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ijonte

**International Journal
on
New Trends in Education
and
Their Implications
(IJONTE)**

January, 2015

Volume: 6

Issue: 1

ISSN 1309-6249

<http://ijonte.org>

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Dear IJONTE Readers,

International Journal on New Trends in Education and Their Implications- IJONTE appears on your screen now as Volume 6, Number 1. In this issue it publishes 20 articles. And this time, 52 authors from 7 different countries are placed. These are Brazil, Bulgaria, Iran, Iraq, Malaysia, Poland, Turkey and USA.

Our journal has been published for over five years. It has been followed by many people and a lot of articles have been sent to be published. 302 articles have been sent to referees for forthcoming issues. They will be published according to the order and the results. Articles are sent to referees without names and addresses of the authors. The articles who get positive responses will be published and the authors will be informed. The articles who are not accepted to be published will be returned to their authors.

We wish you success and easiness in your studies.

Cordially,

1st January, 2015

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PROBLEMS IN WOMEN'S EDUCATION IN TURKEY IMPLEMENTATIONS AND SUGGESTED SOLUTIONS

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ABSTRACT

Women's human rights mean preventing all kinds of violence and discrimination against women, gender equality, equal participation of women in decision making processes and mechanisms, safety and freedom rights of women as individuals, equal protection of women by the law, right to pursue a healthy life, equal and proper work conditions, the right to not expose to inhumane demeaning acts, and as a base for all these rights, equal and non-discriminatory education right. Education is crucial to improve the social circumstances of women and along with health and income level, it is one of the basic indicators in "Human Development Report", the first of which was published in 1990 by "United Nations Development Programme". However, in spite of the developments in education in all parts of the world, education of women is still a major problem in many parts of the world. Women still benefit less from education opportunities and gender inequalities still continue. This study discusses the level of women's benefiting from education opportunities in Turkey, the implementations to increase women's education level, and problems and suggested solutions.

Key Words: Education, education of women, problems in education, educational status.

INTRODUCTION

"Education", which was defined as the process of changing behaviors for specific purposes in its broadest term, was defined in many different ways by many philosophers and educators. According to Tyler, education is the process of changing behavioral pattern of a person. In another definition, education is a regular interaction which is being carried out to make specific changes in personal qualities, which are considered important, such as information, skills, understanding, care, attitude, character (Sönmez, 2002: 31).

Education is a process, and at the end of this process some changes in a person's behaviors occur. In our era, education is the process of gaining behaviors in line with the necessities of our age and parallel to the needs of the community and the process of training people who have the necessary behaviors to meet modern needs and demands. This process, personally starts with birth and continues in family, school and work life. Socially, it is carried out in family environment, in society, in the environment in which schools and work institutions take place and by the mutual interaction of whole social environment with its economic, social, cultural and political dimensions. For this reason, achieving the goal of education process cannot be taught separated from environmental conditions in which it is in individual and social interaction (Sağlam, 1992: 263). However, in our age, education is highly associated with the education in schools. Schools forms the most important part of the education process (Demirel ve Kaya, 2006: 6).

Modern societies have developed different institutions to pursue social life. Schools have been established to institutionalize education. However, this does not mean limiting the concept of education with schools. All social and cultural institutions, facts and values in a society effect an individual's education. Yet, the institution that is responsible for the education of an individual and was established for this reason is school. Education continues in preschool time and school time and even after school it continues life long (Varış, 1998: 7).

Contemporary education is a form of education for training multi dimensional, participating, creative and sensitive people. The goal of contemporary education is to enable not only intellectual development of an individual but also develop him/her physically, socially and emotionally as a whole. In contemporary education individual differences, demands and interests of an individual must be important and an effort must be made to make him/her an adult and ready for the work life. Instead of memorizing, understanding, knowing how to reach the information and customized expertising is essential here. Today, all countries are in a struggle for making education widespread, or at least giving individuals basic education that will give them the responsibility and knowledge to become citizens. Yet, many people around the world still do not know how to read and write, which is the prerequisite for being contemporary. The imbalance between girls and boys in participating in education and therefore in social life is on the agenda as an important problem around the world (Oğuz, 1992: 234-235). Besides, with the wide acceptance of the fact that education enhances economic development and welfare, education of women and the educational gap between men and women is determined as a case that must be handled seriously when the economic and social dimensions are taken into consideration. Hence, along with giving importance to education, the fact that the content of education should be “not sexist, egalitarian” gained importance (Yumuş, 2014).

In our country, in the year 2014, there are still inequalities in benefiting from education opportunities of children when their families’ income and education levels in countryside and cities are considered. Those who are affected negatively from this situation are mostly girls however.

More exploitation of girls’ work power in our country, early marriages, late enrollment, lack of motivation for girls’ education, high cost of education, patriarchal culture and, correspondingly, the thought that education will not contribute to one’s future life continue to affect girls’ education negatively. (KSSGM, 1998:10) Not having social gender equality in our society and prioritizing traditional roles of girls lie at the bottom of all these reasons.

WOMEN’S BENEFITTING FROM EDUCATION OPPORTUNITIES IN TURKEY

Education is crucial to improve the social circumstances of women and along with health and income level, it is one of the basic indicators in “Human Development Report”, the first of which was published in 1990 by “United Nations Development Programme”. However, in spite of the developments in education in all parts of the world, education of women is still a major problem in many parts of the world.

The situation is not different in Turkey either. Although women gained equal education rights with the “Law of Unification of Education” made in 1924, the inequality in practice is still an issue. The rate of illiteracy among women aged 6 and above is 8% whereas it is 1.7% among men. 8 in every 10 illiterate citizens are female. The rate of illiterate women in adult women population (15+) is 9,8% (KSGM, 2012: 12).

Despite the importance of girls’ education, there are still many factors hindering equality of opportunity in our country, as it is the case in many other developing countries. In spite of many campaigns in recent years the schooling rate has not reached the desired level in all stages of education starting from primary education. In World Economic Forum “Gender Gap Report” in which 135 countries were evaluated revealed that women are behind men in many ways in Turkey. According to the report, compared to the previous year Turkey slipped three places and ranked 124 out of 135 in women-men equality list. Women continue to have lower places in the list in education access. Turkey ranked 108 out of 135 in women’s education access.

Socialization shows the new members of a society what are the established customs, traditions, values and attitudes and ways how to adapt and learn them. Socialization process occurs in different social environments, with many people and in many ways. Parents, friends, spouses and teachers are those who contribute to this process in different environments. Socialization institutions are responsible for handing down the culture a society has and therefore very important. The most important of these institutions are family, religion, school, group of friends, sport activities, mass media and work atmosphere. Among these institutions, a more formal

and organized one is education and teachers- academicians in it. School life not only teaches a person information and skills but also it teaches social responsibilities (Özkalp, 2005: 109, 117, 120).

The concept of gender is one of the most significant terms used in women studies. Placing gender equality in master plan and policies is a strategy that came out in 1990s to have an access to gender equality. Gender refers to the social roles that are laid on women and men. Contrary to biologically innate features, gender roles are determined by society and therefore, gender builds sex. Gender, which can differ in respect to place, culture and time can take different forms. These roles, which are internalized by almost all individuals and institutions, are reproduced by internalizing by state policies, which are a natural reflection of society. Gender equality is defined by European Council (2004) as “ equal acceptance of differences between men and women and different roles in society and equal appreciation of these roles”. The concept of gender equality, which took the place of women-men equality in 1970s, was preferred by most academic circles due to involving both women and men and defining the problem better and therefore being more efficient in policy developing process Hence it became a very efficient term today (Baş, 2014).

In our society education is hypocritical when gender roles are taken into consideration. It can be seen that socio-economic status is a significant determiner in gender roles of a society. As the income level and social category increases, the difference in education between boys and girls decreases and the girls are also directed to the professions in which they can earn their lives. However, despite all these, the studies across the country have proved that the principal responsibility of women is limited to their house and children and the in-house service expectation of working women is not different. Women have to decrease their professional performance in order to deal with the responsibilities of both house and work (Navaro, 1997, p:2).

Education system reproduces stereotyped roles for women and men and these roles reflect on boys and girls' occupational and educational preferences. Girls generally participate in general education and vocational education programmes, which help them to have a woman job in the future. Studies reveal that families are influential in school decisions of girls in secondary school years. At university level, girls prefer social sciences while boys head for technical departments. (KSGM(1), 2008: 30) While the rate of female students in the faculties of Dentistry, Pharmacy, Literature, Language, History and Geography, Science, Education, Fine Arts, Theology and Architecture, it has been noticed that male students are predominant in the faculties of Medicine, Engineering, Agriculture, Veterinary, Economics and administrative Sciences. It has been also detected that more than 70% of students in technical sciences are male students. Women constitute 54,8% of students in Open Education Faculty, 58,9% of those who attend a four-year college (women rate in health college is 88%) and 37% of those who attend a two-year associate degree program. Women also constitute 41.3% of those who do Technical Masters Degree. When women's situation in academic staff is taken into account, it has been detected that the rate of women in the positions of professor, associate professor, assistant professor, instructor, research assistant is higher (41%) than many other countries. While this is a significant rate, male dominance (5,9%) continue in higher positions such as rectorship (KSGM, 2013: 15), (KSGM(2), 2008: 20).

Inequality also reveals itself in teaching profession as the number of women in executive positions is less than men. Placing gender equality in all education materials is utmost important since education is the most significant factor in getting rid of gender stereotypes (KSGM, 2008(1): 30).

1982 Constitution guarantees education for all people without making any discrimination with Article 42 “Primary education is compulsory for all male and female citizens and is free in state schools.” Depending on this, all legal arrangements such as laws, legislation and regulations etc. have been made by embracing all society without making gender discrimination. In Article 4 of Basic Law of National Education it is stated that “Educational institutions are open to everyone regardless of language, race, gender and religion discrimination.” and in Article 8 it is stated that “ Equality of opportunity is provided to all women and men in education.” In line with that, Article 2 in Primary Education Law states that “primary education is compulsory for girls and boys in school age and is free in state schools”. With the amendment made in 2012, compulsory

education period was regularized as 12 years including 4 years primary school, 4 years secondary school, and 4 years high school education (KSGM(2),2014).

In our country, there are not any laws preventing girls from benefiting from preschool education, primary, secondary, technical, vocational high schools or higher education. However, there are notable differences between women and men benefiting from educational facilities between rural- urban areas and the areas in different geographical region and cities at varied development level. (KSGM, 2010: 9.) According to 2013 data, in our country, where basic education has been compulsory since the foundation of the republic, the number of illiterate women is 2.205.315 while that of men is 449.328. In Table 1, literacy status and the rates by gender are displayed.

Table 1: Literacy Status and Population (6+age) by Gender 2013 Turkey

Literacy Status	Total	Woman	Man
Illiterate	2.654.643	2.205.315	449.328
Literate	64.374.134	31.275.805	33.098.329
Not Known	1.706.368	832.915	873.453
Total	68.735.145	34.314.035	34.421.110

Source: TÜİK National Education Statistics Data Base 2013 Results

When these numbers are taken into consideration, it can be clearly seen that women do not benefit enough from educational facilities. In Table 2, rates of women and men by completed education level are displayed.

Table 2: Population(6+age) by Gender and Completed Education Level 2013 Turkey

Completed Education Level	Total	Man	Woman
Illiterate	2.654.643	449.328	2.205.315
Literate but not graduated from a school	14.053.831	6.459.316	7.594.515
Primary school graduates	14.994.232	6.454.722	8.539.510
Primary education graduates	13.018.720	7.317.838	5.700.882
Secondary school and equivalent schools graduates	2.828.299	1.720.425	1.107.874
High school and equivalent school graduates	12.085.335	6.976.694	5.108.641
College or faculty graduates	6.706.780	3.762.530	2.944.250
MA graduates	532.757	313.397	219.360
PhD graduates	154.180	93.407	60.773
Not Known	1.706.368	873.453	832.915
Total	68.735.145	34.421.110	34.314.035

Source: TÜİK ADNKS Education, Culture and Sports Data Base 2013 Results

* Foreigners were not included.

Women's educational status around the world is not different from our country. According to 2011 World Education Report by UNESCO, more than half of the illiterates live in the countries where population is the densest around the world such as China, India, Bangladesh and Pakistan and two thirds of the illiterates are women. According to December 2010 Status of Women in Turkey Report by General Directorate on the Status of Women in Turkey, almost 4 million women are still illiterate. While 2.5 million of them are 50 and above, 220 thousand illiterate women are between the age of 6-24. This rate has gone down compared to data in 2013. As a result of some implementations, an increase in the literacy rate of women has been detected. While there has been an increase in the literacy rate and uprising education level of women, a hundred percent literacy level has not still been reached.

IMPLEMENTATIONS FOR INCREASING EDUCATION LEVEL OF WOMEN

In many countries in Europe, the institutionalization process in gender equality occurred in 1970s, however, in Turkey, the institutionalization process of woman and man equality in state institutions was established in 1987 with the installation of Women Policy Consultation Committee within the Directorate General of Social Planning under the roof of SPO. The Convention on the Elimination of All Forms of Discrimination against Woman, 6th Five-Year Development Plan, and Nairobi Forward-looking Startegies have required to establish a coordinator or executive unit about woman. To give a well deserved status for women in social, economic, cultural and political fields, by its current name "General Directorate on the Status of Women" was established by the name of "Presidency of the Women's Status and Problems " by Decree Law No. 422 published in the Official Gazette dated April 20, 1990. General Directorate on the Status of Women was restructured as one of the main service units of the Ministry of Family and Social Policies by Decree Law No. 633 on Organization and Functions of Ministry of Family and Social Policies, which was published in the Official Gazette dated 8 June 2011 and by Decree Law No. 662 on Organization and Functions of Ministry of Family and Social Policies, which was published in the Official Gazette dated 2 December 2011 and Decree Law on Amending Certain Law and Decree Laws (KSGM(1), 2014).

General Directorate on the Status of Women has been carrying out varied projects by the help of the funds it receives from international institutions and the outcomes of these projects have been taken into consideration in forming woman policies in our country. General Directorate, which is engaged in protecting and developing status of women and solving the problems, has still been functioning under the authority of the Ministry of Family and Social Policies. On the education of women, apart from the Ministry of National Education, the Ministry of Health, the Ministry of Aggriculture and Rural Affairs, the Ministry of Industry and Commerce, voluntary agencies and universities have also been functioning. The Ministry of National Education General Directorate of Technical Education for Girls has also been carrying out formal and informal educational activities nationwide for vocational- technical education of women (KTOGM, 1992: 85-86).

Turkey has showed that it has become a party to raising the status of women generally and educating women and girls specifically by signing some international documents on these subjects such as "The Convention on the Elimination of All Forms of Discrimination against Woman (CEDAW)", "Beijing Platform for Action", "Nairobi Forward-looking Startegies for the Advancement of Women". Besides these, "Declaration of the Rights of the Child", which states that children need to be supported and protected in order to complete their education (1994, Article 28), " World Declaration on Education for All" (Jomtien-Tayland, 1990), which gives a special importance to gender discrimination in education, "World Conference on Human Rights and Programme of Action" (Viyana, 1993) and " International Conference on Population and Development and Action Plan" (Kahire, 1994) are also signed by Turkey. However, gender inequality has not still been removed in the country (Gök, 2004: 36-37).

Turkey has been committed to develop education policies, to establish legal regulations, and to implement these laws by ratifying international conventions such as the Convention on the Rights of the Child (ratified in 1990), and the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW, ratified in 1985). The CEDAW is one of the most important international human rights documents concerning equal rights and equal access to opportunities. Article 10, titled "Right to Education" brings the obligation to States Parties to take all appropriate measures to eliminate discrimination against women in order to ensure them equal rights compared to men in the field of education. In Article 10 of the Convention it is stated that the States Parties will take the following measures:

- a. The same conditions for career and vocational guidance, for access to studies and for the achievement of diplomas in educational establishments of all categories in rural as well as in urban areas; this equality shall be ensured in pre-primary, general, technical, professional and higher technical education, as well as in all types of vocational training;
- b. Access to the same curricula, the same examinations, teaching staff with qualifications of the same standard and school premises and equipment of the same quality;

- c. The elimination of any stereotyped concept of the roles of men and women at all levels and in all forms of education by encouraging coeducation and other types of education which will help to achieve this aim and, in particular, by the revision of textbooks and school programmes and the adaptation of teaching methods;
- d. The same opportunities to benefit from scholarships and other study grants;
- e. The same opportunities for access to programmes of continuing education, including adult and functional literacy programmes, particularly those aimed at reducing, at the earliest possible time, any gap in education existing between men and women;
- f. The reduction of female student dropout rates and the organisation of programmes for girls and women who have left school prematurely;
- g. The same opportunities to participate actively in sports and physical education;
- h. Access to specific educational information to help to ensure the health and well-being of families, including information and advice on family planning.

The Convention on the Rights of the Child has been transformed into Turkish national law with the adoption of Law No. 4058 in 1994. In the Convention on the Rights of the Child it has been stated that States Parties recognize the right of the child to education, and in achieving this right on the basis of "equal opportunity" they will take the following measures:

- a. Make primary education compulsory and available to all free of charge;
- b. Encourage the development of different forms of secondary education, including general and vocational education, make them available and accessible to every child, and take appropriate measures such as the introduction of free education and offering financial assistance in case of need;
- c. Make higher education accessible to all on the basis of capacity by every appropriate means;
- d. Make educational and vocational information and guidance available and accessible to all children;
- e. Take measures to encourage regular attendance at schools and the reduction of dropout rates (KSGM(2), 2008: 6-7).

Turkey, which has started an educational campaign for achieving equal participation of girls and boys in education, has opened primary education boarding schools on the purpose of ensuring children in primary education age in villages and rural settlements and children of poor families to have access to the primary education. By the help of some campaigns such as "Come on Girls, Let's Go to School", "Dad, Send Me to School", "Snowdrops" and projects like "Support to Basic Education Project" reducing female students dropout rates and organization of programmes for girls and women who have left school prematurely are targeted (KSGM, 2013: 18).

On the subject of education, a big sensitivity has been created and this sensitivity has transformed into national campaigns in which media took place. "Support Girls Education Campaign" started in 53 cities and later on spreaded to 81 cities in Turkey. To support the families that cannot send their children to school due to poverty, economic aid on a regular basis has also started. In the implementation of the aid, a temporary measurement has been applied and for the first time girls have been given more financial aid than boys (KSGM, 2007: 48). In 2011, "Project for Increasing Enrollment Rates Especially for Girls II (ISEG)" started and in the second phase of the project, raising the quality and capacity of secondary education in vocational and technical schools in particular, increasing the enrollment rate especially for girls and women by increasing the accessibility of girls' and women's professional skills and competence to the labour market have been targeted. In this way, a more developed vocational and technical programs, a more effective monitoring system for school dropouts and unattendance, carrier and professional guidance services and improving the quality of current services by educating the relevant staff in public enterprises have also been aimed. By "Supporting Gender Equality in Education" Project, removing negative effects of gender stereotypes, supporting gender equality, developing gender equality for girls and boys in schools and placing a gender sensitive attitude in educational system are also aimed (KSGM(2), 2014).

Turkey's goal in education was to increase the schooling rate for girls and boys to 100%. Many projects and campaigns have started within this scope. In these projects, the supports of international institutions,

nongovernmental organizations and private sector have been received. As it was the case in previous development plans, in the 9th Development Plan covering 2007-2013 objectives such as empowering social status of woman, enlarging their activity area, increasing their educational level to make sure that they benefit from equal opportunities and facilities, more participation of women in development process, work life and decision making mechanisms, developing projects for increasing literacy of women took place. Based on the importance of providing gender equality in education, one of five sub-committees of "Gender Working Group" assembled for the 10th Development Plan (2014-2018) has been determined as "Education Sub-committee". In 2013 Programme, the following provisions were included: Children who do not continue their compulsory education will be brought in education, the transfer rate between stages will be raised, the transfer rate between stages will be raised by building boarding houses for especially girls (KSGM, 2013: 17).

Apart from these efforts, in our country, other attempts such as organizing literacy courses to increase woman literacy rate, providing women with an employable occupation and increasing the quality and the scope of informal education which aims giving suitable skills for women for the necessities of work life have been continuing (KSGM, 2007: 49).

Informal education includes all programmed education activities, along with and apart from formal education, for providing information, skills, occupation and individual and social development. The abundance and variety of educational activities in Turkey are notable. In addition to informal educational activities of the Ministry of National Education, which have been performed by vocational and technical schools and institutions, a lot of nongovernmental organizations also give literacy and vocational courses for women, of Southeastern Anatolia Project Administration and in Society Centers of Social Services and Children Protection Institution similar activities have been carried out. When the number of people who finish courses in public training centers is taken into account, it can be seen that 54,2 % of those who finish occupational courses, 53% of those who finish socio-cultural courses and 67,5% of those who finish literacy courses are women (KSGM(1), 2008: 29).

Although there are significant developments in legal arrangements on women's education all around the world, a complete success has not still been fulfilled. The number of illiterate women in underdeveloped and developing countries has reached millions in 2014 in spite of all technological developments.

PROBLEMS IN WOMEN'S EDUCATION

"The Convention on the Elimination of All Forms of Discrimination against Women", to which Turkey has become a party, promises women's full access to their education rights. Besides, Turkey promised to raise the literacy rate among women to 100% in the year 2000 by acknowledging Beijing Declaration and the Action Plan affirmed at UN Fourth World Conference on Women. Education and Training of Women is one of 12 critical areas of concern committed at Beijing Declaration and Platform for Action to advance equality, development, and peace for all women. According to the Article 42 of Turkish Constitution, "Primary education is compulsory for all citizens of both sexes and is free of charge in state schools". With this provision, education rights are granted for every individual without any discrimination. However, the majority of women in Turkey do not have the educational opportunities, and this has negative impacts on their employment, and their place in politics and decision-making mechanisms. In most of the cases, this deprivation ends up with a kind of domestic violence to endure. For the bright future of Turkey, forcing girls into marriage at a young age should be avoided and all children should be given equal opportunities for access to contemporary education. If women, half of the population, remain deprived of educational opportunities, the country's development and democratization process is hindered. The key to empowering women in the society is education (TÜKD; 2014).

Ongoing gender discrimination in the family related to gender roles prevents providing equal opportunities to children of both sexes. Boys are often given preferential treatment when there is a family decision on the opportunities in the topics like education, health, nourishment as well as sharing house chores. In this sense, education of girls is not given as much importance as that of boys, and male stereotypes about male roles affect parents' attitudes towards education of girls, the duration of the education for the girls, the following school type after completing compulsory education and the kind of the curriculum that they will follow.

Moreover; majority of the times, due to the fact that they have become socialized based on the stereotyped roles, male-female girls are influenced by their friends and environment and conform to their parents' decision. They can even regard it as their own decision. The stereotyped roles also affect teacher attitudes towards education of girls and gender discrimination occurs in education atmosphere in the selection of school books, curriculums and school and programs (Akhun, 2000:6).

Since women are overwhelmed by heavy responsibilities in their private and social lives, they tend to choose jobs that are suitable for their gender roles and keep away from the ones that require higher level of authority. Even if they reach the highest position in their profession, they cannot elude their responsibilities in their private lives unlike men who can fully commit themselves to their jobs. This causes them to willingly avoid high-level professional positions that mean constant responsibility. In order to procure a higher rate for women in these positions, all family members should share the responsibilities in their family life and the number of institutions that can help women in the society should be increased (KSGM(1), 2008: 30).

Gender discrimination is most widely discussed at professional work life and at education facilities in which the conditions to start of the work life is determined. Social guidance differs for girls and boys when it comes to choosing jobs. For example; in course books, car mechanics, managers, inspectors, engineers are described as jobs for men and nurses, librarians, secretaries are described as women. Social conditioning also canalizes women to certain kinds of jobs (Acar et. al., 1999: 6-7).

Traditional norms and values related to stereotyped women roles in education are drawing girls away from school. Some of them still experience forced marriage at young ages. Another obstacle in this respect is low income. Families with low income have hard times sending their girls to school. In relatively underdeveloped regions such as Eastern and Southeastern Anatolia, average education level is lower. Settlement pattern in rural areas, especially where transportation is poor, causes a disadvantage for providing educational facilities. The students in these areas have to cover long distances to go to school. School attendance rates decrease more in winter when roads are covered with snow and closed. In some cities, the biggest obstacle for education of girls is infrastructure of schools (dining hall, toilets, etc.) (KSGM(1), 2008: 30).

Despite the increasing awareness on the necessity of education of women to ensure gender equality and the gainings attached such as the increase in the alternative educational programs for women who needs special protection, the goals have not been fulfilled yet. This failure to reach the goals is because of insufficient sources, infrastructure problems and lack of a strong political will in education. Discriminating gender stereotypes in school books, negative women clichés, unshared childcare and some traditional attitudes and behaviors are still an obstacle to women's education. In some countries, misformulation of structural adjustment policies or problems in implementation have affected education sector negatively. In addition, the failure to understand the close relationship between employment market dynamics and women's access and attendance to higher education is another obstacle to the issue (KSGM(3), 2014).

Modern woman has to be aware, creative, productive, self-confident and have a recognized status in society. Along with this, it is very important for women to become individuals in society and education is the most effective way to empower women to become individuals and to advance the social conditions they are in.

CONCLUSION AND SUGGESTIONS

Women's human rights mean preventing all kinds of violence and discrimination against women, gender equality, equal participation of women in decision making processes and mechanisms, safety and freedom rights of women as individuals, equal protection of women by the law, right to pursue a healthy life, equal and proper work conditions, the right to not expose to inhumane demeaning acts, and as a base for all these rights, equal and non-discriminatory education right (KSSGM, 2000: V).

Education is directly related to the development and liberation of a person. To realize this, education should be arranged in the direction of democratic and scientific principles. Education right is a right that has a very special

quality. It can directly or indirectly affect and facilitate the establishment of other rights since it gives people a potential to improve one's personality and to liberate. It has a significant role in establishing human rights. It is effective in gaining and benefiting from rights and freedoms such as right to work, right to live, freedom of speech. In all nations, it is a constitutional imperative for governments to implement education rights. This mission is clearly stated in Article 42 of current Turkish Constitution as "No one shall be deprived of the right of learning and education." (Koç and Güçlüer, 1999 :79).

Involvement of girls in education is important in terms of both level of welfare and life standard of the country as well as personal gains it will bring. It is known that countries that fail increasing education level of women so that it reaches that of men encounter less growth and decreasing level of income. Educating girls could also decrease the imbalances among regions. As the literacy level increase, women will act in a more conscious manner against outdated practices and contribute to the modernization of the society (KSGM, 2008(1): 5).

Literacy of women and getting an education is the key to improve family health, nourishment and education and to involve them in decision-making processes. It has been proved that investing in formal and informal education of women and girls is one of the best ways for achieving sustainable development and economic growth let alone its high economic and social gain.

Providing equal education opportunities and forming a gender sensitive education system with the intend of full and equal involvement of women in administration, policy and decision-making processes related to education is crucial. Countries have to realize social, economic and political development of women at any age and increase the education capacity to give them the necessary knowledge, capacity, skills, ability and moral values for involving in these processes fully and under equal conditions and create equal opportunities in terms of accessibility of men and women. Besides, it is also necessary to eliminate gender differences by providing equal accesibiliy for women to carrier development, vocational education, scholarships, research funds and by adopting positive discrimination when necessary (KSSGM, 1995: 43-47).

This inequality in gender causes an artificial discrimination in benefitting from opportunities, allocating and using sources, getting the services and in other jobs that women can do. For women to take part in such jobs in a higher rate, it is required to share the responsibilities of them in private life equally by family members and to generalize and enhance the institutions that can help women in society. Moreover, individuals should be raised with the concept of equality in gender by means of family that is effective in socialization process, educational institutions and the mass media. In addition to this, all occupations should be open to women and they should be able to choose an occupation not because of the guidance of society but in line with their abilities and desires.

"Education for Women" is a vast field. First of all, education should be seen as a tool for having an empowering and liberating effect in women's life. In our country, apart from giving women a licensed education at primary, secondary and higher education level, distance education programs, which will contribute much to women's having a job and encouraging work, raising their awareness of woman rights, becoming a self esteemed, socially successful and modern individuals, are necessary to be opened. These services for women are crucial for our national progress, women's personal improvement and eliminating gender inequalities. The role of reaching a certain education level is significant for women to get out of their secondary position in social life and to have an equal life opportunities with men.

Apart form these institutional efforts, for providing gender equality, women and men should be informed in formal and informal education institutions about laws, gained rights, international agreements and decrees. The mass media should also include the functions of governmental and nongovernmental organizations, their activities, publicity and contacts and amendmends in laws in their programs. Necessary precautions should be taken to make people conscious about violence. Mass media is a powerful education tool. Educators, governmental institutions, nongovernmental organizations could use mass media for the education od women and development. Computerized education has gradually become more important in learning and spreading information in our lives. Therefore, while educators are utilizing these materials, they should be doing it in a

way that gender discrimination can be eliminated. This is significant in terms of forming a consciousness that will let women gain their individuality in society.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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ELEVENTH GRADE STUDENTS' DIFFICULTIES AND MISCONCEPTIONS ABOUT ENERGY AND MOMENTUM CONCEPTS

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ABSTRACT

Physics education researchers have revealed that students have some difficulties and misconceptions in basic physics concepts in mechanics including momentum and energy. The main aim of this study is to determine the 11th grade students' difficulties and misconceptions about Energy and Momentum concepts. In order to fulfill this aim, 21 multiple-choice questions related to momentum and energy was administered to 284 eleventh grade high school students from seven High Schools in the city of Balıkesir during the academic year 2013-2014. Analysis of results showed that high school students have many misconceptions related to momentum and energy concepts. For example, students have many problems with applying or connecting relationship between the conservation of energy and momentum in any given situation.

Key Words: Energy, momentum, 11th grade students, misconceptions.

INTRODUCTION

Many physics education researchers have revealed that students have difficulties in learning scientific concepts because of their some pre-conceived ideas that mostly called misconceptions or alternative conceptions. Those kinds of alternative conceptions and mental models employed by students before and after instruction (McDermott & Redish, 1999) are highly resistant to change. It is accepted that students' beliefs and intuitions about physical phenomena, mainly derived from their everyday experience and usually unacceptable by scientific communities (Novak & Govin, 1984; Duit, 1987). All of the domains of physics, mechanics on the other hand, most studied and investigated branch of physics that students have many misconceptions about (McDermott & Redish, 1999, Duit, 2009). Among these, force and motion concepts have received much interest by researching, however, in spite of two most fundamental concepts in physics there were little research about the momentum and energy all together. Investigating the extent to which students can identify the relevant concept by combining energy and momentum concepts is a part of the rationale for identifying high school student difficulties in this study.

A study was done by Ivowi (1984) examined the misconceptions in physics of 128 students from two secondary schools in Nigeria. He asked students to find out the explanation of the real situation about the conservation of momentum and approximately half of the sample gave incorrect responses to the question. In that study, Ivowi (1984) revealed that (although the concept of momentum was related to the mass and velocity) students

related the conservation of momentum mistakenly only to the concept of velocity. In another study, Graham and Berry (1996) were examined the development of 549 students' understanding on momentum with 20 conceptual questions which involved the relationship of momentum with mass and velocity, vector nature of momentum, impulse in one dimension and the conservation principle of momentum in two dimensions for students at ages 17-18. They explained that according to their results students can be grouped into four categories: first one is those who are confused with the concepts. Second one is those who can understand the basic ideas, recognize relevant situations, and make calculations without knowing the relationships between momentum and impulse and the law of conservation of momentum. Third one is those who are progressing in the hierarchy further and can understand momentum as a vector quantity and apply the impulse-momentum theorem and the law of conservation of momentum in one dimensional problem. The last group is who completely comprehend the concept of momentum.

İngeç, Ünlü and Taşar (2002) investigated the learning sequence of the concept of momentum subject with 158 students from grades 6, 7, 8, 9, and 10 (ages 12-16). They used in-class demonstration experiments related to conservation of mass, velocity, and momentum. They acclaimed that success rate in momentum questions are much higher than others with suggesting understanding momentum does not require understanding the concepts of mass and velocity, which is thought to be necessary for understanding momentum.

Çirkinoğlu (2004), examined with using open-ended conceptual test related to impulse and momentum concepts to reveal 89 primary science students' and 124 high school students' conceptual level and misconceptions about impulse and momentum concepts. Pre and post experimental design was used. She had also conducted semi-structured interviews with 15 students. According to the results of the study, both samples have difficulties about impulse and momentum concepts and students misconceptions remained the same even after teaching the subject areas.

The concept of energy also plays an essential role in physics. Energy conservation principle is commonly stated as energy cannot be created or destroyed (Raven & Johnson, 1999) in almost all science textbooks. However, many science educators dispute that this explanation may be confusing among students if supporting concepts such as "energy transfer, energy flow, and energy transformation are not incorporated when defining energy conservation" (McIlldowie, 1995; Chabalengula et al, 2012).

Energy and momentum conservation offer an underlying framework in teaching the concepts of mechanics. Singh and Rosengrant (2003) were investigated students' understandings of energy and momentum concepts in an introductory physics course. They constructed and administered a 25-item multiple choice test and also carried out individual interviews. According to the findings of the study, most students had difficulties in conceptually interpreting basic principles related to energy and momentum. Similarly, Lawson and McDermott (1987) found out that many students have had difficulties in the interpretation of directly one-dimensional motion of the object to impulse- momentum and work-energy theorem.

PURPOSE

The main purpose of this study is to determine the 11th grade students' difficulties and misconceptions about Energy and Momentum concepts.

Research Questions

1. What are 11th grade students' difficulties and misconceptions about on Energy and Momentum?
2. Is there a significant difference between the male and female students' test scores on the Energy and Momentum Conceptual Survey?
3. Is there a significant difference among students' test scores in different type of schools on the Energy and Momentum Conceptual Survey?

Limitations

This research is limited to

1. 2013-2014 academic year,
2. The seven various High Schools with 284 students in Balıkesir,
3. The Energy and Momentum Concept Test.

METHODOLOGY

Subjects

The sample of the study has been chosen from seven high schools students in the city of Balıkesir during the academic year of 2013-2014. In the study there were 284 eleventh grade students. The distribution of sample according to school is given in Table 1.

Table 1: Distribution of Students by School

School	Female	Male	Number of students (N)	%
Science High School	30	15	45	16
Sırrı Yırcalı Anatolian High School	38	20	58	20
Fatma Emin Kutvar Anatolian High School	16	17	33	12
TOKİ Anatolian High School	16	21	37	13
Cumhuriyet Anatolian High School	37	29	66	23
Bahçelievler Anatolian High School	14	11	25	9
Adnan Menderes Anatolian High School	17	3	20	7
Total	168	116	284	100

Instrumentation

In the study, there was only one instrument, the Energy and Momentum Conceptual Survey (EMCS). The test, consists of 25 multiple choice questions, was introduced by Singh and Rosengrant (2003). It is design to cover subject areas related to work and energy, energy and momentum conservation, and collision in one dimension. The detail distribution of questions related to concept area is given in Table 2.

Table 2: Questions and their related concept in EMCS test

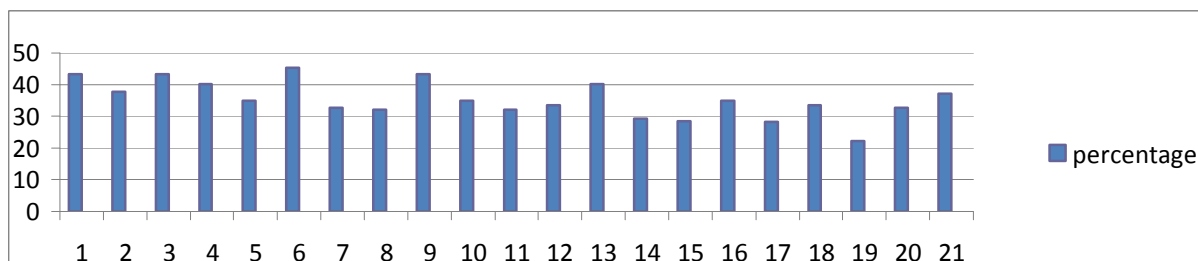
Concepts	Related Questions
Work-Energy	1,7,11
Conservation of Energy	2,4,8,12,13,14,16,18,19
Conservation of Momentum	6,9,15,17,20,21
One-Dimensional Collisions	3,5,10

Procedures

After translating EMCS test into Turkish. The test controlled and checked by some physics instructors and then applied to 54 11th grades of high school students as a pilot study. According to student's responses reducing the four questions the final EMCS test, consisted of 21 multiple question test, was finalized to use in the study. And then this test was applied to 284 high school students after the traditional instruction of subject matter as described in sample section. The reliability of the final version of the test was found as $r=0,81$.

Difficulty coefficient is a measure of the degree of difficulty of the questions that make up a test. Difficulty factor has a value ranging from 0 to 1. When difficulty factor approaches 1 test question thought as easy, then it approaches 0, it is thought difficult (Demirci & Çirkinoglu, 2004). According to Energy and Momentum

Conceptual Survey test, obtained from this study, difficulty coefficient was ranged between 0.22 and 0.45 and average difficulty level of 0,352 (see, Graphic 1).



Graphic 1: Difficulty coefficient(in %) of Energy and Momentum Concept Test

RESULTS

After analyzing data, students' average EMCS test score was found as 32,5%. Distribution of students' answer according to each question is given in the Table 3.

Table 3: Students' answers related to each question(in percent)

Question	A (%)	B (%)	C (%)	D (%)	E (%)	Total correct (%)
1	15	43	21	5	15	43
2	11	11	34	7	37	37
3	12	42	13	13	16	42
4	39	12	7	21	20	40,1
5	19	18	20	35	8	34,9
6	10	13	12	18	46	46
7	17	12	32	20	17	32
8	32	20	16	11	19	32
9	5	17	15	44	18	44
10	19	13	20	10	34	34
11	13	13	19	30	25	30
12	21	20	31	12	14	31
13	14	13	13	40	17	40
14	30	18	25	13	10	30
15	19	19	29	12	15	29
16	28	35	9	13	11	35
17	19	12	19	16	28	28
18	33	13	21	14	13	33
19	29	11	21	23	11	21
20	18	33	18	15	9	33
21	18	11	15	12	38	38

As shown in Table 3, in general, all of the correct answer percentage was below the 50%. The most correct answer is given in question 6 with 46%. This question related to conversation of momentum concept while at least correct answer is given in question 19 with 21%. Also this question is related to conservation of energy concept. The test results reveal that students lack a coherent understanding of energy and momentum concepts and have difficulty applying them to different physical situations. Some detail results according to concept by concept are given the following part.

Questions related to Work and Energy Concepts (1,7,11)

Items 1, 7 and 11 can all be answered based upon the conservation of mechanical energy, because there is no work done by non-conservative forces. According to the students' responses only 43,3% of students had a correct answer rate to the first questions while 32% of the students gave the correct answer to the 7th and 11th questions. While 43,3% of students answered the 1st question correctly, 21% of students gave the wrong answer which is C option. They said that removing the bag from the ground up or doing it from a long way distance would directly impact the work done.

Questions related to conservation of energy concepts (2,4,8,12,13,14,16,18,19)

All questions in this category, especially 2nd, 14th and 16th questions were given correct answers by 38%, 29% and 35% respectively. The wrong choice in the 2nd question was C answered by 34% of students. In 2nd question, two men with the same mass start sliding in same height but different inclination path, then the question asks largest speed at the bottom. The choice of B and C were chosen by 18% and 25% respectively. 18% of students answered that the man whose mass is less would be faster at the bottom of the slide while 25% marked that the man with higher mass would be faster and come first at the bottom of the slide assuming that kinetic energy of the moving object depends on the path of incline plane. In the question 16th, the correct answer was given by 35% of the students, the wrong choices were chosen by 28%, 9%, 13%, and 11%, respectively. It can be imply that students have difficulties related to energy conservation. Also it can be said this idea misconception of "the longer moving path, the more kinetic energy of the system".

Questions related to Conservation of Momentum Concepts (6,9,15,17,20,21)

By selecting E choice in 6th question students answered 46% correctly. This question related to mass, speed and also relation to momentum. However, the 15th question arises judging that the Momentum Conservation cannot fully be understood. As seen answer from the 15th question, the proportion of A and B choice which were wrong answer, it is understood that the 38% of students have difficulties about Momentum Conservation. Although, the most correct answer is given in this question however it easy far away from desired level.

Questions related to Collision in One Dimension Concepts (3,5,10)

Item 5 probes the understanding of momentum conservation in an elastic and inelastic collision choosing the popular distractor B it was believed that the block in which the bullet gets embedded moves faster because the bullet transfers all of its kinetic energy to the block in the inelastic collision. The students answered especially in C option, that the mass of the bullet stucked to a piece of wood increased and the one with higher mass has also higher momentum. Items 3 and 10 were designed partly to evaluate whether students can identify the appropriate system for which momentum is conserved and indicated that many students were confused about it. Many believed that the momentum and kinetic energy are conserved for each object. Incidentally, in the test response to item 10, 57% noted that a person standing on ice will remain stationary when hit by a horizontally moving ball of its kinetic energy to the block in the inelastic collision. Most students ignored that momentum concept is vectoral, energy is scalar quantities.

In order to determine difference between the male and female students' test scores on the Energy and Momentum Conceptual Survey test the independent sample t-test was used. Male and female students' average test scores and standard deviations are given in table 4 and the summary of independent t-test results are given in Table 5.

Table 4: Male and female students' average test scores and standard deviations

	N	Average	Std. Dev.	%
Total female	168	7.35	4.768	35
male	116	7.46	4.986	36

Table 5: The summary of independent sample t-test results by gender

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Top. Equal variances assumed	.195	.659	-.180	282	.857	-.106	.586
Equal variances not assumed			-.179	240.143	.858	-.106	.591

$p > 0,05$

According to the independent t-test results shown in Table 5 concluded that there was not statistical significant difference between the genders was found from energy and momentum conceptual survey test.

Also, in order to determine if is there any significant difference between students' test scores in different type of schools on the Energy and Momentum Conceptual Survey the one way ANOVA test was used. The summary table from this result is given in Table 6.

Table 6: One-Way ANOVA Test Results among Schools

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3273.628	2	1636.814	135.990	.000
Within Groups	3382.203	281	12.036		
Total	6655.831	283			

* $p < 0,05$

According to one-way ANOVA Test results based on the types of schools on the Energy and Momentum Conceptual Survey Test score, there was a statistical significant difference between the types of schools. In order to determine statistical differences between schools Dunnett's T3 "post hoc" test was performed. The summary of Dunett's T3 test results is given in Table 7.

Table 7: Test results between the groups, Dunnett's T3

	(I) Turu	(J) Turu	Mean Difference (I-J)	Std. Error	Sig.
Dunnett T3	1	2	-.323	.985	.983
		3	6.877*	.838	.000
	2	1	.323	.985	.983
		3	7.200*	.578	.000
	3	1	-6.877*	.838	.000
		2	-7.200*	.578	.000

*. The mean difference is significant at the 0.05 level.

It was found that there was a statistical difference between "science high schools and Anatolian high schools.

CONCLUSION

In this study, 11th grade students' difficulties and misconceptions about Energy and Momentum concepts was investigated. 21 multiple-choice questions related to momentum and energy was administered to 284 eleventh grade high school students from seven High Schools in the city of Balikesir during the academic year 2013-2014.

After analyzing data, students average Energy and Momentum Conceptual Survey test score was found as 32,5%. It was found that most of the students have failed to recognize the significance of relation between energy and momentum and they have difficulties in qualitatively interpreting the basic principles related to energy and momentum and in applying them in physical situations. In order to determine difference between the male and female students' test scores on the Energy and Momentum Conceptual Survey test the independent sample t-test was used but there was not found any statistical significant difference between the genders.

Also, in order to determine if is there any significant difference among students' test scores in different type of schools on the Energy and Momentum Conceptual Survey the one way ANOVA test was used. According to one-way ANOVA Test results based on the types of schools on the Energy and Momentum Conceptual Survey Test score, it was found that there was a statistical significant among the type of schools. And then in order to determine statistical differences between schools Dunnett's T3 test used. It was found that there was a statistical difference between "science high schools and Anatolian high schools.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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THE INTEGRATION OF TECHNOLOGY INTO FOREIGN LANGUAGE TEACHING

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ABSTRACT

Technology-based foreign language teaching has provided many effective strategies in the learning process. The use of technology in teaching leads to a good command of the target language with ease. Learners stand a better chance of improving their foreign language skills if learning is strengthened with technology; therefore, technology-aided learning environment is a key factor that motivates the learners to accomplish better. This study puts forward how technology-based instruction helps learners achieve success in foreign language learning process.

Key Words: Technology, Foreign language learning, Achievement, Integration.

