

نشریه دانشکده ادبیات و علوم انسانی

دانشگاه شهید باهنر کرمان

دوره جدید شماره ۱۸ (پیاپی ۱۵) زمستان ۸۴

## ارزیابی دانشجویان دندانپزشکی از نظر توانایی خواندن

متون علمی - فن آوری<sup>۱</sup> (علمی - پژوهشی)

دکتر امیر مهدوی ظفر قندی

استادیار گروه زبان و ادبیات انگلیسی دانشگاه

گیلان

دکتر یوسف جهانانیده

استادیار دانشکده دندانپزشکی دانشگاه علوم پزشکی گیلان

### چکیده

این تحقیق مهارت دانشجویان پزشکی را در امر خواندن متون علمی مربوطه می آزماید. از ۵۷ دانشجوی دندانپزشکی آزمونی شامل ۳۵ سؤال انگلیسی عمومی و تخصصی در نیم ساعت به عمل آمد. سئوالات عمدتاً "چند جوابی و معدودی نیز صحیح / غلط بودند. بررسی نتایج نشان داد که صرفاً ۴۳/۹ درصد توانستند نمره بالاتر از ۱۰ (از بیست نمره) را کسب کنند. چنین نتیجه ای موبداین نکته است که اکثریت دانشجویان دندانپزشکی توان بایسته را در فهم متون علمی مربوطه ندارند.

**واژگان کلیدی:** ارزیابی دانشجویان پزشکی درک مطلب متون تخصصی زبان انگلیسی.

<sup>۱</sup> تاریخ پذیرش نهایی مقاله: ۸۴/۵/۲

تاریخ دریافت مقاله: ۸۳/۶/۸

## **An Assessment of Dentistry Students' Reading Proficiency of EST Texts**

*By: Dr. Amir Mahdavi-Zafarghandi\*, Dr. Yousef Jahandideh\*\**

### **Abstract**

To assess whether general English and EST courses enable the university students of Medical Sciences to achieve the defined course objective(s), this study focuses on the assessment of reading skills of dentistry students. Fifty seven (57) students of dentistry having passed both general and EST courses are given directions to answer 35 items in 30 minutes. The test consists of three reading passages. The first passage is a cloze test with 21 multiple-choice items; section two a reading comprehension test followed by 9 multiple-choice items. Finally, the third one is a selected paragraph of a recent dentistry article followed by 5 True/False statements. The analysis of the obtained data shows that only 43.9% of the students could score 10 or above (from possible 20). This pattern of results shows that the majority of students are not proficient enough in understanding EST texts in dentistry.

**Keywords:** EST (English for Science and Technology) special texts Proficiency specific use assessment

---

\* Assistant Professor, Department of English Language and Literature, Faculty of Humanities, Guilan University

\*\* Assistant Professor, Department of Prosthodontics, Dental School, Guilan University of Medical Sciences

### **Introduction:**

The language to disseminate most of today's up-to-date information in science and technology is basically English. The variety of English used for this purpose is known as English for Science and Technology (EST). Obviously, most of the books, journals, research materials, or almost all other academic sources are nowadays either written directly in, or translated into, English. This is why students of science and technology whose native language is not English are now required to develop some effective skills, especially for reading EST materials so as to meet their basic academic needs.

Although Iranian community of science and technology generally need to communicate in English both orally and in writing, the majority of them including students of dentistry do not make use of EST effectively. According to the curriculum, they have to take both general and EST courses. One of the major objectives of the EST course in dentistry is defined as the improvement in the specific use of English, especially of reading, to meet their needs. However, EST students in general, and students of dentistry in particular, do not seem to achieve the defined course objective(s), even though they successfully pass both the general and EST courses.

More specifically, the question raised in this study is whether the students having successfully completed the general and EST courses could have developed the essential skills so as to have an efficient understanding of some specific texts in dentistry.

Research works on the effective use of EST by Iranian students majoring in different fields of medicine are highly limited. The first study of this kind was conducted by Ahmadi (1993, pp: 109-113) on the reading proficiency of students of Shahid Beheshti University of Medical Sciences, Health and Treatment Services. The focus of the study was on measuring the medical students' English reading comprehension and reading proficiency. Those students who had already passed the ESP modules were given a test. The test was similar to TOEFL (Test of English as a Foreign Language) in terms of the kind of items, the length of reading passages and the method of reading comprehension questions. However, there were, at the same time, some differences in the form and, particularly, the content. Unlike TOEFL, the test did not include any listening comprehension section simply because the investigation was concerned with the students' reading comprehension. Moreover, the selected materials in the test consisted only of medical texts. The results of this study showed that 37.5% of the students could not read and understand the medical reading passages in English effectively.

