Anadolu University



The 6th International Conference
Sustainable Development,
Culture and Education

June 4-7, 2008

Eskisehir / Turkey

"Collaboration on Education for Sustainable Development"

Conference Proceeding CD

The 6th International Conference Sustainable Development Culture and Education

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Collaboration on Education for Sustainable Development

BBCC

The Baltic and Black Sea Circle Consortium

The Baltic and Black Sea Circle Consortium historically was created on a base of cooperation network of the Journal of Teacher Education and Training (JTET) which was established in 2002. The Baltic and Black Sea Circle Consortium was established in 2005 as an initiative in international cooperation between educational research and development institutions in the Baltic and Black Sea Region initially drawn from the countries around and near the Baltic Sea and the Black Sea. The focus is on the issue of re-orienting education towards sustainable development in the Baltic and Black Sea Region. The task of the BBCC is to serve the decade of the priority of sustainable education starting from the year 2005 announced in UNESCO's declaration of "Education for Sustainable Development". Two levels of the activities are highlighted: (1) the general level where the philosophical background of sustainable education is acknowledged, and (2) the specific level where sustainable development as a cross-curricular issue is implemented in teacher education.

Anadolu University

The Academy of Economical and Commercial Sciences in Eskisehir, which was founded in 1958 formed the origin of Anadolu University. This institute was converted into Anadolu University in 1982 and succeeded in being recognized as a modern, dynamic and innovative university by universities both in the world and in Turkey. Anadolu University is a global- conscious university in its 12 faculties of which 3 constitute distance learning, 7 higher education schools, a state conservatory and 9 institutions. Anadolu University is situated in Eskisehir, a center of education, science and culture. Eskisehir is also a historical town. The city reflects deep traces of civilizations such as Hittites, Phrygians, Romans, Byzantines, Seljuks and Ottomans and plays an important role in Turkish Republic's Modernization efforts.

VI. INTERNATIONAL JTET CONFERENCE

JUNE 04-07, 2008 ESKISEHIR-TURKEY

OPENING CEREMONY (June 4 2008, Wednesday)

June 5 2008 Thursday

09.00-10.30 ***Chair of the Session: Ilga Salite*** ***Keynote Speakers:*** ***1.Charles Hopkins*** ***2.Erdem Albek***

10:30-10:45 ***Coffee Break***

	Kırmızı Salon	Mavi Salon	Class I	Class II	Class III	ClassIV (Workshops)	*Poster Sessions*
10.45-12.45	**Chair of the Session: Anne Marie Ronholt**	**Chair of the Session: Jyrki Reunamo**	**Chair of the Session: Anita Pipere**	**Chair of the Session: Hasan Simsek**	**Chair of the Session: Ferhan Odabasi**		
	1. Towards A Multiculturally Competent Teacher in Building A More Sustainable World ***Ilisko, Ignatjeva-LATVIA***	**1.** Primary School Children's Response To A Course titled "Towards A Sustainable Lifestyles" ***Tuncer, Yildirim TURKEY***	**1.** Nanotechnologies In High Schools ***Kuzmovs- LATVIA***	**1.** Finni-Ugric Students Priorities According To Comparative Study ***Leino-ESTONIA***	**1.** Environmental Culture, Education And Sustainability In Campeche Mexico ***Eastmond,Faust,*** Isaac- ***MEXICO***	**1.** The E-Learning For Collaboration On Education For SD ***Assyn,Da-Musa-FRANCE***	***1.****The Environmental Education, The Forming Of Upbringing And Environmentally Aware Thinking In Hungary* ***Szabo- HUNGARY***
	2. The women Employment Problems And Solutions In SD In Turkey ***Turhan-TURKEY***	**2.** Planning an Environmental Education Program: An Example Of Community Collaboration ***Mallen,Barazza SPAIN-MEXICO***	**2.** Interrelation Between Adults' Perception Of Self As Fields' Professional And Their Participation In In-Service Training ***Bakutyte, Useckiene LITHUANIA***	**2.** Implementing And Assessment Of Decade "Education For SD": Characteristic Of Situation In Latvian Higher Education***Grabovska, Grabowski-LATVIA***	**2.**Female Education And Employment in SD ***Cubukcu,Girmen TURKEY***	**2.** Regional Centre of Expertise: Guardian Angel ***Lindau-Bank, Hoenig,Scheer GERMANY***	***2.*** *Perceptions Of The Tasks Of Leadership* ***Jones, Dohnke-UK, GERMANY***
	3. Motivating Factors For Intermediate Level Students In Art Education ***Vilcane,Slahova-LATVIA***	**3.** Developing Professional Efficiency Of A Sustainability Oriented Primary School Teacher ***Lomzina,Guseva,Domb-rovskis, Ilisko- LATVIA***	**3.** Self Management For Heroes And Heroines ***Keuper-THE NETHERLANDS***	**3.** Becoming Aware of Classoom Realities: A Social Responsibility Project ***Bakirci-TURKEY***	**3.** Networks For Researching ESD In Teacher Education In The UK ***Wade, Mackay-UK***		***3.****The Theoretical Aspects Of Pedagogical Competences* ***Ozola- LATVIA***
	4. Current Foci And Approaches to EE Research: An Analysis Of Proposals For The First International Handbook Of Research On Environmental Education. ***Stevenson-USA***	**4.** Collaboration Within Edith Stein's Phenomenology Of Community ***Teloni-ITALY***	**4.** Survey Of The Educational Efficiency Of Basic Environment Course In University Of Debrecen ***Toth, Matisz, Kerekes, Szabo, Lakatos HUNGARY***	**4.** The Role Of Informal Education In The Formation Of Health-Conscious Behaviour Of Migrants ***Gaal,Lakatos,Kosaros-HUNGARY***	**4.** The Important Of Artistic Culture In The Development Of Personality ***Klasone-LATVIA***		***4.*** *Students Independent Work As Self-Organisation Of Learning* ***Rupeika -LATVIA***
							5. *Students' Satisfaction With The Chosen Study Programme* ***Neimane -LATVIA***

