THE COHESIVE ROLE OF FOREIGN LANGUAGE IN STUDENTS ADOPTION OF MEDICAL KNOWLEDGE-CONJUNCTION OF CLASSICAL LEARNING AND WEB- BASED LEARNING

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Medical students, non-native English speakers, who have not been well-served by foreign language education, cannot take advantage of the educational benefits of web-based learning and benefits of scientific work. Foreign language education affects not only the language and culture of students, but also their socio-economic status and interpersonal relationship.

The aim of this study was to determine the cohesive role of foreign language in students' adoption of medical knowledge and its influence on the conjunction of classical learning and web- based learning.

The investigation was carried out among students of Faculty of Medicine in Nis during June, 2006. The investigation included 312 students of all study years and departments and was conducted by means of a questionnaire. Students' performance in scientific work was evaluated according to the achievements at faculty. Language literacy was evaluated according to students' ability to use and understand scientific web contents in English.

Generally, the average grade of the mother tongue knowledge (including writing, and speaking skills) was higher at high educational departments compared to the College of Nursing. Writing skill was differently evaluated among departments. The highest average grade was obtained at the Departments of Medicine and Pharmacy; it was significantly lower at the Department of Dentistry and the lowest at the Department of Nursing, which was confirmed by T test. Speaking skill was the highest among medical students, significantly lower among students of dentistry and pharmacy, whereas it was the lowest among students of the College of Nursing, which represents a statistically significant finding. A very high average grade for reading skill was obtained at the Departments of Medicine and Pharmacy; it was significantly lower at the Department of Dentistry and the lowest at the College of Nursing. Listening skill was the best among medical students; it was significantly lower at the Departments of Dentistry and Pharmacy and the lowest among students of the Department of Nursing, which represents a statistically significant finding.

English language knowledge highly correlates with the students' use of web sources of scientific and medical information. The highest correlation was found between speaking and reading skills and the use of web-based learning (Pearson C=0.28 and C=0.35, p<0.01), while writing skill showed no significant correlation. The satisfaction with the achievements at the faculty is associated only with the quality of oral expression in the mother tongue (Pearson C=0.18, p<0.05). Students' satisfaction with their scientific work and practical knowledge was mostly associated with good speaking and reading skills in English.

The knowledge of foreign language has great impact on Internet use. The students with good English language performance more often use Internet resources for their scientific work and education. Therefore, both teachers and students need to be trained in the appropriate use of the Internet tools so that they can achieve maximal results. *Acta Medica Medianae 2008;47(1):32-36.*

Key words*: foreign language, medical education, Internet use*

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Introduction

Foreign language education is nowadays necessary for communication, education, business, and economic competitiveness in the world. In a highly globalised age we need to learn about other cultures and countries. Learning foreign languages broadens our vision. These benefits include the development of students' creativity, memory, and listening skills. Various studies show that students who have studied foreign languages attain higher scores on the Scholastic Achievement Tests (SAT) and the American College Test (ACT), especially in the verbal areas (1). Medical doctors and researches need to learn English not only because it is medium of teaching and learning but because it is medium of publishing their research work. The international

and national rating criteria of the scholarly status of prestigious medical journals also include an attention to the linguistic aspects of the published articles.

Medical students, non-native English speakers, who have not been well-served by foreign language education, cannot take advantage of the educational benefits of web-based learning and benefits of scientific work. Foreign language education affects not only the language and culture of students, but also their socio-economic status and interpersonal relationship (2).

English has acquired scientific and educational value. The knowledge of English is seen to be the key to students' scientific work based on Internet resources. It adds a new power to classical ways of learning in the mother tongue conducted during regular activities at faculty (3).

The aim

The aim of this study was to determine the cohesive role of foreign language in students' adoption of medical knowledge and its influence on the conjunction of classical learning and web-based learning.

Methodology

The investigation represents a prospective study carried out among students of Faculty of Medicine in Nis during June 2006. The investigation included 312 students of all study years and Departments (Medicine, Dentistry, Pharmacy and Nursing) and was conducted by means of a questionnaire consisting of 20 questions.