INTRODUCTION

As information technologies evolve and advance over time, use of technology in classrooms has increased in the classroom. There is a wide spread belief that technology-based instruction can contribute greatly to the quality of teaching and learning experience. Technology is a facilitating tool of education which teachers and students get a great deal of benefit from. Today's language teachers need to learn how to take advantage of the technology and how to integrate it into their teaching skills. Computers, smart phones, tablets etc. provide powerful opportunities to learn foreign language. As the use of smart phone, computer etc. is increasingly common among students; teachers need to equip themselves with today's technology. Smart boards can be instrumental in engaging and motivating student in the class. For instance pronunciation though the teacher is not a native speaker can be taught to learners with ease using smart phone/board. Teachers who introduce technology to their students may get a great deal of satisfaction when they, accomplish better.

Technology doesn't constitute methodology, but teachers utilize technology to complement it. How can teachers begin to integrate technology in language teaching? I think first, teachers need to contemplate their aims pertaining teaching styles. Different technological materials offer different advantages therefore teachers should be aware of utilities technology. Teachers may apply technology to their teaching skills. As a matter of fact, when teachers use technology in class they should know students' current language skills and needs. In a nutshell, the role of technology in teaching foreign language is very significant in foreign language teaching process.

Technology In Foreign Language Teaching And Learning

Using technology in foreign language learning and teaching is useful for both teachers and students. There is a great tendency among teachers to use technological tools in language learning classrooms. Uluc (2012) argued that the influence of "has permeated into all facets of our lives, including educational settings". In today's schools, information technologies (IT) are more powerful tools to teach, to motivate, and to make the subjects more interesting. Also internet is getting more common for people to communicate each other. In the last 10 years technology (internet, smartphones, computers etc.) has been used in all parts of lives. We use it with media, shopping, education, communication tools. Similarly it has made great contribution to language learning process. Cetto (2010, p.121) puts forward,

"In my experience, technology has broadened the spectrum of interaction while empowering the students' learning process by providing better opportunities for language usage".

Undoubtedly, using technology has positive effects on teaching and learning the English language. How can technology be applied to enhance teaching/learning the English language? When, computer, internet, smart boards, cell phones, video games, music players etc. are used in the target language learning process, students' motivation and language awareness is raised. The new generation (teachers/students) is good at using technology. They are all engaged with technological tools and somehow are involved in the target language through technology. Teaching by using traditional methods is no longer motivating and enjoyable for learners. Learners are more interactive, and learning outcomes bring about efficient results. Moreover the positive outcomes will lead to satisfaction for both teachers and learners.

Experienced teachers present different opportunities to students working at different rates and levels. The most widely used device is smart phone. Teachers and learners use it for developing the skills such as listening, and reading; furthermore watching target language elements on technological tools enable students to improve their second language proficiency. Today's technology is breaking down all borders and bounds faster than physical terms. Houcine (2011: 1) suggests that "the effective use of the Internet and the Hypermedia brings valuable resources to both teachers and learners."

Activities That Can Be Used With Technological Tools

Young generation grows with the technological devices. Which has become a part of our culture at home, at school, at work, and at our social life?

Technology tools for communication, collaboration, social networking... In particular, these tools have transformed how parents and families manage their daily lives and seek out entertainment, how teachers use materials in the classroom with young children and communicate with parents and families, and how we deliver teacher education and professional development.(Odera & Ogott, 2014:4).

Effective teachers provide a natural learning environment for learners. Most teachers before lessons consider what they are going to teach and what kind of activities they will apply in their lessons. Upon deciding on this, they get ready through making lesson plan and finding the right resources or elements they will use. First of all technological devices are more interesting for the students to make some useful activities. For example; making online activities with smart board is very enjoyable for the learners. Integrating technology into language teaching and learning will bring about undivided motivation that will lead to achievement. Sykes suggests, 'integration can include, for example, the use of game content as pre-writing content for a writing task or as an impetus for a classroom debate' (2013: 34). Digital games offer learners a lot of benefits, but too many games especially violence games can be problematic. Characters, game narratives, context of play are very beneficial for the second language learners.

Sarah Catherine and K. Moore state that 'Perhaps the most widespread application of technology in onsite settings to date is the use of software programs designed for language learning.'(2009, p.1) Today many schools have computer labs and computers in every classroom. Almost all schools are connected to the Internet; a lot of teachers have Internet access in their classrooms. Technology can assist the teachers 'what to teach', 'how to teach', 'when to teach' or how to integrate all these to the curriculum framework.

Research questions:

1. Do traditional methods help learners develop their language skills?
2. Do technology-based instructions help learners develop their language skills?

Aim

The goal of this study is to investigate the contribution of technology-based instruction to development of language skills.

METHOD

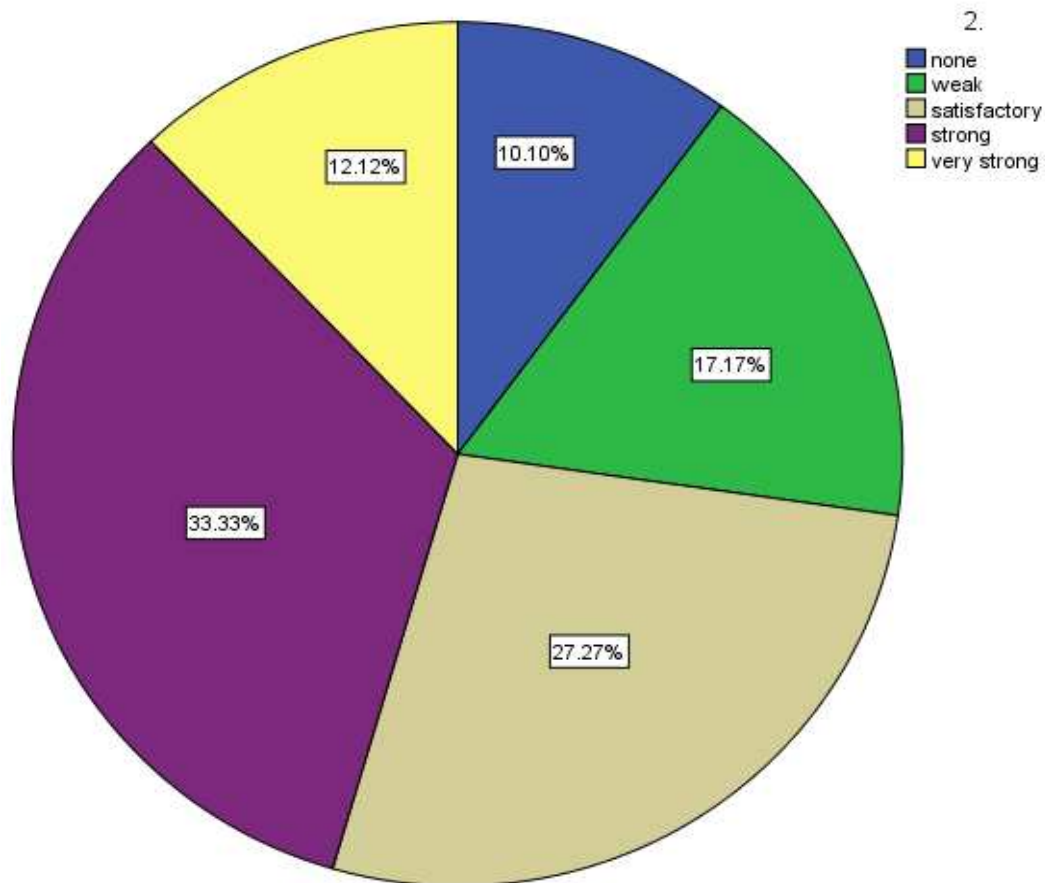
Participants

99 students at English language teaching department at Ishik university participated in this study. The students are third year old fourth year old students who are well aware of traditional methods in the learning process, however technology-based instruction is implemented widely in their classes.

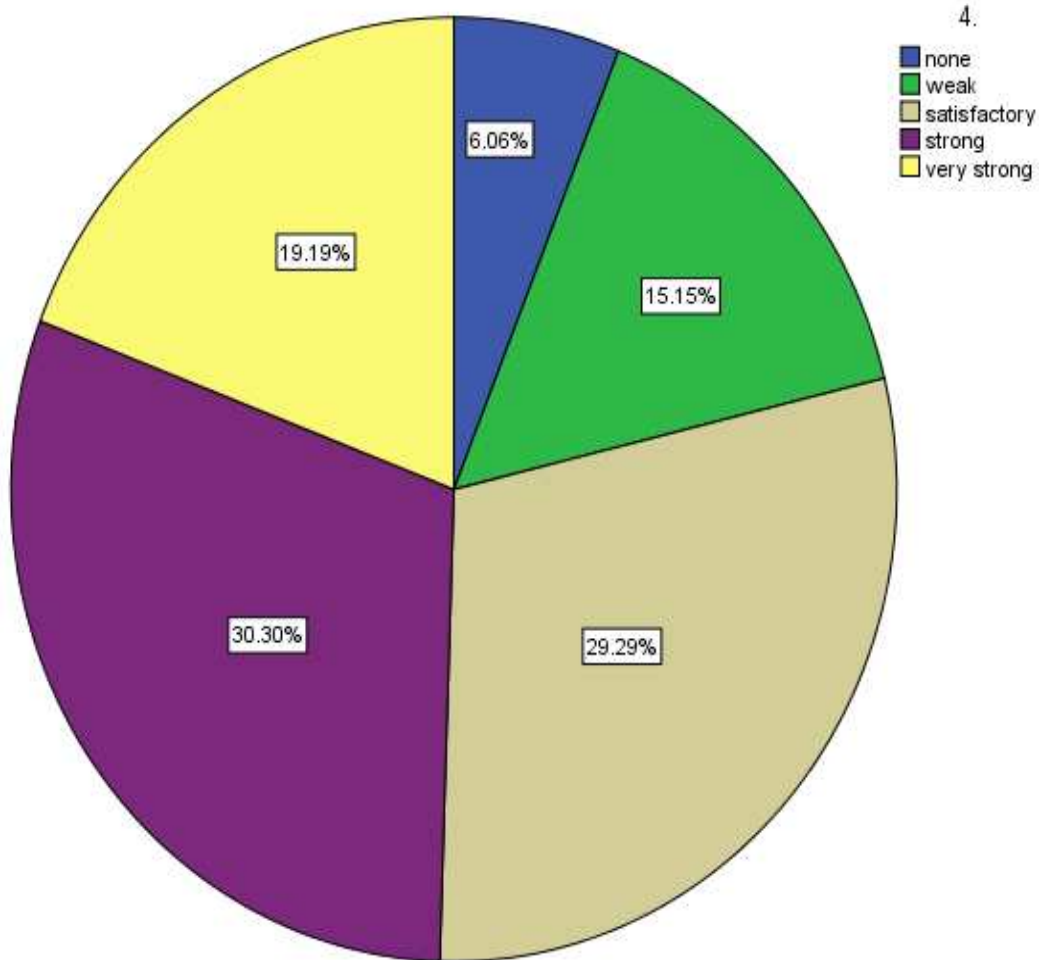
Data collection

In this study descriptive method is applied. Survey data collection technique has been used. The data in this research has been analyzed through qualitative research data analysis

FINDINGS



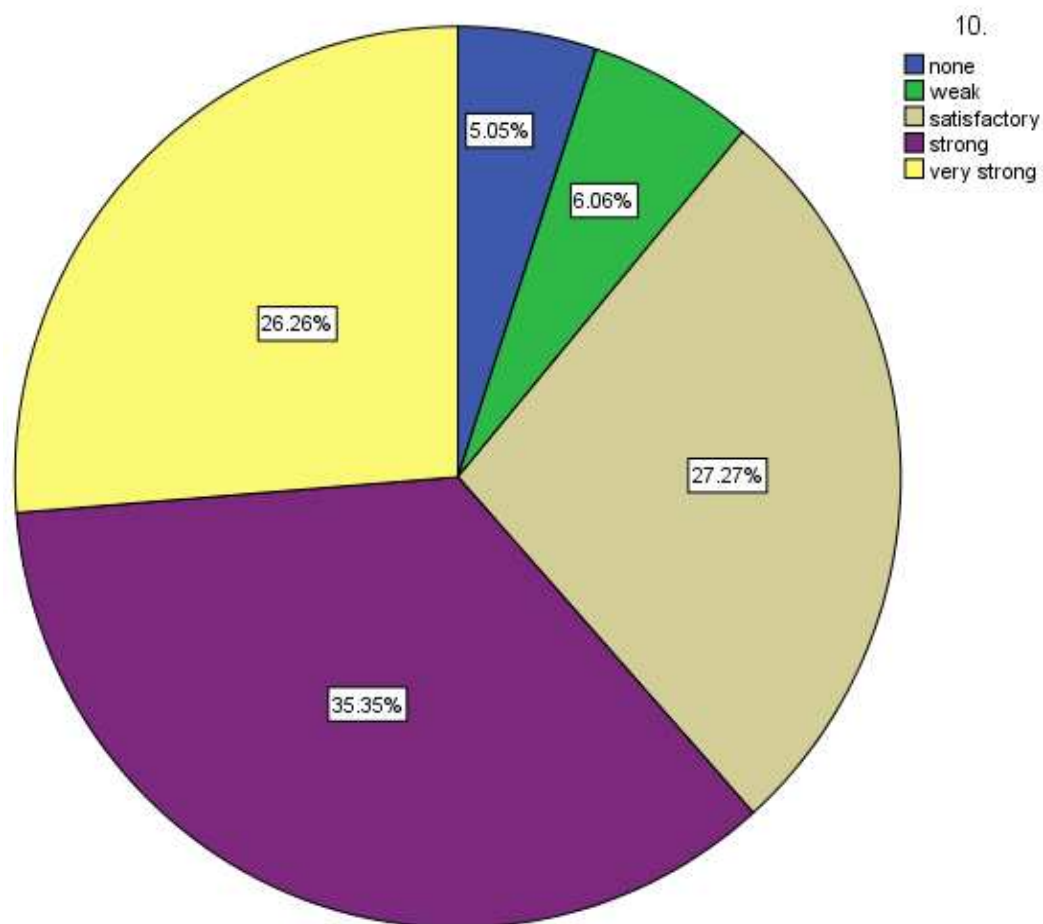
% 12.12 of the students have very strong opinions about positive contributions of traditional methods to the development language skills. The total percentage of the students who believe that traditional methods help them with their improvement of language skills is % 72,72.



% 19.19 of the students have very strong opinions about positive contributions of technology based instructions to the development of language skills. The total percentage of students who believes that technology-based instruction help them with their improvement of language skills is % 78,78.

26.26of the students strongly believe that technology-based instruction should be implemented in language learning process. The percentage of the students who think that technology-based instruction is necessary is 88,88.

Though there is not great difference between students who advocate traditional methods and there who advocate technology-based instruction, the percentage of students have a device towards learning through technology-based instruction.



CONCLUSION

Traditional methods are considered useful for language learners however technology-based instructions highly contribute to teaching and learning process. Technology-based instruction effectively leads to accomplishment. It has been argued that motivation that occurs through integration of technology into language teaching and learning process encourages learners to achieve better.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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PRACTICAL VALUE OF EFL TEXTBOOKS FOR TEACHING MAIN ASPECTS OF COMMUNICATIVE COMPETENCE (SOCIOLINGUISTIC AND PRAGMATIC COMPETENCES)

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ABSTRACT

Two very important components of the concept of Communicative Competence are sociolinguistic and pragmatic competences. Since the advent of the Communicative Approach a lot of attention has been paid to the design and development of relevant teaching materials. This is especially important since in most of the language learning situations textbooks serve as one of the very few sources, in some cases as the only source of the target language. This article investigates two of the textbooks, from prominent publishing houses, in order to determine to what degree they focus on both competences. The findings are then summarized, analyzed and discussed.

Key Words: Communicative competence, sociolinguistic competence, pragmatic competence, textbook evaluation.

INTRODUCTION

The concept of Communicative Competence

Over the past decades the importance of Communicative Language Teaching (CLT) has been widely recognized in the field of English Language Teaching. Communicative language Teaching is a wide language teaching approach that emphasizes interaction within a classroom rather than a clear cut method with prescribed classroom practices. CLT refers to both the aims of the classroom learning as well as the processes that take place within it (Savignon, 2002). The central theoretical concept underlying the approach is the term "*communicative competence*".

The concept "*communicative competence*" was introduced to the field of Applied Linguistics by Dell Hymes (1972), a sociolinguist as well as ethnographer of communication, in the early 1970's of the previous century. The term was introduced as a reaction to Chomskyan (Chomsky, 1965) view of competence which refers to the knowledge of grammatical rules and did not include any notion of contextual appropriateness. Whereas, Hymes defined the notion of "*communicative competence*" as the ability to convey and interpret messages and to negotiate meaning with other speakers in specific contexts. Over the years the term has evolved and developed with contributions of such scholars as Savignon, Canale, Swain and Bachman. We shall summarize most of their views regarding the notion as well.

Canale and Swain (1980) divide communicative competence into three components such as grammatical competence, strategic competence, and sociolinguistic competence. In 1983 Canale added discourse competence to the model. If compared to the Chomsky's view of "competence" in a very broad sense than his notion of "competence" is similar to the grammatical competence of the framework developed by Canale and Swain that represents the knowledge of grammatical rules of the language. Strategic competence, on the other hand, refers to the knowledge of and the ability to use the communication strategies that improves the efficiency of communication and when and if necessary enables the speaker to repair communication breakdowns. The next competence, sociolinguistic competence is the mastery of the sociocultural aspect of language use such as politeness conventions, appropriate application of register, vocabulary and the like of given language in any given context. The last component of the model, discourse competence, refers to the ability to combine and organize utterances/sentences to produce cohesive texts/speech.

Another model of communicative language abilities, a more comprehensive one, was proposed by Bachman (1990), based on language testing research, and later was elaborated further by Bachman and Palmer (1996). The latest model of communicative language abilities by Bachman and Palmer is comprised of two components: organizational knowledge and pragmatic knowledge, both broken down into different subcategories.

Organizational knowledge is composed of textual and grammatical knowledge, i.e. abilities that control the formation of and recognizing grammatically correct sentences and sequencing them to produce texts. Grammatical knowledge is similar to the Canale and Swain's grammatical competence. Whereas, textual knowledge is a more elaborate version of the discourse competence by Canale and Swain.

Pragmatic knowledge deals mainly with what one utters and what function he or she intends to achieve through them, i.e. illocutionary force of an utterance referred to as functional knowledge in this model. In order to communicate effectively, one, however, needs more than illocutionary competence. One also needs to know the social rules and knowledge of appropriateness based on the context or a situation of the language use where one finds himself or herself. This knowledge is referred to as sociolinguistic knowledge and is another component of pragmatic knowledge of the model.

Finally, the last model of communicative competence to be discussed in this paper is the one developed by Common European Framework (CEFR) between 1989 and 1996 in an attempt to standardize language teaching, learning and assessment across Europe. However, it increasingly is being used as a reference by countries in other parts of the world as well. Communicative language competence (CEFR 2001) encompasses components such as linguistic, sociolinguistic and pragmatic.

Linguistic competences include lexical, semantic, grammatical, phonological, orthographic and orthoepic competences. In other words, they refer to the knowledge of and ability to use linguistic resources to form well-structured messages/sentences. The last two competences of the framework: sociolinguistic competence and pragmatic competence are going to be focused on in this study and thus will be summarized with more details.

Sociolinguistic competence is the knowledge of appropriate language usage depending on the given social context. Since language is an important part of culture, everything that relates to the language use in terms of appropriateness to a particular culture in a particular social setting is of relevance to sociolinguistic competence. Thus things like politeness conventions, linguistic markers of social relations, expressions of folk wisdom, register differences, and being able to recognize dialects and accents are the primary components of the competence.

The last component of this model, pragmatic competence, includes two subcomponents: discourse competence and functional competence. Design competence or the so-called planning competence, which stands for the ability of ordering messages to in line with interactional schemata and is the part of both of the aforementioned subcomponents (discourse and functional competences). Generally speaking, pragmatic competence is concerned with the user's/speaker's knowledge of patterns according to which the sentences/utterances are organized and sequenced (discourse competence), used to carry out communicative functions (functional competence) and ordered according to the interactional and transactional schemata (design/planning competence).

We have briefly reviewed some of the models for communicative competence and their key components. Two of the main components of the concept, sociolinguistic and pragmatic competences, will be taken into consideration for evaluating EFL (English as a Foreign Language) textbooks as to how much they focus on teaching these two competences. Thus, before proceeding with the study we shall look briefly at the term "*textbook*".

Textbook and its importance

A textbook or a course book is a book used for the study of a subject, in our case English. A textbook is teaching material for the teacher and a learning material for the learner (Awasthi, 2006). Sheldon (1988) describes it as a 'visible heart of any ELT program'. Garinger (2002) believes that a textbook can serve different purposes for teachers: as a core resource, as a source of supplemental material, as an inspiration for classroom activities, even as the curriculum itself.

Teaching materials are a key component in most of the language programs whether it is a textbook or teacher's own material. They serve as the basis for much of the language input that the learners receive and language practice that occurs within the classroom. (Richards, 2001). Textbooks are very important since most of the time they are the sole exposure to the language that the learners get especially in EFL situations. EFL students usually end their language programs without adequate ability to respond appropriately to different verbal and non-verbal signals, including the teachers themselves. Majority of teachers are non-native speakers of English that have not lived in the English speaking community, thus they have to rely on textbooks to teach pragmatic and sociolinguistic competences to the learners.

Advantages of using a textbook in an EFL class are aplenty. To name a few, they serve as a reference for students, give a sense of progress, move from simple to more complex, usually provide a lot of extra materials such as interactive computer software for classroom use, photocopiable games and activities, video/audio material, are well-organized and include integrated skills appropriately, they lift off the heavy load from the teachers' shoulders, they even act as teacher trainers with the teacher's book and it's thorough guidance on how to teach what.

Disadvantages of using textbooks are fewer: sometimes they are blamed for not being authentic, they are a product of a large business and as such they are forced to be appealing to a wider range of markets which sometimes makes them boring with their usual topics about weather, music etc.

Background of the study

The most important challenge encountered while reviewing the literature on the concept of communicative competence was that there is no single model that would be unanimously accepted by all the linguists and ethnographers of communication. There are several models proposed by many scholars, sometimes contradicting one another, sometimes not clear or ambiguous about the main components of the notion especially when it comes to two components: pragmatic and sociolinguistic.

It's important to notice at this point that sociolinguistic and pragmatic competence are quite intertwined, mainly focus on the same aspects of language use but look at them from different standpoints, e.g. making/answering requests- while sociolinguistic competence looks at requests in terms of politeness conventions, pragmatic competence, on the other hand looks at them from the functional point of view, i.e. from the communicative functions that they perform. Thus the items looked at in this study will not be broken into two separate categories, sociolinguistic and pragmatic respectively, but rather will be looked at as complementing parts of a whole.

The aim of the present study is to evaluate two of the typical EFL textbooks in terms of their practical value for teaching two main components of the communicative competence: sociolinguistic competence and pragmatic competence. And to reveal the parallels between the CEFR requirements for the B1 level sociolinguistic and pragmatic competences and the textbooks under study.

The CEFR requirements for the B1 level, in terms of *sociolinguistic appropriateness* can be summarized as follows:

- Being aware of and able to use salient politeness conventions and acting appropriately
- Being aware of the most significant differences in customs, attitudes, values and beliefs in the community concerned and that of the learners

Requirements for the B1 level, according to the document, concerning *pragmatic competence* can be briefly pointed out as follows:

- Being able to adapt his/her expression to deal with unusual or even difficult situations and being able to use a wide range of simple expressions flexibly to express much of what he/she wants
- Being able to intervene in a discussion on a familiar topic with a suitable expression to get the floor, or to initiate, manage and close simple conversations on familiar topics.
- Ability to connect and link a series of shorter, discrete simple elements into a connected, linear sequence of points.
- Being able to explain the main points in an idea with reasonable precision.

The textbooks under study will also be evaluated against aforementioned criteria, as to what extent they are compatible with the Common European Framework requirements for the B1 level in terms of sociolinguistic and pragmatic competences.

METHODOLOGY

Two of the representative textbooks were selected for this study. Criteria for their selection were that they are both taught in university English language preparatory schools, their main purpose is to teach communicative competence and they are offered by world-renowned publishing houses. Textbook A focuses on developing listening and speaking skills whereas Textbook B is an integrated skills textbook that focuses on developing communicating skills (this can be inferred from the title of the book as well). The level of both of the textbooks is Intermediate (B1 level CEFR) since it is the level that university preparatory schools mainly focus on and it is at this level and onwards when sociolinguistic and pragmatic competences can be taught efficiently. Each textbook consists of 10 units, Textbook A consists of 205 pages and Textbook B consists of 126 pages. Activities in Textbook A are not very dense while Textbook B is more densely “stuffed” with activities so the difference in number of pages does not make a significant difference. The names of the books are not disclosed so as not to express direct criticism. The items looked at in present study are:

Discourse strategies (organizing techniques) such as;

- Ordering writing and speech according to cause and effect
- Managing discussions
- Building coherence
- Turn-taking
- Summarizing and sequencing main points

Expressions of folk wisdom such as;

- Sayings, proverbs
- Idioms
- Quotations
- Expressions of values, beliefs
- Using and understanding figurative speech

Politeness strategies

- Apology
- Making requests/ responding to requests
- Question tags
- Formal/informal register
- Welcoming phrases

Expressing attitudes and emotions such as;

- Expressing interest
- Asking/giving reasons
- Inferring speaker's attitude
- Dealing with misunderstandings
- Giving good/bad news, responding to news

- Making a complaint/ suggestions
- Identifying facts vs. opinion
- Using context to identify meaning
- Giving/supporting opinions
- Taking part in a discussion
- Agreeing and disagreeing
- Giving/answering advice

RESULTS AND FINDINGS

The tables below show us the fact of occurrence of the studied item in the unit but do not represent the number of activities in which they occur. In other words, if there are two ticks next to *building coherence* item it means it occurs in two units thus in at least two activities, in most cases in two or three successive activities.

Discourse strategies (organizing techniques)

Table 1: Discourse Strategies (organizing techniques)

Items under study	Textbook A Units											Textbook B Units											
	1	2	3	4	5	6	7	8	9	10	Total	1	2	3	4	5	6	7	8	9	10	Total	ALL
Cause and effect		√	√								2											0	2
Turn-taking	√		√	√	√						4					√						1	5
Managing discussion				√	√						2				√		√					2	4
Building coherence			√	√	√						3				√	√						2	5
Presentation Techniques							√	√			2											0	2
Sequencing key inform.											0		√	√				√		√		4	4
Summarizing main points											0							√		√		2	2

As can be seen from the table above (Table 1) Textbook A focuses greatly on building coherence and turn-taking in conversation, then on organizing the ideas according to the cause and effect while not paying much attention to summarizing main points since Textbook A focuses on two skills: listening and speaking. Textbook B, unlike Textbook A, is an integrated skills textbook that includes writing activities as well where techniques such as sequencing and summarizing key points are taught. In Textbook A in the end of every unit there is a speaking assignment that is usually performed in the form of a speech before the audience (class). This textbook teaches presentation skills and techniques at the end of two units. Textbook B aims at developing communication skills in general without focusing much on presentation skills.

Expressions of folk-wisdom

Table 2: Expressions of Folk-Wisdom

Items under study	Textbook A Units											Textbook B Units											
	1	2	3	4	5	6	7	8	9	10	Total	1	2	3	4	5	6	7	8	9	10	Total	ALL
Sayings, proverbs	√	√	√								3			√								1	4
Idioms			√								1			√								1	2
Quotations			√								1							√				1	2
Values, beliefs etc.			√	√	√				√		4											0	4
Using figurative meaning								√			1											0	1

Expressions of folk-wisdom, one of the main components of sociolinguistic competence, do not receive enough attention in Textbook B, they only appear as proverbs, sayings and idioms on three occasions while in Textbook A they not only appear frequently in forms of quotations, sayings and proverbs but also appear as expressions

of values and beliefs: e.g. money does not always bring happiness, family is more important than career or financial success, personal responsibilities etc.

Politeness conventions

Table 3. Politeness Strategies and Conventions.

Items under study	Textbook A Units										Textbook B Units														
	1	2	3	4	5	6	7	8	9	10	Total	1	2	3	4	5	6	7	8	9	10	Total	ALL		
Apology			√								1												0	1	
Making a request			√								1			√		√								2	3
Responding to requests			√								1					√								1	2
Question tags					√						1						√							1	2
Formal/Informal email wrt.											0	√								√				2	2
Welcoming phrases											0									√				1	1

In Textbook A politeness forms such as apology, requests and question tags appear on 4 different occasions and in Textbook B politeness forms appear in more elaborate ways such as requests, question tags, formal and informal types of register in addressing people, particularly in email writing. Unlike Textbook A, Textbook B also includes welcoming phrases like “*make yourself at home*” and “*be my guest*”.

Expressions of attitude and emotions

Table 4: Expressions of Attitude and Emotions

Items under study	Textbook A Units										Textbook B Units														
	1	2	3	4	5	6	7	8	9	10	Total	1	2	3	4	5	6	7	8	9	10	Total	ALL		
Expressing interest/emotions				√						√	2		√										1	3	
Asking/giving reasons				√							1								√					1	2
Inferring speaker's attitude	√				√						2													0	2
Dealing with misunderstandings											0			√										1	1
Giving good/bad news											0			√			√			√				3	3
Responding to news											0						√							1	1
Making a complaint											0				√									1	1
Making suggestions											0					√								1	1
Identifying fact vs. opinion						√					1								√					1	2
Using context to identify meaning						√					1													0	1
Expressing attitude via modals						√					1													0	1
Giving/supporting opinions						√					1								√					1	2
Taking part in a discussion						√			√		2													0	2
Agreeing/disagreeing									√		1													0	1
Giving/responding advice											0									√		√		2	2

Textbook A and Textbook B largely focus on different ways of expressing attitudes and emotions. Textbook A focuses more on expressing interest for example by varying intonation and expressing emotions of approval/happiness/sadness/sympathy, on using modals to express attitude, giving opinions, inferring speaker's attitude by noticing how the speaker talks (the use of voice, intonation, hesitation etc.), identifying

fact and opinion, taking part in a discussion, agreeing/disagreeing all of which are relevant to developing speech/presentation and discussion skills. On the other hand, Textbook B focuses more on expressions of attitude and emotions which are more relevant to everyday use of the language such as giving and responding to news, making suggestions, complaints, giving opinion, advice and responding to them among others. This difference in the two textbooks makes it clear that Textbook A is for developing speaking and presentation skills in the language, perhaps for the academic use later on while Textbook B is for teaching general communication skills for everyday use.

One example of Textbook B activity teaching sociolinguistic competence appears in the beginning of the book in Unit 1 was not included in any of the tables above; we believe it is more relevant under the title of: Expressions of Attitudes and Emotions. The activity is interesting from our perspective since it gives tips on how to behave appropriately both verbally and non-verbally in a specific social context, in this case, job interview.

5 tips to help you do well at interviews;

1. Be prepared: do some research about the company/university so you know what questions to ask
2. Dress appropriately: you don't have to dress smartly but you should look clean. And don't wear "bling".
3. Arrive on time. Fifteen minutes early is OK.
4. Shake hands firmly and make eye contact. First impressions are important.
5. Speak clearly and try to offer full answers rather than short responses. This shows your enthusiasm.

DISCUSSIONS

Sociolinguistic competence

With respect to CEFR guidelines for sociolinguistic competence for B1 level, such as being aware of and able to use salient politeness strategies and acting appropriately, both Textbook A and Textbook B can be considered quite successful in fulfilling this requirement since they both focus on politeness forms such as making and responding to apology/requests and using question tags. Registers of the two textbooks is rather different, Textbook A is a more formal book, thus not focusing much on formal and informal registers, whereas Textbook B focuses on these two types of register and is a book with a more informal register in a general sense.

The second requirement for the sociolinguistic competence: "being aware of the most significant differences in customs, attitudes, values, beliefs in the target language community and that of learners" is hard to measure and even harder to analyze it statistically. However, it is clear that this can be achieved through teaching different ways of expressing emotions, interest, asking for and giving reasons, agreeing/disagreeing and inferring speaker's attitudes which both of the textbooks focus on. Textbook A lacks some of the key forms in this respect such as making complaints, suggestions, giving and responding to news.

Pragmatic competence

The requirements for pragmatic competence, as mentioned above according to CEFR documents, are: learner's ability to adapt his/her expressions to deal with unusual or even difficult situations, being able to use wide range of simple expressions flexibly to express much of what he/she wants, ability to connect shorter elements into sequence of points, to explain the main points in an idea and being able to get the floor with a suitable expression, to start, manage and close a conversation on a familiar topic.

Textbook B covers at least few of the different strategies used to cope with unusual situations, e.g. giving good or bad news, responding to them, making complaints and dealing with misunderstandings.

Following activity is an illustration of how Textbook B teaches to handle misunderstandings. There were three successive activities that focused on the strategy, one matching exercise, one listening and identifying the type of misunderstanding and one fill-in-the-blank activity. Below is the matching activity:

Complete sentences 1-8 with phrases a)-h).

1. Make sure you go to the King's Street in the centre of town because...
2. We mistakenly left home at 5:30 because...

3. I was expecting to see Pete, my old school friend, but...
 4. I didn't do the homework...
 5. We thought her birthday was 16th July but...
 6. I ended up at the wrong house because...
 7. When I called Mary Lou, she thought I was a stranger because...
 8. I answered the phone but...
-
- a) It was a **wrong number**.
 - b) I'd got the **wrong address**.
 - c) We **got the date wrong**.
 - d) **We thought** it started at six.
 - e) **It was a different** Peter Smith.
 - f) There are two streets **with the same name**.
 - g) She **didn't recognize** my voice.
 - h) I **didn't realize** it was for today.

With respect to the components of the discourse strategies of pragmatic competence such as connecting shorter elements into sequence of points and summarizing them, it is worth our notice that Textbook A does not cover them, at least not explicitly. Another component of discourse is coherence, which is almost equally covered in both of the textbooks.

The last criterion, ability to initiate, that is to get the floor, to maintain and close a conversation/discussion on a familiar topic is covered in both of the books. Managing discussion is covered equally in both of the books, taking part in a discussion appears in two units of Textbook A and does not appear in the other. Giving and supporting an opinion, which is part of any discussion, is covered in both textbooks equally.

CONCLUSIONS AND RECOMMENDATIONS

The present study demonstrates that textbooks are a good source for developing sociolinguistic and pragmatic competences and yet they alone cannot be totally relied on for teaching them for the following reasons:

- One of the textbooks (Textbook A) does not cover some important aspects of discourse strategies such as: summarizing main points, sequencing the main points and Textbook B does not emphasize turn-taking patterns in English.
 - One important aspect of sociolinguistic competence is expressions of folk-wisdom and Textbook B does not cover them adequately, they only appear in three different places throughout the book as sayings, idioms and proverbs. Understanding figurative meaning, expressions of values and beliefs does not receive adequate attention in Textbook B.
 - Both of the textbooks do not focus enough on teaching main everyday speech acts such as: apology, making requests, responding to request, agreeing/disagreeing etc.
 - Textbook A does not include any video material. Being able to communicate appropriately in specific social situations involves knowing non-verbal clues like gestures, as well; videos can be a good source for teaching them.
 - One of the textbooks (as mentioned in results part) focuses primarily on developing presentation skills, thus not emphasizing everyday communication skills. The other textbook emphasizes everyday communication skills and does not focus much on developing presentation skills. Communicative competence includes them both. Thus a textbook developing one aspect of communicative competence may neglect other aspects.
- The study found out other elements that are not part of the research question, but deserve to be pointed out:
- The communication activities need to include a wider range of topics; what is very relevant and interesting in one culture might not be so in another.
 - The grammar parts of the books are not as long as they used to be in the past and do not include too many rules and explanations like they used to before (say 10-15 years ago).

- Textbooks are very appealing in terms of their design and layout.
 - The unit structures are same throughout the book, being predictive might be good but it also might be boring.
 - The topics are appropriate for the target community.
 - The textbooks encompass cross-cultural issues, thus promoting cultural awareness.
- Recommendations for the teachers aiming at developing communicative competence:
- Teachers using these two textbooks should incorporate authentic materials such as: audio/video material, newspaper articles/ads, and short stories.
 - Activities such as role-play, project work, presentations on different topics and discussions may be incorporated into classes wherever possible.
 - Where possible, intercultural differences and the importance of accepting and respecting one another's culture should be explained and emphasized.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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THE RELATIONSHIP BETWEEN PROFESSIONAL VALUES, STUDENT'S SATISFACTION AND TENDENCY TO LEAVE THE SCHOOL

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ABSTRACT

The aim of this study is to determine to the relationship between the students' professional values, satisfaction and tendency to leave the school. The research was conducted at a nursing department of a health school with 211 nursing students. The study data were collected with Personal Information Form, the Nursing Professional Values Scale. The professional values score of the nursing students was found to be 3.64 (SS= .859), responsibility score to be 3.62 (SS=.775), prompt score to be 3.59 (SS=.771), human honor score to be 3.68 (SS=.757), autonomy score to be 3.68 (SS=.916) and total scale score to be 3.64 (SS=0.73). Professional values were positively correlated with students' satisfaction, but students' tendency to leave the school was not significant statistically. Consequently, it is determined that the students perceive important to professional values. Increasing of nursing students' perception about professional values ensure to increase their satisfaction.

Key Words: Nursing students, professional values, values, student satisfaction, intention to leave school, Turkey.

INTRODUCTION

Professional values refer to standards adopted by professionals and derived from ethical codes (Orak, 2005, Şişman, 2002) that guide vocational training and practices and influence beliefs and attitudes (Altun, 2003). Fundamental values that a nurse is expected to have are aesthetics, dedication, equality, freedom, dignity, justice and truth (Altun, 2003, Keskin and Yıldırım, 2006, Pang, Senaratana, Kunaviktikul, Klunklin and Mcelmury 2009).

Professional values are one of the factors that shape personal traits of a person (Gianfermi and Buchholz, 2011). They signify and shape behaviors, attitudes and beliefs of people. Moreover, professional values provide internal motivation and improve ethical responsibility and professional devotion (Peer and Schlabach, 2011). Therefore, each professional is at the center of performance and decision-making.

It is of utmost importance to encourage nursing professionals to acquire professional values so as to ensure the development of a professional identity and improve nursing practices (Moon, kim, kim ve lee 2014). Acquisition of professional values is only possible through formal education programs peculiar to professional practices

(Fung-Kam, 1998). Professional values are established through a well-developed curriculum and professional practice (Peer and Schlabach, 2011). Altun (2003) states that professional values of nursing students are elemental to improve their perceptions. Educational programs gradually increase the level of awareness and problem solving skills of nursing students, which will eventually increase their perception of professional values (Altun, 2003). Therefore, professional values adopted by nursing students are a significant output of educational procedures and a substantial indicator of the quality of education (Kaya, 2013, Kaya, Işık, Şenyuva and Kaya 2012).

Student satisfaction is another common indicator of the quality of education today. Student satisfaction refers to the degree to which student needs and expectations concerning educational programs and environmental factors are responded (Lieglar, 1997, Elliott and Shin, 2002). Satisfaction evaluation is typically based on a cognitive process in which individuals compare their prior expectations of outcomes with perceived performance (Elliott and Shin, 2002; Elliott and Healy, 2001). Studies have shown student satisfaction to have a positive impact on student motivation, student retention, recruiting efforts and fundraising (Baykal, Sökmen, Kormaz ve Akgün 2005, Petruzzellis, D'Uggento ve Romanazzi, 2006, Elliot and Shine, 2002).

Intention to leave school is usually defined as an intention to drop out from university (Duque, 2014). An analysis of intention to leave school provides significant data for the interventions to reduce the drop out rates (Taylı, 2008) The study results in literature suggest that intention to leave school results from poor adaptation to academic and social environment of the school (Duque, 2014). One of the principal reasons of intention to leave is considered to be low student satisfaction. Besides, results of relevant studies similarly demonstrate that low student satisfaction increases intention to leave school (Şimşek, 2011, Duque, 2014).

Professional values of students, student satisfaction, and intention to leave school have been already analyzed in several studies (Espeland and Indrehus, 2003, Thorpe and Loo, 2003, Orak 2005, Norman, Buerhaus, Donelan, Closkey and Dittus 2005, Rassin, 2010, Kaya et. al., 2012, Kaya, 2013). On the other hand, the correlation between these different phenomena, particularly the relation between professional values and student satisfaction and intention to leave school, has remained unclear. This study, therefore, particularly focuses on the correlation between professional values and student satisfaction and intention to leave school. The study results are considered to provide vital data to improve the quality of nursing curriculum.

METHOD

Study

This study was designed as a descriptive study in order to investigate the correlation between professional values, student satisfaction, and intention to leave school.

Study Universe and Sample

The study universe consists of student nurses (327 1st year, 2nd year, 3rd year and 4th year students) in a Nursing School in west Turkey. As all students in the study universe were included in the study, no sampling method was used in the study. The study data were obtained from 211 nursing students who were regularly attending school and consented to participate in the study. The mean age was 20.6 and 28.0% of the participants were 1st year students, 28.4% of the participants were 2nd year students, 28.0% of the participants were 3rd year students, 15.6% of the participants were 4th year students. It was further noted that 77.3% of the participants were female.

Data Collection Tools

The study data were collected with a Personal Information Form and Nursing Professional Value Scale-NPVS.

Personal Information Form

Personal Information Form was developed by researchers in line with the current literature and it consists of 5 items. The form contains information about age, gender, grade, satisfaction from being a student, and intention to leave school within the last year.

Nursing Professional Value Scale-NPVS

Nursing Professional Value Scale-NPVS was developed by Weis and Mary Jane Schank (2000) on the basis of the ethical codes of ANA. The scale was translated into Turkish by Orak in 2005 and its validity and reliability were tested. The scale is composed of five dimensions, dignity (11 items), responsibility (9 items), taking action (8 items), safety (4 items) and autonomy (4 items) and 36 items in total.

The total score of the scale was the sum of the scores of 36 items. The subdimension scores were calculated with the sum of each dimension; dignity (items 17-18- 19-28-29-31-32-33-34-35-36), responsibility (items 6-7-8-9-10-11-13-14-16), taking action (items 4-12-15-20-21-22-27-30), safety (items 1-2-3-5.), and autonomy (items 23-24-25-26) (Orak 2005).

The items were scaled with a 5 point likert scale as not important (1), slightly important (2), important (3), very important (4), and considerably important (5). The total score and subdimension scores were evaluated with arithmetic mean. Higher mean score indicate that nursing students place a stronger emphasis on professional values.

Orak (2005) analyzed the internal consistency and found that Cronbach Alpha coefficient was .97 (Orak 2005). The scale had been previously used by Kaya (2013) in a study titled "An Analysis of the Perception of Professional Values and the Job Satisfaction of Nursing Managers in Antalya" who found that total alpha coefficient was .91. The results of our study suggested that internal consistency coefficient was .97 for total internal consistency, .92 for dignity, .91 for responsibility, .89 for taking action, .82 for safety, and .88 for autonomy.

Collecting Data

The study data were collected between April-May 2013 after a permission in writing was granted by the school management. The nursing students were informed about the purpose and the confidentiality before handing out data forms. Those who consented to participate in the study and attended the class that day were delivered data forms and they were collected back after 30 minutes. The study data obtained from 211 participants were eventually analyzed.

Data Analysis

The study data were analyzed with SPSS 20.0 software and data reliability and validity were evaluated with Cronbach Alpha Coefficient. The demographic characteristics of participant students were analyzed with frequency, percentage, and arithmetic mean. Variance analysis (ANOVA) was carried out to evaluate whether or not the perception of professional values varied according to intention to leave school. The correlation between the perception of professional values and student satisfaction was analyzed with Pearson Correlation Analysis. Level of significance was taken as 0.05.

FINDINGS

Table 1: Distribution of Intention to Leave School and Satisfaction of Nursing students

Satisfaction	n	%
Satisfied	113	53.5
Partly	83	39.3
Dissatisfied	15	7.1
Intention to Leave School	n	%
Yes	12	5.7
No	158	74.9
Not Sure	41	19.4

The satisfaction levels of nursing students was analyzed (Table 1) and it was found that 53,5% of the students were satisfied and 39,3% of them were partly satisfied olduğu while 7,1% of the participants were dissatisfied. Their intention to leave school was also analyzed and it was noted that 5.7% of the students had an intention to leave school while 74.9% of them didn't express any such intention and 19.4% of the students said they weren't sure.