12.45-14.00 ***LUNCH***

June 5 2008 Thursday		Kırmızı Salon	Mavi Salon	Class I	Class II	Class III	ClassIV (Workshops)	*Poster Sessions*
	14.00-15.30	**Chair of the Session: Kiymet Selvi**	**Chair of the Session: Rosalyn McKeown**	**Chair of the Session: Ilga Salite**	**Chair of the Session: Charles Hopkins**	**Chair of the Session: Turan Akman Erkilic**		
		1. Meaningful Learning As A Ground for Foreing Language Learner SD ***Skrinda- LATVIA***	**1.** Important Requirement Of Teachers´ Work-Adherence To Ethical Principles ***Tiko-ESTONIA***	**1.** Academic Emotions In Students' Learning ***Normak-ESTONIA***	**1.** The Implementation Of The Multilingual Education Model. The Case Of Georgia From A Comparative Perspective.***Grigule-LATVIA***	**1.** Environmental awareness of Hungarian economics and arts students ***Toth, Gyorgy-HUNGARY***	**1.** Horse Assisted Education For Social Work and School ***Lindau-Bank-GERMANY*** (will be held in horse club and last till 17.15)	***1.*** *Social Educationalist's And Social Work Experts' Cooperation Topicalities, Prospects For SD* ***Verescagina –LATVIA***
		2. Understanding Cross-Cultural Communication And Classroom Dynamics In Tertiary Education ***Uckun, Buchanan-TURKEY***	**2.** Are We Asking Too Much From The Cooperating Teachers ***Gursoy, Damar-TURKEY***	**2.** The Role Of The Teachers' Self Effectiveness In The Education Reforms Of Georgia. ***Sadzaglishvili-GEORGIA***	**2.** SD And Education: Life Orientations Of Candidate Teachers ***Gokcakan-TURKEY***	**2.** Development Of Music Teacher's Reflective Activity In The Context Of SD: Theoretical Aspect ***Davidova,Minakova-LATVIA***	**2.** The Role And Possibilities Of The Hungarian Open-Air School Network In The Education For Sustainability ***Lesko, Katona,Karasz- Lakatos HUNGARY***	***2.*** *Basic Competencies Analysis Of Becoming Social Workers Grounded On Demands Put Forward In Normative Acts* ***Lanka- LATVIA***
		3. Teacher Education In The Multicultural Society Of Georgia ***Tsereteli Sadzaglishvili Berdzenishvili - GEORGIA***	**3.** Citizenship Education For SD In Higher Education In Latvia ***Jurgena, Mikainis-LATVIA***	**3.** Promoting Cultural Awareness In Teacher Trainees Through Comenius Projects ***Ipek,Gokce, Kaya Yildirim TURKEY***	**3.** History, Science And Education For Sustainability In Collaboration For Understanding The Changing Trends ***Kiss, Vallner-HUNGARY***	**3.**Cooperation And Dialogue In Education for SD ***Bulajeva,Doubliene-LITHUANIA***	**3.** Estonian Early Childhood Teachers' Conceptions of Professional Development ***Ugaste,Tuul-ESTONIA***	***3.*** *Indicators And Sustainability Development.* ***Gaal,Lakatos, Kosaros-HUNGARY***
	15.30-15.45	***Coffe Break***						