Students' performance in medicine was evaluated according to the achievements at faculty and their satisfaction with the achieved results. The evaluation of language proficiency was estimated on the basis of students' skillfulness in oral and written communication both in the mother tongue and foreign language (four skills- reading, writing, speaking and listening). The skills were graded from 1-5 by the students themselves.

The importance of English language in students' use of web based resources was evaluated according to the frequency and understanding of Internet use in the educational process. The use of web based resources was graded from 1 to 5 by the students themselves.

The results were presented with standard descriptive methods (average values, standard deviation, and frequency) and were analysed by statistical tests (Hi^2 test, Student's t-test and analysis of variance).

Results

Evaluation of writing and speaking skill as well as the frequency of reading books in the mother tongue was graded by the students' themselves. (1-5).The results are presented in Table 1.

Table1. Knowledge of the mother tongue

Department	WRITING SKILL	SPEAKING SKILL
Medicine	4.66±0.6**	4.68±0.5**
Dentistry	4.64±0.5**	4.68±0.5**
Pharmacy	4.74±0.5**	4.8±0.4**
Nursing	4.36±0.9	4.16±1.08
Total	4.64±0.6	4.62±0.6

**p<0.01 vs. College of Nursing

The average writing skill value is 4.64±0.6 at all Departments, whereby the analysis shows significantly lower average value at the College of Nursing (p<0.01). There is no significant difference in speaking skill value between high grade departments, while speaking skill value was higher in this departments in comparison to the College of Nursing (p<0.01).

Writing skill was differently evaluated among departments. The highest average grade was obtained at the Departments of Medicine and Pharmacy; it was significantly lower at the Department of Dentistry and the lowest at the College of Nursing, which was confirmed by T test. Speaking skill fluency was the highest among medical students, significantly lower among students of Dentistry and Pharmacy whereas it was the lowest among students of the College of Nursing, which represents a statistically significant finding. A very high average grade for reading skill was obtained at the Departments of Medicine and Pharmacy; it was significantly lower at the Department of Dentistry and the lowest at the College of Nursing. Listening skill was the best among medical students, it was significantly lower at the Departments of Dentistry and Pharmacy and the lowest among students of the College of Nursing, which represents a statistically significant finding (Table 2).

Table 2. Average value of students' foreign language skills

	writing	speaking	reading	listening
Medicine	3.29±1	3.44±1.	4.07±0.9	4.09±0.9
Dentistry	2.94±1.1**	3.21±1.1**	3.54±1.1**	3.63±1.2**
Pharmacy	3.4±0.93##	3.11±1.1**	3.85±0.8	3.7±1**
College of Nursing	2.5±1.08**##&&	2.5±1.1**##&&	2.92±1.2**##&&	2.73±1.2**##&&
Total	3.16±1.09	3.27±1.1	3.84±1.0	3.85±1.1

**p<0.01 vs. medicine; ##p<0.01 vs. dentistry; &&p<0.01 vs. pharmacy

Table 3. The use of web based learning

Department	Use of web-based learning
Medicine	3.93±0.8[**##]
Dentistry	2.7±0.6[**]
Pharmacy	3.3±0.7[**##]
Nursing	2.03±0.9
Total	2.74±0.7

[**]p<0.01 vs. nursing college;
[##]p<0.01 vs other departments

The use of web-based learning according to the frequency and understanding of Internet use in the educational process is shown in Table 2. The habit of using Internet as a tool for scientific work and education was higher at all high education departments compared to the College of Nursing (p<0.01). The highest average grade was obtained at the Departments of Medicine and Pharmacy compared to the Department of Dentistry and the College of Nursing (p<0.01) (Table 3).