Another study was conducted on English for Specific Purposes at Iran University of Medical Sciences, Health and Treatment Services by Seifouri and Dehnad (1996). This study compared the effect of the ESP textbook of medicine on one group of students with that of only selective articles on the other group. However, there was no measurement of the students' skills in either of the groups. The analysis of data thus collected showed no significant difference between the

two approaches to reading medical texts. Nevertheless, the majority of the students (86%) preferred the selective articles to EST textbooks. The reasons behind their preference came from their interest in the article topics and the close relation between the article materials and their field of study.

A recent study at Guilan University of Medical Sciences focuses on the evaluation of dentistry students' proficiency in understanding educational dentistry films in English (c.f. Jahandideh and Mahdavi-zafarghandi, 2004). Fifty seven (57) students were shown two educational dentistry clips, while asked to answer some comprehension test items. The data collected were then analyzed through descriptive statistics. As a result, only 10.5% of the students gained scores higher than 10 out of possible 20. The pattern of results overall indicates that the majority of students of dentistry are not proficient enough in understanding educational dentistry films.

This study as a follow-up to the previous investigation concentrates on the assessment of reading skills of the dentistry students at Guilan University of Medical Sciences. This follow-up study seems necessary in two respects. First, since EST reading skill is one of the students' primary needs and is clearly stated as the main objective of the syllabus, the assessment

serves as the basis for providing direct feedback on how, and to what extent, this objective is achieved. Second, this study shows whether the assessment of students' reading skill(s) suggests a similar pattern of results with that of the previous study. In other words, the question is whether there is any

significant transfer between the two receptive skills of EST listening and reading.

There have been a great number of studies on EST in other countries, but most of them discuss the content, methodology, and students' need analysis. Therefore, there are fewer studies that primarily focus on assessment.

### **Materials and Methods**

Fifty seven (57) students at Guilan Medical University having passed the EST courses were given an English test. The students were given directions to show their understanding of three short reading selections by answering 30 multiple-choice items and 5 False true statements within 30 minutes. The items were designed to measure the students' proficiency of reading dentistry materials.

The test format consists of three sections. In the first section, there is a multiple-choice cloze test, the passage of which is selected from a book entitled *Esthetic Dentistry* (c.f. Touati, Miara and Nathanson, 1999)

To design the test, the first and last sentences of the passage were kept intact, and every 7<sup>th</sup> word was deleted. There were four alternatives for each of the blanks. The second section consists of another passage from the same source. Following the passage, there are 9 multiple-choice comprehension items. The third section consists of an extract from a dentistry article (c.f. Donahue and Goodkind, 1991). Following the text, there are five True/False (T/F) statements to measure the text comprehension. As regards the scoring

method, the correct response to each of the statements are given twice the weight of other items on the account that the five statements are supposed to measure students' reading ability on a short paragraph in the third section of the test (c.f. the Appendix).

The topic of the reading passages and also the extract from the dentistry paper are all concerned with a particular issue in dentistry, i.e. colours. None of the three sections of the test materials had been seen by the students during their EST courses.

Eight of the students were given the same test after two weeks of the first test administration to measure the reliability of the developed test by test-retest correlation method.

All the collected data was summarized and analyzed by SPSS software, the results of which follow.

## **Results**

The test-retest analysis of the obtained scores shows a high correlation of .90. The analysis of the obtained data shows that only 43.9% of the student could scores 10 or above. Among them, 80% report that they have attended English courses at private institutes outside the university system. The results show that 56.1% scored below 10.

Figure 1 shows the percentage of scores obtained by students on each section of the test and on the total test as well. The bar graph shows that 56.1% of scores is 10 or above on the Cloze Test Section, and that the lowest percentage is 26.3 on Text Comprehension (TC).

Table 1 shows the minimum and maximum scores on each section of the test and the test mean together with the standard deviation. Also, the table shows the results of the same statistics on the total scores of the three sections of the test. Accordingly, the minimum score on the total test is 4.00, and the maximum is 17.00 with the mean score of 9.27. The minimum score is .00 on two sections of text comprehension (TC) and True/False (TF), i.e., providing no correct answer to any of the items. Also, the lowest mean of scores obtained relates to these two sections of the test.

Figure 2 shows the percentage of students' total test scores within 4 score ranges. The highest percentage of the range of scores falls between 7.00 and 9.99, which is 40.4%.