		Chair of the Session: Berrie Keuper	**Chair of the Session: Cynthia Jones**	**Chair of the Session: Rosengren A. Korsbak**	**Chair of the Session: M.J. Van Voorst Tot Voorst**	**Chair of the Session: Enemarke Torsten**		
	15.45-17.15	**1.** The Teaching Strategy Of The Building Construction Subject In Technical School In Junior Groups Of The Age From 17 To 19 Years ***Gejeka- LATVIA***	**1.** A Comparision of Biology Teacher Education Programmes In Finland and Turkey ***Babadogan,Delibas-TURKEY***	**1.** Evaluation Of Creative Writing In Language Classes At Primary School: Collaborative Approach ***Lazdina, Sidorovicha LATVIA***	**1.** Challenges On Management Education For SD In Public Management ***Kalve-LATVIA***	**1.** The Practise As An Important Aspect Of The Techer Training Process ***Nakase-LATVIA***	**1.** Social Work As A Transdisciplinary Approach ***Scheer-GERMANY***	***1.*** *Assessment Of Education Schooling Process Of Sexual Discrimination (Sexism) In Which 6 Years Old Students Who Continue The Pre Education Institutions* ***Karadeniz-TURKEY***
		2. Science Teachers: Are They Key Factors For A Sustainable Future? ***Sahin,Tuncer-TURKEY***	**2.** Collaboration Of 5*2 Areas In A "7 Sense Global" Education For Sustainability ***Simonyi- HUNGARY***	**2.** International And Intercultural Teacher Training "Comenius Assistantships ***Selvi,Batu, Kaya,Keser,Vural TURKEY***	**2.** International Studies In Collaboration ***Russell-UK***	**2.** Perceptions Of The Education Faculty Students Towards Learning A Foreign Language ***Tekmen-TURKEY***	**2.** The Role Of the Media In The Environmental Education On The Basis Of A Survey Among The Students Between The Age Of 13-17 ***Katona,Karasz,Lesko-Lakatos HUNGARY***	***2.*** *The Development Of Speech Of Estonian Children Aged 2-4* ***Tammemae-ESTONIA***
		3. *The Presentation Of The Natural Values Of The Bagiszeg Forest And Their Application In Education* ***Hagymasy, Paka-HUNGARY***	***3.*** *Sustainability-Oriented Researcher's Identity (SORI): Beliefs And Self-Evaluation Of Master Students In Education* ***Pipere-LATVIA***	***3.*** *Grave Effects Of Energy Production On Landscape And The Necessity Of Inclusion Of These Facts...* ***Kiss,Szabo- HUNGARY***	***3.*** *Networking European Universities Through Learning* ***Dlouha, Zahradnik, Henderson, Dlouhy CZECH REPUBLIC***	***3.*** *Evaluation Of Environmental Teaching And Education For Sustainability In Higher Education In Hungary* ***Kosaros-HUNGARY***		***3.*** *The Integrative Character Of Teacher Musical Competence And SD* ***Lomzina-LATVIA***

June 6 2008 Friday

09.00-10.30 ***Chair of the Session:*** ***Anthony Russel*** ***Keynote Speakers:*** ***1.Christopher Day*** ***2. Hasan Simsek***