Table 2: NPVS Scores of Nursing Students (N=211)

NPVS	M	SS	Min.	Max
Safety	3.64	.859	1.75	5.00
Responsibility	3.62	.775	1.44	5.00
Taking Action	3.59	.771	1.75	5.00
Dignity	3.68	.757	1.82	5.00
Autonomy	3.68	.916	1.25	5.00
Total Score	3.64	.733	1.86	5.00

The mean scores of the scale were found 3.64 (SS= .859) for safety dimension, 3.62 (SS=.775) for responsibility dimension, 3.59 (SS=.771) for taking action dimension, 3.68 (SS=.757) for dignity dimension, 3.68 (SS=.916) for autonomy dimension and 3.64 (SS=0.73) for total score (Table 2).

Table 3: The Correlation between Student Satisfaction and the Perception of Professional Values of Nursing Students

NPVS	Student Satisfaction	
	r	p
Safety	.138*	.046
Responsibility	.130	.060
Taking Action	.200*	.003
Dignity	.157*	.023
Autonomy	.138*	.045
Total Score	.168*	.015

*p<0.05

The Correlation between Student Satisfaction and the Perception of Professional Values of Nursing Students was analyzed in Table 3. It was concluded that there was a positive weak correlation between Student Satisfaction and the Perception of Professional Values of Nursing Students (r=0.168, p=0.015) .

Table 4: The Correlation between the Perception of Professional Values and Intention to Leave School

NPSV	Intention to Leave School						F	p
	Yes (n=12)		No (n=158)		Not Sure (n=41)			
	M	SD	M	SD	M	SD		
Safety	3.52	1.041	3.69	.859	3.48	.795	1.183	.308
Responsibility	3.50	1.131	3.68	.770	3.44	.651	1.694	.186
Taking Action	3.40	1.097	3.66	.773	3.38	.608	2.584	.078
Dignity	3.50	.894	3.73	.777	3.53	.614	1.461	.234
Autonomy	3.41	.943	3.71	.916	3.62	.917	.665	.515
Total Score	3.47	.984	3.69	.747	3.48	.560	1.766	.173

The study data were analyzed to evaluate whether or not the perception of professional values varied according to intention to leave school (Table 4). The results of ANOVA analysis demonstrated that the perception of professional values didn't vary according to intention to leave school.

DISCUSSION AND CONCLUSION

Discussion

Professional values bear a crucial significance in professional qualification. Schooling has a vital function in developing professional values among students (Moon et. al., 2014) during which acquisition of professional knowledge and skills are deeply influenced by the school environment, teacher qualifications, curriculum, the value of students within educational practices, and attitudes of teachers. The schooling experiences of students will certainly affect their perceptions of the quality of education and their intention to leave school. Those who believe that their expectations are met continue their education while those who don't are disappointed and they consequently consider leaving school (Şimşek, 2011, Kantek, 2011). Today, higher education centers are expected to encourage Professional values among students, ensure higher students satisfaction, and create low levels of intention to leave school. This study, therefore, deliberately focuses on Professional values of students, student satisfaction, and their intention to leave school.

One of the striking findings of the study is that there is a positive correlation between professional values and student satisfaction ($r=0.168$, $p=0.015$). Although there aren't any studies who particularly indicate such a correlation, a literature review will bring forth studies on the correlation between professional values of nurses and job satisfaction. For instance, Prothero, Marshall and Fosbinder (1999) stated that job satisfaction of nurses and Professional values were certainly correlated (Prothero, Marshall ve Fosbinder, 1999). De-Cooman et. al. (2008), on the other hand, pointed out a positive significant correlation between professional values and job satisfaction (De-Cooman et. al. 2008). Given the fact that professional values eventually shape the attitudes, ideas, and perspectives of professionals, it can be reasonably expected that Professional values would also affect job satisfaction (Moon et. al., 2014, Peer and Schlabach, 2011). Thus, the correlation between professional values and job satisfaction that was confirmed with the results of this study can't be considered as a contingency.

It was also analyzed whether or not the mean scores of NPSV differed in accordance with the mean scores of Intention to Leave School. The results of ANOVA analysis showed that the mean scores of NPSV didn't suggest any difference according to intention to leave. However, student satisfaction is commonly regarded as the leading factor that is most influential on their intention to leave school (Şimşek, 2011, Duque, 2014, Kantek, 2011). Therefore, it is often concluded that factors that may affect student satisfaction may also affect intention to leave school, which didn't comply with the findings of our study which could be related to weak perception of professional values of the participants.

This study has also certain limitations one of which is that student satisfaction and Intention to Leave School were evaluated with bipolar scales. Therefore, findings obtained from such scales can only express general attitudes and perceptions of students. It is certainly suggested to conduct further studies that will present a more detailed analysis. Relatively poor study data on the correlation between professional values, student satisfaction and intention to leave school can be considered as another limitation of the study. Additionally, that the study was conducted in only one school and it included students from different classes was a particular challenge to generalize the study results to a wider population. Further studies are suggested to be repeated with larger sample groups.

Conclusion

It was concluded that this study provided substantial data on the correlation between professional values and student satisfaction and intention to leave school. Enhancing the professional values of nursing students will result in elevated student satisfaction. Finally, it was also reported that the perception of professional values didn't have a far reaching influence of their intention to leave school.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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UNIVERSITY STUDENTS' DIFFICULTIES AND MISCONCEPTIONS ON ROLLING, ROTATIONAL MOTION AND TORQUE CONCEPTS

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ABSTRACT

Rolling, rotational motion and torque is one of the main subjects of physics that the students have difficulties to comprehend. The aim of this study is to determine university students' difficulties and misconceptions about rolling, rotational motion and torque. The sample of the study consists of 100 students majoring mathematics education at Balıkesir University, Necatibey Faculty of Education, in the academic year of 2013-2014. The descriptive survey method was carried out in the study. There was one instrument, the Rolling, Rotational Motion and Torque Concept Test, consisted of 20 multiple-choice questions related to subject areas, in the study. The reliability coefficient of the test was found as $r=0.66$. After analyzing data obtained from the study, it was found out that university students have many difficulties understanding, applying and interpreting many fundamental concepts related to rolling, rotational motion and torque. It was also found that students' achievement levels were very low and they have many misconceptions about the subjects.

Key Words: University students, difficulties and misconceptions on rolling, rotational motion, torque concepts.

INTRODUCTION

Students come to the classroom before formal instruction with various ideas that mostly reflect their life or depend on their experiences (Widodo, Duit & Müller, 2002). These ideas developed by the students are generally intuitive and/or naive ideas that contradict scientifically accepted knowledge (Lautrey & Mazens, 2004). Students' naïve ideas about their environment are important because those kinds of ideas shape and affect their future learning. According to Ausubel's learning theories, the most important factor affecting learning is student's prior knowledge (Özmen, 2005). Ausubel (1963) and Gagne (1965) had highlighted the importance of those kinds of prior knowledge in learning science and some other core concepts in education. The student's prior knowledge gives us some information about their scientific beliefs and also their pre-conceived ideas. (Hewson & Hewson, 1983). Clement, Brown and Zeitsman (1989) indicated that students' prior knowledge might or might not conform to the scientifically accepted ideas. Although, it is very difficult to identify and reveal, misconceptions or alternative conceptions are necessary to confront them and also to improve teaching activity in a classroom setting (Brown and Clement, 1987; Hewson and Hewson, 1991; Terry, Jones & Hurford, 1985).

There is a little study of the literature related to concepts of rolling, rotational motion and torque. For example; Pol, Harskamp, Suhre, & Goedhart (2008) studied on high school and undergraduate students' ideas about torque concept. Rimoldini and Singh (2005) designed to reveal 669 undergraduate students' ideas about rolling and rotational motion and torque concepts. In their study, they concluded that students have difficulties to understand the torque concept and they generally confused about force and torque concepts. Furthermore, according to their conclusion, some of the misconceptions that encountered among students were: 'torque is force's angular state' and 'constant torque produce constant angular velocity'. Also they reported that some students confused about the role of torque on velocity or acceleration change. Another study related to torque was done by Klammer (1998). He identified from his study these misconceptions about torque concept: Students think that "every force acting on an object produces a torque" and "torque is the same as force and also has the same direction".

Bostan-Sariođlan and Küçüközer (2013) aimed to reveal the prior knowledge of 133 tenth grade students about torque, conservation of angular momentum and Kepler's second law of motion. In their study, they asked the students three open-ended questions related to torque, angular momentum and Kepler's second law of motion concepts. Students' prior knowledge about torque and angular momentum was conflicting with scientific ideas about torque and angular momentum and students had misconceptions about given all of the subject area as indicated before.

Palmieri and Strauch (1963), Williamson, Torres-Isea and Kletzing (2000) carried out about conservation of angular momentum. Palmieri and Strauch (1963) had been demonstrated from their experiment that students had many misconceptions about angular momentum. Some of were: "objects that move through the line do not have angular momentum" and "angular momentum is not a vector quantity."

Determining university undergraduate students' difficulties and misconceptions about rolling rotational motion and torque is very important to shape future physics classes to confront their difficulties and to eliminate their misconceptions.

PURPOSE

The purpose of this study is to determine university students' difficulties and misconceptions about rolling, rotational motion and torque concepts. To fulfill this purpose the following questions are posed:

Research Questions

1. What are the university students' difficulties and misconceptions about rolling, rotational motion and torque concepts?
2. Is there any significant difference between male and female students' rolling, rotational motion and torque conceptual test scores?
3. Is there any significant difference between two sections students' rolling, rotational motion and torque conceptual test scores?

Limitations

This research is limited to, the following;

1. Academic year of 2013-2014.
2. Total 100 students at Balıkesir University, Necatibey Faculty of Education
3. The subject of rolling, rotational motion and torque and related to conceptual test.

METHOD

Sample

The sample of the study has been chosen from 100 prospective mathematics teachers who take a general physics course at Balıkesir University, Necatibey Faculty of Education during the academic year of 2013-2014. The distribution of the sample according to branches is given in Table 1.

Table 1: The distribution of students according to the branches

Branch	Girl	Boy	Number of students (N)
2A	29	8	37
2B	9	7	16
3A	15	3	18
3B	22	7	29
Total	75	25	100

Instrumentation

In the study, there was only one instrument, related to Rotational Motion, Angular Momentum and Tork concepts. The test, consists of 30 multiple choice questions, was first introduced by Lorenzo, Rimoldini and Singh (2005). It is design to cover subject areas torque, moment of inertia, and rotational kinetics energy, angular acceleration, rolling, rolling with friction and sliding on incline plane. The detail distribution of questions related to concept area is given in Table 2.

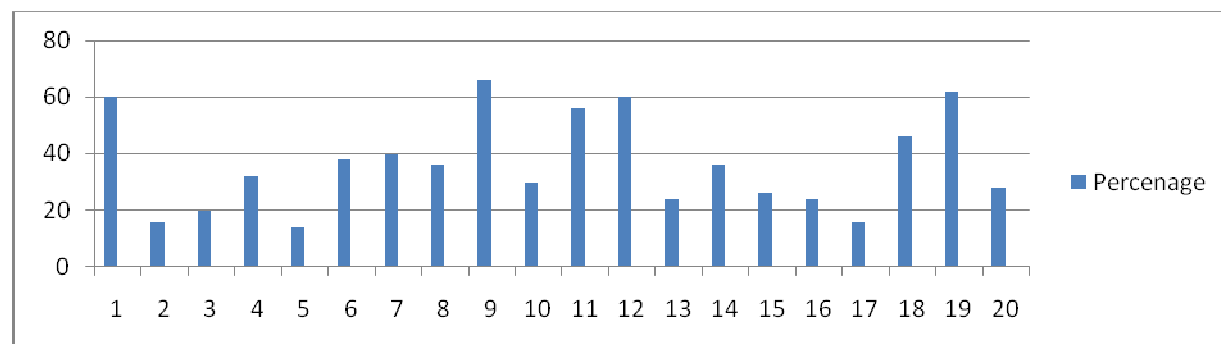
Table 2: The distribution of questions related to concept area in the test

Concepts	Questions regarding concepts
Torque	5, 8, 9, 10, 11, 17, 18, 19, 20,
Moment of inertia	4,15
Rotational kinetic energy	1, 2, 3, 16
Angular speed/velocity	5, 17
Angular acceleration	5, 10, 11
Rolling (relative motion)	6, 7, 16
Rolling (role of friction)	12, 13
Sliding on inclined plane	14

Procedures

After translating conceptual test into Turkish, the test controlled and checked by some physics instructors and then applied to 50 undergraduate students as a pilot study. According to students' responses reducing the 10 questions the final conceptual test, consisted of 20 multiple questions, was finalized to use in the study. And then this test was applied to 100 prospective mathematics teacher students. Applying and analyzing this test to students, the reliability of the final version of the test was calculated as $r=0,636$.

Difficulty coefficient is a measure of the degree of difficulty of the questions that make up a test. Difficulty factor has a value ranging from 0 to 1. When difficulty factor approaches 1 test question thought as easy, then it approaches 0, it is thought difficult (Demirci & Çirkinoglu, 2004). According to Rolling, Rotational Motion and Torque conceptual test, obtained from this study, difficulty coefficient was ranged between 0.16 and 0.66 and average difficulty level of 0,37 (see, Picture 1).



Graph 1: The Difficulty coefficient (in %) of rolling, rotational motion and torque concept test

Statistical Analysis

The analysis of the test was done using the SPSS 19 programme. To compare significant difference between male and female students' rolling, rotational motion and torque conceptual test scores, an independent t-test was used. Also to determine if there is any statistical difference between students' branches from test scores obtained from conceptual test one Way Anova Test and LSD (Fisher's Least Significant Differences) were used.

RESULTS

After analyzing data, students' average rolling, rotational motion and torque conceptual test score was found as 36,4%. Distribution of students' answer according to each question is given in the Table 3.

Table 3: The answers are given by students and their rates

Q	A (%)	B (%)	C (%)	D(%)	E(%)	C.A (%)
1	24	4	65	6	0	65
2	42	22	19	12	5	22
3	10	13	72	1	4	13
4	16	17	35	18	6	35
5	22	15	23	22	9	9
6	15	34	37	8	5	34
7	41	13	2	4	36	36
8	12	11	39	27	9	39
9	3	27	10	55	4	55
10	10	3	6	33	34	33
11	14	10	55	5	13	55
12	12	11	15	2	51	51
13	23	14	19	26	10	19
14	48	17	12	3	13	48
15	5	14	25	31	20	25
16	28	14	22	24	9	24
17	7	25	19	36	7	25
18	12	14	13	13	44	44
19	59	17	10	6	5	59
20	35	12	19	3	28	35

As shown in Table 3, in general, all of the correct answer percentage was below the 50%. The most correct answer is given in question 1 with 65% while at least correct answer is given in question 5 with 9%. This question is related to concept of torque. The test results reveal that students lack a coherent understanding of torque concept and have difficulty applying it in different physical situations. Some detail results according to concept by concept are given the following part.

Torque (Question 5,7,8,9,10,11,17,18,19,20)

The least correct answer rate was given in 5th question with 9%. It can be inferred that the definition or meaning of torque were unclear to many students. Repeatedly concept of torque is replaced by the concept of force and many considered torque and force are equivalent concepts. According to this, it can be said that students could not understand relationship among the concepts of angular velocity, angular momentum and angular acceleration. The following were typical explanations from students that could be seen as misconceptions: "constant torque forms constant angular velocity", "constant torque responsible for rotational balance" and "constant torque forms constant angular momentum". The rate of correct answers for other questions in this group are: 36% for item 7, 39% for item 8, 55% for item 9, 33% for item 10, 55% for 11th

questions, 25% for 17th questions, 25% for 18th questions, 44% for 19th questions, 59% for 20th questions. 9, 11 and 19th

Moment of Inertia (Question 4,15)

The correct answer rate for 4th question was 35% and for 15th question was 25%. Student responses to the questions concerning moment of inertia revealed that most students were uncertain about this idea. For instance, many did not know that moment of inertia is a function of the mass distribution about an axis, and that the rotational kinetic energy depends on moment of inertia and not just on the total mass of the system. Student responses to questions related to rotational kinetic energy showed that students had great difficulty with the exact reliance of the kinetic energy on the moment of inertia and the angular speed of the object. The following were typical explanations from students that could be seen as misconceptions: "The larger the mass of a wheel is, the greater the rotational energy is.", "The lighter wheel has more rotational kinetic energy...because it's moving faster", "moment of inertia depends on rollers' angular acceleration" and "moment of inertia does not depend on rollers' mass".

Rotational Kinetic Energy (Question 1,2,3,16)

The correct answer rate for the 1st question was 65%; 2nd question was 22%; 3rd question was 13% and 16th question was 24%. Student responses to questions related to rotational kinetic energy showed that students had great difficulty with the exact reliance of the kinetic energy on the moment of inertia and the angular speed of the object. The following were typical explanations from students that could be seen as misconceptions: "The larger the mass of a wheel is, the greater the rotational energy is.", "The lighter wheel has more rotational kinetic energy...because it's moving faster", "moment of inertia depends on rollers' angular acceleration" and "moment of inertia does not depend on rollers' mass".

Angular Speed/Velocity and Angular Acceleration (Question 5,10,11,17)

Students also shared common difficulties on questions related to torque, angular acceleration and angular speed/velocity. It is clearly seen that students have misconceptions about angular velocity and angular acceleration. The lower rate of correct answer from 5th question supports this idea. The following were typical explanations from students that could be seen as misconception: " a constant torque forms constant angular velocity and angular acceleration".

Rolling, Sliding (Question 6,7,12,13,14,16)

Many questions associated with rolling motion investigate student understanding of relative motion concepts. Students had great difficulty distinguishing between the speeds of different points on a rigid wheel with respect to the center of the wheel or ground. Most students did not recognize that the bottom point of a rolling wheel was at rest with respect to the ground. The following were typical explanations from students that could be seen as misconceptions: "The instantaneous velocity with respect to the ground is always tangent to the rolling circle." and "The speed of all points should be the same with respect to ground because they are all on the same wheel which is rolling.". Many rolling motion questions also related to the condition for rolling and the roles of friction and other parameters on the rolling motion. A large fraction of students had difficulty with these questions and they believed that friction must slow any kind of motion. The rates of correct answer for other questions are: 34% for item 6; 36% for item 7; 51% for item 12; 19% for question 13; 48% for item 14; 24% for item 16.

In order to determine difference between the male and female students' rolling, rotational motion and torque conceptual test scores the independent sample t-test was used. Male and female students' average test scores and standard deviations are given in table 4 and the summary of independent t-test results are given in Table 5.

Table 4: Male and female students' average test scores and standard deviations

	N	Average	Std. Deviation	%
Female	75	6.96	2.704	34.8
Male	25	8.24	3.455	41.2

Table 5: The summary of independent sample t-test results by gender

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Top Equal variances assumed	2.125	.148	-1.907	98	.059	-1.280	.671
Equal variances not assumed			-1.688	34.330	.100	-1.280	.758

p>0.05

According to the independent t-test results shown in Table 5 it can be concluded that there was not statistical significant difference between male and female students rolling, rotational motion and torque conceptual test.

Also, in order to determine if is there any significant difference among students' test scores in different branches on rolling, rotational motion and torque conceptual test scores one way ANOVA test was conducted. The summary table from this result is given in Table 6.

Table 6: The one way Anova test results between groups

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	110.483	3	36.828	4.729	.004
Within Groups	747.677	96	7.788		
Total	858.160	99			

*p< 0.05

According to one-way ANOVA Test results based on students branches on rolling, rotational energy and torque test score, there was a statistical significant difference among branches. In order to determine statistical differences between branches the LSD "post hoc" test was performed. The summary of LSD test results is given in Table 7.

Table 7: The LSD test results between groups

(I) 3	(J) 3	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
2A	2B	-1.424	.835	.091	-3.08	.23
	3A	.458	.802	.569	-1.13	2.05
	4B	-2.142*	.692	.003	-3.52	-.77
2B	2A	1.424	.835	.091	-.23	3.08
	3A	1.882	.959	.053	-.02	3.79
	4B	-.718	.869	.411	-2.44	1.01
3A	2A	-.458	.802	.569	-2.05	1.13
	2B	-1.882	.959	.053	-3.79	.02
	4B	-2.600*	.837	.003	-4.26	-.94
3B	2A	2.142*	.692	.003	.77	3.52
	2B	.718	.869	.411	-1.01	2.44
	3A	2.600*	.837	.003	.94	4.26

*. The mean difference is significant at the 0.05 level.

According to ANOVA and LSD Test results, there is a significant difference between 3A and 2B and 4B and 3A about rolling, rotational motion and torque conceptual test scores.

CONCLUSION

Rolling, rotational motion and torque is one of the main subjects of physics that the students have difficulties to understand. The current study is designed to determine university students' difficulties and misconceptions about rolling, rotational motion and torque concepts. The sample of this study was chosen from department of mathematics education at Balıkesir University, Necatibey Faculty of Education during the academic year of 2013-2014. The Rolling, Rotational Motion and Torque Concept Test, consisted of 20 multiple-choice questions was conducted to 100 prospective mathematics teachers. The reliability coefficient of the test was found as $r=0.66$. In general, all of the correct answer percentage from the test was below the 50%.

In order to determine difference between the male and female students' rolling, rotational motion and torque conceptual test scores the independent sample t-test was used. According to the independent t-test results there was not any statistical significant difference between male and female students rolling, rotational motion and torque conceptual test.

Also, in order to determine if is there any significant difference among students' test scores in different branches on rolling, rotational motion and torque conceptual test scores one way ANOVA test was conducted. According to one-way ANOVA Test results based on students branches on rolling, rotational energy and torque test scores, there was a statistical significant difference among branches. In order to determine statistical differences between branches the LSD "post hoc" test was performed. According to ANOVA and LSD Test results, there is a significant difference between 3A and 2B and 4B and 3A about rolling, rotational motion and torque conceptual test scores.

Overall, students have some difficulties and misconceptions about fundamental concepts such as rolling, moment of inertia, rotational energy and torque concepts.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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ADOLESCENTS' LIFE SATISFACTION: RISKY BEHAVIORS AND HOPELESSNESS

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ABSTRACT

The aim of this study is to determine the contribution of risky behaviors and hopelessness in predicting adolescents' life satisfaction. Data of the study is obtained from a total of 290 students including 150 girls (51.7%) and 140 boys (48.3%) attending high school. In this study, Life Satisfaction Scale, Beck Hopelessness Scale and Risky behaviors Behaviour Scale are employed. As for data analysis, the Pearson Product-Moment Correlation Coefficient and the Hierarchical Regression Analysis are employed. According to analyses, it was determined that adolescents' hopelessness and risky behaviors predicted their life satisfactions positively. This result reveals that adolescent' risk behaviors and hopelessness decrease as their life satisfaction increases. In this sense, it is possible to contribute to decrease adolescents' risky behaviors and hopelessness by means of school-based prevention programs that focus on increasing adolescents' life satisfaction.

Key Words: Adolescence, life satisfaction, risky behaviors, hopelessness.

INTRODUCTION

In recent years, it can be seen that several studies have been conducted related to the positive psychology that focuses on the positive features of individuals. Rather than focusing on individual problems, positive psychology focuses on strong aspects of individual. According to Snyder & Lopez (2002), concepts such as hope, happiness, meaning in life, optimism, life satisfaction and humor are among the topics of positive psychology. As a concept, life satisfaction was first defined by Neugarten, Havinghurst and Tobin (1961) as the result obtained by a person through comparing his/her expectations, namely what s/he wants, with his/her holdings, namely, what s/he owns. Peterson, Park and Seligman (2005) indicate that life satisfaction and happiness consist of their dimensions including life satisfaction, finding meaning in life and connecting to a situation, person or lifestyle. Considering these definitions, we can say that life satisfaction covers general satisfaction of an individual from life. Life satisfaction is an individual's subjective judgment regarding his/her life and includes a detailed and comprehensive evaluation about life (Veenhoven, 1996). According to Diener and Seligman (2004), life satisfaction emphasizes cognitive aspect of subjective well-being.

Life satisfaction includes processes such as positive effect, satisfaction, self-renunciation, involvement and meaning of life (Diener & Seligman, 2004). According to Yetim (2001), if an individual Life satisfaction experiences and positive feelings more and negative feelings less, then this means his/her subjective well-being level is relatively high. An analysis of studies on life satisfaction reveal that high life satisfaction of infant and adolescents is positively related to their social, emotional and educational adaptation (Diener & Seligman, 2002; Gilman & Huebner, 2006; Huebner, Suldo, Smith, & McKnight, 2004). It was found that high life satisfaction increases positive feelings experienced by individuals and facilitates coping with stressful situations (Gilman & Huebner, 2006); that adolescents with higher life satisfaction tend to be more successful and they have better attendance and attitudes towards school (Suldo & Shaffer, 2008); that it is negatively associated with problems such as anxiety, Drug and alcohol abuse and aggression among adolescents (Gilman & Huebner, 2003). Ash and Huebner (2001) identified that negative events experienced by students reduce their life satisfaction; adolescents with higher life satisfaction, do not show any emotional and behavioral problems, concordantly, Gilman and Huebner (2006) in their research, suggested that adolescents exhibiting bullying behaviors are weak in terms of their well-being and they experience difficulty in social adaptation, and high levels of anxiety, depression, suicide (Karaman Kepenekçi & Çinkır, 2006). In addition, it has been emphasized that life satisfaction is associated with violent behaviors, gun carrying, gun carrying at school, physical assault at school, drunk driving, intentional harm at school, not feeling safe at school and shooting (Valois, 2001).

During adolescence period, there is an increase experienced in tendency to risky behaviors (Aras, Günay, Özcan & Orçın, 2007; Bulut, 2010; Jessor, 1991; Ögel, Tari & Eke-Yılmazçetin, 2006; Siyez, 2007; Bayar & Sayıl 2005). In related studies, among risky behaviors; lead to unintentional injuries (not to wear seat belts, drunk driving, etc.) and behaviors that cause violence (to bear arms, to be involved in a fight), tobacco, alcohol and drug abuse, risky sexual behaviors that cause pregnancy or sexually transmitted diseases, unhealthy eating habits, physical inactivity, truancy at home or school, lying, theft, depression, suicide, anti-social behaviors are notably emphasized (Adams & Berzonsky, 2003; Haugaard, 2001). The Problem Behavior Theory (Jessor 1991), describe problem behaviors (drinking, smoking, illicit drug use, anti-social behaviors, precocious sexual intercourse) and based on protective and risk factors (Jessor, 1991; Jessor, Turbin & Costa, 1998; Siyez, 2006; 2007; 2009).

While emphasizing positive status of life satisfaction in terms of life as a whole (Veenhoven, 1996); negative thoughts, expectations of failure are concepts that accompany the concept of hopelessness (Dilbaz & Seber 1993; Abramson *et al.*, 1989). In certain studies examining the life satisfaction, it can be seen that there is a significant relationship between hopelessness and life satisfaction (Gündoğar *et al.*, 2007). Hopelessness can be associated with life satisfaction regarding the fact that an individual develops negative expectations about the future and hopelessness means attributing wrong meanings to life without any realistic reasons (Beck *et al.* 1974).

Adolescence is one of the most important development period in individual is also known as an interim period from childhood to adulthood. Adolescents, in this period, grow and mature physically, mentally, cognitively, socially and emotionally. In this period when a rapid change is experienced in various domains, it is also necessary for adolescents to cope with several problems. According to Jessor (1991), adolescent's risky behaviors are those preventing him/her to perform development tasks and roles expected from him/her, from feeling sufficient and successful, and from passing onto adulthood period properly. Risky behaviors restrains adolescents to become responsible adults by threatening adolescents' well-being (Lindberg, Boggess & Williams, 2000; McWhirter *et al.*, 2004).

It can be said that risky behaviors affect adolescents' life satisfactions. Psychological counselors at schools and especially those working with adolescents may feel need to evaluate adolescents' risky behaviors and hopelessness levels and increase their life satisfactions. Furthermore, in terms of planning of both preventive guidance and crisis intervention exercises, it is also important that psychological counselors working with adolescents are familiar with risky life experiences regarding adolescence period. Based on these facts, this study will be contributed to psychological counselors working in the field and to literature. The purpose of this research is to reveal whether adolescents' risky behaviors and their levels of hopelessness significantly predict their life satisfaction.

METHOD

Research design

This study was designed in the relational screening model.

Participants This research was conducted with the attendance of a total of 290 adolescents comprising of 150 girls (51.7%) and 140 boys (48.3%) who attend 9th, 10th and 11th grades in various high schools around Burdur Province as of 2013-2014 academic year. Grade-based distribution of adolescents was as follows: 104 of them (35.9%) attending 9th grade, 95 (32.7%) attending 10th grade and 91 (31.4%) attending 11th grade.

Data collection instruments and data collection *Life Satisfaction Scale*: was developed by Diener *et al.*, (1985) and composed of five items relating to life satisfaction, each of which was graded in 7 rates. Aiming at scaling general life satisfaction, the scale is suitable for all ages ranging from adolescents to adults. Adaptation of the scale into Turkish culture was implemented by Köker (1991). Test-retest reliability coefficient of the test was found to be .85. Though in the study conducted by Yetim (1993), Cronbach's alpha internal coefficient of the test and test-retest reliability were found to be .86 and .73 respectively. Within the scope of this study, Cronbach's alpha value of the scale was found to be .88.

Risky behaviors Behavior Scale: was a 25-item scale developed by Bayar and Sayil (2005). The scale includes risky behaviors (ie., unlicensed driving, smoking, carrying cutters like knife, jack-knife etc., spending more than necessary, a high-risk sex practice) aiming at measuring in adolescents in 12 to 21 age range. The scale is rated as one-dimensional and 5 point Likert. The Cronbach's Alpha internal consistency coefficient of the scale was determined as .81. High score obtained from the scale suggests occurrence of high risky behaviors. Within the scope of this study, Cronbach's alpha value of the scale was found to be .86.

Beck Hopelessness Scale: was developed by Becker *et al.* (1974) and is used to determine an individual's negative expectations for the future. Adaptation of the scale into Turkish culture was conducted by Seber *et al.* (1993) and Durak (1993), and in the in the research done towards determining validity and reliability of the scale, Durak (1993) found the alpha reliability coefficient as $\alpha=0.85$ and item-test correlations (as $r=0.31$, $r=0.67$). Seber *et al.* (1993), in their reliability study for implemented hopelessness scale, revealed that Cronbach's alpha coefficient was $\alpha=0.86$, item-total point correlations varied between 0.07 and 0.72 and point variation (range) was between 0-20 in the scale consisting of 20 items. Questions constituting the scale cover emotional, motivational and cognitive dimensions. The Scale consists of three factors including feelings about the future, loss of motivation, and hope (Beck *et al.*, 1974). 11 of items in the scale get 1 point for the "yes" option and 9 of them gets 1 point for the "no" option. When received points are high, hopelessness in the individual is considered as high.

Data Analysis

In the study, Regression Analysis was applied to reveal how much risky behaviors and hopelessness variables predict adolescents' life satisfactions. To provide regression assumption for the analysis of research, primarily the Durbin Watson value was considered to test autocorrelation in the model and this value desired to be between 1.5 and 2.5 (Kalaycı, 2008) was found to be 1.580 in this study. Accordingly, it can be seen that there are no autocorrelation in the model, standard errors of b coefficients are very small and regression assumption is attained. Furthermore, end data in the data set were examined and 15 determined ends were removed from the data set.

FINDINGS

In accordance with purposes of the study, findings related to descriptor statistics and correlation values, and the regression analyses respectively were provided.

Table 1: Pearson Correlation Coefficient Between Life Satisfaction, Risky behaviors and Hopelessness

Variables (n=290)	X	Ss	1	2	3	4	5	6
1- Life Satisfaction	22.37	6.37	1					
2- Feelings about the future	2.75	1.03	-.396	1				
3- Motivation loss	2.67	1.73	-.332	.643	1			
4- Hope	6.99	.143	.218	.012	.046	1		
5- Hopelessness	12.74	3.62	-.222	.649	.687	.096	1	
6- Risky behaviors	42.55	15.08	-.180	-.013	.008	-.043	-.043	1

*p<.05; **p<.01

As can be seen in Table 1, while negative oriented significant correlation between adolescents' life satisfaction scores and risky behaviors behavior ($r=-.180$, $p<0.01$), hopelessness ($r=-.222$, $p<.01$) and among hopelessness subscales, feelings about the future ($r=-.396$, $p<.01$) and motivation loss ($r=-.332$, $p<.01$) was found; among hopelessness sub-dimensions, positive oriented significant correlation was found with hope ($r =.218$, $p <.01$).

Table 2: Multiple Regression Analysis Results towards the Relationship between Adolescent Life Satisfaction and, Risky behaviors and Hopelessness

Model	R	R2	R2 Change	F	F Change
1	.48	.23	.23	20.727*	20,727
2	.50	.25	.03	19.319*	10,829

*p<.01

Analyzing results of regression analysis in Table 2, Models I and II constructed in the study were observed to be significant ($F = 20.727$, $F = 19.319$, $p<.01$). It can be seen that all variables predict life satisfaction with a 25% variance explanation percentage. It can be seen that hopelessness variable included in the first step contributed with an explanation percentage of 23% and in the second step, risky behaviors variable contributed significantly to the model with 3%. Analyzing total point of hopelessness entered in the first step and which ones among hopelessness sub-dimensions contributed to the model (future related feelings and expectations, loss of motivation and hope), it can be seen that feelings about future and expectations, motivation loss and hope variables significantly contribute to the model (respectively $\beta=-.2136$ $t=-4714$, $\beta=-.743$, $t=-2636$, $\beta=9736$, $t=4.184$, $p<.01$), the total score of hopelessness was found not to contribute significantly ($\beta=.212$, $t=1.549$, $p>.05$). Risky behaviors variable entered in the second step is observed to contribute significantly to the model ($\beta=-.072$, $t=-3291$, $p<.01$).

CONCLUSION AND DISCUSSION

In this study, the relationship between adolescents' life satisfaction and risky behaviors and hopelessness is analyzed. According to the research findings that adolescent' life satisfactions are predicted on a significant level by risky behaviors and hopelessness variables and all variables explain life satisfaction with a 25% variance explanation percentage. Considering the significant contributions of variables to the model, emotional and expectations regarding the future, motivation loss and hopelessness variables contribute to the model significantly, however, hopelessness total point does not contribute significantly.

Comparing these findings with the relevant literature, initially it was determined that there is a significant level of relationship between adolescents' life satisfaction and risky behaviors, and as life satisfaction increases, risky behaviors decreases. As highlighted in findings of researches in which this result is supported, it was determined that risky behaviors are related with adolescents' well-being (Lindberg et al., 2000; McWhirter et al., 2004); high life satisfaction in children and adolescents is important for their adaptation progress (Diener & Seligman, 2002; Gilman & Huebner, 2006; Huebner et al., 2004); make it easier to cope with stressful events

(Gilman & Huebner, 2006); and negatively correlated with problems such as anxiety, substance abuse, alcohol usage, aggression (Gilman & Huebner, 2003). Similarly in a research by Suldo & Shaffer (2008), it was revealed that high life satisfaction is correlated with school success, attendance and positive attitude towards school.

In parallel with all these research results, it was determined that adolescents with lower life satisfaction display clinically emotional and behavioral problems (Gilman & Huebner, 2006); and they experience psychological problems including high level of anxiety, depression, suicidal thoughts, and social adaptation problems such as excessive bullying behaviors, dislike for school, and loneliness (Karaman et al., 2006; Rigby, 2002; 2004; You et al., 2008).

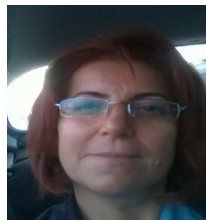
In other findings of the research, it was determined that there is a significant level of relationship between adolescents' life satisfaction and hopelessness, and as life satisfaction increases, hopelessness also decreases. Regarding this result, life satisfaction is correlated with positive evaluations and results about life (Diener & Seligman, 2002); hopelessness is related to negative results such as negative expectations for future, believing in impossibility of defeating failures and problem solving (Beck *et al.* 1974; Dilbaz & Seber 1993; Abramson *et al.* 1989). In this respect, hopelessness is expected to affect life satisfaction in adolescents because it is related to pessimism, being unable to act, the inability to sustain jobs and feelings of guilt. This case, regarding risky behavior, can be related from the point of behaviors such as violent behaviors, gun carrying, gun carrying at school, physical assault at school, drunk driving, intentional harm at school, not feeling safe at school and shooting (Valois, 2001). Based on the above mentioned findings, in this study, adolescents' subjective well-being and life satisfaction that have important role in development progress of adolescents were analyzed from the point of their risky behaviors experiences and hopelessness. However, the need to examine the issue multidimensionality is emphasizes once again with this research.

In conclusion, this study reveals that adolescent' risky behaviors and hopelessness decrease as their life satisfaction increases. In this sense, it is possible to contribute to decrease adolescents' risky behaviors and hopelessness by means of school-based prevention studies that focus on increasing adolescents' life satisfaction. Accordingly, school psychological counselors can take into account the contribution of life satisfaction of adolescents and hopelessness while evaluating risky behaviors in adolescents.

Among limitation to this study, in addition to the fact that all adolescents in the study are from those attending high school, there are not enough number of studies in Turkey to compare research findings with distinct sample groups. Despite these limitations, this research may contribute to studies conducted towards reduction of risky behaviors mainly for experts operating in fields of psychological counseling and guidance in our country.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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COLLABORATIVE LEARNING IN THE FINNISH EDUCATIONAL SYSTEM: BRAZILIAN TEACHERS' PERSPECTIVES

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ABSTRACT

This paper focuses the model of social-constructivism employed in the Finnish education system and the learning methods, based on the social construction of knowledge. The aim of this work is to show the collaboration as a methodological strategy for learning and the main aspects of collaborative learning of the Finnish education system. The methodology used was based on the Brazilian teachers' observations in different learning environments, based on semi-structured interviews in different educational levels. Based on the partial results, the collaboration is used as a teacher's strategy, involving students' autonomy and participation on the learning process. Collaborative learning in Finland is based on the process-perspective, since it works better when communication and verbal reflection between students happens, producing a better interaction, more social connection and creative engagement during activities.

Key Words: Collaborative Learning; Social-Constructivism; Finnish Education System.

INTRODUCTION

The social-constructivist model discusses the learning methods from the teachers' experiences in the world; therefore, for this theoretical view, learning is a fundamentally social phenomenon. According to Freire (2006), it is impractical to think that all person has to learn and to be "built" individually, without the aid of others (Freire, 1996).

Collaborative learning in the educational environment has specific goals and objectives, among which are the promotion of cognitive and social development group, stimulating critical thinking, discussions and reflections of students, the use of the lifelong learning idea, increased self-esteem, affectivity and motivation of students for educational activities Otsuka (1999). Collaboration can also be seen as a methodology for learning as highlighted by Bruffe (1993) that addressed collaboration as a strategy for teacher use in the classroom, where this would involve the students' autonomy and participation of all those involved in learning process.

Based on this, the aim of this paper is to contribute with Brazilian teacher's perspectives of the collaborative learning in the Finnish educational system both based on the observed methods used in Finnish classes and on questionnaires applied to the International Business bachelor degree course at Tampere University of Applied Sciences (TAMK) in Tampere/Finland.

METHODS USED IN FINNISH CLASSES TO DEVELOP COLLABORATIVE LEARNING ENVIRONMENTS

As part of the process of understanding collaborative learning, more than 60 different kinds of classes were observed and described. These classes contemplated different fields of knowledge such as: music, languages engineering, arts, business, computer science, etc. They also contemplate different level of studies such as: vocational schools upper-secondary schools, under-graduation students, master classes and also some classes in a vocational school for special needs. Although most of the classes observed were presential, some online courses and classes were also observed and are part of this analysis

The focus on all these observations was to see if collaborative learning was been applied in all courses and classes and how it was applied into class. In addition to that, whenever collaborative learning was used, the methodology involving this concept was described and analyzed so that some of the methods and materials used in Finnish class to create/establish a collaborative environment among students were more could be better described and, in the future, applied in different realities. In this section, some of these strategies will be described and discussed.

Blogs and social media

One of the materials used by teachers to get to know students better and motivate themselves to know each other better is the blog. In many classes and in informal conversations, teachers and students referred to it as the best way of getting to know students' hobbies, talents, different interests and personalities. Due to that, dividing students in groups with different abilities and interests was easier. In their personal blogs, students could write descriptions about themselves and what they wish to learn and achieve in a specific course. The students can also share useful ideas and research material that they did. Assessments can also be posted in this blog as a way of sharing them with the other colleagues. In many cases, the course itself had a blog in which teacher shared the material that considered interesting and the tasks he/she expects students to do. It is a very fast way of communication with students and also a way of keeping documents and ideas in a single place, under labels that helps future use of the information posted there, as well as from the comments done by others over a certain topic.

Social Medias, such as Facebook, Twitter and others are also a very common tool used in class. In many of the classes observed, students had their groups closed community on Facebook in which they shared their tasks, projects and specially their doubts and questions. In this space, groups had a very strong and active interaction commenting on each other's tasks, production and solving problems.

Group work

Together with blog writing, group work were the two most used strategies to create collaborative learning among students. In most of the courses, after students know each other's characteristics and abilities, they divide themselves into groups that will be the same during all term. In many classes, teacher, after a brief explanation about the topic of the class, gives to the groups a specific task that can be the same for all groups or personalized for each group, depending on the topic of the class. Students have a limited period to develop their task and, will present it in the end of the class. Some of the tasks observed were related to the development of a researching strategy, discussing and solving some cases and even producing a small research during class, for instance. All of them developed by students without teacher's interference.

This kind of approach is centered in students' needs and helps creating a collaborative environment, once students know each other in a deeper way, which helps improving trust and motivates students to use their talents in benefit of the group. In this sense, collaborative environments transforms learning in a space in which failures and difficulties are less important than qualities. All students can contribute with the work in the

best way possible. In this sense, difficulties can be solved with others students help in the exchange of experience and knowledge among them. Each one in the group has a different and important role that is related to his/her abilities. Due to that, in each task all group has to work together using their best qualities and keeping a team spirit to accomplish them. Teachers, in this sense, would be their coaches guiding the work and helping them solving conflicts and struggling moments during projects. In this context, learning is not a teacher's responsibility anymore, but it is a group task.

Learning Cafe and Aquarium

Both this activities are very popular and were present in at least 7 of the 60 classes observed. Both of them are alternatives for the established group work.

Learning Cafe consists in station in which one student plays the mediator of the discussion. In each station, there is a statement or a different activity to be discussed with other students. All the students, apart from the mediators, are divided in groups and should discuss with the mediator about the topic and, later on, the group will move on to the next mediator and discuss the next topic. The mediator should stay in the same place and whenever he receives another group he/she should summarize what was discussed in the group(s) before and encourage the new group to (dis)agree with what was said before. All the ideas that the group come up with should be written down in a poster that will be presented to the class by the mediator. This strategy helps students to create, in a collaborate environment, a web of ideas that can later be related in such a way that they can build arguments to sustain or to go against the ideas that were presented. Other possibility for this activity is its online version. Each group of students would have to talk and discuss about a certain aspect of a theory or statement. All the ideas should be placed in an online document, in a shared online platform, like Google Drive, for example. After a specific time, "the view" would rotate throughout the groups and other ideas and views can be placed in the same document as an addition to the already existing ones. Whenever each group receive its file again, it's time for the mediator to compile the ideas and together with his/her group, organize the ideas and do an online presentation or a summary of what was discussed and the conclusions of the different groups about that topic.

In the Aquarium, students are going to be divided into different tasks. A statement will be given and two students should defend it, while two others should depreciate it (denominated "debaters"). Meanwhile they do that, each one of the debaters will have a student observation how arguments are being built during that presentation and/or discussion. At the end, the other students should be able to, using the arguments that were already used and other new ones, to position themselves in relation to the given statement. Observers should give their feedback to debaters and try to help them to defend their position in a better way. Debaters will also expose his/her difficulties and try to reveal finally their real opinion about the topic.

Pitching

In some classes, students individually or as a group, should present the conclusion of the task they have been producing in a small limited amount of time. Before the presentation, teacher assigns three different students to give feedback to the presenter. The first one should only comment on the positive aspects of the presentation. The second one should concentrate on the form it was done and the third one should present some ideas for the points that has been noticed that weren't that good in the presentation. Student that is giving the speech shouldn't defend himself and only listen to the ideas proposed. After all students have presented, the second round of presentations begins. Students are encouraged to present the same results again but now taking into account all the feedback that they had on the first presentation. In none of the activities, teachers gave their feedback and not even were asked for it. In this sense, students were the ones to help and support each other so that they could learn more about how to do it and how to receive feedback from others.

METHODOLOGY

The goal of this research was to investigate about collaborative learning in Finland. After some classes observations to understand and see how collaborative learning has been being used in classroom, some

questionnaires were applied to the International Business bachelor degree course at Tampere University of Applied Sciences (TAMK) in Tampere/Finland on October/2014, where 24 undergraduate students answered. The students' age vary between 20-29 years old (29% men and 71% women).