## **Discussion**

The test measuring the students' reading skills is developed by two researchers: one is a lecturer of specialized dentistry courses, and the other a lecturer of applied linguistics. The test-retest correlation, .90, which is an index of reliability, can suggest the test reliability. As far as construct validity and reliability are concerned, it would be safe to say that the test is appropriate for measuring the dentistry students' proficiency in reading specific texts in their field of study.

The overall finding that only 43.9% of the students scored 10 or above shows that more than half of the subjects come short of the reading strategies and skills required for an efficient understanding of EST texts in dentistry. It should also be noted that 80% of those who scored 10 or above reported that they had attended some English courses at



private institutes outside the university educational system. This pattern of results suggests that the majority of students at university could not have developed the basic skills required for EST reading even though they had already passed both general and EST courses.

Let us compare the general pattern of results obtained in this study with that of other studies. Ahmadi's study (1993) measuring the medical students' comprehension of medical texts shows that 37.5% score below 10 whereas this percentage dramatically increases to 56.1% in this study. Of course, one should consider the fact that the dramatic increase can be explained in terms of the variety in the samples, test materials, techniques and procedures of the test development and test administration and finally scoring systems. Nevertheless, the patterns of these two different studies are, to a great extent, in harmony with one another. Consequently, we agree with Ahmadi's conclusion that students' reading proficiency of EST texts should be greatly improved.

The comparison between the pattern of results in this study with the previous one (Jahandideh and Mahdavi-zafarghandi, 2004) is quite interesting. The previous study measured the subjects' listening comprehension of educational dentistry films in English, the results of which indicated that 89.5% of the scores was below 10. The first observation is that there is a high degree of similarity in the pattern of results. The fact that students find the listening test more challenging than the reading one can be explained in two ways. First, as long as there is no inclusion of educational films and no emphasis on listening comprehension, one expects that the learner would

do worse on listening than on reading comprehension. Second, as regards to a similarity in the difficulty level of content, listening comprehension can by nature be more challenging than reading comprehension because the adjustment of the listener's auditory memory with the speed of presentation plays an important role in remembering what is heard. The following citation by Rost (2001, p. 9) supports the argument:

“.... Several factors are activated in speech perception (phonetic quality, prosodic patterns, pausing and speed of input), all of which influence the comprehensibility of input. While it is generally accepted that there is a common store of semantic information (single coding) in memory that is used in both first language (L1) and L2 speech comprehension, research shows that there are separate stores of phonological information (dual coding) for speech (Soares and Grosjean 1984; Sharwood Smith 1994). Semantic knowledge required for language understanding (scripts and schemata related to real world people, places and actions) is accessed through phonological tagging of the language that is heard. As such, facility with the phonological code of the L2 – and with the parallel cognitive processes of grammatical parsing and word recognition – is proposed as the basis for keeping up with the speed of spoken language (Magiste 1985).”

The similarity of the pattern of results of the two studies seems to confirm that there is a high degree of transfer between the two receptive skills of listening and reading. This requires a radical change in the language curriculum and thus the classroom syllabus in terms of inclusion of listening, and a shift towards integrative language teaching methodology.

That is, the variety of materials through different mediums, reading and listening, would be more useful than the focus on one of the skills for language learning as well as EST development.

Now, the results of the different sections of the reading test will be discussed so as to give a clearer picture of the students' reading problems in English. As far as the percentage of scores above 10 (Figure 1) shows, the following order of difficulty for different sections of the test: the Text Comprehension (TC), then the True/False (TF) section and finally the Cloze Test. However, Table 1 shows that the subjects found the TF section as the most difficult one because they obtained the lowest mean score and the highest degree of variation on this section of the test.

This initially seems surprising because the subjects were asked to make an either-or decision on this section of the test. But, the difficulty of the text might have resulted from the fact that this section of the test is an extract from a journal article. It can be argued that although one of the primary needs of EST learners is to be capable of reading journal articles in English, there is no systematic exposure to the specific journal articles in the EST courses. Thus, there is a need for the reorientation and modification of EST materials. This suggestion is in harmony with that of Seifori and Dehnad (1999).