The grade of the students' achievements at the faculty is presented in Graph 1.
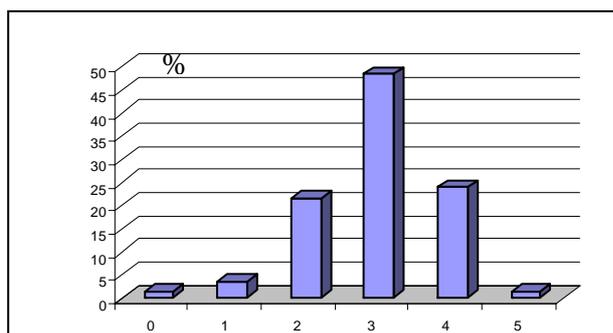
0-no answer; 1-dissatisfied; 2-poorly satisfied; 3-relatively satisfied; 4-satisfied; 5-completely satisfied

Graph 1. The grade of the achieved results at the faculty

The relationship between writing and speaking skill in the mother tongue and English and use of web-based learning and the satisfaction with the achievements at the faculty is presented in Table 4.

Table 4. The relationship between mother tongue and English knowledge and the use of web- based learning and satisfaction with the achievements at the faculty

		Achievements at the faculty	Use of web-based learning
Mother tongue	writing	0.086	0.15
	speaking	0.183*	0.11
English	writing	0.058	0.23
	speaking	0.058	0.28**
	reading	0.067	0.35**

The speaking and writing skill in the mother tongue has a weak correlation with frequency and understanding of web-based learning use (Table 4). English language knowledge highly correlates with the students' use of web sources of scientific and medical information. The highest correlation was found between speaking and reading skills and the use of web-based learning (p<0.01) while writing skills did not show significant correlation. However, satisfaction with the achieved results at the faculty neither showed correlation with English language knowledge nor with the writing skill in the mother tongue. The quality of oral expression in the mother tongue is the only parameter that highly correlates with the achievements at the faculty (Table 4).

Discussion

The writing and speaking skill in the mother tongue were equally graded by the students of all the Departments except for the students of the College of Nursing who showed significantly lower grade. Writing, speaking, reading and listening skills in English were generally the highest at the Department of Medicine and the lowest at the College of Nursing (Tables 1 and 2).

As the world moves toward a more globalised economy, it becomes even more important that foreign language study results in a proficiency level that enables students to read authentic materials, and to understand, speak, write, and respond in a language other than their own. (4)

This is in line with the obtained results that the habit of using Internet as a tool for scientific work and education was higher at all high education departments compared to the College of Nursing. (p<0.01).The highest average grade was obtained at the Departments of Medicine and Pharmacy compared to the Department of Dentistry and the College of Nursing (Table 3).

However, satisfaction with the achievements at the faculty neither correlated with English language knowledge nor with writing skill in the mother tongue. It was only the quality of speaking skill that contributed to better achievements at the faculty (Table 4).

Early exposure to foreign language study can have a positive effect on students' intellectual growth, enriching and enhancing their mental development, as well as on their performance across the curriculum (5). The collateral benefits of the second language learning are most substantial and most enduring for students who pursue their language to a high level and begin to approach the skill and understanding of educated native users of that language. The central benefit becomes apparent when a student with that level of knowledge is able to view the world in a broader perspective free from the narrow prism of a single linguistic system. These are the priceless benefits of a

truly successful education, for at its core, the ultimate goal of the second language learning is to produce students who are measurably better educated than they could have been without it.

English language knowledge highly correlates with the students' use of web sources of scientific and medical information. The highest correlation was found between speaking and reading skills and the use of web-based learning (p<0.01) while writing skills did not show significant correlation (Table 4).

The knowledge of English enables students to obtain information, express feelings and emotions, and exchange opinions (5). Implementing Internet resources for learning students can create a learning environment in which learners can gain linguistic, cultural, professional and scientific competence through exploration and personal experience (6).

Lambert (7) has proposed a 'social psychological model' in which he has emphasized cognitive factors such as language aptitudes and intelligence as well as affective factors such as socio-economic status and social reputation. In this model, he proposes that the extent to which an individual successfully acquires a second language will depend upon personal striving towards intellectual and social success.