This paper is a previous study, to complement the authors' perspective. As a possibility for future works, this questionnaire might be applied in a large group of students so it can be statistically relevant. It can be also applied to teachers.

RESULTS

The analysis was based on the most representative answers. In the first question, when asked about the challenges of collaborative tasks, all students highlighted the difficulties on spreading the workload for all the group members equally and on matching timetables.

Other important question was about the pros and cons of the collaborative tasks, where most of the students highlighted as pros, the process of learning and finding answers together. As cons, the students highlighted the difficulties on finding time for meetings and one of the students highlighted that constant collaborative tasks were "annoying".

The third and last question was "how collaborative works helps your learning process". The students highlighted the possibility of getting different points of view when comparing with an individual activity and one student answered the possibility of learning everything in practice helping to understand the theory.

The Figure 1 shows a concept map that summarizes the answers of the research proceeded.

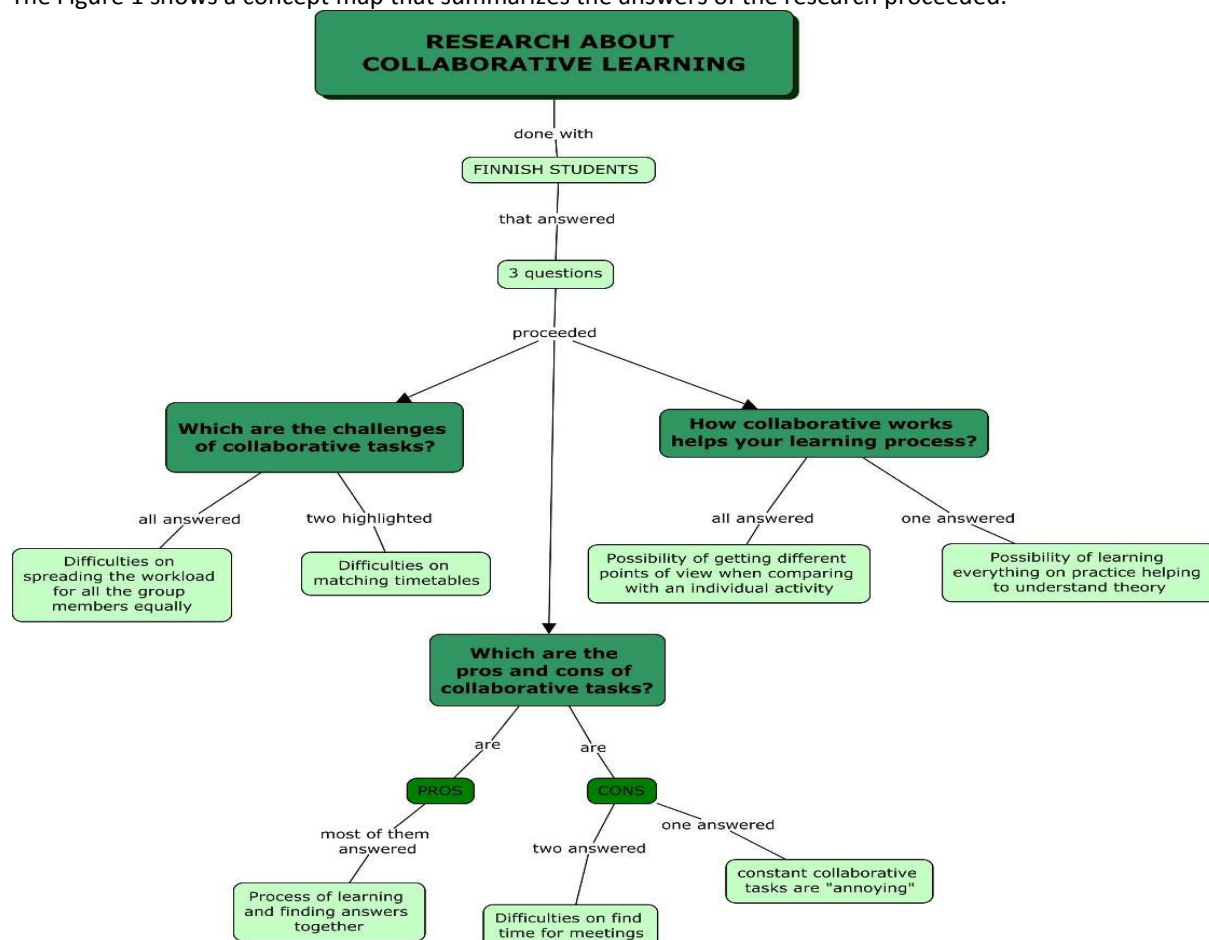


Figure 1: Concept map summarizing the students answers

CONCLUSIONS

The paper has focused on the social-constructivism employed in the finish education system and the learning methods, based on the social construction of knowledge.

From all the classes that were observed, collaborative learning is present in almost all of them. It is adapted to the subject studied and the kind of the student that takes part in that course, but all and all it is the main idea behind most activities done in classroom. Students are more in control of the learning process and create a web of trust among themselves, which will help them to develop social skills that are very important for future working life, such as networking and teamwork.

The students realized that there are difficulties on spreading the workload for all the group members equally, and some of them claimed about difficulties on matching timetable. Most of the students agreed that process of learning and finding answers together is positive and that it is hard to find time for meetings and one student mentioned that constant collaborative tasks are “annoying”. So, it shows that there has to be a compromise, between lectures and group tasks. One important answer was the one that all the students comment about the possibility of getting different points of view when comparing with individual tasks.

The most interesting of the collaborative approach is that it prepares the students not only for working life but also for life itself, where students (citizens) learn subjects and how to apply the theory learnt in groups, with different points of view, different experiences and schedules, respecting and discussing together, building the ideas and achieving better results.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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THE ROLE OF RELIGIOUS SOCIOCULTURAL CONTEXT IN PROMOTING POSITIVE ATTITUDE TOWARDS SCIENCE AMONG MALAYSIAN STUDENTS

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ABSTRACT

Education plays a vital role in ensuring the progress and development of a nation. A perfect education system should be able to transform an individual into a successful citizen, and at the same time receive the blessings of the Almighty. Malaysia's National Education Philosophy had outlined the importance of implementing integrated principles to nurture individuals that are at peace with one's physical, emotional, spiritual and intellectual aspects. For muslim students, what is meant by the implementation of integrated principles are the infused and fortified of school subjects with the teachings of the holy Quran and as-sunnah. This study attempts to determine students' readiness to learn science within religious sociocultural context. A total of 74 Form Two muslim students responded to questionnaires on Perception Towards Science-Religion Interaction (PTSR) and Attitude Towards Science (ATS). The findings indicated that students hold positive PTSR. There is also exist an average correlation between PTSR and ATS ($r = 0.334$).

Key Words: Science, sociocultural context, religion, belief, integration.

INTRODUCTION

One of the major agendas that plays a vital role in determining the quality and rank of civilization of a nation is education. Mankind is deemed aimless and uncivilized without education, hence people who place high regards on education and accept it as a way of life are believed to be more capable of making informed and wise decisions. The education process is an imperative component in developing the potential of a student that encompasses the cognitive, psychomotor, emotional or spiritual aspects.

In 1979, Malaysia discovered that the former national curriculum was not effective in producing a patriotic, ethical and balance citizen. Hence, the awareness towards the need of establishing a philosophical framework that outlines the national education system was then identified (Siti Alia Zaharuddin et al, 2012; Abdul Rahim & Siti Norashikin, 2007; Shahril & Habib, 1999). As a result, Primary School New Curriculum (KBSR) was launched in 1983, followed by Secondary School New Curriculum (KBSM) five years later with the main objectives of preparing a balanced human capital physically, emotionally, spiritually and intellectually (Yahaya & Azhar, 2010; Wan Mohd. Zahid, 1988). In 1987, the National Education Philosophy was formally declared as follows;

Education in Malaysia is a continuous effort towards enhancing potentials of individuals in a holistic and integrated manner in order to create individuals who are well-equipped intellectually, spiritually and emotionally. This effort aims to produce knowledgeable, ethical and responsible Malaysian citizens who are can contribute towards the harmony and prosperity of the community and nation.

This National Education Philosophy of Malaysia clearly stated the belief and subservient faith in God as their outline. This religious elements sets Malaysia's education system apart from the education system espoused by the West. However, a glimpse into the current education system shows a conflicting scenario. A holistic and integrated instructional approach based on one's submission and compliance to God is not fully implemented, for the system is still axised upon the Western secular ideas. The teaching of academic subjects and Islamic education subject are totally alienated, as religious matters are only taught during Islamic Education period whereas in other subjects, the word Allah are not mentioned at all.

The Role of Religious Sociocultural Context in Promoting Positive Attitude Towards Science

Research indicates that educational beliefs and practices are not context free or separated from the wider sociocultural context that we're embedded in (Mansour, 2013; Robbins, 2005). It is therefore necessary to take into account the contextual factors that have shaped and formed certain beliefs around us. Social constructivists emphasizes the importance of culture and context in understanding what occurs in society. They view meaningful learning as a social process that occurs when individuals are engaged in social activities (Mansour, 2013; Vygotsky, 1978). In science education, learning science means seeing the scientific study of the world as itself inseparable from the social organisation of scientists' activities. In muslim country like Malaysia, it is obvious that Islamic teaching and culture had become a dominant sociocultural context that shapes the learning process of science. Therefore, there should be a move to integrate science and religion in instructional approach so that students can be benefitted from this relationship. However above all, students' perception towards science-religion integration must first been determined to avoid any problem in the future.

RESEARCH METHODOLOGY

This study used two instruments in a set of five-point Likert scale questionnaire, namely Mansour Instrument (2011) and Harery Instrument (2007). The reliability of this questionnaire is 0.711, which according to Kerlinger (1986) questionnaires are suitable when Alpha Cronbach point gains more than 0.60. Mansour Instrument (2011) consists of 14 items asking for students' perception over the interaction between science and religion. It tries to determine whether students hold positive perception or negative perception towards the interaction. On the other hand, Harery Instrument (2007) consists of 49 items measuring students' attitude towards science. Six constructs were tested; Value of Science in Society, Motivation in Science, Enjoyment of Science, Anxiety Towards Science, Self Concept in Science and Correlation Between Science And Religion. A total number of 74 Form Two muslim students (aged 14 years old) from various schools were choosed randomly as sample for this study. All of them are excellent students which scores A or B grade in science subject during their Primary School National Examination (*Ujian Penilaian Sekolah Rendah, UPSR*).

DATA ANALYSIS AND FINDINGS

a. Students' Perception Toward Science-Religion Interaction (PTSR)

Table 1: Mean and standard deviation for PTSR among Form Two students

Science-Religion Interaction	Value		Interpretation
	Mean	Sd	
Negative	2.14	0.572	Low
Positive	3.88	0.615	High

b. Students' Attitude Toward Science (ATS)

Table 2: Mean and standard deviation for ATS among Form Two students

Construct	Value		Interpretation (according to Rudzi, 2003)
	Mean	Sd	
Value of science in society	4.00	0.351	High
Motivation in science	3.63	0.492	Average
Enjoyment of science	3.84	0.423	High
Anxiety towards science	2.66	0.396	Average
Self concept in science	3.35	0.425	Average
Correlation between science and religion	3.69	0.344	High

c. Pearson Correlation Between PTSR and ATS

Table 3: Pearson correlation between PTSR and ATS

Correlation	ATS		Interpretation (according to Cohen, 1988)
	R	Sig.	
PTSR	0.334	0.004	Average

DISCUSSION AND IMPLICATION

Data analysis found that students hold positive perception toward the interaction between science and religion (refer to Table 1). This finding is in accordance with Mansour (2011), Clayton (2005) and Pannenberg (2005) which concludes that most of people nowadays holds positive perception toward science and religion interaction. Only a small number of people thinks that science and religion are in conflict, or at least cannot be integrated in any way.

Students also show high attitude towards science in (1)Value Of Science in Society, (2)Enjoyment Of Science and (3)Correlation Between Science and Religion constructs. This is not surprising since the samples are chosen among the best students from various schools. This finding also indirectly indicates that the Ministry of Education's efforts in promoting positive attitude towards science are yielding fruits, at least in few aspects.

However, students show average attitude in (1)Motivation in Science, (2)Anxiety towards Science and (3)Self-Concept in Science constructs. In Harery Instrument (2007), Motivation in Science is represented by statements like *science is easy for me, I love science, I prefer difficult tasks in science etc.* Anxiety Towards Science is represented by *I'll feel depress when people talk about science with me, science classes scares me, I don't feel good towards science, I don't want to work in science field etc.* Whereas Self-concept In Science is represented by *i'm not good in science, I still don't understand science although I've studied very hard, I don't remember lots of facts in science, I'm not good in science lab activities etc.* (Negative statements had been adjusted to be standardised accordingly with Likert scale). According to Kamisah et al. (2007), when motivation in science is at average it indicates that the instructional approach is merely facts feed and students are not encouraged to think critically. Parkinson et al. (1998) argues that when students have low self-concept towards science, the probability that they will not further their study in science will become high. An average level in Anxiety Towards Science can be interpreted as students are not too depress nor feeling too good with science subject, in other word students can control their anxiety level wisely.

Pearson correlation between PTSR and ATS is at 0.334 point. According to Cohen (1998), 0.334 lays at an average strength. It implies that there are still a lot of effort could be done to integrate science facts with

religion context. This can be achieved by providing intensive training to teachers and pre-service teachers, preparing them with instructional strategies on how to promote positive attitude towards science through religious sociocultural context.

CONCLUSION

The school children today are the leaders of our future. The success or failure of curriculum design and teachers' instructional approach will only be apparent years after they leave their alma mater. In our quest to gain success in developing science and technology, we certainly don't want to witness the production of generations that lost their contact with the Creator. Thus, they should be made aware of the existence of Allah as the creator of the Universe, by revealing them the proofs through science. Thus, teachers as well as curriculum makers should take a pro-active stance in equipping themselves with the knowledge and strategic instructional approaches that can integrate science with religion harmoniously.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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INCORPORATING EPOSTL (EUROPEAN PORTFOLIO FOR STUDENT TEACHERS OF LANGUAGES) INTO METHODOLOGY COURSE

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ABSTRACT

This study tries to determine the pre-service teachers' views on the role of the EPOSTL (European Portfolio for Student Teachers of Languages) in increasing the effectiveness of Methodology course. Methodology course is crucial at English Language Teaching Departments as its main goal is to fill the gap between theory and practice. However, it is arguable that it is successful in filling this gap. Therefore, a way- the EPOSTL that could help improve the course was suggested by determining the views of the student teachers in this study. In order to determine these views, firstly a pilot study in which the EPOSTL was used was carried out in Methodology course for 16 weeks. After the pilot study, semi-structured interviews were conducted with 8 student teachers. The qualitative data gathered from the interviews were analyzed by using content analysis. The results showed that student teachers had positive attitudes towards using the EPOSTL in the Methodology course. The student teachers believed that the EPOSTL increased the effectiveness of this course as it provided more feedback, self-assessment and reflection. And Methodology course with the EPOSTL was much closer to filling the gap between theory and practice.

Key Words: EPOSTL, Methodology courses, pre-service teacher education, English Language Teaching, student teachers.

INTRODUCTION

In recent years, foreign language teacher education has aroused great interest both in academic studies and in language education policies in Turkey as all over the world. Pre-service teacher education that is the first step of teacher education is at the center of this interest. Pre-service teacher education focuses on the preparation of student teachers to their future profession. And the question of how to prepare student teachers to their future profession is one of the most discussed subjects in academic studies and policies related to teacher education. Relating theory to practice is one of the most addressed answers to this question. Thus, the last pre-service foreign language teacher education program that was introduced in 2006 in Turkey had a more stress on teaching methodology and practice than the previous program (Karakaş, 2012). However, it is arguable that this stress is sufficient as of 175 hours, only 32 of one are concerned with practice. Of these 32 hours, 8 of them belong to Methodology courses as called also Special Teaching Methods. Being one of the courses that relate theory to practice, Methodology courses are important in field education. Hence, it is crucial that these courses be effective in practicing English language teaching. In order to contribute to the effectiveness of these courses, this study tries to use a new technique-which is EPOSTL. The purpose of this study to determine the student teachers' opinions on the use of the EPOSTL in Methodology course.

EPOSTL (European Portfolio for Student Teachers of Languages)

The EPOSTL is a kind of portfolio which was introduced by ECML (European Center for Modern Languages) in 2007 with the aim of helping student teachers to be prepared for their future profession. Newby (2012), one of the creators of the EPOSTL, defines the EPOSTL as:

“A document intended for students undergoing their initial teacher education which encourages them to reflect on the didactic knowledge and skills necessary to teach languages, helps them to assess their own didactic competences and enables them to monitor their progress and to record their experiences of teaching during the course of their teacher education” (p.1).

EPOSTL is a didactic portfolio which helps student teachers to assess their own teaching knowledge and skills. With this feature, it differs from ELP (European Language Portfolio). EPOSTL is different from ELP but it bases on ELP. ELP focuses on learner’s linguistic abilities whereas EPOSTL is concerned with student teachers’ didactic skills. Apart from ELP, EPOSTL also bases on CEFR (Common European Framework Reference) and European Profile for Language Teacher Education. CEFR is a guideline that helps language learners learn to communicate in this language and the knowledge and skills related to the language. The European Profile for Language Teacher Education “deals with the initial and in-service education of foreign language teachers in primary, secondary and adult learning contexts and it offers a frame of reference for language education policy makers and language teacher educators in Europe” (Kelly and et al, 2004).

The EPOSTL consists of six sections which are *Personal Statement, Self-Assessment, Dossier, Glossary, Index and Users’ Guide*. *Glossary* includes the most important terms related to language learning and teaching in the EPOSTL. *Users’ Guide* gives detailed information on the use of the EPOSTL. *Index* helps student teachers locate terms in the descriptors. *Personal Statement, Self-Assessment* and *Dossier* are main sections. In the section of *Personal Statement*, student teachers answer some questions about their experiences and expectations related to teaching. These questions are about student teachers’ own experiences that influence their teaching, aspects of teaching, expectations of teacher education course and some features of a language teacher. The most important part of the EPOSTL is *Self-Assessment* as the main function of it is providing assessment. *Self-Assessment* section “identifies a core of 195 didactic competences expressed as ‘can-do’ descriptors, which enable reflection and self-assessment at different stages of teacher education” (Newby, 2011, p.6). According to Newby (2011), *Self-Assessment* has two functions: reflection and self-assessment. Newby maintains that reflection function enables student teachers to think about and discuss specific competences and to review the requirements of being competent in a specific field. And the self-assessment function encourages student teachers to make qualitative judgments about their competences and to chart their development and progress by coloring the bars under each descriptor. Descriptors are the ‘can-do’ statements located in *Self-Assessment* section of the EPOSTL. Student teachers complete them in order to evaluate themselves by coloring some bars that are under the descriptors. They also write dates in columns of these bars, which helps them see their improvement. *Dossier* “encourages the student to provide evidence of progress and to record examples of work relevant to teaching” (Newby, 2011, p.6). *Dossier* is the same with a teaching portfolio as it is a collection of evidence of the works that have been accomplished.

EPOSTL enables student teachers to reflect on their teaching skills, which is the main aim of the EPOSTL. There are some studies that showed that the EPOSTL served this aim; in other words, provided reflection. For example, Velikova (2013) found that the EPOSTL was a useful tool in fostering self-reflection and raising awareness of student teachers’ strengths and weaknesses in teaching. Similarly, Fenner (2011) who piloted the EPOSTL to find its effectiveness in providing reflective practice found that the EPOSTL encouraged student teachers to plan and critically reflect on the important task of planning lesson based on learning aims and objectives. Strakova (2009) also found that the EPOSTL was a good way of fostering reflective teaching skills of student teachers in her pilot study that lasted for two years. Strakova also found that the EPOSTL a) deepened the insight on learning and teaching process, b) encouraged students to be more aware of the teachers’ work, and c) enabled students to develop competence.

EPOSTL contributes also to training autonomous teachers as self-assessment and reflection are related to autonomous learning. Çakır and Balçıkanlı (2012) showed this contribution by piloting the EPOSTL with 25 student teachers and 4 teacher trainers. The findings emphasized that the student teachers gained a more autonomous perspective thanks to the EPOSTL. Although the findings do not show that the student teachers became more autonomous after the EPOSTL, they indicate that the student teachers became aware of teacher autonomy.

The prior studies highlight that the EPOSTL provides professional development by engaging student teachers in self-assessment, autonomy and reflection. In these studies, the EPOSTL was used in different contexts: in teaching practicum, (Orlavo, 2011; Nihlen, 2011; Ingvarsdottir, 2011), in the courses related to the teaching (Makinen, 2011; Bagaric, 2011; Çakır and Balçıkanlı, 2012) and also in a bilateral teacher education program (Jones, 2011). Moreover, it is also possible to see the studies that the EPOSTL was used in both in lectures at university and at the same time in teaching practicum (Fenner, 2011; Velikova, 2013). In this study, The EPOSTL was incorporated into Methodology (Special Teaching Methods) course that was given at the Department of English Language Teaching of Turkish universities. And it was tried to identify student teachers' ideas on this incorporation by interviewing 8 student teachers.

METHODOLOGY

This study aimed at learning the student teachers' views on using EPOSTL in Methodology course. Hence, qualitative research design was used in this study, as qualitative research design "focuses on the voices of the participants" (Auerbach and Silvrstein, 2003, p.126). This study tries to give voice to student teachers to express their ideas on the effectiveness of the EPOSTL use in Methodology courses. In order to learn these student teachers' opinions on the EPOSTL, interviews were done. When the aim is to understand the experience of people involved in education, it is necessary to use interview as this technique is a road to inquiry (Seidman, 2006). The interview form had originally 7 questions, but as the interviews were semi-structured, extra questions were also asked.

Participants

The subjects of this study consisted of 8 undergraduate students (juniors) that had education at English Language Teaching Department at Atatürk University. Of the 8 students, 4 students were female and 4 were male. 3 students had education at evening class and the rest had education in day-time. The age of participants varied between 22 and 29.

The procedure of the implementation and data collection

EPOSTL was needed to be used by the student teachers in order to identify their views on using the EPOSTL in Methodology course. After the participants had been selected, two meetings where the EPOSTL and the process were explained were held. Then, the student teachers began to make their microteachings. Each student teacher who did his/her microteaching watched and evaluated the video-recording of his/her microteaching with the researcher. A month after the microteachings were done, macro-teachings were launched. Again, each student teacher watched and evaluated his/her macro-teaching with the researcher. During this process, an online group that would serve as dossier was opened on the social media. The student teachers uploaded some teaching evidences such as their plans and video-recordings of microteachings and macro-teachings to this group. After macro-teachings had been also over, the descriptors were completed. Each student teacher completed the descriptors of Self-Assessment section of the EPOSTL in the fields that s/he did her/his micro and macro teachings. After the implementation had been completed, the interviews were held with 8 student teachers one by one. Each interview lasted between 10-15 minutes. The interviews were conducted in the native language of the participants, Turkish, in order to decrease the speaking anxiety that may stem from using a foreign language and get more valid data as language blocks might influence the accuracy of the data. After completing all the interviews, the recordings were listened, transcribed and translated into English by the researcher. Two colleagues did proof-reading the translated version of the interviews' transcriptions.

Data Analysis

In order to analyze the data gathered through interviews, content analysis was carried out. Themes were formed by the researcher. A month after first analyses, the researcher reviewed the themes again. And an inter-coder who was an expert also reviewed the themes.

RESULTS AND DISCUSSION

The student teachers evaluated the use of the EPOSTL by comparing their two courses one of which included EPOSTL implementation during the interviews. The data gathered from the interviews showed that all of the student teachers believed that EPOSTL should be incorporated into Methodology course. The student teachers thought that knowing methods only theoretically was not useful; practice was also necessary in learning methods. And they stated that the EPOSTL provided this-chance of practice. Furthermore, some of the student teachers were opinion of that the EPOSTL was a continual process that provided professional development as it had some important benefits such as improving reflective teaching skills and increasing self- assessment and feedback. They believed that these benefits made Methodology course more effective. Being the most addressed benefits, reflection and self-assessment formed the themes of this qualitative study. The other benefits were gathered under one another theme. These theme will be discussed below by benefiting from extracts of interviewees. In the presentation of these extracts, numbers were given for each interviewee (1-8).

Self-Assessment

Self- assessment is one of the key terms of learning. Boud and Falchikov (1989) define self-assessment as “the involvement of learners in making judgments about their own learning, particularly about their achievements and the outcomes of learning” (p.529). Self-assessment is important as it provides autonomous learning and helps learners to see their own learning process. Portfolios are one of the techniques that are most used in providing self-assessment. In this study, a didactic portfolio-the EPOSTL- is used as a technique that fosters self-assessment. Self-assessment is one of the main aims of the EPOSTL. Hence, the most comprehensive section of the EPOSTL is the ‘Self-Assessment’ section. In this study, the student teachers completed the descriptors of this section, which they regarded helpful for their teaching. And it was found that this section served its aim as student teachers believed that the EPOSTL enabled them to evaluate themselves. The story of one of the interviewees exemplify this:

“...Evaluating ourselves has not been possible so far. I wish we could have more opportunities, more presentations, studies like this. The most important benefit is how we see ourselves as teachers from our eyes- we teach as teachers in the classroom but while teaching we do not see our mistakes-when we watch ourselves, then we can say easily that ‘mm look why did I not do this’. It is good in this respect.” (Interviewee 3)

The student teachers agreed that they did not use to evaluate themselves before the use of the EPOSTL. They stated that thanks to the EPOSTL, they became aware of their strengths and weaknesses in their teaching. They believed that descriptors that they completed enabled them to see their weaknesses. The following extracts can be given examples for this contribution of the EPOSTL:

“It provided me to see what our previous weaknesses were and how I could eliminate them” (Interviewee 7).

“I think evaluating ourselves was very effective here. Because, firstly I should see and accept my fault then I can understand that I have made a mistake when somebody tells about it...” (Interviewee 6).

Jones (2011) who used the EPOSTL in a bilateral teacher education program also found that the EPOSTL provided self-assessment. The participants of his study stated that they did not know what the self-assessment actually meant. They learned what self-assessment actually was thanks to the EPOSTL. It is seen that EPOSTL is successful in fostering self-assessment which is one of the crucial parts of learning.

Reflection

“Reflection is a thinking process more than simple memorization and comprehension, and involves a variety of cognitive processes, such as summarization, identifying general principles, exploring various situations, reconciling options, monitoring progress, and so on” (Wang, 2009, p. 453). It is a kind of thought that helps individuals assess and criticize themselves and then correct their mistakes and support their strengths. Due to this characteristics, it is seen a key term in professional development. Hence, reflection or reflective practice or reflective teaching has been seen necessary in teacher education in recent years. In order to promote reflection, many tools such as observation, action research, journal writing and portfolios have been suggested.

All of these techniques play an important role in fostering reflection. EPOSTL which is defined briefly as 'a reflective tool' is another technique that was tried to be incorporated into Methodology in this study. The findings of this study showed that EPOSTL promoted reflection in this course. The participants of this study believed that with the EPOSTL they began to think more reflectively. Interviewee 7 stated this as follows:

"I did not use to think reflectively before that. I saw myself at the end of this process. I saw how I had done, how I had done teaching and how I should."

The student teachers believe that they had a chance to reflect on their practices thanks to the EPOSTL. They reflected on their practice by firstly watching their own micro and macro teachings and then completing the descriptors of the EPOSTL. One of the interviewee reported this as follows:

"After practice, I can ask reflective questions such as what I taught, how I can evaluate myself or how I contributed to the students and to myself." (Interviewee 8)

The results showed that the EPOSTL was effective especially in meta-cognitive reflection. Meta-cognitive reflection, briefly, refers to knowledge of teaching. In this study, the participants believed that they became aware of their teaching thanks to the EPOSTL. They were of opinion that this was the one of the most important benefits of the EPOSTL. Furthermore, the EPOSTL helped student teachers to show cognitive and practical components of reflection. They made conscious efforts (cognitive) to develop professionally and practiced reflection (practical). Cognitive dimension is also about learning new things theoretically. Although the EPOSTL seems that it focuses on practice, the student teachers of this study stated that they also learned new things theoretically. The following extract exemplifies this well:

"I did reading and vocabulary teaching in the process of the EPOSTL. And I learnt what I needed as teaching reading. Before the EPOSTL, we regarded teaching reading as a simple reading activity, but I learnt it had many procedures. Teaching vocabulary is also same. It was a field that I had not been familiar with. I can say I learnt new things also theoretically..." (Interviewee 1)

The previous studies on the EPOSTL show parallelism with the findings of this study in terms of benefits of the EPOSTL in reflection. Velikova (2013) found that EPOSTL was a self-reflective tool that raised awareness of the participants' strengths and weaknesses in teaching. Similarly, Çakır and Balçıkınlı (2012), Strakova (2009), and Fenner (2011) found that the EPOSTL was a good way of reflecting on teaching practices. Providing reflection on teaching practices of student teachers, the EPOSTL made the Methodology course more effective. And as the student teachers learn new things both theoretically and practically, a course with the EPOSTL is closer to filling the gap between theory and practice in foreign language teacher education.

Other Contributions

The interviewees uttered some other changes that emerged with the use of the EPOSTL. One of them was about getting feedback. Feedback is crucial for enhancing learning and motivating students to improve by facilitating reflection and self-evaluation, as well as highlighting errors, deficiencies and problems (Case 2007). Hence, feedback should be provided in Methodology course in which students are very active as they do many practices. However, the student teachers participated in this study believed that they did not get enough feedback in the course in which the EPOSTL was not used. They used to get feedback only from their friends. The student teachers did not find peer-feedback sufficient as they regarded it subjective. They believed that as they were their friends they did not evaluate their friends objectively. Hence, they needed another form of feedback such as teacher or self. The following extract illustrates this as follows:

"We did presentations but these evaluations were done. Only presentation, there was no evaluation as good or bad. As there was no feedback on what our weaknesses were, the presentations were useless for us" (Interviewee 2).

Another change was in their practices. The student teachers believed that their second practice was better than the first one, as they realized their weaknesses in the first one and eliminated them in the second one. They also stated that they overcame their shyness thanks to the implementation including EPOSTL.

These contributions made student teacher think positive things about the EPOSTL. They believed that the Methodology course with the EPOSTL was better than the previous one. They believed that the EPOSTL should more common and used. The extracts of *Interviewee 5* and *Interviewee 8* are in the form of summarization of the findings.

“..., I think it (EPOSTL) should be implemented by all teachers and teacher candidates.”

“I think the EPOSTL is necessary in teacher education...”

CONCLUSION

This study aimed at determining the student teachers' opinions about using the EPOSTL in Methodology course. In order to achieve this aim, 8 student teachers were surveyed through semi-structured interviews. The results have shown that these student teachers were quite positive about incorporating the EPOSTL into Methodology course. They believed that the EPOSTL provided them to see their strengths and weaknesses as they assessed themselves. The EPOSTL helped them to be aware of their teaching. The student teachers who were aware of themselves and acted in their practice as to this awareness were reflecting on their practice. It is expected that a practical course that presents the chance of self-assessment and reflection is more effective. The student teachers also believed that Methodology course with EPOSTL is more effective due to these contributions. Given these contributions of the EPOSTL, it is suggested that EPOSTL be incorporated into Methodology course. However, the number of participants in this study is so limited that it is not true to generalize the results. Hence, it is suggested that the study be replicated with more participants.

Note: This paper is a part of MA thesis defended with the name of “Using EPOSTL (European Portfolio for Student Teachers of Languages) to foster reflective teaching skills of pre-service teachers in Turkey”.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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IMPLEMENTATION THE PROJECT OF DISTANCE LEARNING IN FACULTY OF PUBLIC HEALTH

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ABSTRACT

This article pertains to a project realized in Faculty of Public Health (FPH) in the Medical University – Sofia. The project is financed by the European Social Fund (ESF) - European Commission. In this project was realized a distance educational course in Public Health with the use of Information and Communication Technologies (ICT). The project includes over 1,000 students, 25 lecturers and five assistants in 22 different disciplines. Within the project was created a multimedia lab. The result shows that this new form of education is very well received by the students and the quantity of knowledge receives surpassed that of traditional methods. The project is for a period of two years. After the final of the project the FPH will accredit Master programs.

Key Words: Distance education, e-learning, ICT, public health.

INTRODUCTION

In 2012 the Faculty of public health to the Medical University – Sofia started introducing distance learning under a project funded by the European Social Fund (ESF) - European Commission. Its implementation will create the necessary prerequisites for more active and effective utilization of the opportunities provided by the state-of-art information and communication technologies for the achievement of quality training and provision of equal opportunities for acquiring the knowledge and skills one needs for full value life in the information society (Oldfield S., 2005). The dynamics of the modern economy necessitates the maintenance of high level of professional qualification and significant role in this area is attributable to the cutting edge technologies and innovative learning methods. The classical educational patterns suggest high costs as well as difficult access to education of the handicapped people and the ones that live outside the academic cities and towns (Oldfield S., 2004). The project created good base for the maintenance of distance learning and consequently it will underwent additional development and will serve as good practice for the entire university (Petkov V., St. Velikov, R.-Velikova Zlatanova, T. Zlatanova, 2013). It is in full conformity with the requirements provided for in the regulations for acquiring higher education of “bachelor” and “master” educational-qualification degree (Popov N., V. Petkov, T. Zlatanova, 2008).

PROJECT OBJECTIVE

The improvement of quality and access to education and qualification thanks to the establishment of platform for innovative patterns of interactive e-learning, development of virtual library and training with the students of the Faculty of public health to the Medical University – Sofia.

PROJECT IMPLEMENTATION STAGES

We developed a laboratory for the creation of multimedia contents (Figure 1.). The laboratory will consist of 5 workplaces and each will be equipped with computer that contains high-speed processor for rapid rendering of video and audio contents, monitor and high quality microphone and earphones, device for creating e-drawings. In it the lecturers will be provided with access to an environment for preparing e-contents.



Figure 1: The new laboratory for the creation of multimedia contents.

Training for the lecturers. It is a part of the current project and aims at improving the qualification of the lecturing personnel in the area of the cutting edge methods and models in the area of distance learning. The lecturers should be provided with up-to-date information in the area of the current theory and practice. The training also covers training for preparing tests, including the theory, the manners of measuring the test quality, making up questions. The remaining training is focused on using particular technologies and software, being elements of the present project. During the training the lecturers were informed about the environment under development, operating Moodle and creating e-contents. The training was held in 2 phases – theoretical and practical parts that were finalized with tests.

22 distance learning modules were elaborated for the majors taught by the lecturers, who were trained under the previous activity (Figure 2.). They were assisted by five “Programmes” Assistants that are aware of all technical details concerning the e-contents elaboration for training purposes and render methodical, technical and all other kinds of assistance to the lecturers that prepare the distance learning courses. On the basis of the developed modules the lecturers created contents for the virtual library. The majors in view of which the modules were elaborated, are distributed into the winter and summer tuition semesters. The modules contain various lecturing approaches and methods depending on the opportunities of the e-platform and they are finalized by tests and grades assigned to the students.

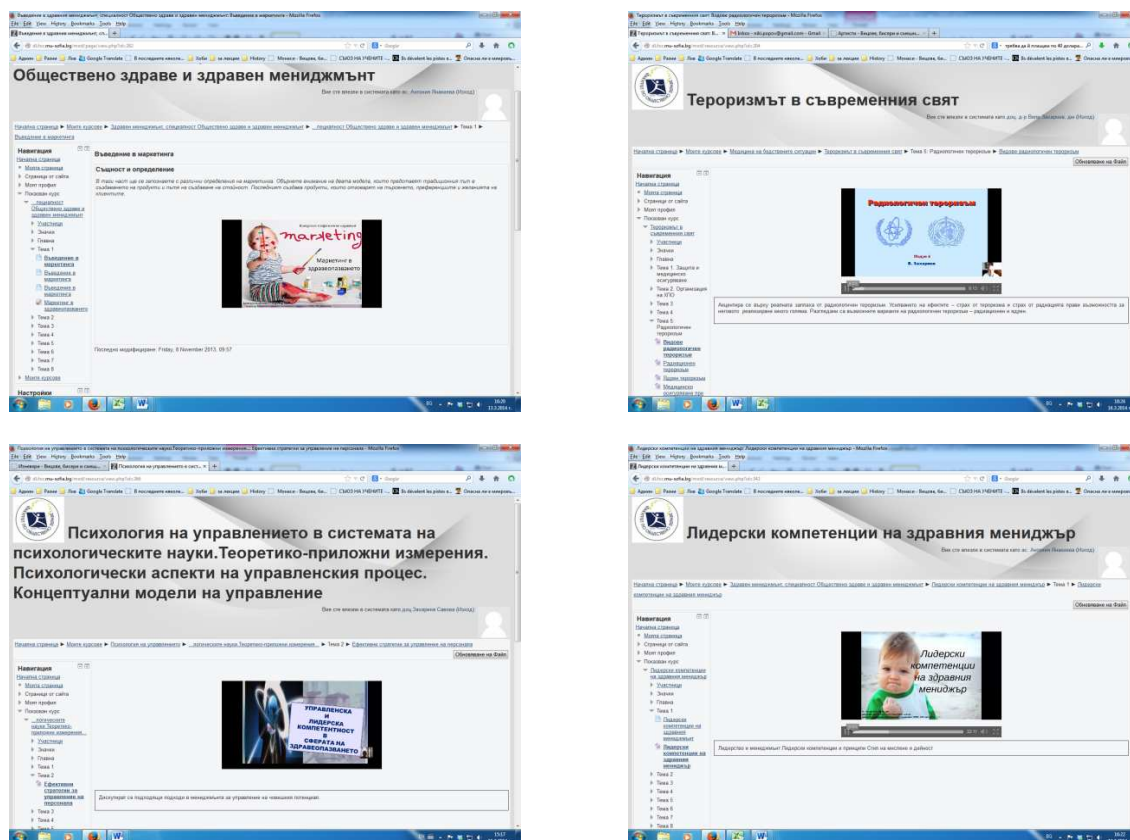


Figure 2: Parts of the developed distance learning modules in Faculty of Public Health

The next project stage was about the actual holding of distance learning for the students of the Faculty of public health with the use of the e-platform, the virtual library and the e-contents. The introduction of the distance learning pattern and teaching the students on the basis of the developed modules is part of their self-preparation for the particular major, as each module is finalized by the test and results of the distance learning. During the tuition the students were provided with the opportunity to use the created virtual library, which proved very useful according to their feedback.

FORTHCOMING ACTIVITIES

Over 1000 questionnaires are about to be processed as a result of the enquiry survey that was held among the trained students in order to summarize the training results, report the positive sides of the distance learning courses, the recommendations provided by the students, the difficulties encountered by them, the objectivity of the defined results. Comprehensive analysis of their opinions and impressions will be elaborated by the project team.

E-learning manual will be issued and it will be useful for the lecturers as well as for the students. It will provided answers to general questions (of the type: What is distance learning?), specific issues (possible difficulties and coping with them, recommendations) and practical pieces of advice for holding the learning process step-by-step. The manual will contain materials from the training with which the lecturers are provided, analysis of the held students' tuition and conclusions.

After the project finalization in November 2014, the distance learning system of Faculty of public health will be maintained and operated in conformity with the introduced programme and on the basis of the experience accumulated during the project implementation. The university has undertaken to provide funding for the work related to the distance learning patterns, after including these activities in its annual budget. Opportunities will be sought for raising external funding in order to build over and improve the distance learning with the application under various schemes and programmes including the ones co-funded by the EU, as well as various

sponsorship patterns. As a result, the verified distance learning programme will be presented to the attention of the Accreditation Council. A Standing Committee of already trained lecturers will keep working with the e-platform and they will hold distance learning courses and will enrich the virtual library with materials and information. Students' grades acquired in the distance learning courses will be regularly assessed in order to perform continuous monitoring on behalf of the lecturers' team. On the basis of this monitoring we will undertake actions for improving the processes of the distance learning for students. The technical maintenance will be performed by full-time technical employees that will also support the team of lecturers when it comes to implementing courses.

The result of the comprehensive project implementation will have favourable effect on the training process thus diversifying the academic contents and the training itself. The students will have the opportunity to take advantage of the convenience and benefits offered by the distance learning thus making their education much more attractive (Velikov St., 2011). They will participate much more actively in the tutoring process. The lecturers would be able to acquire different experience and facilitate the material being assimilated by the students thanks to the cutting edge learning and tutoring methods. The distance learning will bring about innovative approach towards presenting the educational material and more opportunities for individual work.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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CONCEPT MAP AS A TOOL IN THE TEACHING-LEARNING PROCESS OS ELECTROSTATIC

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ABSTRACT

This paper presents a proposal for the use of concept maps as a teaching and learning tool in the discipline of electrostatic in a Course of Technology. The experiment is based on the Theory of Meaningful Learning. A study was conducted in a classroom where students reviewed the subject in a concept map built specifically for a review of concepts, as seen in the classroom. The research uses concept map as a cognitive tool, supporting the computing and demonstrates by means of a comparison test, the initial knowledge and after presenting the conceptual map of electrostatics, the values obtained from the same test.

Key Words: Teaching-learning, Electrostatics, Concept map.

INTRODUCTION

Although physics has been known since antiquity, mainly electrical phenomena, it is discussed today how to teach students. In general, the curriculum starts from the Newtonian physics: mechanics, followed by thermodynamics, optics, waves and only at the end of the courses the students will study concepts of electrostatics and magnetism. In some courses this subjects are included as specific matters.

The process of teaching and learning Electrostatic, specific branch of physics, is necessary to understand Electromagnetism and involves magnetic fields and vectors, which are usually defined by totally mathematical approaches.

Necessarily the process of interaction between particles are described in various concepts relating forces, fields, energies, vectors, among other phenomena and magnitudes. Each step must be clear to be possible the

identification and to do the relations between concepts. So the students will be able to understand these concepts.

Martin e Solbes (2001) say that the student does not know the differences in interaction between particles and even don't know about induction fields. The authors say that what students know about electrostatic fields is not a scientific concept.

Martin e Solbes (2001) explain that students observe the phenomena without considering mass, charge and force e don't consider the interaction between particles. So, for example, they cannot distinguish field intensity and some teachers also are confused themselves. In this way, the students cannot understand important aspects and cannot associate the interaction between particles (MARTIN; SOLBES, 2001). In other words, it is not possible to observe a global view between concepts, their importance and the mathematics that is implicate.

According to Martin e Solbes (2001), the difficulty to promote a qualitative teaching about electric field is because the abstraction that the study demands. So, it is difficult to establish relations with day by day student's experiences as it occurs with the Newtonian physics. And the authors conclude that the didactic books show a lot of mistakes that promotes confusion in the teaching-learning process.

Gução et al. (2008) analyzed physics books in Brazil and related conceptual mistakes about history and chronology of the physics events: (I) at the first demonstration, the authors transcribe a mistake in formulation of the principle of conservation of energy, with confusing texts; (ii) at the second analysis the authors show a chronological mistake about electric phenomena; (III) at the third book, they found wrong assumptions; (IV) at the fourth didactic book there are mistakes about dates and researchers.

In this experiment, a concept map built by the teacher was used in a review class. There was a pretest and a post-test to verify the learning process.

This study intends to show the viability of Physics studies, specifically Electrostatics, which involves concepts and mathematics relations, using a cognitive tool. This cognitive tool is based in formulation of concepts with Informatics. In this process, teaching-learning becomes easier for students and teachers.

THE THEORY OF MEANINGFUL LEARNING

This educational proposal is based on the Theory of Meaningful Learning David Ausubel. Meaningful learning is a process by which a new information relates to an important aspect of the knowledge structure of the individual (Moreira and Masini, 2001).

Concept maps are only diagrams indicating relationships between concepts or between words used to represent concepts (Moreira, 1997).

This work intends, from existing concepts in the cognitive structure of the student in Electrical, concepts such as atoms, electrons, neutrons, protons, the student uses them as subsumers in order to support the new concepts to be learned.

According to Moreira (2006: 15) the subsumers are a concept, an idea, a proposition already existing cognitive structure, able to serve as 'anchor' the new information so that it acquires thus meaningful to the individual (i.e., it has able to assign meaning to this information). In this respect the concepts previously "anchored" in the cognitive structure of the learner, such as atoms, electrons, neutrons, protons, act as subsumers, so that new information is acquired by the learner. As new information, understand the concepts needed.

According to Moreira (2006:13), the most important idea in Ausubel's theory can be summarized in the following proposition Ausubel's own, the most important single factor influencing learning is what the learner already knows. Check this and teach him accordingly (Ausubel et al., 1980: viii).

According to Moreira (2006), Ausubel is referring to the cognitive structure of the learner. It takes the content to be learned meaningfully.

