higher than boys mean score (74% ± 1.78) and significant differences indicated (p=0.03). The download score of boys 89%±1.98 considered more than girls(86%±1.68)and significant differences recognized (p=0.01). The rate of computer activities native compared with non – natives' individuals that showed 9 examined cases of 14 cases were significant and score of non – native students was higher than native students (Table 3).

Table 3: A comparison between native and non-native students about computer activities

Titles	Score%		p-value%
	Native	Non-native	
Scripts and sending email	82±1.65	89±2.03	0.01
Participation to discussion groups through email	72±1.4	88±1.68	0.01
Search for text and content by computer	79±1.36	67±2.65	0.002
Search for text and content by help of librarian and informed individuals	78±1.83	81±2.08	0.01
The use of information database for organization of information	77±1.54	89±1.83	0.01
The use of statistical software program	68±1.43	77±1.64	0.02
Search for information using the Medline database	82±2.33	73±2.52	0.005
Chat	73±1.41	79±1.64	0.02
Downloading texts and software through internet	86±1.66	87±1.95	0.01

Computer activities of day and night student's courses studied and determined that daily students obtained 9 cases of 14 cases in computer activities more than the night students. Computer activities of different fields compared with each other and revealed that excluding the case of the difference was significant (Table 4).

Table 4: A comparison day and night students about computer activities

Titles	Day%	Night%	p-value%
Type and sending email	9±1.92	8±1.55	0.02
Participation to discussion groups through email	84±1.61	68±1.3	0.09
Search for text and content by computer	69±2.58	84±2.24	0.03
Search for text and content by help of librarian and informed individuals	86±1.76	72±1.43	0.03
The use of information database for organization of information	86±1.76	72±1.43	0.02
The use of statistical software program	76±1.46	87±2.1	0.03
Search for information using the Medline database	81±1.63	6±1.26	0.001
Chat	81±1.63	6±1.26	0.001
download texts and software through internet	9±1.89	79±1.56	0.05

Programming in the use of statistical software, search texts aided informed individuals and, librarians and play in other cases.

Table 5: The relationship of computer activities and deferent fields

Field	Interance	e-mail	Discussion group	game	Search of web	Search by librarian	Information database	Statistical database	Writing Computer program	excel	Review internet	medline	chat	download	General percent
Family Health	48	20	13	62	74	66	30	33	13	10	32	62	7	20	35
Environmental health	36	60	23	55	83	66	46	63	48	75	69	36	29	49	60
Environmental health	68	48	44	55	81	26	38	28	32	36	64	68	40	44	51
Anesthesia	58	72	72	77	100	100	86	43	0	15	72	67	58	43	62
Midwifery	33	17	34	50	100	34	17	0	0	17	17	67	50	34	44
Discuses	60	60	23	76	84	48	94	44	48	20	56	74	28	48	49
Laboratory sciences	84	84	34	84	100	75	50	33	17	67	75	100	30	59	63
Operati on operation res	100	0	0	67	100	100	25	25	25	67	100	100	25	67	57
Medline	85	76	50	83	92	61	57	35	35	44	70	91.4	57	76	65
Nursing	56	47	33	63	72	68	42	33	24	19	52	73	26	40	47
Radiology	75	38	25	88	100	88	38	38	13	15	63	100	38	63	57
Percent whole	68	47	32	69	89.6	66.5	47.5	34	23	35	61	80	37	49	53.6
p-value	0.003	0.001	0.02	-	0.04	-	0.05	-	-	0.001	0.03	0.001	0.007	0.001	-

4. Discussions

The study performed to determine literacy and computer information of students in ShahreKord

University of Medical Sciences. The research will help to acquire information of the students status , to create the appropriate policy and planning , to

develop training and information of students to provide computer literacy. The results showed that most information literacy of students indicated based on the amount of computer use, the performance of personal tasks relating to content, search for texts needed by computer (2.46), Medline search for needed information (2.35), computer game (2.19), writing a text using Word program (2.1). The lowest cases included Programming (1.24), using Excel software (1.49), using a statistical software program (51 / 1), participate in a communication program and chat (1.51). In the study of Kerman University of Medical Sciences, students in the highest computer use were ranked using e-mail, computer games, and Web searching for information (sarabi A & Bahaaldini k 2005).