Conclusion

The knowledge of foreign language has great impact on Internet use. The students with good English language performance more often use Internet resources for their scientific work and education. Therefore, both teachers and students need to be trained in the appropriate use of the Internet tools so that they can achieve the best possible results.

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KOHEZIVNA ULOGA STRANOG JEZIKA U USVAJANJU MEDICINSKOG ZNANJA-VEZA IZMEĐU TRADICIONALNOG UČENJA I UČENJA PUTEM INTERNETA

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Studenti medicine kojima engleski jezik nije maternji, a pritom nemaju prethodno znanje engleskog jezika, nisu u mogućnosti da u potpunosti iskoriste pogodnosti učenja putem interneta za svoj naučni rad. Znanje stranog jezika utiče ne samo na jezik i kulturu studenata, već i na njihov socio-ekonomski status i međusobne odnose.

Cilj ovog istraživanja bio je određivanje kohezivne uloge stranog jezika u usvajanju znanja iz medicine kao i njegovog uticaja na povezanost tradicionalnog učenja i učenja putem interneta.

Ispitivanje je sprovedeno među studentima Medicinskog fakulteta u Nišu tokom juna 2006. godine. Ispitivanjem je obuhvaćeno 312 studenata svih studijskih grupa (medicina, stomatologija, farmacija, zdravstvena nega), a sprovedeno je putem anonimne ankete. Uspeh studenata u njihovom naučnom radu je procenjivan u odnosu na njihove postignute rezultate na studijama. Jezička pismenost je procenjivana u odnosu na sposobnost studenata da koriste i razumeju naučne sadržaje na internetu na engleskom jeziku.

Prosečna ocena znanja maternjeg jezika (koja je uključivala sve četiri jezičke veštine) je bila viša na studijskim grupama medicine, stomatologije i farmacije u odnosu na grupu studenata zdravstvene nege. Veština pisanja je bila različito procenjena na različitim grupama. Najviša prosečna ocena je dobijena na odseku medicine i farmacije, bila je znatno niža na odseku stomatologije, a najniža na

odseku zdravstvene nege, što je i potvrđeno T testom. Veština govora je bila najbolja među studentima medicine, značajno niža među studentima stomatologije, a najniža među studentima zdravstvene nege, što predstavlja statistički značajan rezultat. Veoma visoka prosečna ocena za veštinu čitanja je dobijena na odseku medicine i farmacije; bila je značajno niža na odseku stomatologije, dok je na odseku zdravstvene nege bila najniža. Veština razumevanja je bila najbolja kod studenata medicine, značajno niža kod studenata stomatologije i farmacije a najniža među studentima zdravstvene nege, što predstavlja statistički značajan rezultat.

Znanje engleskog jezika je u visokoj korelaciji sa korišćenjem naučnih medicinskih izvora putem interneta. Najviša korelacija je pronađena između veština govora i čitanja i korišćenjem interneta radi učenja (Pearson C=0,28 i C=0,35, p<0,01), za razliku od veštine pisanja koja nije pokazala značajnu korelaciju. Zadovoljstvo postignutim rezultatima na fakultetu je povezano samo sa sposobnošću usmenog izražavanja na maternjem jeziku (Pearson C=0,18, p,0.05). Zadovoljstvo studenata svojim naučnim i praktičnim znanjem je uglavnom bilo u vezi sa dobrim veštinama govora i čitanja na engleskom jeziku.

Znanje stranog jezika ima veliki uticaj na korišćenje interneta. Studenti koji imaju dobro znanje engleskog jezika češće koriste internet izvore za svoj naučni rad i obrazovanje. Zbog toga je potrebno da se i nastavnici i studenti osposobe za adekvatno korišćenje interneta u cilju postizanja najboljih mogućih rezultata. *Acta Medica Medianae 2008;47(1):32-36.*

Ključne reči: *strani jezik, medicinsko obrazovanje, korišćenje interneta*