Also, when Ausubel refers to "what the learner already knows" for learning to occur of new information, it is referring to specific aspects of cognitive structure.

Still according to Moreira (2006:14), check would be discover the pre-existing structure, concepts that already exist in the mind of the individual, his organization and their interrelationships; doing a "mapping" of cognitive structure, which is also something difficult to accomplish. This information serves as a basis for that is the planned use of concept maps as a teaching resource (Silveira, 2008,: 95).

In Ausubel's proposition, "teach him accordingly", Moreira (2006) states that it means education basing on what the learner already knows, and identify it is not an easy task.

This work intends from existing concepts in the cognitive structure of the student, they use them as subsumers in order to underpin the new concepts to be learned.

In this aspect concepts previously "anchored" at the student cognitive structures, act as subsumers, so that new information is acquired by the learner. As new information, understand the concepts needed. Ausubel says that the essence of the meaningful learning process is that symbolically expressed ideas are related in a no arbitrary and substantive way to know what the learner already knows, namely, some existing relevant aspect of his structure of knowledge (Ausubel, 1968: 331). Therefore, it is important that students relate the concepts in new concepts with pre existing in their cognitive structure. Also, according to Moreira, one of the conditions to the occurrence of meaningful learning is that the material to be learned is relatable to the cognitive structure of the learner, in the way not arbitrary (Moreira, 2006: 19). Therefore, the Theory of Meaningful Learning will be of great value and will be used as a theoretical foundation in this work.

Concept Maps

Concept Maps are closely linked to Meaningful Learning Theory proposed by Ausubel. However, Ausubel never addressed concept maps in his theory. This is a technique developed by Joseph Novak and his colleagues at Cornell University (USA) (Moreira, 2010: 17). Therefore, the concept maps were developed by Joseph Novak as a constructivist tool to support Meaningful Learning of Ausubel. Diagrams are used to represent, describe, organize, communicate concepts and the relationships between them. The concepts are the nodes (crosslinks) of the map and relations are the links. Generally, concepts are nouns and relationships are represented by verbal expressions. Figure 2 illustrates what is a concept map.

Concept maps can be used as an evaluation tool of learning, study strategy, content presentation, learning resource, among others. Concept maps may be used in obtaining evidence of meaningful learning, namely the evaluation of learning (Moreira, 2010: 22). Figure 1 shows a concept map, including the software installation and building maps.

Concept maps can be used as learning assessment, study strategy, to teach the subject, among others. Concept maps can be used to verify to get evidences of meaningful learning, i.e., in the assessment of learning (MOREIRA, 2010, p. 22). But, it must be careful because some maps are too poor and it shows that learning did not occur as it should be.

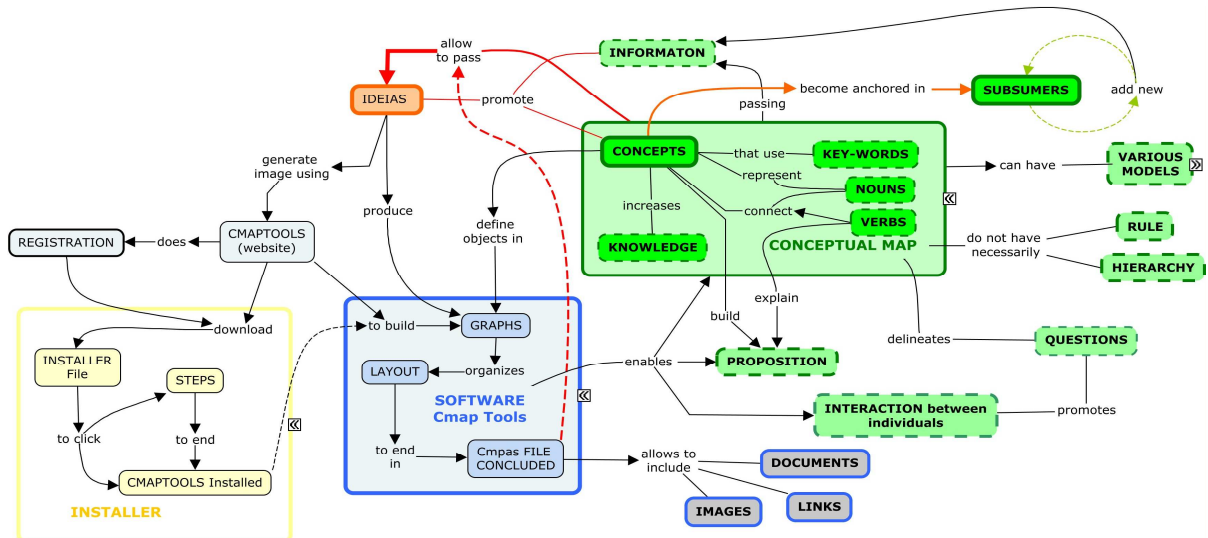


Fig. 1: Concept map definition

METHODOLOGY

A review class was done using an Electrostatics concept map. The experiment was realized with six undergraduate students of the first year of Telecommunications course in a Federal Institute of Brazil in July 2013. This experiment lasted for 3 hours and was done one week before the test.

First the students answered a pretest with five questions to verify their knowledge level. Second, the teacher did the review using the concept map built by the teacher. At the end, the students answered a post-test (with the same questions) to verify the new knowledge level. The concept map used at this experiment is shown at figure 2. This map was built with *CmapTools*.

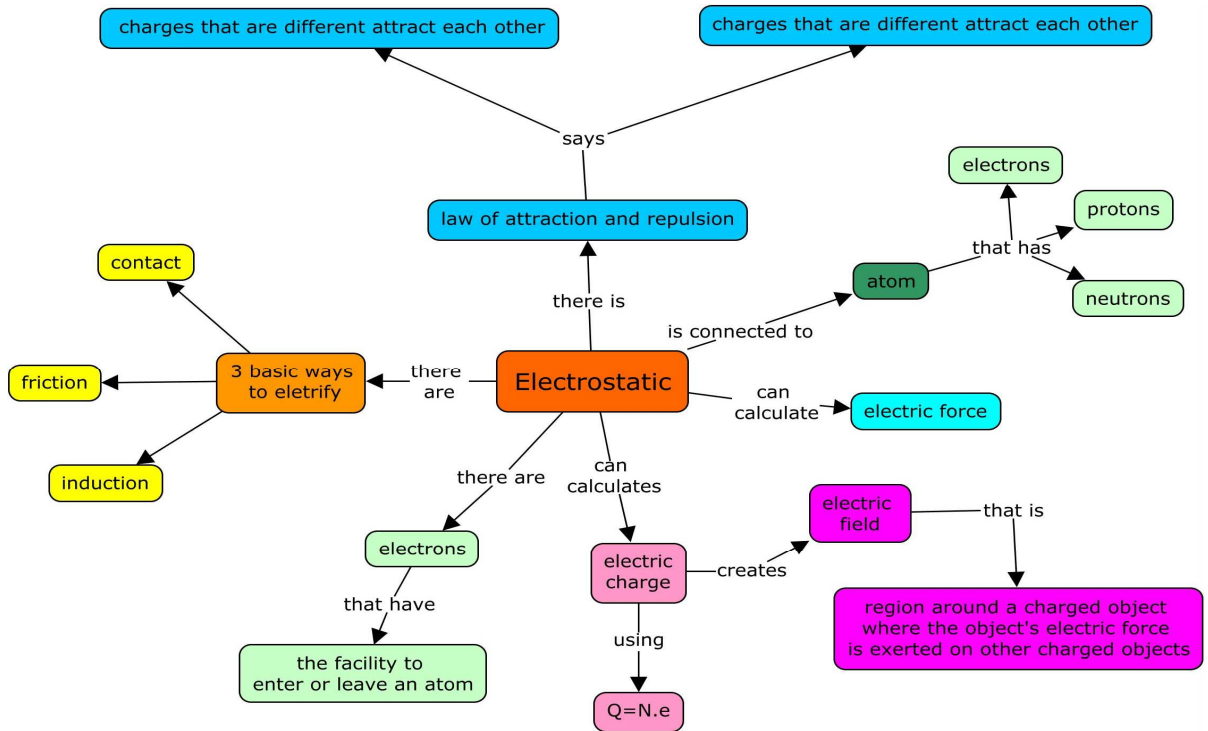


Fig. 2: Concept map used in this experiment

This concept map was also available to students after this with this experiment. So they were able to study using this one in the future.

RESULTS AND DISCUSSION

After the review, the same test was applied and the results are:

Frame 1: Hits

Atividade	How many hits					Total
	1	2	3	4	5	
Pretest	1	1	1	2	1	6
Post-test	3	2	3	3	6	17

In the pretest there were less hits then in the post-test. The post-test was realized after the explanation with the concept map (figure 3)

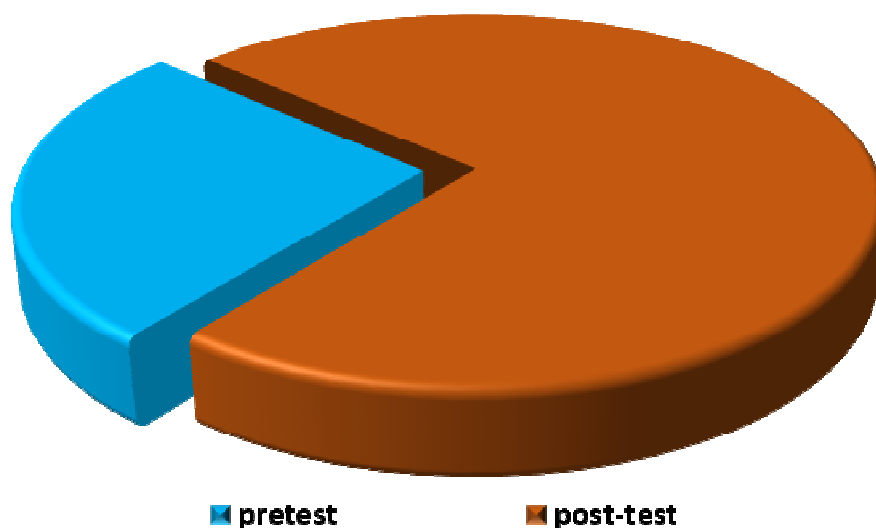


Fig. 3: Graphic comparing hits

In a concept map is possible to show all information at the same time, interfering and forming new concepts. Figure 2 shows all the subject of the class in one map.

Teacher and students can use the map as reference to build knowledge, advancing in their own knowledge again, as shown in figure 4.



Fig. 4: Graphic comparing pretest and post-test

In teaching-learning point of view, is important to recognize the subsumers in students. In this way, the teacher will be able to plan the classes in a best way.

Students Highlights

To understand the teaching-learning process, at the end, a questionnaire with six questions was applied with the students. The questions were: 1^a “Did you study electrostatic?”; 2^a “Did you learn the concepts?”; 3^a “Do you think that is easy to learn the concepts?”; 4^a “Do you think that is easier to visualize the subjects?” 5^a “Do you feel more prepared about the concepts that you learned after studying with concept map?”; 6^a “Do you think that will be easier to study with the concept map?”

The student’s answers are as follows (frame 2):

Frame 2: Student’s answers

	1 ^a Did you study electrostatic?	2 ^a Did you learn the concepts?	Do you think that is easy to learn the concepts?	4 ^a Do you think that is easier to visualize the subjects?	5 ^a Do you feel more prepared about the concepts that you learned after studying with concept map?	6 ^a Do you think that will be easier to study with the concept map?	Total
<i>Strongly agree</i>	2	1	2	2	1	2	10
<i>Agree</i>	4	5	4	3	5	3	24
<i>Neither</i>	-	-	-	1	-	1	2
<i>Disagree</i>	-	-	-	-	-	-	-
<i>Strongly disagree</i>	-	-	-	-	-	-	-
Total of students	6	6	6	6	6	6	

From frame 2 the graphics 5A, 5B and 5C were extracted (figure 5).

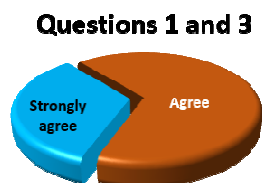


Fig. 5A

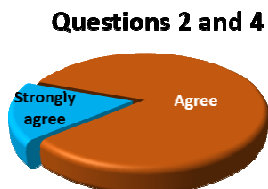


Fig. 5B



Fig. 5C

Fig. 5: Graphics (questions 1 to 6).

The graphic on figure 6 is about the total.

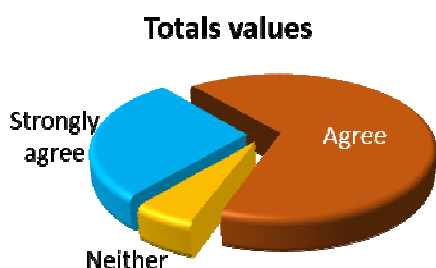


Fig. 6: Total (from frame 6)

CONCLUSION

In this experiment, a concept map about Electrostatic was built by the teacher and used in a review class. Before using it, was applied a questionnaire. After the review, the same questionnaire was applied. After the experiment, the students increased the hits, showing that the concept map is an excellent tool to review classes.

The questionnaire answered by the students shows that they mostly agree that is good to study with concept maps.

Concept maps

Na análise pontuada pelos alunos sobre a aprendizagem significativa com mapa conceitual, observou-se uma adesão favorável, bem como também o processo valorizado do ensino-aprendizagem da disciplina.

Concept maps help the process of meaningful and collaborative teaching.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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ROLE OF E-LEARNING IN THE FACULTY OF PUBLIC HEALTH SOFIA

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ABSTRACT

The prevailing opinion of the need to redefine the objectives of the Bulgarian education to the new requirements of the dynamic global economy. The article presents elements of the Share Point site. Described are the opportunities for implementing e-learning for students from the Faculty of Public Health – in master's programs in Public Health and Health Management „and” Management of health care. It concluded that the application of new technologies and stimulate the generation of knowledge sharing, management of tasks and effective communication, which significantly enhances activity in the training of trainers.

Key Words: E Learning, Share Point, communications.

ROLE OF E-LEARNING IN THE FACULTY OF PUBLIC HEALTH SOFIA

The prevailing opinion on the necessity of pre-defining the objectives of the Bulgarian education in view of the new requirements of the dynamic global economy. The challenges presented by the highly competitive labour market in the EU, as well as the influence of the modern information and communications technologies has significant impact on the progress achieved by the educational system (Popov N., V. Petkov, T. Zlatanova, 2008).

Some of the more significant differences between the e-learning pattern and the traditional ones are concerning the scope, cost effectiveness, technological effectiveness, equal footing and interdisciplinary characteristics.

In view of the e-learning scope we have simultaneous communication with numerous academic information sources (e-libraries, database etc.) of many trainees, as well as communication via communication networks between the students and their lecturers. The effective utilization of the academic areas and technical devices,

the concentrated and unified presentation of the educational information and the multi access to it significantly cut down the costs for preparing specialists in the case of e-learning (Petkov V., Velikov St., Zlatanova-Velikova R., 2013). Another significant difference between both learning patterns /traditional and e-learning/ is about technological effectiveness – the use of new information technologies in the educational process creates prerequisites for faster, more effective and pragmatic assimilation of the educational material in the case of e-learning. The principle of social equal footing, i.e. providing equal opportunities for education irrespective of residence, health status and material procurement is fully conformed with in the case of e-learning. Last, but not least the international character – export and import of the international achievements of the educational services' market with the help of e-learning is highly developed (Shoykova, E., 2010).

In the modern hectic and stressful world namely e-learning is the solution for most people that would like to improve their professional qualification and maintain continuously high knowledge level. In view of the specific characteristics of some students – for example the ones studying for master's degree - the Faculty of public health could fully use the opportunities provided by the e-learning thanks to attracting more students and the innovative approach when it comes to their preparation (Popov N., V. Petkov, 2006) .

The e-learning systems are defined as systems for social and knowledge-attaining activity based and enhanced by the state-of-art information and communications technologies.

The “E-learning” notion means learning that has been prepared, provided and/or managed via versatile technologies and the one that could be locally or globally provided.

The “E-learning technologies” notion means new technologically-based devices that make it possible for each and every *professional* in the educational area to be more productive, while helping the others learn as well. The e-learning covers procedures, processes and attachments for design, delivery, management and holding the learning process (Zlatanova-Velikova R, Velikov St., 2011). In this case we use Internet and mobile technologies, satellite broadband communications, interactive TV and multimedia on CD and DVD.

“E-learning” is a synergy between information-on-demand, multimedia communication, social cooperation, instructions, discovery and research whose interaction provides the trainee with better learning opportunities... “(Richard Otto)

The Share Point website is a group of web pages where one could organize training activities, work under projects, hold meetings and share information. Each department could have a website of its own for storing files and procedures. The website of each department could be a part of the portal of a larger organization (Faculty of public health), where the various departments publish information (Velikov St., 2011).

All Share Point websites share common elements: lists and libraries.

The list is a component where the organization – in this case, the Faculty of Public Health (FPH) could store, share and manage information. For example, it could create a list of tasks –in the case of accumulating data about the annual activity of each department – publications, participations in conferences, monographs etc. and these lists are accessible to everyone and events in the calendar – faculty meetings, general meeting, holiday of the Faculty of Public Health etc. Research or discussions could be held concerning the particular topic.

The library is a special type of list that stores the files. One could control the way they are being managed, created and shared.

We present an exemplary structure of the Share Point website of the Faculty of Public Health. The website is divided into seven sub-sites, one for each of the FOH departments – Department “Health Policy and Management” (DHPM), Department “Health Economics” (DHE), Department “Ethics and Law” (DEL), Department “Healthcare” (DHC), Department “Medical Pedagogy” (DMP), Department “Preventive Medicine” (DPM) and Department “Occupational Health” (DOH), and each site contains resources. Each and every

member of the particular department could also use My site while working – personal site for every Share Point user. Figure 1 presents an exemplary structure of the Share Point website of the Faculty of Public Health.

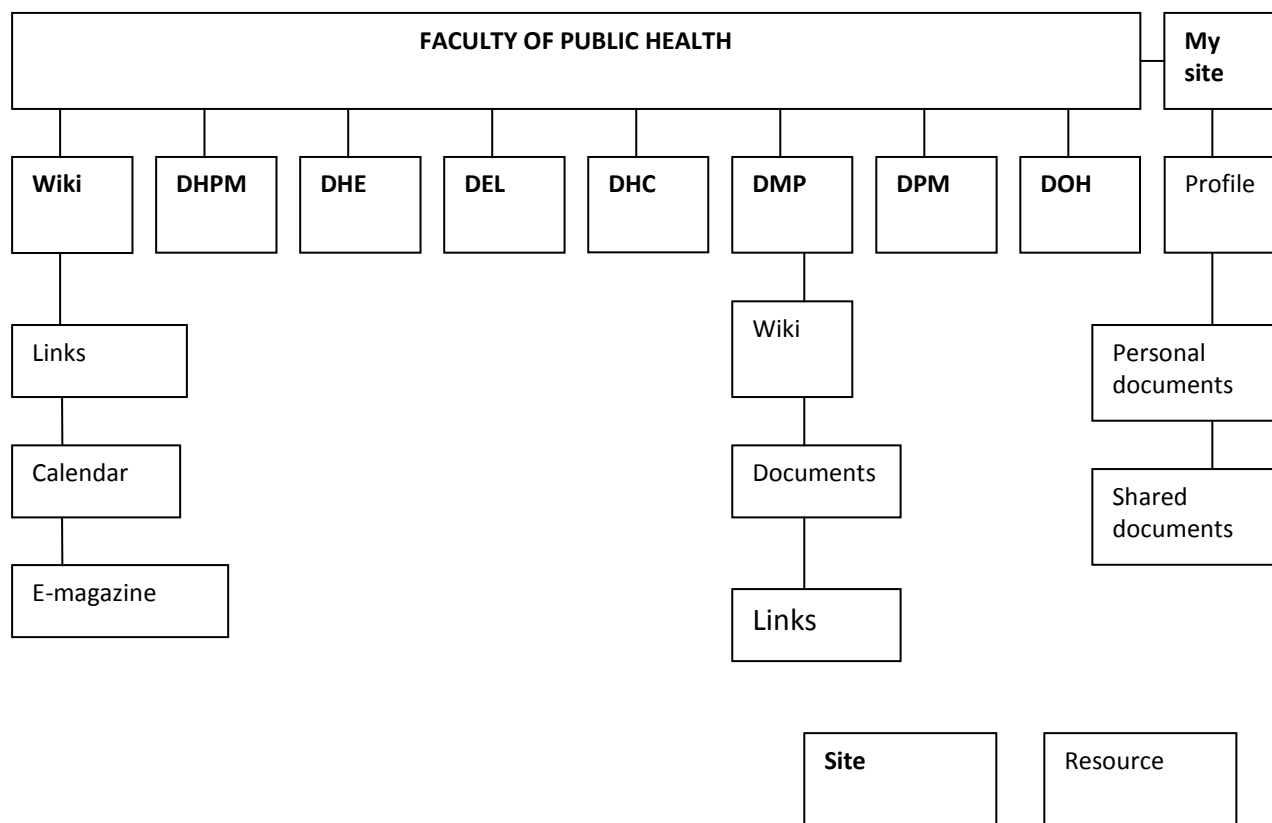


Figure 1. Scheme of the structure of Share Point website of the Faculty of Public Health

Wiki is the network technology for arranging interlinked [web](#)-pages, each of which could be visited and edited by the users at any moment, and the history and all web page versions are being preserved.

In the e-magazine one could publish the presentations from the Collegiums of the FPH, results of research work and projects of the FPH employees, as well as performances of the faculty students.

Every lecturer – professor, associate professor and assistant and every student has a website of his or her own – **My site**, where he or she could upload documents, lectures, exercises, tasks and in the case these are shared documents, part of students’ learning could take part this way.

The Share Point implementation in tutoring the part-time students of the master’s programmes could result in higher activity and interest in the studied matter, because in the case the students have the lectures and tasks and cases assigned in advance, the meetings with the lecturers could be held as discussions and case solving and this would generate many new ideas, knowledge and experience sharing. This learning pattern complements the traditional learning and stimulates students’ activity throughout the learning process and results in more effective communications between lecturers and students.

The main objectives and tasks of the e-learning are the following:

- Improving learning’s effectiveness for the individual and groups;
- Supporting the process of creating, transferring and sharing knowledge in organizations;

- Promoting the better understanding of the learning process via the study of connections between human knowledge and technologies;
- Learning progress and improvement via integrating information and communications technologies;
- Enhancing the acquisition of new educational concepts and approaches focused on the student and learning personalization;
- Non-reproduction of the classical tutoring manners but creation of solutions that could engage and motivate the students and lecturers in new ways.

All this results in passing beyond the succession of contents to succession of educational activities in socially oriented and technologically rich environments.

On the basis of the abovementioned we could conclude that e-Learning 2.0 in general and in particular via Share Point, is:

- Not only technology, but ideology;
- Students are not only content users, but content authors and;
- The tutoring process is not only lecturer-student, but student-student since everyone has access to the information uploaded on the website.

We could summarize that thanks to this learning approach the student not only has access and receives educational contents, but also develops the skills necessary for sharing, modifying and issuing recommendations via the documents' creation (Zlatanova-Velikova R, Velikov St., 2011). Additionally, via the learning in the Share Point environment the students easily overcome distance and do networking in the circumstances of support and assistance. In the capacity of team members – in this case, a particular course, they develop the skill of collaborating via uniting resources and co-authorship.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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THE INVESTIGATION OF PROBLEM SOLVING SKILLS OF MOTHERS WITH AND WITHOUT DISABLED CHILDREN

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ABSTRACT

In this study, it was aimed at investigating the problem solving skills of mothers with and without disabled children. The participants of the study was composed of 258 volunteer mothers in Kırşehir. In the study, "General Information Form" which was prepared by the researchers and "Problem Solving Inventory" (PÇE) (Savaşır and Şahin, 1997) which was adopted into Turkish by Şahin and his colleagues in order to determine the problem solving skills of mothers were used. At the end of the study, it was found that the difference between the problem solving skills of mothers with and without disabled children was significant ($p < .01$). The problem solving skills of mothers with disabled children were found to be lower than the ones of mothers with children without disabilities.

Key Words: Disabled children, mother with disabled children and problem solving.

INTRODUCTION

Parents desiring to have a healthy child do not prepare themselves for the parenting role of a child with different specialties (Aral & Gürsoy, 2007; Yıldırım Sarı, 2007). However, conflicts will arise between expectation and reality upon recognizing that the child is disabled. Families could consider the birth of a disabled child as a punishment for themselves, but there are also families interpreting that the disabled child is given them to gather the family (Ekas, Whitman, & Shivers, 2009). In the face of this unexpected situation, families of disabled children might experience different feelings like shock, refusing, extreme sadness and depression, anger, guiltiness, non-acceptance, reconciliation, adaptation and acceptance, respectively (Aral, Bütün Ayhan, & Aydoğan, 2006; Coşkun & Akkaş, 2009; Gargiulo, 1985; Kim, Greenberg, Seltzer, & Kraus, 2003; Padeliadu, 1998; Sen & Yurtsever, 2007).

Having a disabled child brings along with certain peculiar difficulties including economic problems, life style, relations with family and social environments, educational and nursing problems regardless of the types of disability. Mothers reportedly display more efforts and take more active roles in solving these problems (Bahar, Bahar, Savaş, & Parlar, 2009; Karadağ, 2009; Özşenol et al., 2003; Padeliadu, 1998). Mothers have to spend most of their time, interest and energy to meet daily care of the disabled child, which could gradually drive them apart from their spouse and other children. Therefore, inclusion of a disabled member changes the structure of the family and damages the normal function of the family (Aral & Gürsoy, 2007; Gargiulo, 1985; Okanlı, Ekinci, Gözüağca, & Sezgin, 2004; Padeliadu, 1998; Sen & Yurtsever, 2007). The previous studies reported that mothers of a disabled child have to spend less time with the other members of the family (Sen &

Yurtsever, 2007), and therefore, their relations with other children, relatives, neighbors and colleagues are negatively affected (Reichman, Corman, & Noonan, 2008), they more frequently experience long-term economic problems (Fazıl, Bywaters, Ali, Wallace, & Singh 2002; Sen & Yurtsever, 2007), current family problems are increased with the additional of the disabled child (Aral & Gürsoy, 2007; Okanlı, Ekinci, Gözüağca, & Sezgin, 2004) and family disintegration is more frequently observed due to divorce, living separate or similar events among families with disabled child (Reichman, Corman, & Noonan, 2008).

At the same time, it was reported that mothers of a disabled child do not know how to help their children (Aral & Gürsoy, 2007), their physical and spiritual health is damaged (Özşenol et al., 2003), and they feel less happy (Emerson, Hatton, Llewellyn et al., 2006). In addition, defining their child as disabled ranks first among the reasons that depress parents (Glidden & Schoolcraft, 2003), and it is also stated that families refusing the disability might sometimes adopt negative approaches that could endanger the family itself and impair the development of the child (Gülşen & Gök Özer, 2009).

The previous studies reported that mothers of a disabled child more frequently have somatic complaints, depression, and anxiety (Olsson & Hwang, 2001; Toros, 2002; Uğuz, Toros, Yazgan İnanç, & Çolakkadioğlu, 2004; Olsson & Hwang, 2008), they feel themselves worse and have higher stress level compared to parents with no disabled child (Oelofsen & Richardson, 2006; Olsson & Hwang, 2008). Furthermore, mothers who have a disabled child and live alone are more affected by depression than mothers living with their spouse (Olsson & Hwang, 2001). Each problem in the family affects the all members of the family. In addition, families perceive the problem they experience as their individuals matters. However, these problems are quite prevalent among all the families with a disabled child. It cannot be thought that families with disabled children experience more problems than families with normally developing children. The only difference is that families with normally developing children can handle their problems more successfully (Aral & Gürsoy, 2007; Canel, 2007; Kazu & Ersözlü, 2008; Reichman, Corman, & Noonan, 2008).

Individuals with problem solving ability are more self-confident and successful in communication and they experience less emotional problems compared to people who ineffective in problem solving (Heppner, Baumgardner, & Jakson, 1985). Studies indicated that problem solving skills are higher in individuals who have good family functions, can empathize and do not have problem in the family (Shanmugham, Cano, Elliott, & Davis, 2009).

It is considered that problems of mothers with disabled child could negatively affect their problem solving abilities. The perception and suitable solution of everyday life problems by mothers with and without disabled child is considered to positively affect the domestic relations, communications and psychology and self-confidence of mothers. From this viewpoint, the present study aims to determine the problem solving abilities of mothers, propose suggestions to improve their problem solving abilities and investigate whether different variables create significant differences in their problem solving abilities.

MATERIAL AND METHOD

Type Of Study

This study is designed in descriptive survey model to investigate the problem solving abilities of mothers with or without disabled child (Büyüköztürk, 2007).

Participants

The study included a total of 258 mothers including the mothers (n:124) of disabled children aged between 7 and 14 years and attending the special education and rehabilitation center in Kırşehir affiliated to Ministry of Education and the mothers (n:134) of children in the same age group, with no disability and attending the primary schools affiliated to ministry of education.

Measures

In the study, "General Information Form" developed by the researchers was used to collect the information about the disabled and non-disabled children and "Problem Solving Inventory" (PSI) developed by Heppner and Peterson (1982) was used to determine the problem solving abilities of mothers with and without disabled child. The internal consistency coefficient of the inventory is .90 (Savaşır and Şahin, 1997). Turkish adaptation, validity and reliability tests of the scale were made by Şahin et al., and its Cronbach Alpha Significance Coefficient was found .88. The reliability coefficient of the scale was determined as .81 by half-division method. In terms of criterion-referenced validity, the correlation with the total score in Beck Depression Inventory was .33 and the correlation with State Constant Anxiety Inventory and Constant Form was determined .45 (Savaşır & Şahin, 1997).

Problem Solving Inventory consists of 35 items. Each answer is scored between 1 and 6 points in the scale. The minimum score that can be obtained from the scale is 32, while the maximum score is 192. Higher total score indicates that person feels incompetence in problem solving.

After obtaining necessary permissions for performing the application in Special Education and Rehabilitation Center and primary schools, PSI was applied on mothers. Mothers were informed about the study, and asked to fill the inventory. It was paid attention during the formation of study sample that mothers should have a whole family composed of mother, father, full brother-sister and one disabled child.

Data Analysis

In analyses of study, it was primarily tested whether the total scores of Problem Solving Inventory had a normal distribution. For this purpose, Kolmogorov-Smirnov One Sample Test was used (Siegel, 1977) and the results indicated that the problem solving ability scores of mothers with and without disabled child did not show normal distribution ($p < .01$). Therefore, it was decided to use non-parametric statistical methods. In this regard, Mann Whitney U Test and Kruskal Wallis Test were applied to investigate whether different variables created differences in mothers' scores of problem solving ability (Green, Salkind, & Akey, 1997; Büyüköztürk, 2007).

FINDINGS AND DISCUSSION

The following tables show the findings about whether certain variables like having a disabled child, the number of children and education level of mother are effective on problem solving abilities of mothers and the results are discussed with the support of relevant information in literature.

Table 1: The Mean Scores, Standard Deviations And Mann Whitney U Test Results On Problem Solving Abilities Of Mothers With And Without A Disabled Child

Group	PSI Score			Mann Whitney U Test Results			
	N	\bar{X}	S	Rank Average	Rank Sum	U Value	p
Having a disabled child	124	91.55	19.95	156.65	19424.00	4.942	.000*
Not having a disabled child	134	78.30	19.46	104.38	13987.00		

* $p < .01$

The previous table demonstrates that having a disabled child created a statistically significant difference in problem solving abilities of mothers ($U=4.942$, $p < .01$). This result indicates that having a disabled child is effective on problem solving abilities of mothers. The mean score of mothers is closer to the maximum score that can be obtained from the scale, which gives clues that mothers especially with a disabled child might be inadequate in terms of problem solving ability. This situation could be attributed to the fact that mothers with a disabled child have to be more interested in care and education of the child and they don't know what to do due to the lack of knowledge about the disability of the child, and they become more exhausted.

Table 2: The Mean Scores, Standard Deviation And Kruskal Wallis Test Results On Problem Solving Abilities Of Mothers With And Without A Disabled Child In Terms Of The Number Of Children In The Family

Disability Status	Number of children	PSI score			Kruskall Wallis Test Results				
		N	\bar{X}	S	Rank Average	Sd	χ^2	P	Sig. Diff.
Mothers with a disabled child	Singleton	49	87.85	17.86	55.88	2	4090	.129	
	2-3 Children	62	95.11	21.58	69.02				
	4 and more children	13	88.53	17.46	56.35				
Mothers without a disabled child	Singleton	16	79.43	41659	69.91	2	8977	.011*	41700
	2-3 children	67	72.79	14.63	57.87				
	4 and more children	51	85.19	22.70	79.39				

* p<.01

Table 2 reveals that the number of children did not create a significant difference in problem solving abilities of mothers with a disabled child ($\chi^2(2)=4.090$, $p>.05$). This could be caused by the domestic relations rather than the number of the children. Bekko, Konstantareas, & Springer (1987) also reported that the number of children in the family did not create a significant difference in stress levels of mothers. However, the number of children created a significant difference in problem solving abilities of mothers without a disabled child ($\chi^2(2)= 8.977$, $p<.05$). The reason of this difference was established with binary Mann Whitney U Test. In the comparisons of the groups in Mann Whitney U Test, the difference was found to be caused by the different problem solving abilities of mothers with 2-3 children and mothers with 4 or more children. There could be certain problems like jealousy etc. between siblings in families with more than one child. In this case, mothers feel themselves in a more problematic environment. On the other hand, the most favorable attitude towards the disabled child was determined as the parental approach in families with a disabled child. Ceylan (2004) reported that the number of children was effective on stress levels of mothers, and having only one child increased the depression levels of mothers with a disabled child.

Table 3: The Mean Scores, Standard Deviations and Kruskal Wallis Test Results on Problem Solving Abilities Of Mothers With And Without A Disabled Child I Terms Of Education Level

Disability status	Education level	PSI Score			Kruskall Wallis Test Results				
		N	\bar{X}	S	Rank average	Sd	χ^2	P	Sig. Dif.
Mothers with a disabled child	Primary School	86	95.86	19.18	70.28	2	13155	.001*	41671
	Secondary School	32	82.03	41900	44.95				
	University	6	80.66	21.55	44.58				
Mothers without a disabled child	Primary School	71	84.84	20.73	81.15	2	23520	.000*	1-2 1-3 2-3
	Secondary School	54	72.55	15.13	56.49				
	University	9	61.22	15950	35.83				

* p<.01

Considering the problem solving ability mean scores of mothers with and without a disabled child in terms of their education level, education level was determined to create a significant difference in problem solving abilities of mothers with a disabled child ($\chi^2(2)=13.155$, $p<.01$). Mann Whitney U Test was carried out to further investigate the significant differences between groups and the difference was determined to be caused by primary or secondary school graduate mothers with a disabled child. In addition, education level also

created a significant difference in problem solving abilities of mothers without a disabled child ($\chi^2(2)=23.520$, $p<.01$). As a result of the Binary Mann Whitney U Test applied to determine the source of the difference between groups, the difference was observed to be caused by all the three groups. In light of these results, it can be concluded that education level is effective on problem solving abilities of mothers.

It was reported that anxiety levels of mothers with a disabled child decrease with higher education level (Ahmetoğlu & Aral, 2007; Coşkun & Akkaş, 2009), and education level created a statistically significant difference in methods of coping with stress (Gülşen & Gök Özer, 2009). The previous studies indicated that problem solving ability improves with increasing education level, and mothers feel themselves better in terms of problem solving ability; on the other hand, mothers with low education level suffer more from the responsibility of children care and they are negatively affected by this (Gallegher, Beckman, & Cross, 1983; Quine & Pahl, 1991).

CONCLUSION AND RECOMMENDATIONS

As a result of the study, it was determined that having a disabled child and education level created statistically significant differences in problem solving abilities of mothers. Mothers with a disabled child were observed to have lower problem solving abilities than mothers without a disabled child. The number of children created a significant difference in problem solving abilities of mothers without a disabled child, while social security caused a significant difference in problem solving abilities of mothers with a disabled child.

Difficulties experienced by mothers with a disabled child start with the realization of the problem with their child and the diagnosis. The shock they could suffer is closely related to the approaches of experts they first communicate; therefore, these experts might provide the consultancy needed by parents through correct information about the diagnosis and the disability of the child, and give possibility to get better knowledge about certain issues like medical services and instruments. The participation of families can be obtained in the education of their children. Experts and educators could make home visits to observe the development level of children.

Negative responses of environment and close relatives to the disability of the child could disturb the balance in the family. These attitudes should not be turned into a problem, and suggestions of the experts should be applied without paying attention to the responses of the environment. Mothers could be contacted through educators in the schools, and their knowledge level about the education and condition of their children could be periodically obtained.

Supporting parents of disabled children on economic issues, which are among the biggest problems, could automatically solve many problems. Therefore, it is required to make necessary legal regulations for eliminating the loss of earnings and economic problems. Workers of the institutions where families bring their disabled children for treatment and education should be also informed about the emotions of families in addition to children. In addition, providing family education as well as individual and group consultancy services in these institutions could increase the problem solving abilities parents.

There are a limited number of studies in literature about the problem solving abilities of mothers; for this reason, these studies could be increased especially within Turkey. The future studies might investigate the effects of different variables on problem solving abilities of fathers or other family members.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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CONTINUING MEDICAL EDUCATION IN BULGARIA - ORGANIZATION AND ATTITUDES

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ABSTRACT

Conducting continuing medical education is an important element in the implementation of national health policy and aims to increase and maintain the qualification of medical professionals performing diagnosis, treatment and rehabilitation of medical institutions. In the article are presented and analyzed legal documents and forms of continuing training of doctors in Bulgaria. Survey conducted by opinion was delivered by doctors on how to realize the training and change in quality of medical care provided by them after a continuing medical education. Data from the survey indicate that the majority of respondents practitioners / 81% / not have enough time to participate in various events in the conduct of continuing medical education. This leads us to search for new forms and ways of conducting the CME.

Key Words: Continuing medical education, quality, doctors.

CONTINUING MEDICAL EDUCATION IN BULGARIA - ORGANIZATION AND ATTITUDES

Every doctor bears the responsibility of providing him- or herself with medical knowledge that is abreast of time considering the novelties in science while actively participating in continuing medical education (CME) thus offering the best and most quality possible cares for his or her patients. This is doctor's moral and professional responsibility throughout his professionally active life. In this light, the CME is inherent, necessary and mandatory for every practicing doctor at each level of the healthcare system as well as for the lecturers in universities (Zlatanova T., R.-Velikova Zlatanova, 2008).

The idea of continuing medical education (CME) is very old. The first steps for implementing it were made as early as 1947 in the USA.

On the 20th of July 1958 the European Union of Medical Specialists (UEMS) was founded in order to harmonize the medical specialists in the European Economic Community (EEC) back then, being the predecessor of the European Union (EU).

In October 1999 to UEMS the European Accreditation Council for Continuing Medical Education (EACCME) was created as it aims at equalizing the quality and ensure standardized CME of the medical specialists in Europe. It

is recommendable for the European countries that do not have developed accreditation system for CME of their own to accept the one of UEMS.

EACCME, the American Medical Association (AMA, www.ama-assn.org) and the Accreditation Council for Continuing Medical Education (ACCME, www.accme.org) in 2000 agreed on the mutual recognition of the CME credit points. The end objective of this mutual approval is providing the opportunity for free migration of doctors between the various states.

This way, the CME events held by any of the three organizations get the automatic accreditation of the other two. Actually, uniform system was created for CME assessment in Europe and North America. The basis of this CME 'globalization' was the CME document that was verified by the World Federation of Medical Education (WFME, www.sund.ku.dk/wfme) in 2001 .

UEMS members are the CME accreditation bodies of 28 European states; associated members are Croatia, Turkey, Romania and Azerbaijan; Israel is an observer. The Bulgarian Medical Association is not a UEMS member.

Holding a continuing medical education is an essential element when it comes to implementing the national healthcare policy and objectives, improvement and maintenance of the medical specialists' qualification, as these specialists take care after the diagnostics, treatment and rehabilitation in the healthcare institutions. The improvement of medical specialists' qualification is the main prerequisite for ensuring the necessary quality of the medical activities and improvement of their effectiveness (Velikov St., 2011).

In conformity with paragraph 1 of article 182 of the Health Act, the organization, coordination, holding and registering doctors' continuing education are assigned to doctors' branch organizations. The education terms and conditions are defined in the contracts entered with the institutions of higher education.

After passing Ordinance № 31 [**Hata! Başvuru kaynağı bulunamadı.**] the post-graduate education of doctors was artificially divided into:

- ☞ Acquisition of major that is organized, registered, held and controlled by the institutions of higher medical education, the medical colleges and the Military Medical Academy (for the military medical majors) (Article 5)
- ☞ Holding continuing qualification of the doctors that is being organized, registered, held and controlled by the Bulgarian Medical Association in conformity with the terms and conditions defined in the contracts entered with the institutions of higher medical education, the Military Medical Academy, the Union of the scientific medical societies in Bulgaria, the Union of scientists in Bulgaria and the medical associations in terms of majors (Article 40)

The continuing qualification patterns are the following:

- ☒ **Category A:** Lecture, discussion, clinical day, collegium, presentations etc. One point per hour – not more than 8 points a day. Up to 60 points are recognizable for 3 years;
- ☒ **Category B:** Congresses, symposiums, conferences etc. In the case they cannot be certified in view of academic hours, they are recognized as 3 points per 1/2 day, with not more than 6 points per day. Up to 60 points are recognizable for 3 years;
- ☒ **Category C:** Continuing qualification patterns with foreseen participation of every trainee individually (practical exercises, individual training, courses). 1 point per one academic hour is recognized as well as one additional point per course/lecture, up to 5 hours – 5 points per day;
- ☒ **Category D:** Continuing qualification pattern with distance learning. The educational material contents should be approved in advance by the Management Board of the Bulgarian Medical Association. The grade is 1 point per 1 academic hour (45 minutes). Up to 60 points are recognizable for 3 years;
- ☒ **Category E:** Education with medical literature, other manuals, newspapers, magazines, subscriptions etc. These are certified with subscription quittances. One subscription – 5 points. Up to 30 points are recognizable for 3 years;

- ✂ Category F: Authors of a report, publication, paper, feedback on the side effects of medications etc. 10 points are assigned for the performance or 10 additional points to the points assigned for the educational event (congress etc.) Up to 30 points are recognizable for 3 years;
- ✂ Category G: When it comes to passing an exam for grading the acquired knowledge 5 additional points are assigned for categories A and B.

Certificates are issued after the doctor has collected and documented 150 points in a term of 3 years and has submitted an application for having a certificate issued by the particular regional collegium of the Bulgarian Medical Association thus certifying where necessary the continuing qualification undertaken by him or her during the crediting term.

In order to hold an effective continuing education we need to elaborate regulations that clearly define the terms, conditions, criteria, requirements and control when it comes to this type of education, as well as the obligations and prerogatives of all participants in the process, while providing opportunities for quality continuing education, the necessary resources and control, thus ensuring high level of professional qualification.

All held events, as well as the credit points and participations of every doctor are being registered in a common, uniform information bank that is being maintained and funded by the Bulgarian Medical Association. Each organization (of professional groups – societies and associations, scientific societies etc.) that organizes and holds CME maintains the same register for its activities and provides it for filling in the uniform information bank in the Bulgarian Medical Association.

After evaluating the funding received in the distance learning system to the Bulgarian Medical Association in line with the CME, we should consider significant part of them for maintaining the CME department (salaries, consumables etc.), as well as for funding the software elaboration for the database maintenance. With some of the remaining funds partial funding should be ensured for the CME activities organized and held by the societies and associations in view of the individual majors, the scientific societies, the regional doctor collegiums or the head office of the Bulgarian Medical Association (seminars, congresses, E-CME).

The societies and associations in view of the individual majors, the scientific societies should be responsible for defining the annual minimum amount to be disbursed for CME, organization and holding. The Bulgarian Medical Association controls, coordinates, registers, supports and legitimates these activities (Petrova - Gotova Ts, 2008).

The individual participation of every doctor in the CME should be based on positive motivation. We could try implementing various methods, but definitely the most effective one is the financial compensation. The choice of every doctor concerning the particular CME pattern should be absolutely independent of those that fund and regulate the CME (Zlatanova T., 2010).

Every doctor should be provided with the opportunity to participate in the CME activities in the limits of the defined general framework, in the scope of his or her financial opportunities and proposals for training in the various areas of interest (Zlatanova-Velikova R, Velikov St., 2011).

The Bulgarian Medical Association adapts in the light of the Bulgarian circumstances the German accreditation system according to which for one academic hour of continuing medical education one credit point is assigned. This system is used for equalizing the certificates for attending congresses and symposiums abroad received by the Bulgarian doctors.