### **Conclusion**

In short, this study shows that the majority of the students seem not to be proficient enough in understanding

EST texts in dentistry efficiently even after successfully completing the academic and EST courses offered at the university. Therefore, to rectify these shortcomings, the following suggestions are made:

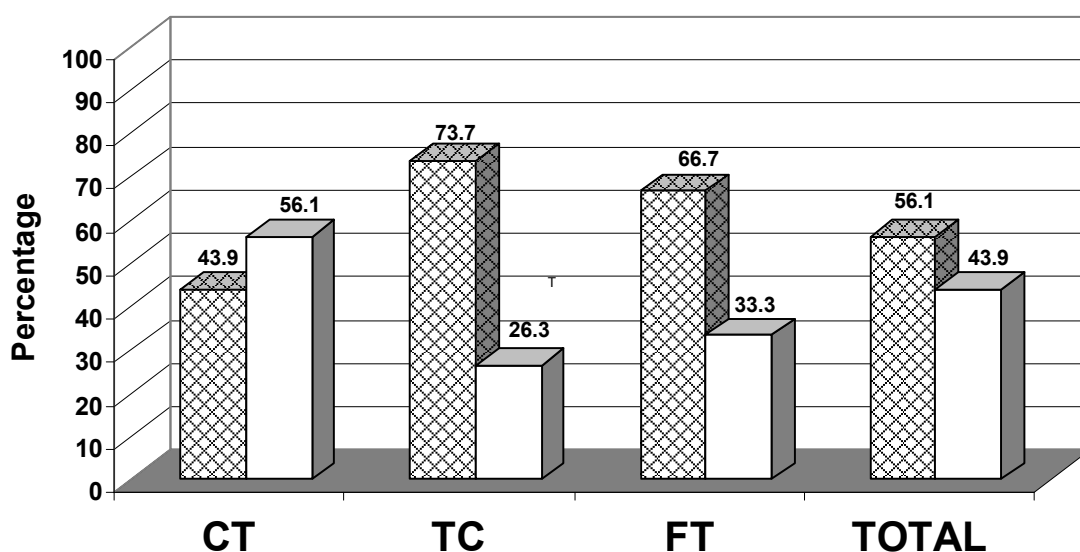
- (1) There must be some changes to the EST curriculum in terms of the use of the up-to-date journal articles;
- (2) The EST courses should be offered through joint teaching, i.e., through the full co-operation between ESP teachers and content course lecturers;
- (3) An integrated language teaching seem to be advantageous because, as this study and our previous study show, there must be a high degree of transfer between the reading and listening skills in EST. Also, there seems to be a need to add some more academic oriented English courses as the pre-requisite for EST courses;
- (4) There should be a placement test to measure the students' ability in English prior to the start of English courses. Also, according to the results of the placement, appropriate decisions should be made to have students at similar levels of English proficiency attending the EST courses (c.f. Farhady et. al. 1994);
- (5) There should be both formative and summative evaluation during the EST courses. Backman and Palmer (1996, p. 98) state that:

“... Information from language tests can be useful for the purpose of *formative evaluation*, to help students guide their own teaching methods and materials so as to make them more appropriate for their students' needs, interests, and capabilities. Language tests can also provide useful information for *summative evaluation* of students' achievement or progress at the end of a course of study.”

### Acknowledgement

We are greatly thankful to the research vice-chancellorship board of Guilan University of Medical Sciences for approving and funding this research project.

**Figure 1: The Percentage of Student's Scores on each section and in total**  BELOW 10  10 OR ABOVE



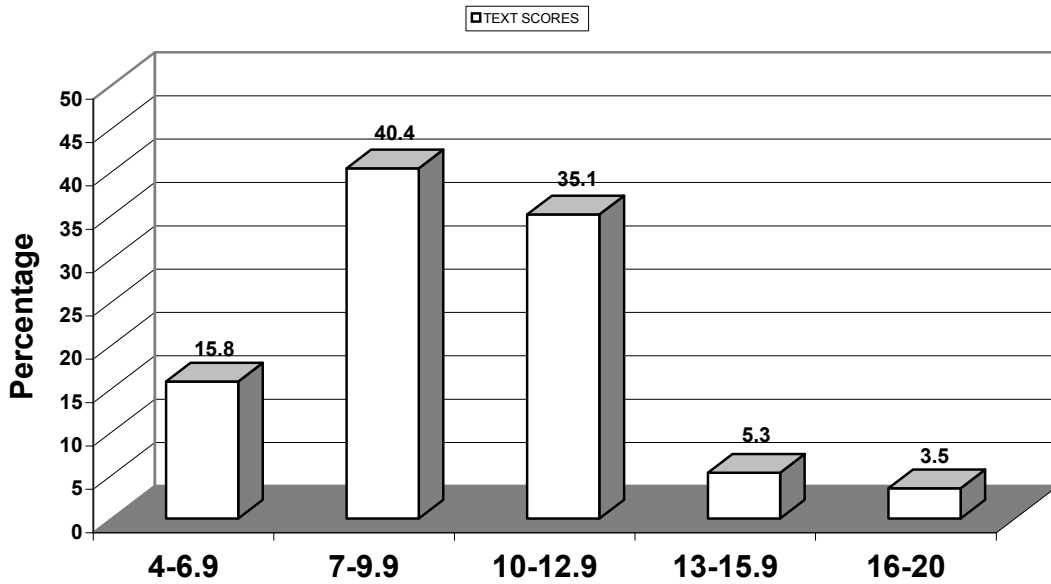
(CT= Close Test , TC= text Comprehension , FT= False/True)