10:30-10:45 ***Coffee Break***

10.45-12.45

Kırmızı Salon	Mavi Salon	Class I	Class II	Class III	ClassIV (Workshops)	*Poster Sessions*
Chair of the Session: Mateja Brejc	**Chair of the Session: Kevin Thompson**	**Chair of the Session: Marika Veisson**	**Chair of the Session: Ilknur Kecik**	**Chair of the Session: Gyula Lakatos**		
1. Cultivate The Residue: An Inquiry On The Aim Of Collaboration In The Light Of Clement's Theory Of Landscape ***Mandolini-ITALY***	**1.** Sustainability And Slovene School Curriculum ***Sedmak,Erculj-SLOVENIA***	**1.** Gender Issues In Latvian Primary education Challenges And Opportunities ***Grigule- LATVIA***	**1.**Sustainability In Career Development Support In A Regional University ***Paulina, Olehnovica, Ignatjeva LATVIA***	**1.** Various Aspects Of Competitiveness As Pedagogical Concept: From Theoretical Substantiation To Students' Opinions And Self-Evaluation ***Katane- LATVIA***	**1.** Transdisciplinarity , Social Work and education ***Lindau-Bank,Scheer-GERMANY***	***1.*** *Conditions of promoting individualized learning process for primary school children with learning difficulties* ***Guseva-LATVIA***
2. Giving Responsibility Education For SD With The Cooperation Of School And Family ***Ceylan-TURKEY***	**2.** Developing The Fatalism Scale, And Comparing The Religious Tendency Locus Of Control And Epistemological Belief Levels Of Teacher Candidates ***Bokeoglu,Guzeller TURKEY***	**2.** Cultural Dimension In Collaboration for SD Education: A Case study of British and Japanese Environmental NGO's. ***Katayama-UK***	**2.** Cooperation Between Non-Governmental Organizations And University In Sustainable Development . ***Cubukcu, Senturk TURKEY***	2. Student Teachers In Influencing Pupils's Study Environmet:Good Practice In Professional Development During Teacher Training Practice ***Timostsuk-ESTONIA***	**2.** Childhood,Preschool Culture And Child-Initiated Education ***Pukk-ESTONIA***	***2.*** *Developing Students Inquiry Interest In The Context Of Sustainable Development* ***Gerina-LATVIA***
3. European Challange 2008- The Year Of Intercultural Dialogue-Challenges, Threats And Possibilities Of Implentation ***Trumsina-LATVIA***	**3** Values Education In Latvia`s Schools ***Lidaka- LATVIA***	**3.** Estonian Students' Sense Of Responsibility For Environmental Issues ***Henno,Reiska- ESTONIA***	**3.** Case of Collaboration ***Holland, Mulcahy-IRELAND***	**3.** The Relationship Between Turkish Pre-Service Teachers' Learning Styles And Problem Solving Skills ***Gocmencelebi, Arslan-TURKEY***		***3.*** *Educating Aspects In the Course of Art Days* ***Mezinska, Apele-LATVIA***
4. Pupils' Interpretations Of Their Role At School In The Background Of Changed Educational Accents ***Kuurme-ESTONIA***	**4.** Transition Of Students With Special Needs From Special Education Schools To Vocational Schools In Estonia ***Mutso-ESTONIA***	**4.** Role Of The Qualification Of ESP Teacher In Academic English Proficiency: ESP Teacher Training In Turkey ***Savas-TURKEY***	**4.** Social Partnership In The Field Of National Qualification System ***Spudyte, Lauzackas, LITHUANIA***	**4.** The Experience Of The Internet Course: Education For SD, Virtual Campus Of The National Universtu Of Rosorio,Argentina ***Spiaggi,Mendiaz-ARGENTINA***		***4.*** *Children As Researchers: Experience With Primary School Children In Latvia* ***Ilisko, Ignatjeva, Micule LATVIA***
						5. *Cooperation of Higher Education Establishment and Institutions for Facilitation of Students Teachers and Lecturers Professionalism* ***Strode, Mezare LATVIA***

12.45-14.00 ***LUNCH***

SOME RESULTS FROM THE SURVEY ON TURKISH STATISTICS EDUCATION

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Abstract: Although the length of the period in which statistics is being taught is relatively short in Turkey, the number of statistics departments is near 25 that can not be discarded so easily. Some educational problems encountered in this period might originate due to the nature of this "quick growth process" while some other problems might reflect some general inefficiencies of statistics education all around the world.[43] In this study, we tried to investigate some aspects of Turkish statistics education at university level by the valuable supports of TUBITAK[44] in 2007. Questionaire forms of students from 19 different statistics departments of Turkish universities were analysed. We also studied on some questionaire forms of Turkish academic statisticians At the end of this paper ,we propose some means which we have considered useful .