The most frequent patterns of continuing medical education are the congresses, symposiums and conferences. We present the results of pilot research of 95 general practitioners in the month of January 2012 concerning their opinion on the continuing medical education.

Of all enquired general practitioners 67,4% are female and 32,6% are male. 43,2% of the doctors that participated in the research are aged between 41 and 50. In view of their practice location - 43,2% are in the capital, 52,6% in towns and 4,2% in villages. 62,1% of the enquired general practitioners have individual practice for primary medical care.

Acquired major in general medicine is attributable to only 10,5% of the general practitioners that participated in the research and those registered for specialization in general medicine are 48,4%.

The question: "According to you, what is the manner of implementing the continuing medical education in the case of general practitioners?" got the answers presented at **Figure 1**. According to the figure the highest relative share of those that are of the opinion that CME should take place as congresses, conferences and seminars (72,6% ±9,3%), as well as with learning in small groups (72,6%±9,3%). There are many enquired general practitioners that are of the opinion the individual learning (36,8%), as well as learning via e-educational media (35,8%) are suitable version for holding the CME.

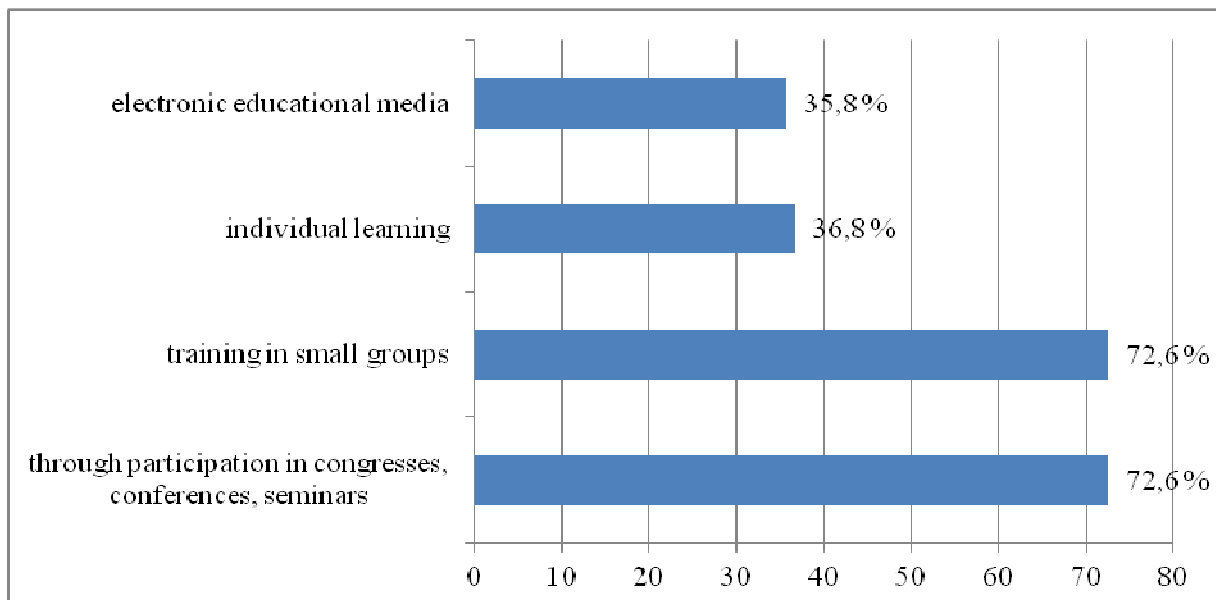


Figure 1: Opinion of the general practitioners on the manners in which the continuing medical education should take place in their case

Since much of the time the general practitioners are devoted to working with their patients, and by law they should be available 24 hours round, we asked them whether they have the time to participate in continuing medical education events. The resulting answers are presented at **Figure 2**. The highest is the relative share of the general practitioners that participated in the research and answered they do not have enough free time – 81,1% (±8,5%). There are many general practitioners that answered they didn't have any time 12,6% and only 6,3% have time for learning. Consequently, when it comes to organizing CME events we should coordinate in advance the time and place with the general practitioners so that they could actively participate and the learning process would bring about the expected positive results of better quality medical service.

We asked the general practitioners whether they believe that thanks to the knowledge acquired during the continuing medical education they will improve the quality of the medical cares provided by them (**Figure 3**). The highest is the relative share of those that answered they would partially improve the quality of the medical cares (67,4%) they provide for their patients. There are many that believe they would fully improve the quality of the medical cares provided by them – 28,4%, thanks to the knowledge acquired as a result of the continuing medical education. Consequently, a majority of the general practitioners (95,8%) rely to some degree on the knowledge acquired via the various CME events for improving the quality of the medical cares provided by them.

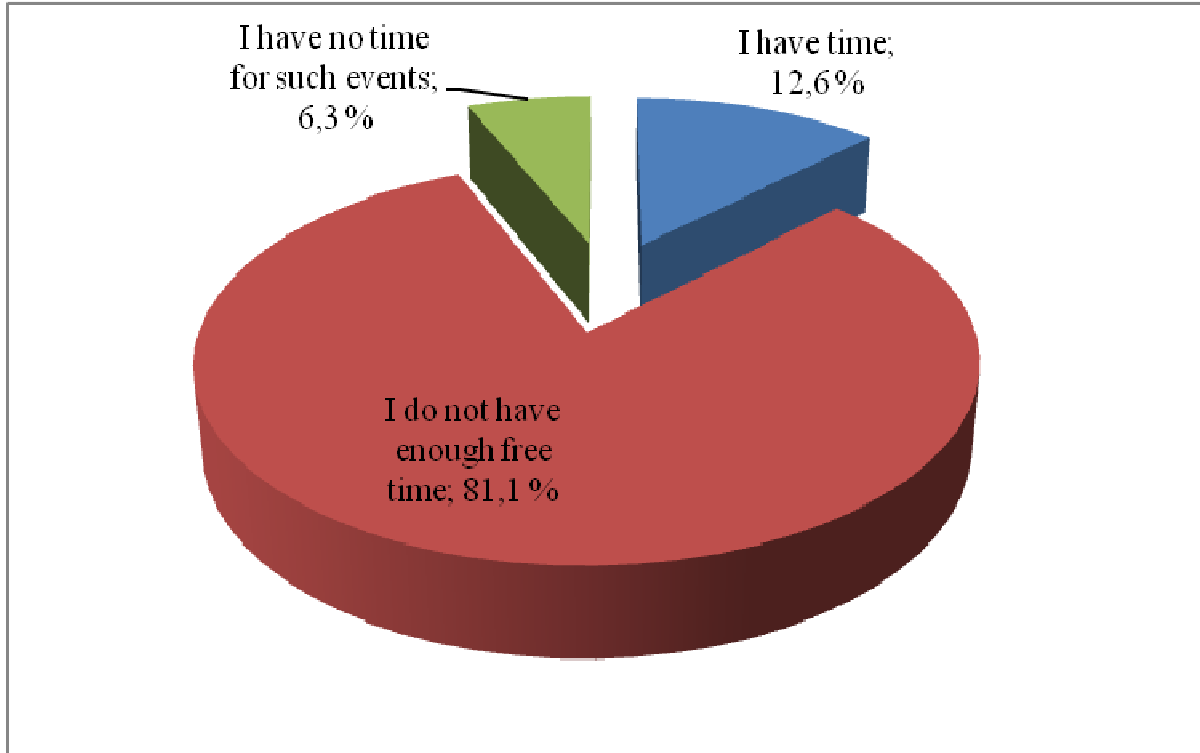


Figure 2: Opinion of the general practitioners on the availability of time for participating in continuing medical education events

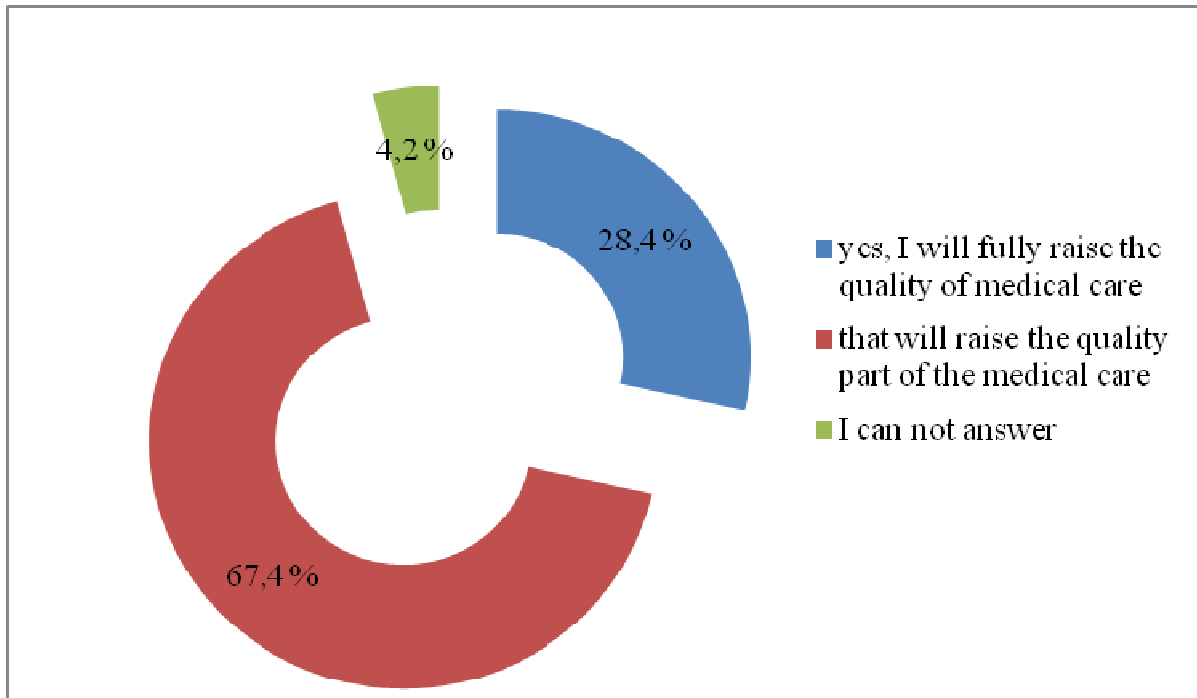


Figure 3: Opinion of the general practitioners on the change of quality of the medical cares provided by them thanks to the continuing medical education

On the basis of the presented results we could make the following conclusions:

1. Setting up the idea of continuing medical education on scientific base with precise rules and its most intensive and massive development in Europe was in the period of 2000-2006. All states share the need of quality, accessibility and difficulties encountered when it comes to funding;
2. In view of holding effective continuing education we should elaborate regulations that clearly provide for the terms, conditions, criteria, requirements and control when it comes to holding this type of education;
3. The general practitioners are of the opinion that the most suitable pattern of holding the continuing medical education are the congresses, conferences and seminars, as well as learning in small groups;
4. The highest relative share of the enquired general practitioners (81,1%) do not have enough time for participating in the various events for holding continuing medical education;
5. According to 67,4% the knowledge acquired during the CME will partially contribute for improving the quality of the medical cares provided by them;
6. The participation in the continuing medical education should be one of the rules for good medical practice that are in effect for each major.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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LEARNING OBJECT IN SERVICE OF MATHEMATICS TEACHERS: MEDIATION STRATEGIES

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ABSTRACT

Facing the Information and Communication Technologies (ICT) in society, the importance of researches to the pedagogical use of digital Learning Objects (LO) in Flash devoted to the teaching and learning of mathematical contents are highlighted. Making use of these LO is to try to promote a rapprochement between educational practices and the digital reality in which young people are included and require appropriate methodologies geared up for the processes of teaching and learning. This study aims to analyze the processes of building pedagogical practices developed by mathematics teacher in the classroom, with the use of LO, relating concepts of Exponential Function and Arithmetic Progression, applied on a high school students group. It promotes a discussion resulting from participant observation discoursing about the mediation strategies as they occurred, and the potential difficulties in interacting teacher-student-LO. It is concluded that the actions were developed not to allow any passive and unilateral discussions.

Key Words: Mediation strategies, learning objects, mathematics.

INTRODUCTION

The performance of Brazilian students in mathematics, according to the PISA (Programme for International Student Assessment), SAEB (Evaluation System of Basic Education) and ENEM (National High School Exam), has not been satisfactory (ROSISTOLATO; VIANA, 2014). This may be evaluated by an increasing decline in student interest in how the mathematical concepts are presented in the classroom (LUCAS et al., 2014).

What causes the student to lose interest in the classroom during the teaching and learning of mathematical content?

According Lorenzato (2007), the success or failure of students depends on the mathematical content of an established between them and these relationship issues. To succeed in the process of teaching and learning mathematics, it is necessary to link the mathematical content to the reality in which the student is placed.

Pedagogical practices traditionally known are giving way to new forms of teaching and learning through the meaningful integration of Information and Communication Technologies (ICT) and processes of teaching and learning in the classroom has become a potentially innovative challenge (NUNES, 2009, p.3).

Silva, Fagundes and Basso (2008) emphasize that only have access to the use of ICT is not enough that there is a quality education system. New ways of experiencing learning supported by the use of ICT should be adopted in order to adequately address the wants and desires for a quality education.

Based on these considerations, and in order to contribute to the improvement of the teaching and building knowledge of mathematical content of the student's high school, this study aims to examine the processes of construction of teaching practice for teacher, relating concepts and Geometric Progression Exponential function with the use of a Learning Object (OA).

EXPONENTIAL FUNCTION AND GEOMETRIC PROGRESSION

The way mathematics is taught in the classroom reflects several difficulties presented by students during their study. Meier (2012), Oliveira and Lopes (2012) report that they have difficulties in: (i) establish connections between mathematical content and its interaction with the world; (ii) promote inter-relationships between arithmetic and algebraic equations; (iii) interpret the codes of mathematical content in natural language and mathematics own language, among others.

In some kinds of content, eg, exponential function, Brucki (2011) reports that there is student interest in studying it. This is because they have access to practical applications involving the subject, nor do they establish relationships between Exponential Function and other mathematical content.

Also in relation to the exponential function, as authors Brucki (2011) and Angiolin (2009) emphasize that students present during the study, difficulties in conversions of algebraic record for the chart record; manipulation of equations; operations with rational and negative exponents and interpretation of the meaning of empowerment and their properties.

Regarding the study of Geometric Progression, Sousa (2010) states that during the resolution of problem situations, students did not achieve much success when they needed to understand the logic proposed for its resolution. Ie, they could not succeed during utterance interpretation. Moreover, had difficulty expressing mathematically thinking, using the nomenclature improperly and not showing accurate understanding of mathematical concepts.

In fact, according Bellemain and Siqueira (2011), the teaching of mathematical functions by some teachers adheres to the passage of the equation for your graph with the construction point to point and forget that the reverse transition brings problems. For these authors, the types of records are explained separately by the teacher during the teaching of mathematics. But joints between them are considered as a natural consequence of mathematical knowledge. So that the student knows articulate records, teachers should aim to make them mathematical objects.

Given the difficulties described, involving the learning of some topics of Exponential Function and Geometric Progression, Moura (2004) suggests strategies for the interdisciplinary study of these issues, aiming to overcome some of the difficulties experienced. The author argues that in establishing contextualized situations relating such content, promotes the construction of algebraic concepts significantly to the student, allowing them to establish connections between algebraic concepts and the relationships between them are exploited to the full.

LEARNING OBJECTS AND THEIR APPLICATION IN THE AREA OF MATHEMATICS

The concept of OA emerged in the 90s, having studied literature in various settings, and the proposal by (WILEY, 2000) is the most quoted. The author defines OA as any digital resource that can be reused to assist learning.

In this article, we adopt the definition of Lopes (2012) which considers OA digital or non-digital resource to be used in actions of teaching and learning processes composed of knowledge mediation between subject-subject, when in use, to allow new knowledge.

According to Lopes (2012), if the object does not allow teaching and learning strategies that can support different teaching practices, is not characterized as an OA to support the construction of knowledge.

In the context of this work involving the field of mathematics, Sampaio and Almeida (2010) and Castro Filho et al. (2011) applied OA on mathematical content in the computerized classroom and reported some advantages in its use.

Sampaio and Almeida (2010) applied an OA on parity of numbers. The objective of the research was to analyze how the use of an object, the mediating role of instrument teaching and learning process may influence the students' learning. As a result of this analysis highlighted that the use of OA served as a tool that encourages potential and might modify the forms of teaching and learning, enabling and challenging learning by dynamic and playful manner with which he presents the knowledge.

Castro-Filho et al. (2011) applied an OA which aimed to analyze what the contributions of its use for solving activities that contemplated the construction and interpretation of graphs. The authors point out that, during the analysis, it was observed that there were significant advantages in the use of OA in the role of mediating tools of learning, in that it resulted in a better understanding of graphics and visualization elements necessary for teaching math concepts. They also reported that one of these advantages is related to the fact that students can understand the concepts, using a simple graphical way to work, questionnaires and tables supported by the object.

SOCIO-HISTORICAL THEORY: MEDIATION AND ZONE OF PROXIMAL DEVELOPMENT

This section presents two concepts of socio-historical theory: mediation and zone of proximal development that underlie this work.

Vygotsky (2007) defines mediation as a feature of human cognition which refers to the internalization of activities and socio-historical and cultural behaviors, including the use of tools and signs in man's interaction with the social space in which it operates. This mediating action that develops the social interaction between individuals from the use of instruments (signs) mediation aims at the development of the subject (PASSERINO, 2005).

The contribution of socio historical theory possible to understand how mediation occurs in the teaching and learning process, it has a fundamental role both by the facilitator (teacher who encourages students), through reflections, offering help, as for its importance for student autonomy and ownership of knowledge (PASSERINO et al., 2008).

Vygotsky (2007) discusses the relationship between the development process and the appropriation of knowledge occur within the Zone of Proximal Development, which establishes two levels of development. A level that is called real development and another potential development. The first deals with the actions and processes that the learner can do without help. Second, the actions that the student is able to accomplish with the help of a more experienced person. So is the Zone of Proximal Development (ZPD) that transposition occurs between the actual developmental level of the student and their potential development (VYGOTSKY, 2007).

The concept of mediation, this work has the intention of intervention, interference of a subject or between subjects or groups, with the aim of achieving goals, occurring in the educational environment, in the context of a discussion between the student, the teacher in the role the mediator and the OA.

CASE STUDY: STRATEGIES FOR MEDIATION IN THE RELATIONSHIP BETWEEN EXPONENTIAL FUNCTION AND GEOMETRIC PROGRESSION

In the second half of 2013, in a classroom course of the second year of high school in a Federal Education Institution, it was proposed to apply a OA developed by a research group composed of teachers in the area of mathematics and scientific initiation scholarship of the institution.

This proposal came from the initiative of the research group that in researching mathematical content that addressed the relationship between Exponential Function and Geometric Progression through a digital OA, OA did not find any that did this relationship and talking to a professor of mathematics secondary education institution, this demonstrated interest in the application of OA.

For exploration of the contents of Exponential Function and Geometric Progression, a survey was conducted in textbooks of high school and on the Web in scientific publications. Selected surveys conducted between texts discoursed about concepts, addressing the content of Exponential Function and Geometric Progression and the use of ICT.

OA Digital to present the relationship between these contents in scientific journals in the area of Mathematics and OA repositories were also surveyed. How not found one that relates the two OA content has motivated the construction of a by addressing the relationship between these contents to support the work of the teacher.

This work was conducted through a case study with direct observation, analyzing and describing the records of mediation between the teacher-student-OA. The study took place in the computerized classroom, we had available twenty-one computers and duration of two hours and thirty minutes. Forty-two students participated and the study was done in pairs. The record of the lecture was recorded and filmed.

The teacher had access prior to its application in the computerized classroom to OA and observation it became clear that developed some teaching strategies such as: (i) the activities of OA were developed in pairs in order to enable and encourage social interactions between subjects, (ii) discussion of two contents (Exponential Function and Geometric Progression) and the relationships between them, and (iii) mediation of the teacher with students, seeking that the student was the agent of their learning process.

At the end of the previous lesson the application object, the teacher, who was not a teacher of the class in the first year, applied a questionnaire with three questions, to investigate whether students had already studied the contents of Exponential Function and Geometrical Progression in first year of high school, basic to the application of OA prerequisites. In analyzing the responses, we found that all forty-two students had already studied such content. As for seeing the relationship between them, 25.64% of students responded affirmatively. When asked what was the relationship between these contents, 50% responded that a Geometric Progression "becomes" one exponential function, 20% answered that they both have potentiation, 20% said they both "have exponent", and 10% did not know or did not reminded of the relationship.

Can conclude that, although some students have already seen the relationship between the two contents, they did not know how the content is related. This can be seen among those who have seen the relationship between content, only 50% knew that a Geometric Progression was a restricted case of exponential function.

In the next lesson, presenting the object to teachers, the teacher warned that while answering the questions in the OA, they could consult with other classmates and the teacher herself. This interaction teacher-students and students-students aimed to develop a mediation in which, through these interactions, we attempted to observe a link between students and the OA used for resolving the questions posed.

It was also advised that they could use a sheet of paper to facilitate calculations for the resolution of issues. This sheet was used appropriately named and associated with the computer on which would be recorded in .txt

during application of OA response. This request was intended to supplement the data analysis, monitoring student mathematical reasoning since the resolution of the issues to put your final answer in OA. This is because students would be faced with new and challenging situations, and often the skills acquired would prove insufficient to meet them. By using their previous knowledge, the student modifies them, rejects them, complete them, or resets them discover new contexts of use.

The OA was applied at room consists of screens that had five questions in context with items to be answered, in which each question was described by an image representing the context of the situation described.

During application, the teacher was circling the room, observing how students interact with their peers and with OA. It was observed that, before consulting the teacher, they sought to discuss the issue with colleagues proposed themselves (student-student interaction).

In extracts of dialogues analyzed, while mediation process between teacher and student, used the legend: A = students, P = teacher and A (n, n) = double.

ANALYSIS OF THE RESULTS OF THE APPLICATION OF OA WITH HIGH SCHOOL STUDENTS IN THE COMPUTERIZED CLASSROOM

It brings this result to analyze certain items of some of the questions posed in OA, considering the relevance observed in mediations occurred.

The first issue described in Figure 1 was stated as: "Everyone has two parents, four grandparents, eight great grandparents, sixteen great, great grandparents, etc. Every generation that kicked, we double the ancestors" and goals: to interpret the statement to organize the data in the table; to correlate the rate of sequence number generation; manipulate the properties of powers; interpretation of the chart to reach its generalization; relate the data table with the result and to reflect on the common function found and the sequence formed features.



Figure 1: Statement of question
 Source: own authorship

The item (a) asked to complete the table according to the genealogy of each student and in item (b) ordain that the numbers presented in the table in the form of sequence. At this time of the application, seven doubles the 21 requested the help of the teacher. Realizing that the difficulty lay in completing the sequence, the teacher suggested that they desenhassem your own family tree on notebook sheet, taking as an example the image of the proposed situation. This suggestion was made because of the error of the double was in place, as the first

term of the sequence, the zero element. With the proposed design, the pairs who asked for help realized that there was no generation of a family with zero person.

It was noticed that the seven teams who did the design requested by the teacher failed to solve the items (a) and (b) correctly. It is believed that the figurative element, in this case the design of the students encouraged to reflect on the terms of the sequence. The seven double responded in part (a) that the first generation: 2, second generation: 4, 3rd generation: 8 and 4th generation: 16 and part (b) 2, 4, 8, 16, 32.

Another item that was possible to observe a mediation strategy was the item (f), which sought that students associate the common characteristics between the function found in part (e) and the sequence formed in part (b) as shown in Figure 2.

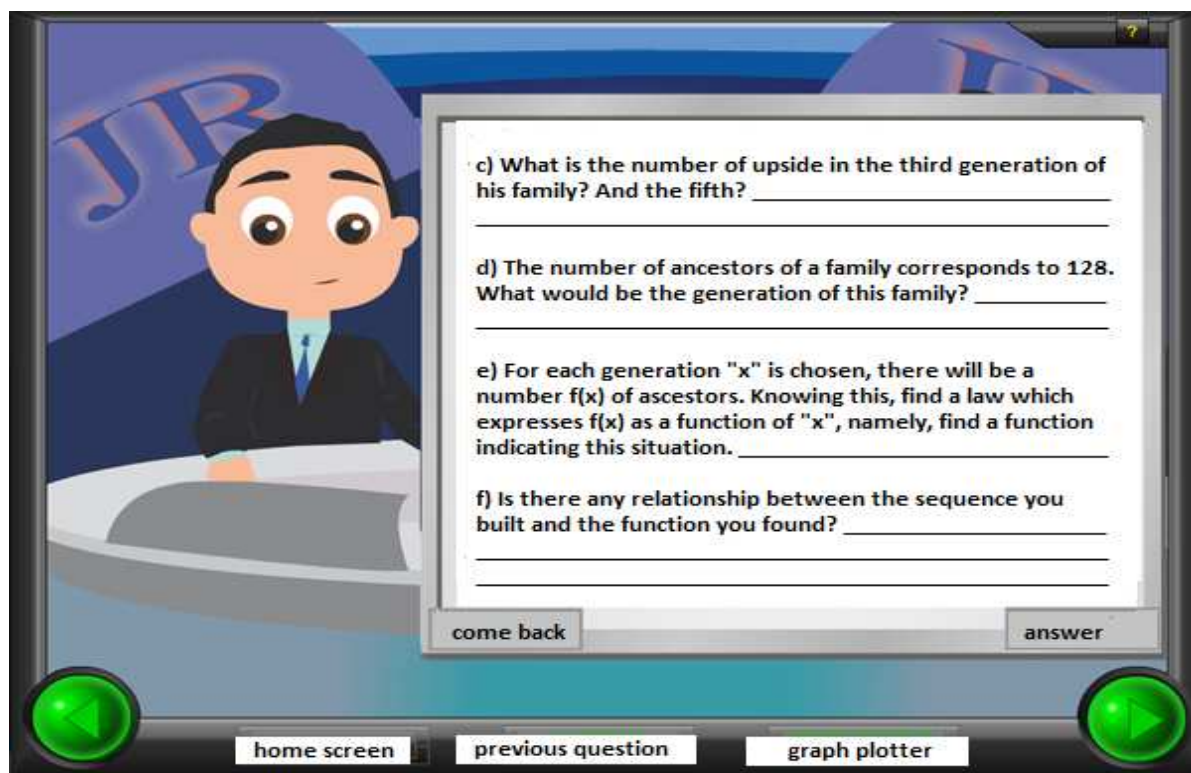


Figure 2: OA screen with topic (f) of the first question
 Source: own authorship

A teacher who does not intervened in the knowledge construction process of students was asked by them to her to explain about what is asked in the question. The mediation between the teacher and the students it happened this way. She went to the front of the room and toward the contextualized image of the projection issue, began a strategy of dialogue-exhibition:

<P>: *Let's read the wording of the question together.*

<P>: *Is there any relationship between the sequence that you created with the function you found? What did you notice what happens to the numbers in the sequence?*

<A>: *Each term of the sequence, the successor is twice the previous term.*

<P>: *OK! And what did you understand the function of the law found? Write table data in powers of the same base.*

<A>: *The law exponent of the function is the number of generation!*

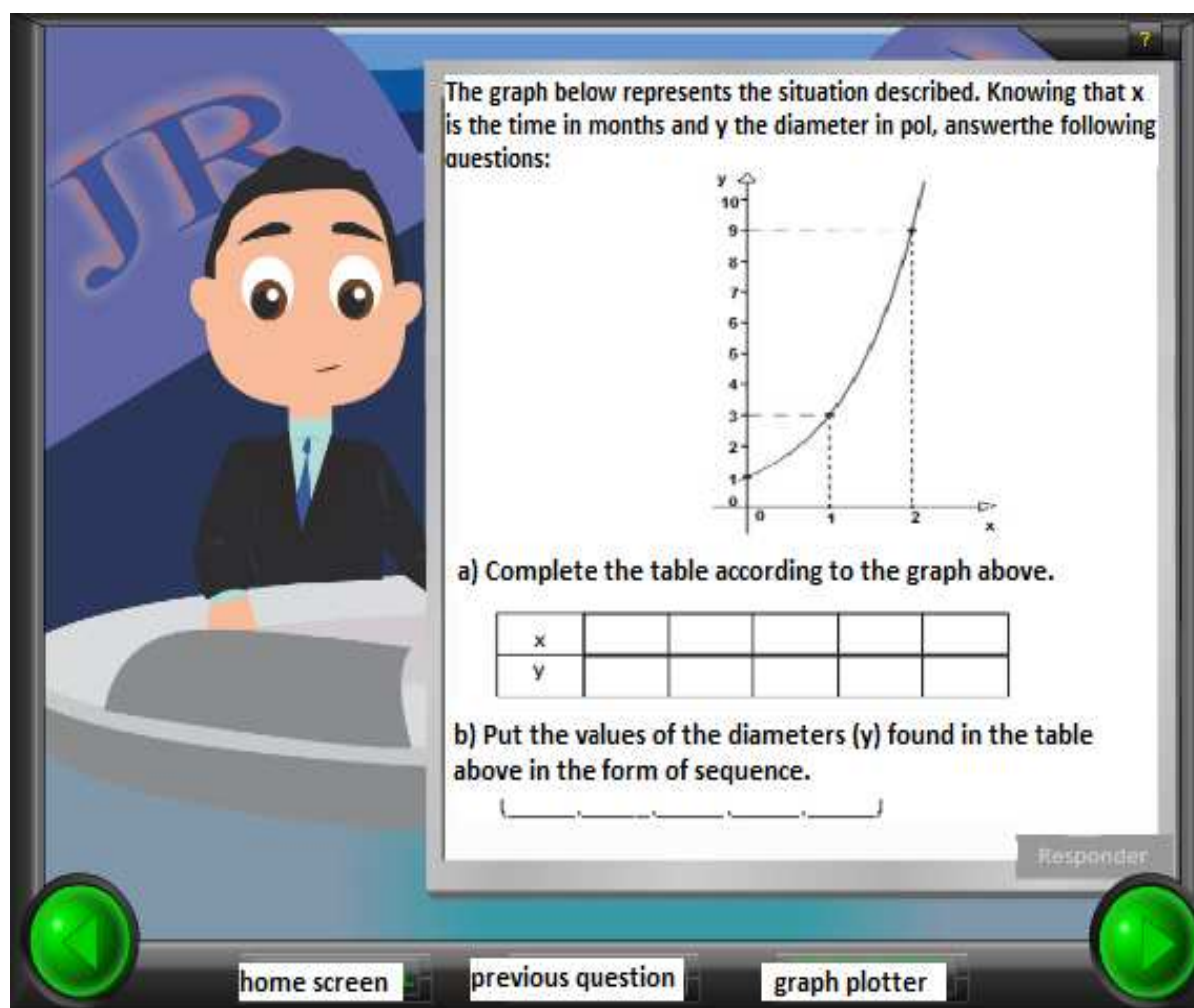
<P>: *Done! Therein lies the answer to the question. Very nice!*

With the mediation of the teacher with students during the resolution of this item, it was noticed that all the students were able to describe properly, natural language, the analysis found between the function and the

sequence formed. Additionally, recorded their responses in OA correctly, two examples of pairs <A3.4> and <A11.12> these responses, respectively, can be observed after mediation with the teacher: "Yes, because every generation the number of people increases, this being elevated to the corresponding generation "and" number Yes, because with this function you can calculate any number of sequence ".

At that moment, it was inferred that the students who were in the ZPD had a level of real development before the mediation took place.

In another question (third), part (a) and (b) shown in Figure 3 were aimed at the interpretation of a type graph $f(x) = 3^x$, as well as the organization of graph data in a table. From this table built, came to the correlation of the function with the index of the term of the proposed variable Geometric Progression.



The graph below represents the situation described. Knowing that x is the time in months and y the diameter in pol, answer the following questions:

a) Complete the table according to the graph above.

x					
y					

b) Put the values of the diameters (y) found in the table above in the form of sequence.

home screen previous question graph plotter

Figure 3: Screen with the topics (a) e (b) of the third issue
 Source: own authorship

The teacher noticed that some pairs had difficulty recognizing the point that was on the Y axis, and led the students to reflect, developing a strategy of dialogic lecture that aimed at achieving the goal we wanted to reach through the process of student learning . The teacher made the students to participate actively, in which prior knowledge was exploited and taken as a starting point. The teacher went to the projection of OA within the room and began the following dialogue-exhibition:

<P> Let us recall some concepts. If point is at the intersection of the axes, what point is that?
 <A5>: Zero!
 <P> Well done! And we represent a point? Only one value, two values?

<A6> (double student A5) ordered pair? Two points? Is (0.0)?

<P> Exactly! So in the situation you are seeing, the point is on the axis OY, what value of x and y?

<A> Y is one and x is zero.

<P> So, the first point on the graph is ...?

<A>: The point (0,1)

<P>: Very good!

Double that requested the help of the teacher to resolve the issue, from her mediation, able to correctly complete the table and the sequence, ie, able to convert the log plot for the table and the table for the sequence requested. The teacher once again gave no reply. Took students to reflection through mediation.

Upon resolution of the part (f), the teacher was asked by some double, to help them in terms of the generalization sequence. The teacher asked the double return on the screen that had the sequence, suggesting that they formed to write the following, from an understanding of the context of the question, with the data written as a power of the same base. This suggestion aimed to help them visually relate to the exponent power formed the index term of the sequence. One realizes that the teacher has used a strategy of problem solving, in which coping with a new situation requires the development of reflective, critical and creative thinking on data described in the formulation of the problem. Demand the application of principles, or laws that can not be expressed in mathematical formulas. In issue three, the strategy of mediation occurred as follows:

<P>: Go back to the screen where it has the design of a biologist and analyze the sequence formed. Write this sequence, with numbers in the form of power and show the same basic representation of the position.

<P>: Were you able to observe something?

<A>: The leaf is 1 centimeter in diameter initially. The exponent of the power generated is one less than the index of the term of the sequence.

<Q>: And then? How to write for this one months x, any?

<A>: 3^{x-1}

It was noticed that during the suggestion proposed by the teacher, the students viewed the relationship between the index of the end of the sequence and the exponent of the power base 3. Students wrote: $a_1 = 1 \Rightarrow 3^0$, $a_2 = 3 \Rightarrow 3^1$, $a_3 = 9 \Rightarrow 3^2$.

During the analysis of the responses of the students, it was observed that the double hit that this item had registered on the sheet of paper which the teacher asked them to do.

The teacher, to circulate among the pairs around the room, he noticed that some students were struggling to understand what the statement asked. He decided to interfere with the application, providing a mediation with students, as described below:

<P>: Go back to the table and the following screen. What happens to the data table?

<A>: Passing The diameter triples each month.

<P>: OK! Now analyze what happens with the terms of the sequence.

<A>: Each successor term is triple the previous.

<P>: If the triples over the following months diameter, and the terms of the sequence too, so ...?

<A>: The Geometric Progression formed is an exponential function!

After mediation by the teacher with the students, they returned the question to answer it. During the analysis of the answers given by the double, it was found that all students were able to write in natural language, a Geometric Progression is an exponential function.

At the conclusion of the data analysis, we conclude that the students mastered without the mediation of the teacher, the use of OA as ICT, on the other hand, does not dominate alone observed and analyzed some items that require abstract / reflective thinking.

CONCLUDING REMARKS

Five issues were proposed in the OA for the purpose of discussing relations between Exponential Function and Geometric progress, but it was not possible to bring all of these discussions on the limited space in this paper. However it can be concluded that the application of an OA by the teacher while teaching strategy, addressing relations between the concepts of Geometric Progressions and Exponential Functions, brought the possibility of the student experience everyday questions that refer to these relationships, allowing us to understand the study of these concepts, widening his field of knowledge at the time that can make this relationship.

The mediation occurred, mainly the "Talk aloud," allowed to infer that this is a suitable means to formalize mathematical concepts, leading students to understand and internalize these concepts, through actions that are designed so as not to allow passive and unilateral discussion.

The study by the use of the object, while the construct of learning, also helped to promote student reflection on the content being, using interactions with the object and mediations occurring between teacher-students-OA, a fact quite evident in the dialogues described in this research.

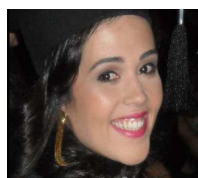
IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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THE ELECTRONIC TEST IN CONTINUOUS MEDICAL EDUCATION

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ABSTRACT

The continuous education is necessary for every practicing doctor in all levels of a health care system. Test and certification systems are an appropriate form lending doctors in continuous education. Technical training facilities are based on technical progress of education. The tests are the main tools in all forms of formal and informal education . The electronic test allows management of the learning process with precisely defined objectives that leads to operational activities.

Key Words: Test systems, continuing medical education.

INTRODUCTION

The new information technologies allow the time and place of education to be determined by the student, which gives a different aspect of the training process and makes the student from a passive observer to an active participant in the process. It allows the students themselves definitions timing, extent and the rate of absorption of the material. On the other hand On-line based training systems allow faster results at lower costs, increased access to training materials and clear idea of the all participants in the learning process(Velikov, Zlatanova-Velikova,& Petkov 2012).

Conducting continuing medical education is an important element in the implementation of national health policy and aims to increase and maintain the qualification of medical professionals performing diagnosis, treatment and rehabilitation in medical institutions. Training of health professionals is essential for ensuring the required quality of medical services and improving their efficiency.

The main conclusion that can be done from a survey conducted among GPs is that most of the doctors do not have enough free time for training. This imposes a larger organization and prior coordination of the time and place of GPs to ensure more active participation in training process. The problem with the place and timing of continuing medical education can be solved using the test systems and dialog programs for the implementation of programmed education.

TEST SYSTEMS

By Velikov (2011) the using of information technology for the purpose of continuous education has the following impact on the learning process:

- The application of information technology in the learning process saves time and effort in training;
- Web - based learning allows students to take an active part in their learning, improve their skills, without limitations on the distance and time;
- More useful information than traditional learning classical auditorium sessions can be achieved. Improves access to training materials and vision to all participants in the learning process;
- E-learning education offers accountability (feedback), personalized and collaborative learning and accessibility.

Generally the using of test materials has the following advantages:

- A more objective evaluation of results;
- E-test system cannot be manipulated, as each student provides various issues;
- Increasing the level of knowledge of students;
- Do not assume the student with time and place;
- Allows the student individually to plan and manage the learning process according to the rate of absorption of the material;
- Increasing the efficiency of the examination process;

The main weaknesses include:

- Long process of building the system - includes technical implementation of the system and constructing of a system of questions and correcting information;
- Extra technical support;
- Long-term maintenance and improvement of the system - expressed in a continual update of questions and the correcting information in the system;

CONTENT STRUCTURING

Fig.1 shows the hierarchical structure of the content on the given subject.

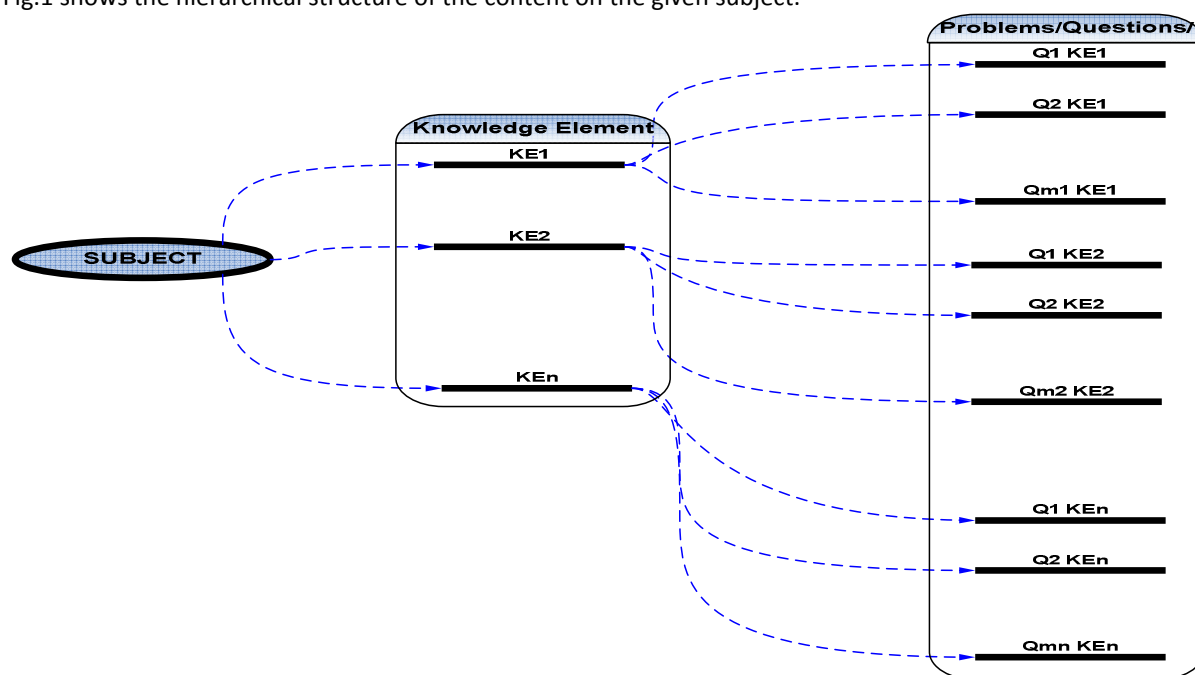


Fig.1: Hierarchical structure of the content on the subject

Questions Q_i in saved in assessment system about the subject are grouped as a system of knowledge elements KE_j over six levels by Bloom's taxonomy /perception, comprehension, application, analysis, synthesis, evaluation/. This allows the construction of the test based on whole subject where the questions are from different knowledge elements and test based on given knowledge element where the problems are from different levels of Blum's taxonomy. This guarantees the more precise assessment of the degree of absorption of the material by the students.

EDUCATION PROCESS

Fig.2 shows the process of education. After every knowledge elemen the student solve test covered that knowledge(Velikov et al., 2012). According to the result of the assesment there are two directions:

- Not pass – the students have not passed the test and additional education is needed. The system suggest correcting knowledge according to made mistakes in test;
- Pass – the students have passed the test and were redirect to next knowledge.