**Table 1: Descriptive Statistics of the scores**

SD	$\bar{X}$	Max	Min	Text Type
2.75	10.32	17.14	1.90	Close Text
4.00	7.99	17.78	0.00	Text Comprehension
4.78	7.89	20.00	0.00	True/False
2.77	9.27	17.00	4.00	Total

(SD= Standard Deviation , X= Mean)

Figure 2: The percentage of student's scores the on the total test



## APPENDIX

### Reading Comprehension Test on Dentistry

Full Name:

Time: 30 minutes

#### Selection 1

Directions: The following reading is a cloze test.

1. Read it carefully to get the general idea.
2. Guess what the missing word in each of the blanks must be.
3. Choose A, B, C, or D which best fits the meaning of each blank, and place a cross-mark (X) over the letter of corresponding number in the **Answer Sheet Only**.

Restorative dentistry has witnessed some major discoveries during the past two decades, to the extent that many routine procedures in modern dental practice vary considerably from the way in which they were practised for over half a century.

The conventional ground rules for restorative (1) ..... [A. bio-material B. cavity C. dentistry D. material] still taught in most modern dental (2)..... [A. offices B. surgeries C. schools D. hospitals] include two objectives: debridgement of carious (3) ..... [A. abutment B. tissue C. lesion D. tooth] and establishment of a cavity preparations (4) .....[A. have B. were C. had D. are] designed to contribute to resistance against (5) ..... [A. functional B. muscular C. physiological D. biological] stresses as well as to counteract (6) ..... [A. placement B. displacement C. loss D. maintain] of restorative material from the tooth (7) ..... [A. restoration B. retain C. restore D. retention]. Another traditional feature in cavity design, (8) ' ..... [A. restoration B. rehabilitation C. expansion D. extension] for prevention', has become less popular (9).....[A. from B. in C. since D. of] recent years, but still finds its (10) .....[A. function B. material C. waste D. use] in many applications.

Traditionally, the retention (11) ..... [A. from B. in C. of D. for] the restorative material would be provided (12) ..... [A. by B. for C. from D. of] mechanical undercuts in the cavity preparation. (13) ..... [A. This B. It C. That D. There] arrangement, still the basis for retention (14) ..... [A. from B. on C. of D. in] silver amalgam and other restorations, does (15) ..... [A. somehow B. always C. never D. not] provide perfect microscopic alignment of the (16) ..... [A. restorative B. displaced C. existing D. various] material with the cavity walls; in fact, (17) ..... [A. the B. a C. that D. this] gap may exist between the tooth (18) ..... [A. material B. gap C. alignment D. structure] and the restorative material. This gap (19) ..... [A. will B. may C. must D. need] be large enough to allow saliva, (20) .....[A. organic B. mineral C. salivary D. metal] ions and bacteria to enter the (21) ..... [A. space B. region C. place D. area], causing micro leakage.

Silver amalgam restorations (e.g. gold inlays) functioned because of the use of cements for sealing and retention. Polymerization shrinkage and the lack of a seal are distinct disadvantages.

**Selection 2**

Direction: the selection is followed by some multiple-choice items. Read it carefully and answer the subsequent items by placing a cross-mark (X) on the appropriate letter A, B, C, or D of the **Answer Sheet Only**.

Without becoming too involved in the complex mechanism underlying color perception, it should be remembered that sight cannot exist without light and that tooth shape and color can only be perceived if the tooth reflects or **emits** light rays reaching the eye, producing signals that pass to the brain, where they **trigger** a visual perception process.

In attempting to understand the basic relationship between light and visual perception, it should be pointed out that light is a form of energy, which propagates according to the laws of physics. This energy spreads in the form of waves characterized by two different parameters: wavelength and amplitude.