- **Keywords:** Turkish statistics education, the evaluation of statistics education from the students' and lecturers' points of views, some proposals on Turkish statistics education.

Depending on how we accept the future, preparing for the future can be a challenging , rather than a frustrating , or frightening experience. J.K.Ghosh(1997)

I-Introduction

[43] In the United States, general public were dissatisfied with the quality of higher education in 1990's. Many courses were not taught by faculty members. There was a total lack of training for professors in pedagogical processes. However , an overall concern for continuous quality improvement on college campuses could significantly improved higher education. (Hogg,1995, p36)

[44] The Scientific and Technological Research Council of Turkey

It may be easy to conclude that the statistics is rather a young discipline in Turkey as far as the establishment years of statistics departments are taken into account.[45] In addition, an increasing demand for statistical studies from business life is being observed frequently. Of course the existence of a high level of demand for making studies in any specific discipline has some positive results especially in motivating scientists belonging to that scientific area. On the other hand; as a byproduct of this rapid growth process ; there are some disadvantages that cannot be overcome rapidly. In this study, we intended to get a general picture or an impression of the performance of Turkish statistics education through students' and lecturers' points of views.

The target population of our study was composed of both the students and the instructors from 25 statistics departments of Turkish universities. In this manner , we interviewed with some of the people studying statistics at the universities existing in 10 different cities of Turkey. SPSS 11.0 and SAS 9.4 software programs were used in evaluating and analysing the thoughts of students and instructors.

The sample ratio related to students' survey was planned to be 50 %. The sample size was 2142 . 10% of the questionaire forms were discarded owing to the inconsistencies found among some answers given to some mutually related questions.

We adopted a sort of quota sampling methodology for students' evaluations . The quota criteria were the number of students in each department, the number of years the students spent in the statistics department, gender and the type of the education program that the students registered .[46]

For the instructors, we planned to reach as many people as possible. As a general tendency most of the proffessors and associate proffessors stayed reluctant in making contributions to our study. In this case it can be said that "our methodology is biased" since the main contributions are especially from younger statisticians of the universities.

II-The Reliability of the Conclusions from our Study

The Cronbach alfa coefficients were calculated to check the overall reliability of the statistical results obtained from questionaire forms. To detect the consistencies (or inconsistencies) between the answers related to evaluations on institutional performances,

[45] In Turkey , the oldest statistics departments were established in 1960's . Using the figures of 2006, there were 25 statistics departments in which 4282 students were studying statistics .

[46] In some universities, there are two types of statistics undergraduate programs offered. One is carried on daytimes and the other on the evenings. The acceptance scores in the university entering examinations for the two alternatives differ eachother considerably.

evaluations on the quality of education, and some current and/or future expectations from statistics departments; the calculated Cronbach alfa coefficients were found somewhere between 0,69 and 0.89. Thus it was concluded that the answers given to similar types of questions or to the questions from the same categories were in agreement in general.

III-General Conclusions about Students' Appreciations on Turkish University Education in Statistics

i)General

- The number of participating students in this survey was 1794.
- Questionaire forms from 19 different Turkish universities were collected, summarized and analysed. On the average, there were 94 participating students coming from each university .
- One third of the students in the sample were seniors, whereas one fourth were juniors.
- 52 percent of the students in the sample were female.
- A great majority of students (84.1 %) in the sample were from statistical education programs carried on daytimes.
- More than half of the students (62.7 percent) were graduated from well-qualified high schools in Turkey.
- The ranks of the statistics departments in the students' preference lists while applying universities were asked the students. The mean of the answers given to this question was 8.81. It was observed that most of the answers concentrated within the first 12 preferences. [47]
- The socioeconomic scores of the students were calculated and it was observed that 9% of the students came from the group with the highest income and wealth, 30 % of the students came from the second highest group, and 50 % came from the two middling groups.

[47] The students have the right to fill their choice list by 24 different preferences when they apply university entering examination. The top of this list is for the program with the highest minimum score that a student must get to be accepted by that program . Similarly the bottom of the list is for the program with the lowest minimum scores. So the average rank number of an undergraduate program reflects how much it is demanded by its prospective students.