In another study, researchers groups had performed on freshman university students in Shahrekord University of Medical Sciences, none of the subjects did not conduct using electronic messages, participate in discussion groups, programming and using the Excel software. The highest rate of use indicated to work with the Internet and search for different subjects and downloading the content. In the study of ten-year on medical students in University of Virginia, it was published in USA 2002, that the highest computer literacy of students has been in the field of software application to write MS-word word processor, use the mail, computer games and searching Information (Seago BL, schelesinger JB, & Hampton CL 2002). In another study conducted in America in 1999, the highest of students skills recognized using software Word, and e-mail and search information from the Internet respectively (holander su 1999). The other results revealed in the University of Michigan, College Australia, the most amount of students knowledge found using word processor software (Brain E & Smith JM 1997; Crowe P, howie C, & Thorpe M 1998). The results of studies in African students indicated the low skills of medical students in the software application of Word, compared with Europe and the U.S (Samuel M, Coombs JC, Miranda JJ, Melvin R, Young EJW, & Azarmina P 2004). Results of this study demonstrated that computer data between male and female students were significantly different only in two parts, content and search texts needed to inform and assist librarians one or was an Internet software Search the scores and texts needed to help librarians Vafrad inform the girls and scores more were downloading, and in other cases (12 cases) there was no significant difference. The cause of this difference could be the nature of computer applications and possibly two more girls interested in getting help and information from other people. Kerman University of Medical

Sciences in the study of literacy found a significant male students than female students (sarabi A & Bahaaldini k 2005). In other studies such as European studies and a study in Malaysia, a significant difference between computer literacy considered (Matteos N et al. 2005; Nuriahan MI, LIMT A, FOONG A, Yeong SW, & Ware j 2000). In the study because of Kerman Author The result more likely to complete the questionnaire, lack of interest by girls Vahtmal boys who have lower computer literacy as well as generalized probability of unknowingly being involved in cultural issues, as has is (sarabi A & Bahaaldini k 2005). In this study a significant difference between the boys and girls was not revealed. In the current study the number of non-native students using computers were more than the native students. This difference was observed between night and day students as well. The reason probably was that daily and non-Native students had the private computer, in comparison with others. While a greater percentage of non-indigenous students computer had passed training courses (60 vs. 50). The result of a study on university freshman students also showed significant differences between passing training courses, having personal computer and the score of computer literacy in native and non-native students. According to the study of recent results, 60% subjects had a PC. About 67 percent of Kerman students had private computer and determined a significant relationship between computer literacy and student computer ownership (sarabi A & Bahaaldini k 2005). The study of Associate and bachelor degree students in eight field illustrated that more than a quarter of students were the owner of private computer in Mashhad University of Medical Sciences (Sarbaz M & Vahedian M 2006). 24 percent of students had the computer in Studies of Africa (Samuel M, Coombs JC, Miranda JJ, Melvin R, Young EJW, & Azarmina P 2004). The results of another countries studies designated that the increase of students' computer ownership promoted computer literacy of students and had a significant relationship. The results of this study were to force freshman students to buy a private computer in some medical college of America (Crowe P, howie C, & Thorpe M 1998; holander su 1999; Seago BL, schelesinger JB, & Hampton CL 2002). In the current study the amount of computer literacy of students, according to the studies in different fields was different, the most in Medicine and the least in the field of Family Health. Of course, it seems this domain is related to computers and possessing a manner most computers having studied medicine and the lowest was dedicated to the field of family health. The tendency to Most training courses existed for courses via the

Internet by medical sources, search the Web and using Word software, and using the Medline database. The highest percentage of Kerman students was willing to train in search of medical resources, Medline search on the Internet. The most freshman university students were interested to seek medical sources as well as. With regard to the existence of desire and valuable medical resources, Internet training in this area should include in the students curriculum especially for medical students. In twenty-first century expected that doctors should have adequate ability in using computer technology for professional decision in order to treat and care patients, doing research Clinical and must meet continuing education (Seago BL, Schelesinger JB, & Hampton CL 2002). Due to this matter American Association of students of medicine changes in medical education recommended in 1986. One of the recommendations is that information sciences, students should be included in training course of students. They recommended that students must be able to use word processor, email, ability to choose and use educational resources and information search and the evaluation of databases at the end of fourth year in students education (Holander su 1999). Although the importance of computer literacy for medical students due to its effect on various grounds is obvious, computer integration in medical education continues in a slow motion. Lack of budget, space, faculty members believed in an important role of computer in students training and lack of long-term programs in use of computer are considered medical education barriers in development computer literacy (Gibson KE & Silverberg 2000). Lack of identical educational standards and non-accessibility of technology for learning fundamental skills and primary computer mentioned main factors for lack of appropriate computer literacy (Gibson KE & Silverberg 2000; Seago BL, Schelesinger JB, & Hampton CL 2002). According to the results of this study and mentioned studies, it seems IT education and information technology should be considered as a training curriculum, especially in cases of using word processor, email, ability to choose and the use of educational resources, information search and the evaluation of specialized databases. The barriers to the development of computer literacy are removed with appropriate policy, planning, and creating uniform educational standards. Although university of medical sciences students in computer training has taken steps, but these things seem temporarily and require long-term planning and set information technology education as a course is necessary.

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