Light is the form of electromagnetic energy visible to the human eye. Color perception depends on both objective and subjective phenomena, and occurs as a result of vision, or, in other words, the pattern of optical and cerebral response over a very narrow band of the electromagnetic spectrum. The 380-760 nm electromagnetic wave range can be **discerned** perfectly well by the naked eye. The human eye can distinguish violet, blue, green, yellow, orange and red, but finds it difficult to establish clear boundaries between different hues.

22. What is the main idea of the above selection?

- A. Sight does not exist without light.
- B. Complex mechanisms for color perception are explained.
- C. Light is a form of energy.
- D. It is about how the language of color is understood.

23. What is the meaning of 'emit' in line 3 of the first paragraph?

- A. send out      B. send away      C. turn out      D. turn away

24. The perception of the tooth shape is basically made possible by.....

- A. the reflection of light rays from the tooth
- B. the production of signals
- C. the trigger of a visual process
- D. the relation between light and visual perception

25. In what form does light spread?

- A. energy      B. amplitude      C. waves      D. vision

26. One can perceive color based on .....

- A. optical response
- B. cerebral response
- C. objective and subjective phenomena



- D. the electromagnetic wave
27. The word 'discern' in line 5 of the last paragraph means .....
- A. discovered B. perceived C. developed D. established
28. The human eye can.....
- A. draw a line between different hues  
B. identify the colors within a definite spectrum  
C. perceive 377 nm electromagnetic waves  
D. recognize any electromagnetic wave
29. What might be the topic of the next paragraph in the passage?
- A. color and its matching wavelength C. energy and wavelength  
B. color and energy wave D. wavelength and visual perception
30. The word 'trigger' in line 4 of the first paragraph means .....
- A. block B. cause C. imagine D. interfere

### **Selection 3**

Directions: Read the following paragraph from the discussion of a research report and then accordingly decide if the answer to the items 31 through 35 are **True, or False**. Put a cross over the letter of your choice, **T** for True and **F** for False, in the **Answer Sheet Only**.

With the light sources and shade guides used in this study, there was low overall agreement among examiners when they tried to match colors of teeth. Although it is still thought that "getting a second opinion on color interpretation from a female staff person is advisable since women perceive color more accurately than men in general," we found no evidence to support this statement. Men tended to agree with one another slightly more than women in shade selection. A likely explanation for the difficulty examiners encountered in matching teeth is the inadequacy of shade guides in covering the color space of natural teeth.

31. Examiners generally tended to agree on matching colors of teeth.
32. According to this research, women perceive color more accurately than men in general.
33. The inadequacy of shade guide in covering the color space of natural teeth might explain the difficulty in matching teeth.
34. According to this study, it is advisable to get a second opinion on color interpretation from a woman.
35. Some evidence in this study suggests that women seem to agree with one another a bit less than men in shade selection.

## References

- Ahmadi, M. "A Measurement of Medical Students' Proficiency in Reading and Understanding Medical Texts in English at Shahid Beheshti University of Medical Sciences." *Researcher Journal*, 2, 4: 109-113 (1993) in Persian.
- Bachman, Lyle F. *Fundamental Concepts in Language Testing*. Oxford: Oxford University Press. 1990: 60-61.
- Carter, R. & D. Nunan. *Teaching English to Speakers of Other Languages*. Cambridge: Cambridge University Press. 2001: pp. 9-11.
- Farhady, H.; A. Ja'farpur, and P. Birjandi. *Testing Language Skills: From Theory to Practice*. Tehran: SAMT Publication. 1994: pp. 20-23.
- Jahandideh, Y. & A. Mahdavi-zafarghandi. "An Evaluation of Dentistry Students' Proficiency in Understanding Educational Dentistry Films in English. *Shahi Beheshti University Journal of Dentistry*, 2004; 21(4):492-499.
- James, Donahue & Richard, J. Goodkind. "Shade of Color Discrimination by Men and Women: J of prosthetic Dentistry 1991 , 65: 699-703.
- Seifouri, N. & A. Dehnad. "A Comparison of the Effect of English Textbooks for Students of Medicine with that of Selected Articles on the Medical Students' Comprehension in English." *Research in Insfahan University of Medical Sciences*, 3, 1, pp. 84-91 (1996) in Persian.
- Touati, B., P. Miara & D. Nathanson: *Esthetic Dentistry and Ceramic Restoration*, 1th edition Martin Dunitz Lth 1999 pp. 40-41