- 41.9 percent of the students declared that they took financial supports for their educational expenses. The most frequent support under this category was the grants for university fees.

ii)Prior Information About Statistics Departments Before University Applications

Participants were asked whether they had had some prior information about the statistics departments (i.e. employment opportunities after graduation etc.) before they had taken the university entering examination. The percentage of "yes" answers in this question was 54.3 %.

iii)Changes in Attitudes of the Students Towards Statistics

It was questioned whether there were meaningful differences in either way (positive or negative) in the attitudes of students towards the statistics programs in the period following university acceptance. 12.3 % of the students stated that their attitudes changed "quite positively" while 54.6 % claimed that their attitudes changed "positively".

iv)Future Plans or Future Expectations of the Students

Approximately, half of the students (47.8 %) planned to join business or industrial life after graduation from university. 40.7 percent planned to apply graduate programs . Half of the students (51 %) who had already planned to apply graduate programs also wished to complete their education processes in some areas or disciplines other than statistics.

v)The Evaluation of the Performances of Statistics Departments

- The majority of the students (65.3 %) of statistics departments thought that the education program they had to attend was very difficult indeed .
- 71.5 % of the students needed more rigorous mathematics background to keep up with the courses they were taking. In contradiction with this fact , most of the students did not demand more mathematics courses in their statistics curriculum.

- 34 % of the students agreed with the proposition that the textbooks and similar reference books were sufficient both in quantity and in quality whereas some other 33 % disagreed.
- Most of the students in our survey thought that theoretical courses offered in their departments were plenty in number with respect to applied courses.
- 70 percent of the students desired more social courses in the program while 9.3 percent opposed this suggestion.
- One of the most appreciated and interesting courses offered by the statistics departments was introductory statistics courses with a score of 42.6 % This group was followed by computer science courses with a relative frequency of 15.5% mathematics courses came thirdly . All these were followed by operations research courses with a relative frequency of 7.8 percent
- Descriptive statistics and introductory statistics courses were the leading ones among the 'most useful courses' lists filled by the students. The relative frequency of this judgement was 43 %. This group was followed by regression analysis with a relative frequency 16 %. Then came the group of multivariate techniques with a score of 8 % and finally came sampling with a score of 7 %.
- The leading least useful courses in the curricula; from students' point of view; were mathematics courses with a score of 17.2 percent. This group was followed by social courses with a relative frequency of 14.1 %.
- 14 % of the students stated that they had some difficulty in understanding some basic concepts of computer programming methodology .
- 5% of the students claimed that they were in trouble with some basic (and crucial) concepts of calculus such as limit, derivative and integral.
- 45.6 % of the students agreed with the statement that the current education program in statistics departments was aimed to cultivate academicians[48]
- 67.2 % of the students demanded more statistics courses while 52.6 % asked for more operations research and optimization courses.

- [48] This point is interesting. Because based on this fact it is possible to critisize curricula for their inability to cultivate appropriate graduates for industry and business life.

- 79.7 percent of the students thought that it would be better to increase the number of statistics courses in the program to increase the degree of specialization on some topics.
- 92.1 percent of the students stated that more computer science knowledge would be useful and beneficial.
- The students were not sure if the methods applied in the classrooms to maintain the active participations of students to sessions were succesful or not .
- 42 percent of the students thought that the lecturers should have used some more creative methods to attract the attentions of the students to the subjects currently being discussed at the sessions.
- 32.3 % of the students agreed with the proposition that the students were directed to scientific research while some other 38.9 % disagreed .
- 94.9 percent of the students thought that it was going to be wiser to go into case studies in some applied courses.
- 62.5 % of the students who had participated in this survey favored the proposal that the courses should be supported by obligatory research studies .
- 95.7 percent of the students were in favor of the suggestion that the statistics education had to be supported by mandatory practices in industry or in business life.
- 88.9 percent of the students demanded more advisory and consultative services from the statistics departments.
- Most of the students claimed that they didn't have the opportunity to contact with the experts or well-known statisticians during their university education periods.
- Approximately 62.2 % of the students thought that the frequency of meetings organized to discuss some professional or scientific problems within the bodies of statistics departments or univerisities was low.
- 80 % of the students thought that the annual student capacities of the statistics departments should have been limited with some upper figure between 30 and 40 in university entering examinations.
- 70.6 percent of the students thought that revisions on employment laws should have been made for statistics graduates to have the right to be able to work as teachers in high school education.