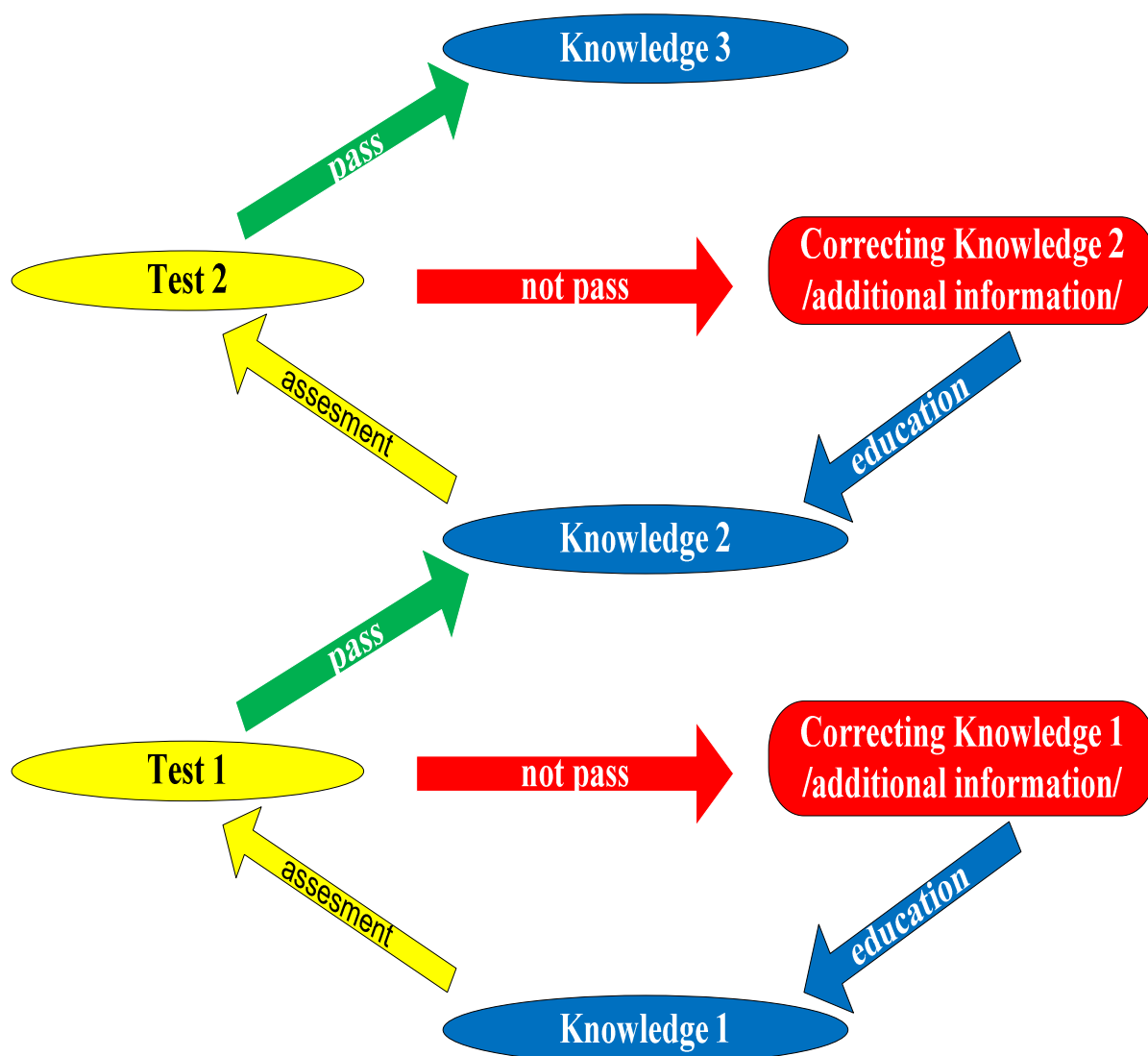


Fig.2 : Diagram of educational process

IMPLEMENTATION OF BASIC FUNCTIONS

Forming function

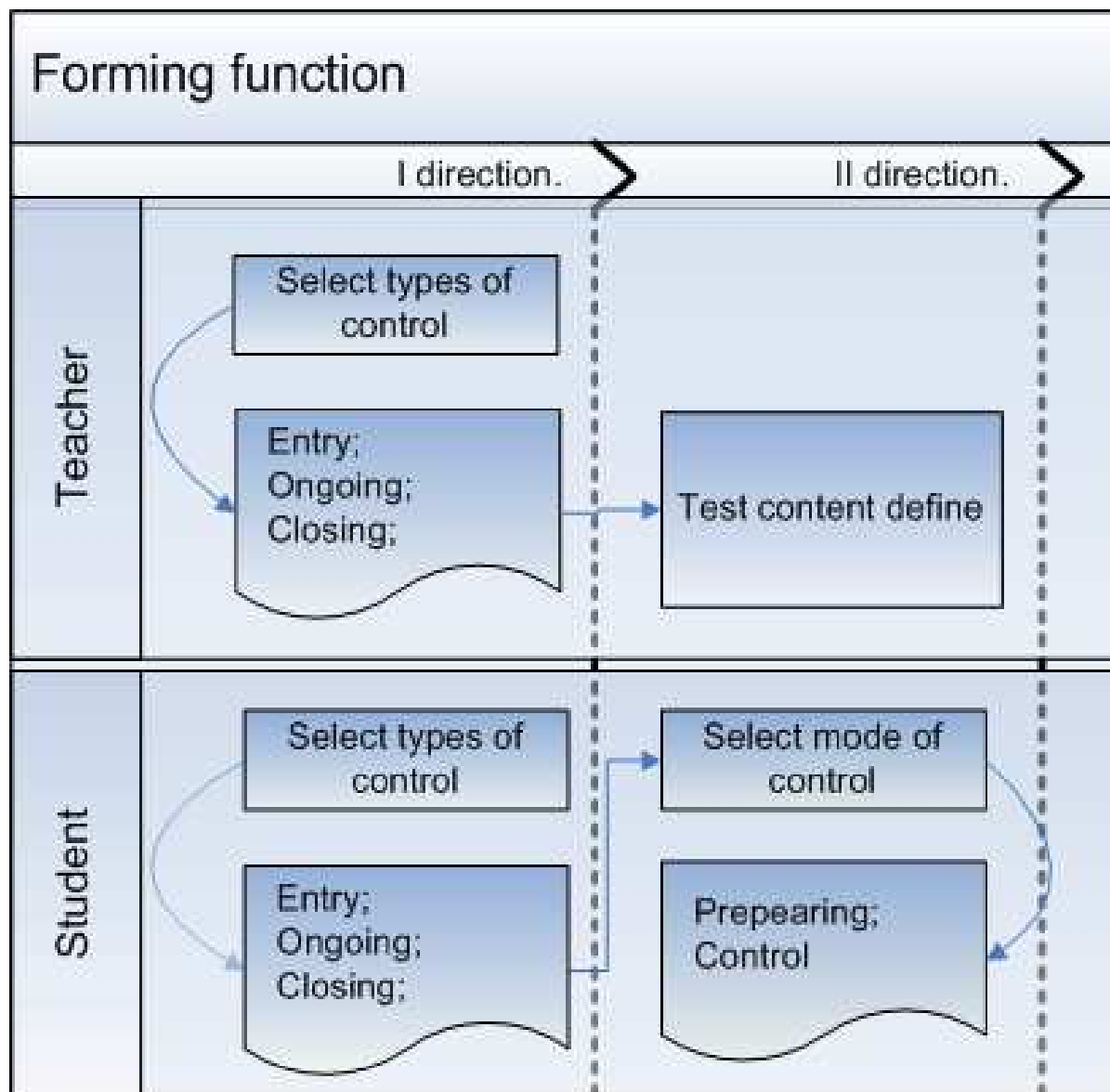


Fig.3: Forming function of test systems

Presents the opportunity to direct and manage the learning process. This function is realized by both the teacher and the student. The presented structure of the learning content allows the implementation of this function in two ways[Zlatanova-Velikova 2011]:

A. I direction

It is related to the type of control that can be implemented using electronic tests. Can offer following types of control:

- Entry control - determining knowledge of the learner before education in certain subjects;
- Ongoing control - control during training, it may cover one or more cognitive elements;
- Closing control - final examination on completion of education in certain subjects.

B. II direction

- For the teachers is realized by control of the tests - for each one of the tests of I level electronic systems allow to determine the configuration of the test / number of questions from each of the cognitive elements /;
- For the students is realized by two modes of assessment - preparing - for each of the questions in the system and provide more information. In this mode, the student can check their knowledge and corrected after each question and control - mode real test.

Diagnostic function

The diagnostic function is aimed at detecting problematic knowledge elements *KE*, to correct contents of the system and the created tests. While the students have access to their results, the teacher is able to check results for every solved the defined test and to analyze the results of all group. This feature is the result of a continuous process of interaction between student and teacher with the help of the test system that can be described with the following actions (Zlatanova-Velikova & Velikov 2011):

- A. Student - The role of the student is expressed mainly in solving tests. He chooses the test and answer the questions. This activitie occurs in parallel with the actions of the teacher. Also, the student can review the results and to correct their knowledge before the next test session;
- B. Teacher - The role of the teacher is to identify educational problems by analyzing the accumulated data for solved tests. The reactions of the teacher are:
 - Problem definition - Identification of KE where students permit as many errors and problems;
 - Adapt the database content- Preparation of the corrective information for detected typical mistakes and including the new alleged wrong answers in the system, changing the contents of the test by altering the number questions covered define KE, included in the test, and changing the questions in the system / add new, delete old, correction of existing .

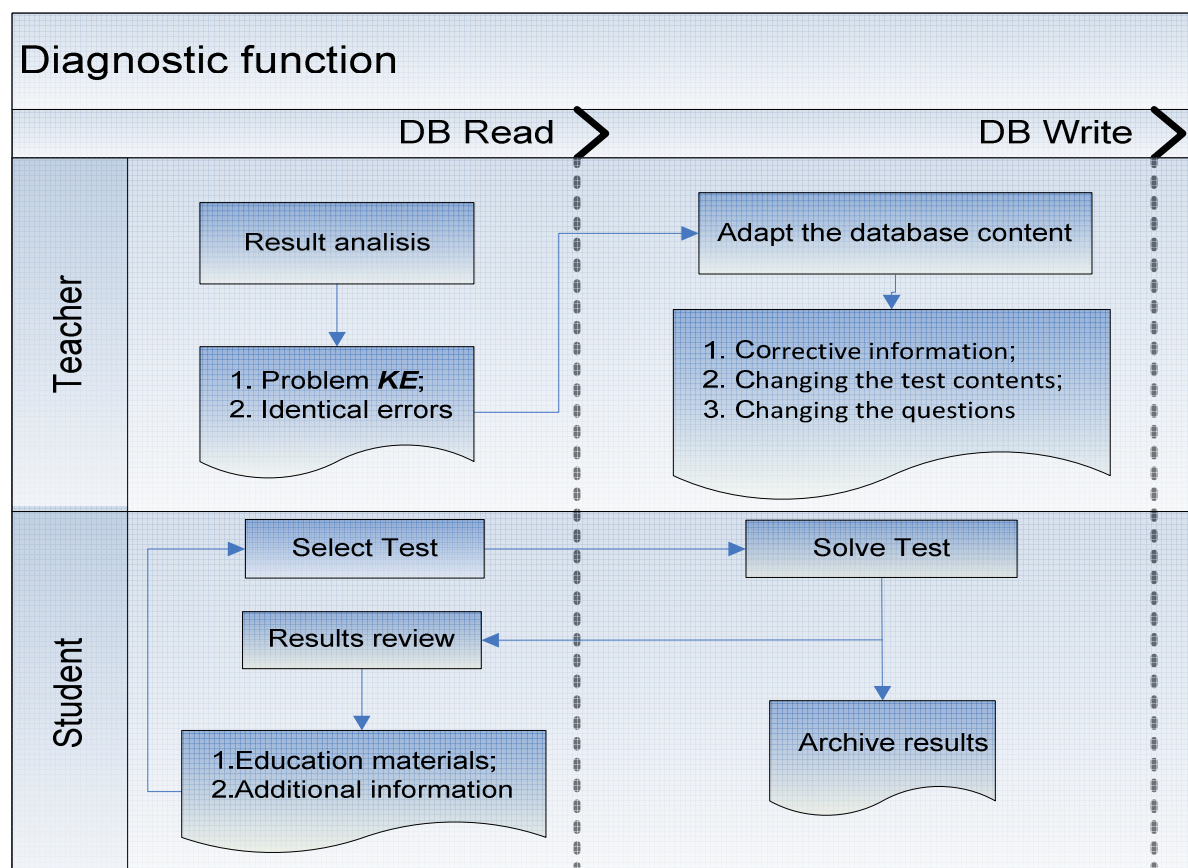


Fig.4: Diagnostic function of test systems

CONCLUSION

We can draw the following conclusions:

- The using of tests in a virtual environment encourage independent work of students;
- A student opportunity to ask questions ;
- The results from the tests are used for self-organization and self-control by the student.

Internet is a source of information, but in many cases it is unregulated and methodically incomplete or inaccurate. Offering on-line test systems become global network not only a source of knowledge but also a corrective to the already accumulated knowledge and skills. In this sense WEB - based test systems have a future in education. Whether the use of test systems will be included in the continuous medical education is a matter of will on the part of primary health organizations. But as a tool for determining degree of absorption of the knowledge of the trainees and an essential tool for certification, they should find a place in the implementation of continuing medical education.

IJONTE's Note: This article was presented at World Conference on Educational and Instructional Studies - WCEIS, 06- 08 November, 2014, Antalya-Turkey and was selected for publication for Volume 6 Number 1 of IJONTE 2015 by IJONTE Scientific Committee.

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STEM SCHOOLS VS. NON-STEM SCHOOLS: COMPARING STUDENTS' MATHEMATICS GROWTH RATE ON HIGH-STAKES TEST PERFORMANCE

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ABSTRACT

The purpose of this study is to determine how students who attended T-STEM academies performed on the mathematics section of the Texas Assessment of Knowledge and Skills (TAKS) compared to their corresponding peers who attended traditional public schools in Texas. The present study included 18 T-STEM academies and 18 matched non-STEM schools. The sample consisted of three years of TAKS mathematics data for 3026 students, of which 1506 attended 18 T-STEM academies and 1520 attended 18 non-STEM schools in Texas. Hierarchical linear modeling (HLM) was used to construct a three-level model for analysis. Results revealed that at the end of grade 9, students who attended T-STEM academies performed higher in mathematics compared to their counterparts in comparison schools, but no difference was found in their mean mathematics score's growth rate from 2009 to 2011. In terms of gender, the present study found that female students who attended T-STEM academies performed higher on TAKS mathematics than male students in comparison schools.

Key Words: STEM, T-STEM academies, Inclusive STEM schools, TAKS, TEA.

INTRODUCTION

STEM education refers to teaching and learning in the disciplines of science, technology, engineering, and mathematics. Quality STEM education is critical for a country to be scientifically and technologically relevant. The two foremost reasons why STEM education in K-12 is critical are that today's world requires every individual to understand scientific and technological knowledge (National Research Council [NRC], 2011; Young, House, Wang, Singleton, SRI, International, & Klopffeststein, 2011) and that the successes in STEM disciplines play a vital role for a country's future in the competitive global market (President's Council of Advisor on Science and Technology, 2010). Several reports, including those by the National Academy of Science, National Academy of Engineering, and Institute of Medicine (2011a), have already linked the importance of K-12 STEM education to the ability of the United States to maintain its current scientific leadership and economic power. Barack Obama, in response to this fact, has launch the *Educate and Innovate* program to cultivate STEM literacy in K-12 education and increase student interest in STEM related majors. The program focuses on K-12 education because those years are vitally important in developing students' interest in one of the STEM related subjects (Buxton, 2001). Increasing K-12 students' interest in STEM related disciplines is essential for encouraging more students to pursue STEM career pathways in postsecondary education settings. It is imperative that these formative years emphasize STEM success for the entire student population. To achieve this, the United States needs STEM schools that all students can attend regardless of their academic and social background (Bicer, Navruz, Capraro, & Capraro, 2014; Han, Capraro, & Capraro, 2014). This led to the development of specialized STEM school initiatives (Navruz, Erdogan, Bicer, Capraro, & Capraro, 2014; Thomos & Williams, 2009), which have already showed promising effects in increasing students' science and mathematics achievement (Capraro, Capraro, Morgan, Scheurich, Jones, Huggins, Corlu, & Younes, 2014; Young et al., 2011).

Concerns & Goals for STEM education

The National Assessment of Educational Progress (NAEP) showed that U.S. students were not proficient in mathematics and science (Schmidt, 2011). Additionally, international indicators (e.g., TIMMS and PISA) have showed that students from the United States did not perform well in mathematics and science compared to students in other developed countries (e.g., Singapore), thus putting their scientific leadership and economic power in danger. This result is one of the main reasons why the United States is concerned about STEM education in K-12 and why the first goal is to increase all students' success in STEM related disciplines.

Another concern is the size of the mathematics and science achievement gaps between students who come from a traditionally upper class background and those students who come from diverse ethnic and low socioeconomic status (SES) backgrounds. This achievement gap puts young people at a disadvantage when seeking employment because many of the high paying jobs require a high level of STEM related proficiency. Additionally, the domestic need for a workforce in STEM associated fields increased rapidly from 2008 to 2009, indicating that there are positions available for those who qualify. Thus, the second goal for K-12 STEM education is to "Expand the STEM-capable workforce and broaden the participation of women and minorities in that workforce" (NRC, 2011, p. 5). Achieving this goal would increase the available workforce for a rapidly expanding job market.

The National Science Foundation (2010) reported that while the unemployment rate from 2008 to 2009 increased 3.8%, the needs of the workforce in STEM associated jobs increased by 3.3%. In the next decade, it is projected that there will be 20 new occupations, of which 80% will be related to STEM fields. While 5% of these occupations will require an advanced STEM degree, 75% of them will require solely vocational certification or an undergraduate degree with a major in a STEM associated field (Lacey & Wright, 2009). In order to fill the rapidly increasing STEM workforce, more and more K-12 STEM students need to pursue STEM related majors in their post-secondary education and later follow STEM related career pathways.

The last concern is the 21st century's increasing scientific and technological demands that require every individual to know basic science and mathematics. In the past, science and mathematics were considered the disciplines for talented people (Stotts, 2011), but today's world requires each individual to know basic

scientific, mathematical, and technological knowledge. Thus, the last and most important goal for STEM education, increasing STEM literacy for all students regardless of whether they pursue a STEM related career pathway, is vital (NRC, 2011). Achieving this goal is strategically important because current employers in various industries have complained of their employees' lack of mathematics, technology, and problem-solving skills. Increasing STEM literacy for all students, not just those who follow STEM related career pathways in their postsecondary education, will make future citizens capable of dealing with the complex problems of a scientifically and technologically driven 21st century society (NRC, 2011).

STEM Schools

STEM schools are designed to decrease the mathematics and science achievement gaps among various ethnic groups and to increase all K-12 students' mathematics and science scores on both national and international standardized tests (Bicer, Navruz, Capraro, & Capraro, 2014; Capraro, Capraro, & Lewis 2013; Capraro, Capraro, & Morgan, 2013). There are three types of STEM schools: selective STEM schools, inclusive (i.e., open-admission) STEM schools, and schools with STEM-focused career and technical education (CTE). Selective and inclusive STEM schools are the two most common STEM schools across the United States (NRC, 2011). The curriculum for selective and inclusive STEM schools was designed to improve students' science and mathematics learning by engaging students with hands-on tasks in a collaborative and competitive environment (Gonzalez & Kuenzi, 2012). There are some differences between these two types of STEM schools in terms of their organization. The clearest distinction between selective STEM schools and inclusive STEM schools is the admission criteria. Selective STEM schools admit only students who are talented in and motivated toward STEM related fields while inclusive STEM schools have no selective admission criteria. Because of the difference between admission criteria of the two STEM school types, inclusive STEM schools are considered to serve a broader population (NRC, 2011). Young, House, Wang, and Singleton (2011) noted that "Inclusive STEM schools are predicated on the dual promises that math and science competencies can be developed, and students from traditionally underrepresented populations need access to opportunity to develop these competencies to become full participants in areas of economic growth and prosperity" (p. 2). Therefore, inclusive STEM schools utilize a unique school structure to achieve the three goals stated by NRC (2011) for K-12 STEM education. In the present study, we only included inclusive STEM schools, which were compared with non-STEM schools.

In this study, STEM schools were selected from the state of Texas because it has one of the biggest inclusive STEM school initiatives in the United States. STEM schools in the state of Texas are known as Texas STEM (T-STEM) academies. T-STEM academies are defined by a unique "blueprint" that differentiates it from non-STEM schools. One important characteristic of the "blueprint" is the implementation of innovative instructional methods such as Project-Based Learning, Inquiry Based Learning, and Problem Based Learning. T-STEM academies are also well equipped with labs to facilitate the adoption and utilization of these innovative instructional methods. The blueprint requires that all T-STEM academies are inclusive and cannot be selective at the time of enrollment. In addition, the blueprint specifies that each T-STEM academy needs to comprise of at least 50% of students who are economically disadvantaged and at least 50% of students who come from traditionally underrepresented subpopulations (Young et al., 2011). Six T-STEM academies started serving students in 2006, and the number of T-STEM academies expanded from 2006 to 2014. Currently, there are 65 T-STEM academies (26 campuses for only high school students and 39 campuses for both middle and high school students) serving approximately 35,000 students in Texas. T-STEM academies were divided into groups based on their region, and each region is lead by a T-STEM center. T-STEM centers have the role of supporting T-STEM academies by creating innovative STEM instructional materials and providing effective professional development to teachers. There are seven T-STEM centers that support more than 2,800 STEM related teachers by empowering their teaching in STEM related subjects (Texas Education Agency, 2013). Besides creating innovative science and mathematics classrooms and delivering professional development to teachers, these educational centers were charged with a) researching innovative STEM curricula; and b) creating partnerships among businesses, universities, and school districts. T-STEM academies, along with professional development centers and networks, work collaboratively to increase the quality of instruction and students' academic performance in STEM-related subjects at secondary schools.

T-STEM Academies' Promising Effects

Researchers conducted both qualitative and quantitative studies to explore the effects of attending T-STEM academies on students' science, reading, social science, and mathematics achievement (Capraro et al. 2013; Gourgey et al., 2009; Stotts, 2011; Young et al., 2011). The qualitative (Gourgey et al., 2009) and quantitative studies (Capraro et al. 2013; Stotts, 2011; Young et al., 2011) regarding T-STEM academies indicated promising effects of T-STEM academies on students' academic achievement.

To determine if the positive effects of attending T-STEM academies on students' academic achievement continues, a longitudinal method was used (Capraro et al. 2013; Young et al., 2011). Applying a longitudinal method enables researchers to characterize patterns of change in students' scores over time, which includes both the average trajectory and the variability of each student's trajectories. To compare students' academic achievement in terms of their school types (T-STEM academies and non-STEM schools [traditional public schools]), researchers applied various comparison techniques, such as exact matching or propensity score matching. Results from these studies indicated that students who were in grade 9 in T-STEM academies achieved slightly higher mathematics scores than their peers in the comparison schools. Similarly, results showed that students who were in grade 10 in T-STEM academies received higher mathematics and science scores than their peers in the comparison schools. These findings showed a difference favoring T-STEM academies, but the Cohen's *d* effect size reported ranged from 0.35 to 2.03. Results also noted that students who were in grade 9 and attended T-STEM academies were 1.8 times more likely to meet the benchmarks of TAKS reading and mathematics than their counterparts in comparison schools. Likewise, students who were in grade 10 and attended T-STEM academies were 1.5 times more likely to meet the benchmarks of TAKS reading, mathematics, social science, and science than their counterparts in comparison schools (Young et al., 2011).

In another attempt to characterize students' academic patterns of change over time in T-STEM academies (Gourney et al., 2009), students who were in grade 10 and participated in T-STEM academies increased their mathematics and reading high-stakes test results compared to their corresponding scores in grade 9. Students who were in grade 10 and came from low-SES backgrounds increased their mathematics scores compared to their mathematics scores in grade 9. In terms of ethnic background, Hispanic students who were in grade 10 showed the largest increase within any of the ethnic groups in their mathematics scores compared to their mathematics scores at grade 9. Likewise, Bicer (2014) found that attending T-STEM academies statistically significantly increased Hispanic students' mathematics mean score relative to White students' mathematics scores in non-STEM schools. Navruz, Erdogan, Bicer, Capraro, and Capraro (2014) conducted a study to understand how students' TAKS mathematics scores changed after their school converted to inclusive STEM high schools. Results from this study revealed that students had a statistically significant increase on their mathematics scores after their school adopted and implemented STEM curriculum and instruction. This study also examined the effects of adopting STEM curriculum on females and males. Evidence from this study showed that "both genders experienced practically important changes" (p. 67).

Researchers mostly focused on students' test scores to compare the success of T-STEM academies compared to matched schools; however, NRC (2011) noted that students' test scores do not tell the whole story of success. In response, researchers also examined the relationship between school types (T-STEM and non-STEM) and dropout rate as a measure of success. Results revealed that students who attended T-STEM academies are 0.8 times less likely to be absent from school than their peers in comparison schools (Young et al., 2011; cf. Capraro et al. 2014). Students who attended T-STEM academies were more comfortable with STEM related disciplines and more likely to pursue a college degree, and more female students took advanced placement (AP) courses (Stotts, 2011). Another important finding revealed that one of the high schools changed its rating from Academically Unacceptable to Academically Acceptable as a result of students' academic achievement scores on high-stakes tests and demographic groups. After schools became T-STEM academies, more students enrolled in college level courses than when their schools were non-STEM schools (Stotts, 2011). The STEM academies were more successful across a wide range of variables including test scores, attitude, truancy, and college matriculation.

The present study applied a longitudinal method to track students' mathematics success between the years of 2009 and 2011. Researchers have already applied a longitudinal method to characterize students' success between the years of 2007 and 2009 (Young et al., 2011). However, these studies were conducted in the earlier stage of newly established T-STEM academies. Therefore, the present study involved only schools that turned into T-STEM academies before the 2008-2009 school years. This constraint ensures that the schools have had adequate time to implement STEM-specific curriculum and teaching to show promising effects on students' mathematics achievement.

Research Questions

- 1) How does initial student mathematics performance differ by school type?
- 2) What are the mathematical benefits for students who attend T-STEM academies for three years as compared to their non-STEM counterparts?

METHOD

In this quantitative research project, student and school-level data about students who attended inclusive stand-alone T-STEM academies, as well as matched students who attended non-STEM high schools, were obtained from the Texas Education Agency (TEA) website. This statewide analysis was based upon 36 schools, of which 18 were T-STEM academies and 18 were matched non-STEM (traditional public) schools. In this study, only 18 of the 65 T-STEM academies were selected because of the selection criteria of becoming an inclusive T-STEM school on or before the 2008-2009 school year and because of the designation of the academy whether stand-alone or school-within-school. In stand-alone academies, the entire school is a STEM school, meaning that 100% of the students attending the school are members of the STEM program. A school-within-school is a different dynamic in which STEM is a program available within a traditional school setting, meaning that not all students that attend the school are necessarily engaged in the STEM program. Thus, the present study included students who attended stand-alone T-STEM academies for at least three years. The sample consisted of three years of Texas Assessment of Knowledge and Skills (TAKS) mathematics data for 3026 students, of whom 1506 attended 18 T-STEM academies and 1520 attended 18 non-STEM schools in Texas. The first measurement for the sample was taken when students were at the end of 9th grade in 2009, and the last measurement for the same students was taken when they were at the end of 11th grade in 2011.

In order to match students who attended 18 T-STEM academies with their corresponding peers who attended 18 non-STEM schools, school-level data was first matched by following the TEA campus comparison method. This comparison is based upon the following school-level variables: 1) ethnicity (% of Hispanic, % of African American, and % of White students), 2) economic disadvantaged status (free lunch, reduced price lunch, other public assistance, and none), 3) English language proficiency (ELP) (met the English language proficiency state standard and did not meet the English Language proficiency standard), and 4) school mobility rate (expressed as a ratio of the whole school population to students moving into and out of the school in one year). T-STEM academies and non-T-STEM schools were matched with a 1:1 exact matching strategy using the following: ethnicity, SES, ELP, and school mobility rate.

Students were excluded from the study if they did not have any mathematics TAKS scores in any of the measurement years 2009, 2010, or 2011. Students were also excluded if they: (1) left a T-STEM school and transferred into a non-STEM school, or (2) transferred into a T-STEM school from a non-STEM school. These exclusions ensured that the students who attended STEM academies received at least three years of STEM education during their high school years.

In this study, students' mathematics TAKS scale scores were used as an outcome estimate of students' mathematics achievement. A student's mathematics TAKS score at the end of 9th grade was modeled as the estimated initial mathematics achievement plus the change over time, that is, the rate of change, (π_{1jk}), plus error. Additionally, students' gender, ethnicity, and SES background were further added to the model in order to estimate each group's (gender, ethnicity, and SES) initial status and growth rate in mathematics. Further,

students' school type was added as the last predictor to the model in order to estimate students' initial status and growth rate in terms of their school types (i.e., STEM or non-STEM).

HLM Analytic Procedures

Hierarchical linear modeling (HLM) was used to construct a three-level model for analysis. Level-1 was the repeated measures, which were nested within students. Level-2 was the students who were further nested within school types. Level-3 was the school types (STEM and non-STEM). This three-level model was used in the present study to characterize patterns of change in students' measures over time, which included both the average trajectory and the variability of students' trajectories. This technique also allowed the simultaneous estimation of between-schools variables (STEM schools and non-STEM schools), within-school level variables (ethnicity, gender, and SES), and the variances of students' repeated measures. A series of model fit indices were estimated by using HLM software, and this procedure resulted in the best model (see Table 1) with specific student and school-level variables. First, students' 9th grade mathematics TAKS scale scores were added as an outcome. Second, based on a theoretical and empirical consideration reported by NRC (2011), each student-level variable (ethnicity, gender, and SES) was added one at a time to the model and evaluated for statistical significance. The same procedure was followed for the school-level predictor, and its effects were also evaluated for statistical significance. The slopes of student- and school-level variables were "fixed" and not allowed to randomly vary if random effects of these variables were not statistically significant in improving the model fitness. The indices of model fitness were based on a Chi-square test, in which deviations' scores and degrees of freedom (*df*) provided by HLM software were subtracted from each other to determine whether the slope of the variables had random or fixed effects.

RESULTS

To examine the differences in mathematics achievement at the end of grade 9, and the growth rate of mathematics achievement from grade 9 to grade 11, a three-level growth model in HLM software was conducted. To address the two research questions, the results section addresses aspects of the questions across two sections: 1) differences in mathematics achievement at the end of grade 9, and 2) differences in growth rate of mathematics achievement from grade 9 to grade 11.

Differences in Mathematics Scores at the end of Grade 9

The results indicated statistically significant differences in students' mathematics achievement at grade 9 for all independent Level-2 variables. In addition, the interaction effects between 'STEM9' and 'Gender' were found statistically significant at $p < 0.05$. Table 1 illustrates 9th graders' mathematics achievement relative to the mathematics achievement of our reference group (WHITE, male, high-SES students in non-STEM schools).

The predicted mean math achievement of our reference baseline group at the end of 9th grade ($\gamma_{000} = 2265.551923$) was statistically significant at $p < 0.01$. The difference between T-STEM academies and non-STEM schools ($\gamma_{001} = 102.139905$) was statistically significant at $p < .01$, which indicates that students in T-STEM academies have higher mathematics scores than students in non-STEM schools at the end of 9th grade controlling for ethnicity, gender, and SES.

We were also concerned about the impact of school types on students' mathematics achievement by students' ethnic background. Results showed that the effect of being Hispanic on students' predicted mean mathematics score relative to White students' predicted mean mathematics score ($\gamma_{010} = -96.532630$) was statistically significant, $p < .001$. It showed there was a statistically significant difference between Hispanic and White students in terms of their predicted mean mathematics score at the end of grade 9 controlling for SES, gender, and school type. In other words, at the end of grade 9, White students' predicted mean mathematics TAKS score was higher than Hispanic students' predicted mean mathematics TAKS score. Similarly, African American students' predicted mean mathematics score relative to the White students' predicted mean score ($\gamma_{020} = -173.758141$) was also statistically significantly different ($p < 0.01$). In other words, there is a difference between African American students' mathematics achievement and White students' mathematics achievement at the

end of grade 9 controlling for gender, SES, and school type. At the end of grade 9, White students achieved higher mathematics scores than African American students' mathematics score.

Table 1: Final Estimation of Fixed Effects

Fixed Effect	Coefficient	Standard error	t-ratio	Approx. d.f.	p-value
For INTRCPT1, π_0					
For INTRCPT2, β_{00}					
INTRCPT3, γ_{000}	2265.551923	16.564143	136.774	34	<0.001
STEM9, γ_{001}	102.139905	22.540964	4.531	34	<0.001
For H, β_{01}					
INTRCPT3, γ_{010}	-96.532630	14.333986	-6.735	3025	<0.001
For B, β_{02}					
INTRCPT3, γ_{020}	-173.758141	16.156283	-10.755	3025	<0.001
For FEMALE, β_{03}					
INTRCPT3, γ_{030}	22.848168	8.735190	2.616	3025	0.009
STEM9, γ_{031}	-48.234222	16.621230	-2.902	3025	0.004
For SES, β_{04}					
INTRCPT3, γ_{040}	-49.574607	13.986314	-3.545	3025	<0.001
STEM9, γ_{041}	31.177788	15.587501	2.000	3025	0.046

Because females continue to be underrepresented in STEM fields, we were also interested in how the students in T-STEM academies and non-STEM schools compared by gender. The effect for gender on students' predicted mean mathematics score ($\gamma_{030} = 22.85$) was statistically significant at $p < 0.01$, which indicated that there was a difference between female and male students at grade 9 controlling for ethnicity, SES, and school type. At the end of grade 9, female students achieved higher mathematics scores than did male students. Additionally, the interaction effect of 'FEMALE' and 'STEM9' as FEMALE*STEM9 ($\gamma_{031} = -48.23$) was statistically significant, $p < 0.01$, which showed that there was a statistically significant difference between female students in T-STEM academies and male students in non-STEM schools in terms of their mathematics scores at grade 9 controlling for ethnicity and SES. Male students in non-STEM schools achieved higher mathematics scores than female students in T-STEM academies, controlling for ethnicity and SES.

When it came to SES, the effect of SES on students' mathematics achievement ($\gamma_{040} = -49.574607$) was statistically significant, $p < 0.01$, which illustrated that there was a difference between low-and high-SES students on math achievement at grade 9 controlling for gender, ethnicity, and school type. At the end of grade 9, high-SES students achieved higher mathematics scores than low-SES students controlling for gender, ethnicity, and school type. However, the interaction effect as 'SES*STEM9' ($\gamma_{041} = 31.18$) was also statistically significant, $p < 0.05$. It showed that there was a statistically significant difference between low-SES students in T-STEM academies and high-SES students in non-STEM schools in terms of their mathematics scores at grade 9 controlling for gender and ethnicity. At grade 9, low-SES students in T-STEM academies achieved higher mathematics scores than high-SES students in non-STEM schools controlling for gender and ethnicity.

Differences in the Growth Rate of Mathematics Achievement

Results indicated statistically significant differences in the growth rate of math achievement for all independent Level-2 variables. In addition, the interaction effect of 'STEM9' and 'FEMALE', was found to be statistically significant at $p < .01$. The findings related to the differences in the mathematics scores' growth represented in Table 2.

The average annual growth rate of mathematics achievement for our reference group (WHITE, male, high-SES students in non-STEM schools) ($\gamma_{100} = 25.97$, $p < 0.01$) showed an increase of 25.97 points per year. The change per year was statistically significantly different from 0. In addition, the effect of time*STEM9 ($\gamma_{101} = -23.30$) was statistically significant at $p < 0.01$, which showed there was a statistically significant difference between

students in T-STEM academies and non-STEM schools in terms of their growth in mathematics scores controlling for gender, ethnicity, and SES. Results showed that the growth rate of students' mathematics scores in non-STEM schools was higher than that of students in T-STEM academies controlling for gender, ethnicity, and SES.

Table 2: Final Estimation of Fixed Effects

Fixed Effect	Coefficient	Standard error	t-ratio	Approx. d.f.	p-value
For TIME slope, π_1					
For INTRCPT2, β_{10}					
INTRCPT3, γ_{100}	25.968299	5.048436	5.144	34	<0.001
STEM9, γ_{101}	-12.082513	11.739254	-1.029	34	0.311
For H, β_{11}					
INTRCPT3, γ_{110}	10.106036	3.467278	2.915	3025	0.004
For B, β_{12}					
INTRCPT3, γ_{120}	20.520762	3.194384	6.424	3025	<0.001
For FEMALE, β_{13}					
INTRCPT3, γ_{130}	-9.035162	2.190104	-4.125	3025	<0.001
STEM9, γ_{131}	14.840486	5.454409	2.721	3025	0.007
For SES, β_{14}					
INTRCPT3, γ_{140}	6.574822	2.571577	2.557	3025	0.011

From Table 2, the average annual growth rate of math achievement for Hispanic students ($\gamma_{120}=10.11$) showed that it increased 10.11 points per year, $p < 0.01$. The change per year was statistically significantly different from 0. The average annual growth rate of mathematics achievement for African American students ($\gamma_{120}=20.52$) increased 20.52 points per year, $p < 0.01$. The change per year was statistically significantly different from 0.

The average annual growth rate for mathematics achievement for female students controlling for SES, ethnicity, and school type ($\gamma_{130}=-9.03$) showed that the growth rate of mathematics achievement decreased 9.03 per year, $p < 0.01$. The change per year was statistically significantly different from 0. We also have the interaction effect of female*STEM9 ($\gamma_{131}=14.84$) that was statistically significant, $p < 0.01$, which indicated that there was a statistically significant difference between female students in T-STEM academies and male students in non-STEM schools in terms of the rate of change in math achievement controlling for ethnicity and SES. Female students in T-STEM academies had a higher mathematics growth rate than did male students in non-STEM schools. Lastly, the average annual growth rate of mathematics achievement for low-SES students controlling for gender, ethnicity, and school type ($\gamma_{130}=6.57$) was statistically significant, $p < 0.01$, showing that the growth rate of mathematics achievement decreased 6.57 per year, $p < 0.05$.

DISCUSSION

The objective of the present study is to examine how students who attended T-STEM academies performed on TAKS mathematics in 2009 and how their TAKS mathematics performance changed from 2009 to 2011 compared to their counterparts in comparison schools. To the best of our knowledge, this study is unique in terms of T-STEM school selection. The present study only included schools that had transitioned to T-STEM academies prior to the 2008-2009 school year. This ensured that students who attended these schools received at least three years of a STEM emphasized education. This criterion also makes sure that schools that turned into T-STEM academies have had sufficient time to fully implement STEM teaching and learning practices to show their effects on students' mathematics achievement. Three years is considered sufficient time because NRC (2011) reported that T-STEM academies showed their effects on students' academic achievement in three years.

Looking at the results, findings indicated that our reference group's (White, male, high-SES in non-STEM schools) predicted mean TAKS mathematics score was significantly lower than students' predicted mean TAKS mathematics score in T-STEM academies at the end of grade 9. This finding is consistent with prior work by Young et al. (2011), which found that students who attended T-STEM academies performed higher on TAKS mathematics than their counterparts in comparison schools at grade 9. This might be explained by the fact that mathematics classrooms in most public-traditional schools focused on either teaching the theoretical background of mathematics or teaching procedural mathematics (Stotts, 2011). Thus, students' mathematics learning in non-STEM schools may become more rote memorization than meaningful learning, and students may have difficulty applying previously learned mathematical facts to new mathematical topics. In order for students to learn mathematics more meaningfully, they need to develop both conceptual and procedural understanding of mathematical facts (Ashlock, 2005), but for some students this cannot be achieved without scaffolding. In terms of school types, students' mathematics scores are statistically significantly different in favor of T-STEM academies. T-STEM academies' mathematics instruction might be one potential cause of this achievement difference. From this result, it is possible to deduce that T-STEM academies fulfill their duty, which is to improve students' mathematics and science scores, in terms of mathematics. It might be better for non-STEM schools to adopt STEM learning and teaching practices in mathematics classrooms to increase their students' mathematics learning. STEM practices (i.e., Project Based Learning [PBL], and Problem Based Learning) in T-STEM academies' mathematics classrooms give students ownership of their education and provide opportunities to work collaboratively on applicable, hands on activities that are more meaningful than traditional, rote memorization assignments. These instructional methods might be appealing because they simultaneously develop students' conceptual and procedural mathematical understanding.

Another finding revealed that at the end of grade 9, low-SES students in T-STEM academies achieved higher mathematics scores than students in our reference group. This result might be explained by the possibility that low-SES students who attended T-STEM academies were already interested in STEM related disciplines, which resulted in their decision to attend T-STEM academies. This result may also be explained due to T-STEM academies' obligation about serving underrepresented subpopulations (ethnic minority, female, and low-SES). This obligation provides opportunities to low-SES students, who are interested in STEM related disciplines, to show their potential through enrollment in T-STEM academies. This is important because previous studies reported that the existing mathematics achievement gap between low and high-SES students favored high-SES groups (Bicer, Capraro, & Capraro, 2013), and another report (NRC, 2011) emphasized that decreasing the mathematics achievement gap between low-and high-SES students is an essential goal for STEM education. By taking into account the fact that low-SES students may enroll in T-STEM academies due to a preexisting interest in STEM disciplines, we can conclude that T-STEM academies' curriculum and teaching features, such as hands-on activities, scaffolding, group work, and real life applications (Avery, Chambliss, Pruiett, & Stotts, 2010; Young et al., 2011) may help low-SES students achieve their potential in mathematics.

Our findings also indicated differentiation in gender. Our reference group showed greater mathematics achievement than females in T-STEM academies at the end of grade 9 controlling for ethnicity and SES. However, female students' mathematics growth rate was statistically significantly higher than our reference groups' mathematics growth rate. This might be explained by the fact that female students who attended T-STEM academies may have more positive attitudes towards STEM related disciplines when presented with opportunities for science and mathematics learning. The curriculum and instruction strategies (group work, active engagement, hands-on activities, real life applications, cooperative and collaborative learning, etc.) in T-STEM academies could have provided a framework for greater engagement (Myers & Fouts, 1992; Oakes, 1990). This result also could lead us to the conclusion that with proper strategies female students' achievement and interest in STEM disciplines could be increased. Increasing female students' achievement and interest in STEM disciplines would lead them to pursue STEM careers, which will close the gap for females in the STEM pipeline (Blickenstaff, 2005) and aid to increase the number of people who are in the STEM workforce. Female students experienced enhanced mathematics performance as indicated by their TAKS mathematics test scores. In terms of ethnicity, it was found that the reference group that included White students had statistically significantly higher mean mathematics scores than Hispanic and African American students at the end of 9th grade. This shows parallel results with our previous findings (Oner et al., 2014), which showed that African

American students' mean mathematics scores were statistically significantly lower than White students among group of students in T-STEM academies.

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LEGAL EDUCATION OF COURT INTERPRETERS AND SWORN TRANSLATORS UPON THE DIRECTIVE 2010/64/EU

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ABSTRACT

The purpose of the paper is to expose current difficulties connected with education of legal translators and interpreters and to put forward a proposal for establishing an educational program to ensure the respective quality of service. It is pointed out that the translation is not only a linguistic activity and requires broad expertise in legal knowledge and legal language as well as awareness of ways in which legal knowledge is expressed in linguistic communication. The paper outlines the main assumptions of the Directive of the European Parliament and of the Council 2010/64/EU of 20 October 2010 on the right to interpretation and translation in criminal proceedings, including the requirement to ensure the respective quality of translation. The protection of rights of accused persons in criminal proceedings has been identified as a fundamental right within the European Union: everyone charged with a criminal offence has the right to the free assistance of an interpreter if he cannot understand or speak the language used in court. The education policy directly affects many other policies and fundamental freedoms, hence the concept of leaving the responsibility for its formation with the Member States and to reduce the Union's competences only to encouraging, supporting and complementing them. The interdisciplinary character of the research allows to shed a new light on the issue of education of translators and interpreters acting for authorities and law enforcement bodies.

Key Words: law, translators, interpreters, European Union, legal education.

INTRODUCTION

The differences between national legal systems of the Member States of the European Union increase trading costs, introduce uncertainty as to the applicable law and cause imbalances among individuals. Undoubtedly, the Union's objective is to strive for closer integration of the Member States to achieve its smooth functioning in all areas. Some areas of substantive law in particular need harmonization, while others are resistant to this process. Some of them has been successively harmonized for a long time: these include maritime law, aviation law, commercial law with elements of cross-border exchanging of services, competition law and private international law. For other areas, however, such as real estate law, there is little practical need for harmonization (Oppermann, Classen & Nettesheim, No. 1067). There are also typical national fields of law, that are conditioned socially, religiously and culturally or that fall under family and inheritance law and that are also resistant to harmonization (Caemmerer, 1996: 66). Criminal law and education also belong to this typical national area.

METHOD

The article is based on traditional methods applied in legal studies. The main one is the dogmatic method consisting in the analysis of legal acts within the field of research serving the implementation of its specific objectives. Due to the interdisciplinary character of the research, there will be a review and a critical analysis of the output of the literature in both linguistics and European law. It will also be necessary to take into account the research accomplishments in other fields of law, especially in Polish criminal law and domestic regulations

on the profession of sworn translator, as well as to observe their practical application. The analysis and synthesis of the achievements in these fields will allow gathering adequate knowledge essential for the development of the research area. The purpose of the paper is to expose current difficulties connected with the necessity for education of legal translators and interpreters and to put forward a proposal for establishing - in accordance with current legal regulations in the European Union -an educational program to ensure the respective quality of service.

FINDINGS

According to the Charter of the Fundamental Rights of the European Union and the European Convention on Human Rights, any trial in the absence of an interpreter for the benefit of a defendant who does not speak the language of criminal proceedings is a clear breach of EU and international law. The protection of rights of accused persons in criminal proceedings has been thus identified as a fundamental right within the European Union. Article 6 of the European Convention on Human Rights, along with Article 47 of the Charter of the Fundamental Rights of the European Union guarantee the right to a fair trial.

The Stockholm Programme – “An open and secure justice serving and protecting the citizens” is the European Union’s plan in the areas of freedom, security and justice that has been set up for the period from 2010 to 2014. The programme promotes fundamental rights as enshrined in the Charter of the Fundamental Rights of the European Union and the European Convention on Human Rights, which state that everyone charged with a criminal offence has the right to “the free assistance of an interpreter if he cannot understand or speak the language used in court”.

The Stockholm Programme indicates the need for the Member States to establish common minimum rules in order to harmonize their standards of civil and criminal law and to strengthen their mutual trust. As stated in Article 3 of the Stockholm Programme, “In the Hague Programme, adopted in 2004, the European Council noted that in order for the principle of mutual recognition to become effective, mutual trust needed to be strengthened by progressively developing a European judicial culture based on the diversity of legal systems and unity through European law. The judicial systems of the Member States should be able to work together coherently and effectively in accordance with their national legal traditions.”