vi) Computer Skills , Physical Availabilities for Computer Practices

- Students seemed interested in SPSS applications much more than in any other statistical softwares. 4.74 % of the students declared that their performances in SPSS were best. Some other 19.23 % declared that they were good enough while another 36.34 % declared that their performances were on the average level.
- Most of the students (85.28 %) declared that they had no skills in SAS programming.
- Only 23.13 % of the students declared that they used Office programs at superior levels. Some other 38.41 % declared that their performances were at high levels . Another 13.38 % declared that they had no ability in this matter.[49]
- Some 47 percent had no ability in C and similar programming languages. Similarly 52.34 percent had no idea on VISUAL BASIC and its applications.
- The levels of interest or engagement of the students in either net based or data based programs were also very low.
- 79.8 % of the students who had participated this survey declared that they had their own personal computers .

vii) General Considerations on the Future of Statistics

- 48.3 percent of the students thought that the importance of statistics in scientific studies was underestimated generally. But there was a hope among the students that the conditions for statistical studies would be much better in future. 63 % of the students thought that statistics was going to be in a more prestigious position than it was and it had to be.[50]
- It can be said that there was a meaningful correlation between the level of satisfaction with the department and the number of years that the students had spent in the department. Generally, the level of satisfaction with the department was low for the

[49] This phenomenon is, of course, a possible indicator of some serious problems of computer skills' education and therefore should not be neglected.

[50] In the analysis of beliefs shared by the students from different universities on the prestige of statistics as a profession in Turkey, there were significant differences between the students' views. While comparing the ideas of the students from different universities about the future expectations on statistics as a profession , there were again obvious differences. There also exist meaningful differences between students' views (from different statistics departments) in stating their optimisms (or pessimisms) on the future abilities to work as statisticians.

early years of university education. As time passes , the level of satisfaction increases considerably.

- We cannot say that the level of willingnesses or eagernesses of the students to work as statisticians after graduation were high.

IV-General Conclusions Related to Lecturers' Survey

i) General Knowledge

- This survey consisted of the questionaire forms obtained from 182 academicians
- In this survey questionaire forms from 19 universities were investigated. On the average there were 9.57 academicians from each university.
- 45.1 percent of the participants were research assistants. This group was followed by the group of assistant professors which constituted 26.9 percent of the total. The third group which contributed significantly to the total was the group of lecturers with a relative frequency of 13.2 percent.
- 53.3 percent of the participants were female.
- The average age of the academicians contributing this survey was 35.2.

ii)Educational Information

- 67 percent got their undergradute degrees from statistics departments. Mathematics departments came secondly with a percentage of 11.5. These two were followed by the departments of "statistics and computer sciences" with percentage of 3.8, departments of econometrics with percentage 2.2 % and departments of business administration with percentage of 2.2 %.
- 56 % of the academicians have had completed their doctoral educations in statistics departments . The statistics departments were followed by the departments of mathematics and econometrics with the respective percentages 4.4 and 2.2 .

iii)The Number of Students Present at Graduate or Doctoral Level

- 89 % of the statistics departments had their own graduate programs.
- There were 15 graduate level students on the average in each statistics department.
- There were 7 doctoral students on the average in each statistics department.

iv) On Occupational and Educational Responsibilities of Academicians

- 67 percent of the academicians participating this survey gave lectures at undergraduate level.
- The average time spent by each academician in giving lectures at undergraduate level in his or her statistics department was 10.23 lecture hours per week. This number was 2.82 hours for other departments. The sum of these two figures were 13.05 lecture hours.

v) Computer Skills of Academicians

- Academicians interest much more in SPSS programming and in its applications than in any other statistical packages. 22% claim that they use this program at a superlative level , 44.5 % at a high level, 25.8 % at an average level.
- 2.2 % of the academicians state that their performances with SAS programming are superlative ; while some 5.5 % state that their performances are high and 11.5 % are on the average level.[51]
- 89 % of the academicians who participated in this survey declared that they had personal computers.

vi) On Occupational and Educational Responsibilities of Academicians

- 67 percent of the academicians participating this survey gave lectures at undergraduate level.
- The average time spent by each academician in giving lectures at undergraduate level in his or her statistics department was 10.23 lecture hours per week. This number was 2.82 hours for other departments. The sum of these two figures was 13.05 lecture hours.
- The average time spent by each academician at the graduate level was 2.45 lecture hours. This figure is 0,36 hours for other departments. The total of these two were 2.81 lecture hours weekly.