The Stockholm Programme also emphasizes that the mutual trust between authorities and services of the Member States as well as between the decision-makers is the basis for effective cooperation in this area. With respect to the cross-border crime, the program emphasizes the need to intensify efforts to improve the effectiveness of judicial cooperation. The instruments adopted should be user-friendly and focus on the issues that regularly arise in cross-border cooperation, such as the terms and conditions of language and the principle of proportionality. In order to improve the cooperation based on the principle of mutual recognition, it may be necessary to harmonize the substantive and the procedural law of the Member States. The Action Plan implementing the Stockholm Programme emphasizes that the EU's policy towards the convergence of substantive and procedural criminal law should be guided by a strategy that is fully consistent with the principle of subsidiarity and coherence.

The principle of recognition of judgments and judicial decisions found its expression regarding the legal aid between the Member States in the Convention on Mutual Assistance in Criminal Matters between the Member States of the European Union, signed in Brussels on 29 May 2000 as well as in the Protocol to this Convention, signed in Luxembourg on 16 October 2001. The Convention specifies cases in which legal assistance must be guaranteed and regulates respective procedures. The protocol includes additional measures to fight against organized crime, money laundering and financial crime. These acts supplement and develop the European Convention on Mutual Assistance in Criminal Matters of 1959.

Article 82(2) of the Treaty on the Functioning of the European Union (hereafter TFEU) enables the harmonization through directives according to Article 288(3) of the TFEU. These directives shall be adopted jointly by the European Parliament and the Council, acting in the ordinary legislative procedure pursuant to

Article 289(1) and 294 of the TFEU. The purpose of the directives must be to facilitate the mutual recognition of judgments and judicial decisions and police and judicial cooperation in criminal matters having a cross-border dimension. The nature of the phrase "and" is not clear - it can be understood cumulative or alternative (Callies & Ruffert, 2011, art. 82 TFEU, No. 31). The directives adopted in this area can only define minimum standards, which does not prevent the Member States from maintaining or introducing a higher level of protection for individuals. Pursuant to Article 82(2) of the TFEU the directives may be adopted only "to the extent necessary" while simultaneously meeting the principle of proportionality set out in Article 5(4) of the Treaty on European Union (hereafter TEU) and the principle of subsidiarity found in Article 5(3) of the TEU. The established standards should also take into account the differences between the legal traditions and systems of the Member States, which even more explicitly emphasizes the need to respect the principles of proportionality and subsidiarity. The project of such an act shall therefore state the reasons on which it is based and shall refer to any proposals, initiatives, recommendations, requests or opinions required by the Treaties.

The condition relating to the rights of individuals in criminal proceedings that is specified in Article 82(2)b) of the TFEU put the cooperation between the Member States in criminal matters in unfavourable light, because it gave the impression that the existing instruments do not respect the rights of suspects and accused (Suhr, 2009, pp. 318 ff). In this area some particular solutions have been adopted, such as the Council Framework Decision 2008/977 / JHA of 27 November 2008 concerning the protection of personal data processed in the framework of police and judicial cooperation in criminal matters and the Directive of the European Parliament and of the Council 2010/64 / EU of 20 October 2010 on the right to interpretation and translation in criminal proceedings. That was the first time the European Commission has succeeded in regulating court interpreting and sworn translating in a legal instrument.

The Directive 2010/64/EU on the right to interpretation and translation in criminal proceedings aims to improve the protection of individual rights by developing the common minimum rules for the right to a fair trial and the right of defence maintained by these documents. The necessity for ensuring sufficient quality of the translation or interpretation provided to the suspected or accused person "to safeguard the fairness of the proceedings, in particular by ensuring that suspected or accused persons have knowledge of the case against them and are able to exercise their right of defence" is the object of specific provisions in Articles 2(8) and 3(9) of the Directive. Moreover, the quality of the interpreting or translating service provided may be the object of a specific review procedure according to Articles 2(5) and 3(5).

Article 5 of the Directive also addresses the question of practical availability of qualified legal interpreters and translators. According to its provision, the Member States must take concrete measures to ensure the quality of interpretation and - as a means of achieving the necessary quality - establish "a register or registers of independent translators and interpreters who are appropriately qualified". The register, once established, should be made available to legal counsel and relevant authorities. Where the quality of interpretation is not sufficient to guarantee the fairness of the proceedings, according to point 26 of the preamble, the competent authorities must be able to replace the appointed interpreter. Point 32 provides that the level of protection of the Directive should never fall below the standards stipulated by the ECHR and by the Charter. Furthermore, pursuant to point 33 of the preamble, the provisions of this Directive that correspond to rights guaranteed by the ECHR or the Charter should be interpreted and implemented consistently with those rights.

According to Article 6 of the Directive 2010/64/EU, without prejudice to the independence of the judiciary, Member States shall request those responsible for training judges, prosecutors and judicial staff to pay attention to particularities of communicating through an interpreter in order to ensure efficient and effective communication. This recommendation is a novelty aimed to making the prosecutors, police officers or judges aware of factors which may influence the quality of interpretation, such as the rate of speech or highlighting of essential information, which has to be enhanced by appropriate education.

The Member States should have implemented this Directive by 27 October 2013. As defined in the Article 288 TFEU, the directive is a legal act that binding any country to which it is addressed as to the result to be achieved. States are free to choose the form and means to be used. The process of law making involves two

steps. The first step is the adoption of the Directive by the EU institutions - typically Parliament and the Council, acting according to the ordinary legislative procedure. However, the adoption of directives is not a subject to one procedure, but it depends on respective competency norms. The directive must specify the objective of its adoption. The aim is to provide a similar level of protection under taking into account the specifics of the law and the non-legal situation in the Member States. The second step is the implementation of the directive by the Member States.

The scope of freedom, left to the Member States with regard to the transposition of the directive and the determining of sanctions is not unlimited. Above all, the transposition must be effective to achieve the result, so that the objective of the Directive has been implemented (CJEU C-14/83, No. 14). Furthermore, it is necessary to apply appropriate measures for achieving the objective (CJEU C-102/79, No. 44). While implementing of directives with no sanctions, the Member States must carry out an independent assessment of whether sanctions are necessary at all to fully achieve the result prescribed by the Directive. If they consider any sanctions to be necessary, they must choose them from their national criminal, administrative or civil law, as well as establish the specific degree of their dissuasive effect. If, however, the choice of sanctions and their implementation remains the sole responsibility of each Member State, they are obligated to ensure the sanctioning of EU law infringements to the same formal and material extent, as in relation to infringements of national law of a similar nature and importance (Kurcz, 2004: 35; TS EU C-382/92 No. 55). The extent to which the Member States have taken the necessary measures in order to comply with the Directive 2010/64/EU will be assessed by the Commission, which should, by 27 October 2014, submit a report to the European Parliament and to the Council, accompanied, if necessary, by respective legislative proposals.

The lack of transposition of an incorrect transposition of the Directive into the legal order of a Member State may not only lead to the initiation of proceedings by the European Commission for failure to comply with treaty obligations (TFEU, Art. 258), but also to the liability for damages on a general basis (CJEU C -6/90 No. 39f.; CJEU C-334/92, No. 22; CJEU C-178/94, C-179/94, 188-190/94). According to the EU Court of Justice case-law, the lack of transposition or a delayed transposition of the directive causes a direct vertical effect of the directive. The Court dealt with this issue for the first time in the *Van Duyn* case in 1974 (CJEU C-41/74). The Court confirmed then the direct effect of the directive transposed incorrectly or untimely in vertical relationships, that is between the individual and the state. The point was to ensure the full effectiveness of the law of the European Union.

In order to become a court interpreter and a sworn translator in Poland, under the Profession of Sworn Translators Act of 25 November 2004, it is necessary to pass an official examination in front of a national board. After complying with the respective formalities the sworn translator is then entered into the national register of sworn translators, that is publicly available on the website of the Ministry of Justice. The title "sworn translator" means upon the Polish law both a translator and an interpreter. According to Article 197 (1) of the Polish Code of Criminal Procedure Act of 6 June 1997, the sworn translators are bound by the provisions providing that they must carry out their duties impartially and according to their conscience. The same applies when an *ad hoc* interpreter is appointed. If the quality of translation / interpretation is poor, the judge has the power to replace the translator / interpreter.

LEGAL KNOWLEDGE

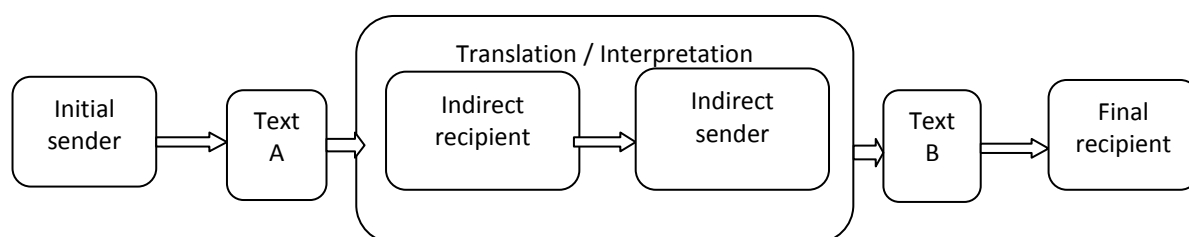
Translation and interpretation are obviously not a purely linguistic act (Osiejewicz, 2010, pp. 360-369). Firstly, the text to be translated must be decoded with respect to its meaning. The meaning ascribed to this text results from the conventions of the source language, from the specialized knowledge and from the translator's / interpreter's valuation and judgment on the text content. To effectively render the text content, the translator / interpreter has also to take into account the capabilities of the recipient (Kielar, 2000: 235). The professional knowledge required of the translator is not confined to linguistics and logically extends to several aspects that result from professional and conventional experience or purely from life occurrences. Thus the basic requirements for translating a legal text are as follows: proficiency in legal language(s), knowledge of the legal system(s) and interpreting / translation skills. The translator must have a specific translational

competence that enables him to replace the source text with the equivalent target text (Grucza F., 1985: 35). This competence is always limited to certain language pairs including certain specialized legal language pairs.

Undoubtedly, legal texts contain certain lexical items (terms) that are constitutive for their cognitive reception (Lukszyn & Zmarzer 2001). The sender of the legal text transmits with its product not only the knowledge and the sense itself, but also the way in which this knowledge and this sense are expressed. For the translation of legal texts, that is for the targeted restructuring of the translation texts not only the knowledge about application of appropriate terms is indispensable, but to the same extent the knowledge of useful and appropriate structuring of the text. Although the structures are not recognized as legal terms, their adequate application is desirable in particular communicative situations. The terms are therefore the most important components of a legal text, but the "professionalism" of the respective legal text is not only limited to terms (Grucza S., 2008c, pp. 177 f).

Only to a small extent is the translation / interpreting done by mechanical application of equivalent expressions and formulations. The main issue is the meaning of expressions that has to be decoded and understood by the translator, because the meaning is the reason for delivering the target text that has been based on terminological equivalents (Kielar, 2002: 177). Insignificant linguistic or text structure - related errors in the target language may only slightly affect the reception of the translation product in the target language, while a false interpretation of the source text, and thus inappropriate reconstruction of intentions of the legal text sender, will lead to failure of the translation process.

The diagram of the translation process in the sense of the anthropological theory of language was proposed by F. Grucza (1981a):



Translational system (Grucza F., 1981).

According to this chart, the text A that is produced by the intermediate sender is received by the translator / interpreter as an indirect recipient and then transmitted by the translator / interpreter as the intermediate sender to the final recipient. The translator / interpreter acts therefore as an intermediary between the producer and the recipient. Both the reception of the text A and the production of the text B by the translator / interpreter are intended to enable the final recipient to reconstruct the appropriate sense and to act appropriately in the communicative aspect (Żmudzki, 2000: 322). In other words, the translation of the text "a" formulated in the language "A" into the language "B" is a reformulation of the text "b" formulated in the language "B" in such a way that the text "b" awakens in its recipients the same or very similar associations, that the text "a" awakens in its recipients (Wojtasiewicz 1996: 22).

During the translation process, at first, the knowledge of the initial sender is expressed in the text A. On the basis of the text A the translator / interpreter as the indirect receiver reconstructs the information intended by the initial sender. After that the translator / interpreter as the indirect sender expresses by means of text B the knowledge that he acquired through the reconstruction. This knowledge is independent of the language used in each case, because this or that language as a kind of practical knowledge enables the translator / interpreter only to make structures of certain statements and express them through the formulation of the text B. The knowledge that has been used for the production of the text B remains unchanged and intact, regardless of the language used in each case. Through the text B, the translator / interpreter pursues his goal, which means that he uses this text as a mean. Although the translator / interpreter performs the dual function of an indirect

recipient and an indirect sender, it must not be forgotten, he is one and the same person, has only one brain and the knowledge he has reconstructed in his brain after reception of the text A and the knowledge that has served him to formulate the text B, are logically the same knowledge, regardless the practical aspect, that is the language used in each case. At the end the final recipient decodes the meaning and the value of the received text B and reconstructs the knowledge that has been used for the formulation of this text. Thus he creates in his mind the knowledge, the meaning and the intentions, on which the production of the text A by the initial sender was based and the expression of which was the intention of the initial sender (Osiejewicz, 2010: 361). This process is similar, both in translation and in interpretation, though of course there are technical differences (Tryuk, 2006: 16).

Thus it is essential to pose a question whether it is better to teach lawyers languages instead of training linguists in law, or in other words, who will better perform in this role: specialists with languages or specialised translators. It is essential to point out, after World War I, there was even no profession of an interpreter in Poland. This profession was mainly pursued by bilingual diplomats, officers, language teachers, scientists, polyglots without a specific profession, whose speeches were regarded as a kind of art (Tryuk, 2007: 25). However, the analysis of legal discourse and mediation in legal communication obviously requires both kinds of knowledge. The key is to establish the proportion in order to determine when could a lawyer trained in the translation and a linguist featuring an extensive knowledge in the field of law and constantly upgrading their professional qualifications be a better translator / interpreter of legal texts.

Obviously there are mostly linguists who translate legal texts, but the answer to the question above depends on the definite circumstances of each act of translation. The language skills are preeminent if the source text is linguistically complex and difficult to decipher, and also when the text recipient expects a linguistically correct output text, whereas specialized legal knowledge appears to be essential for translation among lawyers themselves. The required level of linguistic and professional knowledge of the translator / interpreter depends on the legal difficulty of the text to be translated, as well as on expectations and needs of the translation recipients. Without doubt, however, the foundation for any legal translator / interpreter lies in an extensive knowledge of substantive and procedural law, the judiciary, law enforcement activities and administration combined with a specialized knowledge of legal language, as well as being entirely aware of the ways in which legal knowledge is expressed in linguistic communication (e.g. pleadings in both languages).

LEGAL EDUCATION

A legal interpreter and translator cannot understand the information implicit in specialised texts without legal training. In consequence, without accurate comprehension it is impossible for the legal translator / interpreter to make the text understandable to a foreign recipient. To meet these requirements, current professional practice should be based on appropriate training arrangements for interpreters and translators in order to gradually establish a system of continuous professional development. The legal translator / interpreter training at university level cannot fulfil market needs, since the competences necessary for this occupation as well as the requirements for the relevant national examination are not sufficiently defined. The translator / interpreter education programs have to be established deliberately to enable students to develop the best possible qualities that will help them to exercise their complex role in the future.

A solid educational foundation should be put in place, because this level of expertise can only be achieved in a full-fledged university degree program. It is recommended to establish a special, preferably an inter-faculty, field of study, namely translation / interpretation for authorities and law enforcement bodies, because that is how students will be able to experience the complex character of the role they will be performing when they embark on their careers. The relevant guidance provided by professional associations for such a field of study would be important in order to follow best practices. One of them is e.g. EULITA - European Legal Interpreters and Translators Association, that was founded in Antwerp, Belgium, on 26 November 2009 under the Criminal Justice Programme of the Directorate-General Justice, Freedom, Security of the European Commission (project number JLS/2007/JPEN/249) in order to promote cooperation and best practices in working arrangements with the legal services and legal professions.

In subsequent graduate degree programs translators / interpreters should have the possibility to develop further professional competences. This could be also an essential step for those who have already pursued this profession and are willing to pursue lifelong development by improving their language competences in both Polish and foreign legal language as well as specialized knowledge, particularly regarding the foreign law system, and translation techniques matching the needs of justice and law enforcement agencies.

The training for interpreters currently on offer in Poland is inadequate, primarily due to the lack of training for interpreters of rare languages and the paucity of experts who have competencies to conduct this type of training. Training initiatives conducted in cooperation with representatives of the judiciary are also rare. A solution to this problem would be to train translators / interpreters in various language combinations in cooperation with foreign partners, such as international associations of interpreters / translators. In addition, training is generally available in larger cities, which makes it difficult for students from smaller towns to attend it. The development of e-learning programs could increase its availability of training for a larger group of recipients.

The remuneration of sworn translators in Poland as stated in the Regulation of the Minister of Justice on the Sworn Translator's Remuneration for Translation Services of 24 January 2005 is too low (the fee for an English to Polish translation of a standard calculation page, that is a page containing 1125 characters amounts to 23,00 PLN (approximately 5,5 EUR) in comparison to the prices of educational services, causing financial difficulties in undertaking specialist courses, or even forcing translators / interpreters to take up further, additional employment, enabling them to finance the training. To guarantee the quality of services it is therefore necessary to increase the current wage rates for sworn translators so as to make the profession an attractive alternative to experienced and highly qualified specialists as well as to the best students. In the light of the obligation imposed by the Directive, the state should consider subsidizing specialized training in order to facilitate access to lifelong learning of this professional group.

It is also impossible for sworn translators in Poland to choose a specialisation – they have to be skilled in each branch of law, while lawyers are able to specialise. The abundance of branches of law, and hence the need to master the terminology and substantive knowledge in all these areas, would be conducive to allowing specialization, in particular with regard to the most commonly used languages. This would be beneficial for both members of the judiciary who could benefit from translators specialising in a particular field and to the interpreters themselves who could focus on training in a specific branch of law. Adding information about the specialisation of specific translators to the register of sworn translators available at the Ministry of Justice would directly contribute to improving the quality of translation and increase both the prestige of the profession and trust in those who pursue it.

In many countries, it is a standard practice to separate translators and interpreters, as it is uncommon to be equally efficient in either area because of individual aptitudes. The Polish law on sworn translators does not allow to sworn translators to be devoted exclusively to translation or interpreting. To improve the quality of court interpreting and sworn translation, it is advisable to consider the separation of these two competences.

Nevertheless, an instruction in standards of conduct and good practice is essential among representatives of judiciary. Knowledge of rules governing the profession of a sworn translator (Kierzkowska, 2005) by representatives of judicial institutions is necessary, as it will help to improve the quality of translation. In view of the Directive on the right to interpretation and translation in court proceedings, it is compulsory to set up proper interactions between legal interpreters and translators on the one hand, and judges, prosecutors, attorneys at law etc. on the other in order to contribute to the expedient conduct of proceedings (and thus to decrease litigation costs).

As noted above and as proved in the European Commission 2010 Consultation on European Judicial Training (Ref. Ares (2011) 413544 - 13/04/2011), translation in court should be performed by properly qualified legal translators and interpreters whose training has been widely recognised as both necessary and specific to

answer their need for knowledge of peculiarities of different judicial systems and the respective legal vocabularies, which is sometimes even considered as part of European judicial training as such.

In this context, it is worth noting that a draft to amend Polish regulations governing the conditions for access to the exercise of certain professions is currently being worked on. According to the draft, the Minister of Justice may by means of an administrative decision be able to exempt a candidate for a sworn translator from the requirement of possessing higher education in the event of a significant shortage of sworn translators of the foreign language which that candidate speaks. As indicated above, the difficulty of legal translation stems from the need to possess specialist knowledge of the two legal systems and the specialized linguistic skills (terminology and the means of expressing knowledge). Apart from this, there are specific difficulties arising from the necessity to explain to a person who does not possess the adequate knowledge the meaning of a specific legal text, which involves the skill to compare legal systems in the source and target languages. It is doubtful whether a person with secondary education would be able to handle such difficulties, as well as whether the proposed change is consistent with the objective of Directive 2010/64/EU and contributes to enhancing the quality of translation.

FINAL REFLECTIONS

Article 6 of the TFEU lists the competences of the European Union to carry out actions to support, coordinate or supplement the actions of the Member States. One of the areas of such action at the European level is education. The common feature of these areas is that the harmonization of legal systems of the Member States is excluded. Actions taken to encourage or coordinate arrangements may take the form of binding norms that have the same legal position as any of the provisions of EU law and cannot be questioned by the Member States. Pursuant to Article 165 of the TFEU, the Union should contribute to the development of quality education by encouraging the cooperation between the Member States and, if necessary, by supporting and supplementing their actions.

The division of competences in this filed as for the supranational and the domestic level has been clearly set out in paragraph 1 of Article 6 of the TFEU, where it is stated that the European Union must fully respect the responsibility of Member States for the content of teaching and the organization of education systems and their cultural and linguistic diversity. The education policy directly affects many other policies and fundamental freedoms, hence the concept of leaving the responsibility for its formation with the Member States and to reduce the Union's competences only to encouraging, supporting and complementing them. Article 165 of the TFEU excludes any harmonization in this area. The prohibition applies to any possible treaty authorization and refers to the content, not to the form of the measure adopted. The concept of harmonization is not limited to situations in which national regulations already exist, but includes the consequences for a Member State arising from the adoption of acts of harmonization (Callies & Ruffert, 2011, art. 165 TFEU, No. 22). The prohibition also includes the so-called indirect harmonization, defined as shaping educational policies of the Member States through the use of financial promises.

The relationship between the EU law and the national laws of EU Member States has been repeatedly considered by the Court of Justice of the EU, as well as by the national courts of the Member States, especially their constitutional courts. The period from 1962 to 1994 was decisive for the present case law. In that time a total of 90 judgments were issued: 20 of them by the Court of Justice of the EU, and the remaining 70 by national courts of the then twelve Member States. The issue has been initiated by the German Federal Constitutional Court in its judgments, the first of which comes from 1967. From 1967 to 1993 this Court commented on the above subject eight times (Wasilewski, 2009: 215). The result of concerns about the preservation of national identity is its famous judgment of 2009, describing - from the perspective of the German state - the boundaries of legitimacy of the Union with regard to the completion of European integration. The judgment concerned the compatibility of the Lisbon Treaty (and two other laws) with the Basic Law for the Federal Republic of Germany and the consequences of the ratification of the Treaty into the German legal order. The Court pointed out the necessity to protect the elements constituting the German state, and containing in the concept of "constitutional identity". It detailed the branches of law, which must be

remain in the activity of the Member States: criminal law outside the scope of intergovernmental cooperation; use of the national armed forces outside the country; responsibility for receipts and expenditure of the state; organization of social order and social security; education. In these areas a consensus allowing the harmonization will remain difficult.

The Member States have decided not to grant to the European Union competences in the area of education policy. This means that under the current Treaty the European Union has only the power to make recommendations regarding the legal education of court interpreters and sworn translators by highlighting the necessity for ensuring the respective quality of translation / interpretation. The burden rests on the Member States.

Note: The paper is an extended written version of an oral presentation at the international academic conference “Legal Education in Contemporary Europe” that was held from 30.9. 2014 to 2.10.2014 in Zielona Góra / Poland to inaugurate the establishing of a new Faculty of Law and Administration at the University of Zielona Góra.

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COMPUTER-MEDIATED COMMUNICATION: PEDAGOGICAL AND LANGUAGE LEARNING IMPLICATIONS

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ABSTRACT

Computer has become an inseparable part of everyday life. Since the introduction of electronic media in general and the Internet in particular, more and more people have been using the Internet to communicate as a quick and reliable means of information transfer. Alongside the ever-increasing interest in electronic media, the Internet has been gaining ground to fulfill a variety of purposes not only as an intra- and inter-personal communication medium but also as a pedagogical tool facilitating language learning and teaching. Therefore, the purpose of this study is to provide an account of the benefits and positive contributions found in previous studies which text-based Computer-Mediated Communication (CMC) has to offer in language learning and teaching. This study also provides an overview on CMC, its modes, and relevant definitions. The impact of CMC on language education and language development will be dealt with as well.

Key Words: Computer-Mediated Communication, Synchronous CMC, Asynchronous CMC, the Internet, E-mail.

INTRODUCTION

The development of computers alongside the widespread use of the Internet has turned CMC into a very important communication media which has been used wildly and effectively to cover a variety of purposes including interpersonal communication, information transfer, pedagogical ends, etc. The integration of technology into educational environments can be expected to have a myriad of positive effects on language learning and teaching. It has been proved that Internet-based communication will have a significant motivational effect on the students (Meunier, 1996; Warschauer, 1996) resulting in the improvement of their communicative skills both orally and in the written form. According to Quan-Hasse, Cothrel, and Wellman (2005), computer technologies have enabled learners to communicate ideas, information, and their feelings without any limit on time and space. Similarly, Zhao (2006) refers to the application of the Internet and states that the Internet is the first major medium of communication that allows people to establish new social contacts outside the face-to-face (FtF) context as well as to maintain existing ties formed in corporeal contexts. According to Fey (1998) and Boone (2001), technology-based language learning has revolutionized the world of education and made it possible to transcend boundaries of classroom walls and to learn in new ways. Therefore, there is a need to further explore the advantages and potentials that this media has to offer.

Computer-Mediated Communication

According to Nguyen (2008), "CMC has been extensively researched from various disciplinary and methodological perspectives. This form of communication, with a broad scope of processes and tool-use, facilitates information design and delivery, and human-human and human-machine interactions with structural, cognitive and sociocognitive implications" (p. 23).

In order to gain insight into the nature of CMC, various definitions have been proposed from a wide range of perspectives. The term CMC was first coined and introduced by Hiltz and Turoff (1978) while experimenting on computer conferencing on the Internet. They viewed CMC as a medium for creating, perceiving, transmitting, decoding, and encoding messages. This definition has been endorsed by various researchers. Barnes (2002)

defines CMC as a wide range of technologies that paves the way for human interaction and sharing of information through interconnected networks of computers including e-mail, discussion groups, newsgroups, and real-time chat. December (1997) also states that CMC is a process of human communication via computers, involving people, situated in particular contexts, engaging in processes to shape media for a variety of purposes. Similarly, According to Warschauer (2001), CMC or “on-line communication refers to reading, writing and communication via networked computers” (p. 207).

However, over the past few decades, along with the fast-changing CMC technologies themselves, the definitions have changed to reflect the current view on language learning. In general, CMC can be viewed both as intermediary tools and as a communication process. When viewed as tools, CMC is examined from technological aspects that provide the medium for communication. Other aspects are revealed when CMC is perceived as a communication process, which includes the message, the sender, and the receiver. It is therefore human factors with their sociocultural, historical, and pedagogical background that play significant roles during the interaction process through electronic media.

Synchronous and Asynchronous CMC

It is conventional to divide CMC into two modes including synchronous (SCMC) and asynchronous (ACMC) (Luppini, 2007; Pfaffman, 2008). Accordingly, Warschauer (2001) defines different modes of CMC as:

- a) Synchronous computer-mediated communication, whereby people communicate in real time via chat or discussion software, with all participants at their computers at the same time;
- b) (b) Asynchronous computer-mediated communication, whereby people communicate in a delayed fashion by computer, e.g. by e-mail; and
- c) The reading and writing of on-line documents via the internet. (p. 207) .

SCMC discussions allow learners to communicate similar to FtF contexts (Lee, 2001), and, at the same time, provides them with the opportunity to monitor their language use (Sykes, 2005). On the other hand, ACMC provides mediated media of communication which allows learners to deliberate, review, revise or even cancel the stream of communication before sending the information to the recipient (Heisler & Crabill, 2006). This valuable property of ACMC helps learners learn how to reflect on the content of what they are going to convey and be critical of what they have in mind before communicating it to others. Therefore, asynchronous technologies can deeply involve learners in the processes of critical thinking (Lee, 2004) and problem solving (Jonassen & Kwon, 2001) by demanding more focused and purposeful communication.

Pedagogical implications of ACMC and SCMC technologies have been extensively researched and positive results have been reported. With regard to ACMC, Warschauer (1995) emphasizes the role of e-mail and says that e-mail is one of the most important applications regarding the Internet. Sotillo (2000) also maintains that because of the delayed nature of e-mail, learners have more opportunities to produce syntactically complex language resulting in a significant improvement in their accuracy.

Regarding SCMC, reported evidence suggests that real-time, conversational exchange via text may indirectly develop L2 speaking ability (Abrams, 2003; Beauvois, 1997; Payne & Whitney, 2002). Researchers have also compared SCMC and FtF discussion on a number of dimensions including the investigation of the effectiveness of SCMC as a preliminary activity for FtF discussions. These studies have been cross-sectional in nature, frequently comparing the quantity and nature of linguistic output during one chat session as compared with FtF discussion. Findings from these studies endorse the effectiveness of SCMC both over FtF discussions and in promoting FtF.

According to Nguyen (2008), “Another widely-accepted classification of CMC is whether it is text-based or audio/video-based” (p. 27). Text-based CMC reflects the current view in educational environments and “has been the subject of research in many disciplines from general education to language studies” (p. 27). Nguyen (2008:27) summarizes this concept in the following figure:

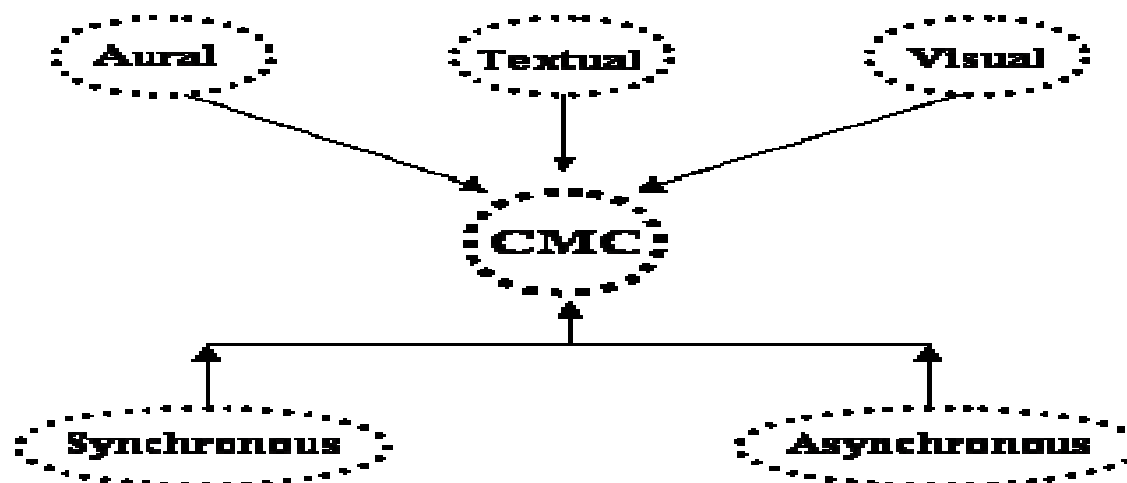


Fig 1: Modes of CMC

Nonetheless, information technology in general and CMC in particular have been developing so rapidly that not only do they encompass educational contexts but they have also taken one step forward to include Wikis, Blogs, to Podcasting and Gaming. Blogs and Wikis can be used either synchronously or asynchronously depending mainly on the participants' preferences, objectives, pedagogical, and cultural and socio-cultural traits.

In summary, alongside ACMC which has already gained its place in both daily communication and educational environments, "using SCMC for learning and practicing a target language now seems like the most natural thing in the world" (O'Rourke, 2008:227). SCMC and ACMC with their peculiar characteristics, complement each other (Honeycutt, 2001). Nguyen (2008) refers to Ingram and Hathorn (2004) and states that "while synchronous discussions may be best suited for brainstorming and quickly sharing ideas during interaction, asynchronous exchanges allow more time for considered opinions and are more effective for deeper discussion of ideas" (p. 28). A combination of synchronous and asynchronous experiences seems to be necessary to promote the kind of engagement and depth required in collaborative learning. In line with the current communicative, sociocognitive trends in education, both synchronous and asynchronous CMC offer numerous opportunities for language learners in terms of collaborative learning and are now a significant ground for investigation in applied linguistics.

CMC and Pedagogical Implications

According to Nguyen (2008), CMC has proved to be influential in promoting educational conditions and "is believed to offer a number of pedagogical applications. Numerous primary and secondary studies on didactic characteristics of both SCMC and ACMC have been reported, through which educators are gradually realizing their educational potential to the learning context" (p. 29). CMC in educational contexts are mainly based on the fundamental tenet of connecting students to one another with the aim of meaningful communication via computers in or out of the classroom (Hirvela, 2006). One of the advantages of computer-based communication, as stated by Hirvela (2006), is "the positive 'distancing effect' afforded by electronic communication which lends itself to increased student empowerment and increased desire to express oneself in the target language because the computer seems to minimize the risks involved in communication in a foreign language" (p. 234).

Research on the use of CMC regarding language learning has mainly focused on the learners' active engagement in target language, language usage, and their writing skills (Warschauer & Healey, 1998). Payne and Whitney (2002) also identified three themes regarding the research findings on CMC as following:

- a) Students tend to produce more complex language in chatrooms than in face-to-face settings . . .
- b) participation increases online with 'quieter' students participating as much or even more than those individuals who normally dominate classroom discussion . . .
- c) attitudes toward the target language were reported to improve. (p. 14)

Kamhi-Stein (2000) also found some advantages regarding CMC in reducing anxiety, social distance between students and their instructor, and increasing social knowledge of individuals. CMC has also proved to have an advantage over traditional learning conditions (Bikowski & Kessler, 2002) by allowing collaborative learning (Meskil & Mossop, 2003), encouraging students to be actively involved in target language communication (Bikowski & Kessler, 2002), allowing participants to have control over the learning process (Bikowski & Kessler, 2002), and facilitating negotiation of meaning (Blake, 2000). According to Ellis (1999), negotiation of meaning takes place “when interlocutors seek to prevent a communicative impasse occurring or to remedy an actual impasse that has arisen” (p. 3). Blake (2000) also notes that negotiation of meaning also happens in CMC which further facilitates meaningful communication in target language.

Similarly, computer technologies can help learners increase their opportunities to use target language (e.g., Barson, Frommer, & Schwartz, 1993). Thus, these opportunities result in the improvement of the quality of written and spoken language (Sotillo, 2000) and negotiation of meaning (Blake, 2000).

Regarding the domain of language education, according to Nguyen (2008), numerous studies have been conducted investigating positive effects of CMC on motivation, active learning, reflective learning, learner autonomy, and collaborative learning. Beauvois (1998) found that learners’ motivation positively improved in the CMC context rather than in FtF communication. Interaction with native speakers of the language via computer may also increase learners’ motivation in the future use of CMC (Lee, 2004).

Regarding active learning, it has been stated that learning takes place when learners are actively involved in the learning process (Lee, 2005; Warschauer, 1996). Nguyen (2008) also refers to White (2007) and notes that “active learning is one of the crucial elements creating a successful online learner-centred language learning environment” (p. 31). Nguyen (2008) further reiterates Egbert’s (2001) claim in that “CMC can often make it easier to develop meaningful tasks during which language learners of any language level are active and have opportunities to interact” (P. 31).

Similarly, reflective learning has also been proved to benefit from CMC. Reflective learning involves learners in “evaluating their experiences, and is a trend in language leaning” (Nguyen, 2008:31). Nguyen (2008) refers to Jonassen (2004) and Weasenforth, Biesenbach-Lucas, and Meloni (2002) and points out: CMC, especially ACMC, allows more time for reflection and referring to other electronic sources of information. Moreover, the asynchronous nature of the CMC medium not only allows learners to prepare their messages more carefully in a word processor but also is believed to invite quiet students to play more active roles since their more reflective learning styles are easily accommodated (p.31) .

Learner autonomy is another crucial notion regarding computer-mediated learning (White, 2003). Nguyen (2008) refers to Sinclair (2000) and defines learner autonomy “as the notion of taking responsibility for one’s own learning and also associated with a number of other terms, such as learner independence, independent learning, lifelong learning, learning to learn, thinking skills” (P. 32). Chapelle (2001) also refers to the efficacy of CMC applications in giving learners more control and autonomy over their own learning.

According to Nguyen (2008), collaborative learning via CMC has also been broadly researched (e.g., Suthers, Vatrappu, Medina, Joseph, & Dwyer, 2008). According to Harasim (2007), collaboration through CMC paves the way for better interaction among learners and their instructors resulting in better learning.

Nguyen (2008:30) summarizes various studies on the benefits of CMC in language education in the following table:

Table 1: Pedagogical Features of CMC

Pedagogical features of CMC	Sample publications	Mode of CMC	
		SCMC	ACMC
Increase motivation	Lee, 2004; Schwienhorst, 2004; Smith, 2003	✓	
	Sotillo, 2000	✓	✓
	Weasenforth, Biesenbach-Lucas, & Meloni, 2002		✓
Support active learning	Warschauer, 1996	✓	
	Lee, 2005	✓	✓
	Bikowski & Kessler, 2002		✓
Promote reflective learning	Swaffar, Romano, Markley, & Arens, 1998	✓	✓
	Jonassen, 2004; Weasenforth, Biesenbach-Lucas, & Meloni, 2002		✓
Enhance learner autonomy	Arnold, 2002; Payne & Whitney, 2002; Warschauer, 1996	✓	
	Beauvois, 1995; Schwienhorst, 2004	✓	✓
	Chiu, 2008		✓
Foster collaborative learning	Darhower, 2002; Leahy, 2008; Warschauer, 1997	✓	✓
	Abrams, 2005; Savignon & Roithmeier, 2004; Weasenforth et al., 2002		✓

CMC and Language Development

According to Nguyen (2008), numerous studies have been carried out to investigate the effectiveness of CMC in language development. These studies take into account concepts such as (a) metalinguistic aspects including negotiation of meaning, sociolinguistic environment, and intercultural and intracultural competence; (b) language components and areas including grammar, vocabulary, and pronunciation; and (c) language skills developments including writing, reading, speaking, and listening.

According to Chun (2008), negotiation of meaning in CMC has also been thoroughly investigated. As stated earlier, some studies have endorsed the facilitation of negotiation of meaning through CMC (e.g., Blake, 2000; Pellettieri, 2000; Sotillo, 2005). CMC has also proved to be effective in advancing sociolinguistic ends. According to Nguyen (2008), CMC is also known for providing a beneficial environment for sociolinguistic development (Kitade, 2000; Smith, 2003). Learners display less anxiety and increase self-esteem; thereby, enabling students reluctant in oral discussions to contribute more actively in electronic discussions (Al-Sa'di & Hamdan, 2005).

Many studies regarding intercultural and intracultural issues within CMC have been conducted and positive results have been reported (e.g., Chun, 2008; Abrams, 2006).

Summary of previous studies on metalinguistic aspects has been shown in the following table proposed by Nguyen (2008:34):

Table 2: Benefits of CMC in metalinguistic aspects

Metalinguistic aspects	Sample publications	Mode of CMC	
		SCMC	ACMC
Negotiation of meaning	Blake, 2000; O'Rourke, 2005; Pellettieri, 2000; Shekary & Tahririan, 2006; Sotillo, 2005; Tudini, 2003; Wang, 2006	√	
	Sotillo, 2000; Toyoda & Harrison, 2002	√	√
	Kitade, 2006		√
Sociolinguistic environment	Kern, 1995; Kitade, 2000; Warschauer, 1996	√	
	Schwienhorst, 2004	√	√
Intercultural & intracultural competence	Kramersch, A'Ness, & Lam, 2000; Sotillo, 2005; Thorne, 2003	√	
	Abrams, 2006; Chun & Wade, 2004; Kramersch & Thorne, 2002; Thorne, 2003	√	√
	Itakura, 2004; O'Dowd, 2003; Ware & Kramersch, 2005; Ware & O'Dowd, 2008		√

A number of studies have also investigated the role of CMC in components and areas of language. Among those, Kern (1995) found that learners produced more language in CMC contexts than in FtF interaction. Kern (1995) also revealed that grammatical accuracy of learners dramatically improved in CMC environments. Faghih and Hosseini's (2012) and Hosseini's (2012, 2013) findings also endorsed the effectiveness of CMC in improving certain aspects of grammar for learners.

Nguyen (2008) also refers to numerous studies conducted on vocabulary learning and pronunciation improvement through CMC (e.g., Fitze, 2006; Fuente, 2003; Li, 2000; & Jepson, 2005).

The following table summarizes some previous studies on the benefits of CMC in language components proposed by Nguyen (2008:35):

Table 3: Benefits of CMC in language areas or components

Language areas or components	Sample publications	Mode of CMC	
		SCMC	ACMC
Grammar	Bax, 2003; Fiori, 2005; Fitze, 2006; Kern, 1995; Lee, 2006; Salaberry, 2000; Sotillo, 2005; Van Deusen-Scholl, Frei, & Dixon, 2005	√	
	Abrams, 2003; Dussias, 2006; Honeycutt, 2001; Sotillo, 2000	√	√
	Gonzalez-Bueno & Perez, 2000; Li, 2000; Shang, 2007		√
Vocabulary	Fitze, 2006; Fuente, 2003; Toyoda & Harrison, 2002	√	
	Fotos, 2004; Li, 2000		√
Pronunciation	Jepson, 2005	√	

Regarding language skills, Nguyen (2008) refers to Levy and Stockwell (2006) and states that “there is a common tendency to associate CMC with the development of specific language skills” (p. 35).

According to Davis and Thiede (2000), text-based nature of CMC helps learners improve their writing skills as they have more time to deliberate on the content of their writing, resulting in more accurate and grammatically complex content. Nguyen (2008) also refers to Shang (2007) and Sotillo (2000) in that the application of CMC “promoted written accuracy and sentence complexity. In addition, previous studies also indicate that the delayed nature of ACMC exchanges appears to give learner more chances than SCMC to produce complex language” (p. 35).

As stated by Levy and Stockwell (2006), reading abilities can also improve while interacting in the context mediated by computers.

In order to substantiate the efficacy of CMC in improving speaking skills, Nguyen (2008) cites Payne and Whitney (2002) for their study on the effectiveness of CMC on speaking and mentions that “participants in a chatroom have a significantly higher oral proficiency than those just spending time in traditional oral classes” (p. 36). In another study, Dussias (2006) supported oral production improvement in CMC context.

Volle (2005) has also endorsed the role of electronic media in improving listening skills of the learners. Nguyen (2008:36) summarizes previous studies regarding the benefits CMC and language skills in the following table:

Table 4: Benefits of CMC in language skills development

Language skills	Sample publications	research	Mode of CMC	
			SCMC	ACMC
Writing	Li, 2000		√	
	Blake, 2000		√	√
	Davis & Thiede, 2000; Meunier, 1998			√
Reading	Godwin-Jones, 2008; Greenfield, 2003		√	
	Fotos, 2004; Gruber-Miller & Benton, 2001		√	√
Speaking	Stockwell, 2003		√	
	Chun, 2003; Jepson, 2005; Payne & Whitney, 2002; Tudini, 2005		√	√
	Abrams, 2003; Dussias, 2006			√
Listening	Volle, 2005		√	

In general, the text-based nature of CMC brings with it great possibilities for both learners and teachers to experience reinforced learning as well as an opportunity to produce syntactically complex language especially in written form and through a less stressful learning environment (Blake, 2000; Hampel & Hauck, 2004).

In conclusion, technology can remarkably enhance learning conditions not only in but also out of classroom by eliminating both physical and psychological barriers which might hinder learning.

CONCLUSION

The present discussion has shown that CMC with its particular characteristics, types, and scopes holds beneficial applications for language learning and development, from metalinguistic aspects to language components and skills. This article will hopefully draw an overall picture of the potential advantages of integrating computer technologies into pedagogical environments with the aim of facilitating comprehension, analysis, and production of language. However, with respect to social aspects, the prospect of integrating CMC into language education in all contexts is not a “cure-all” approach to language learning and teaching. This paves the way for more inquiry for language practitioners and researchers. In other words, more

comprehensive studies about the introduction and application of CMC into language learning and teaching in different sociocultural, institutional, and individual contexts are required in order to gain deeper insight into the advantages of this fast-growing learning tool in pedagogical environments. regarding cooperative approaches to foreign language learning via technology, there are still areas left unexplored including the impact of CMC with regard to collaborative learning, social activities required of online students in collaborative environments, different forms of collaboration applicable in CMC environments, the role of learners in the process of online collaboration, the role of teachers in organizing online courses, learners' attitude towards CMC collaborative processes, the role of effective collaboration in CMC contributing to language development, the impact of learners' sociocultural backgrounds on the learning process, the amalgamation of SCMC and ACMC in enhancing collaboration, And most importantly, the effective ways of integrating technology in a way acceptable by and less threatening to students. As a result, further research on authentic online collaborative learning is merited as there is much more to gain regarding this promising and pristine area of language learning and research.

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