[51] The average levels of interest of academicians in other software applications such as STATISTICA and SYSTAT are found to be considerably low.

- The average lecture hours given at the doctoral level in statistics departments was 1.3 weekly. This figure is 0.12 hours for other departments. The sum of these two figures was 1.42 lecture hours per week.
- The time which must be spent for the dissertation thesis studies of students for each academician was ; on the average ; 6 hours weekly.
- The time that each academician should spend for dissertation thesis studies of the students at the graduate level was 4 hours weekly.
- The dissertation thesis obligations of each academician at the doctoral level was 2 hours .

vii) Some Statistics on the Publication Activities of Academicians[52]

- Each academician had on the average 2.55 articles published internally in common with his or her colleagues . 50 % of the academicians did not have common publication practices in this context.
- 89% of the academicians did not have more than 2 articles published in domestic scientific periodicals.
- Each academician, on the average had 1.46 articles written in common and published abroad.
- 8.2 % of the articles published were not included in SCI and SCI Expanded categories. 14.2 % percent of the academicians have just one article published under these categories. 3.3% have two articles (2.7% have three articles and 2.2% have 4 articles.)

viii) Some Points to be Highlighted in Some Judgements of Academicians

- The majority of the academicians agreed strongly with the statement that the students were in trouble with some basic concepts of statistical reasoning like sampling distributions and central limit theorems .[53]

[52] The authors of this article do not adopt the philosophy of "publish or perish". But in Turkey , it is a very common practice to appreciate the scientific performances of academic personnel by a kind of "counting process". Therefore we are sorry that we couldn't deviate from this trend to some extent.

[53] "*Many research studies have shown that ideas of probability and statistics are very difficult for students to learn and often conflict with many of their own beliefs and intuitions about data and chance." (Garfield, 1995, p. 31)*

- The majority of the academicians strongly agreed with the proposition that there should have been more mathematics courses in the curriculum.
- The majority of the academicians was optimistic about the future of statistics in Turkey.
- 96.6 % of the academicians demanded more support or incentives from their universities in participating scientific organizations both at home and abroad.
- 95.8 % of the academicians needed some sort of constructive critisism from their colleagues on their academic studies. This ratio was high enough to be analyzed carefully.

IV-Proposals.

In this section we will list some of the proposals which will be useful for solving some problems encountered.

1. There should be more statistics courses in the curricula in order to increase the level of specialization in statistics undergraduate education.
2. It will be wiser to support curricula with more qualified computer science lectures.
3. All means for constructing more collaborative atmospheres between the different departments of the universities should be built. Especially more collaborative studies with mathematics departments should be on the agenda. As a good starting point of this collaboration; some meetings in which the common problems of both mathematics and statistics education can be discussed must be organized. These common organizations must be realized in the long run as well.
4. Before observing the maturity of statistics departments it will be useless to open some more statistics departments. The extensive growth of statistics departments will inevitably cause in an inflationary process of statistics departments lacking quality. The young graduates or the candidates for graduation are very sensitive on this problem. This is a phenomenon which should be considered well. The negative influences of such an inflationary process to the prestige of statistics as a profession in the public should not be underestimated.

5. At least an introductory statistics course should be offered for the final classes of high schools (or for lycees) in order to make statistics popular and well-known among the young candidates of university entering examination (and of course among the candidates of scientific research of near future) . Naturally, it is meaningless to expect every student to be a professional statistician but this proposal will serve the purpose of maintaining the position of statistics "culturally healthy" in the society.[54]
6. The graduates of statistics departments should have the right to be employed as statistics or mathematics teachers at the high schools. Of course this is a common problem and faced by the graduates of the departments of mathematics, physics, chemistry, history etc. It will be wiser to follow a common agenda with the graduates from both statistics and these sciences mentioned just now to draw the attention of public to these problems. A sensitivity in the public on the problems of newly-graduated people should be increased.
7. Most of the works in statistics are based on some applications. Free time practices , obligatory industry or business practices are the natural allies of this education process. These obligations are especially vital for the students to "recognize data", and to encounter with some aspects of statistical studies and some basic problems of the processes of collecting , summarizing, analyzing statistical data as well.

8. The " data specialist" or "data analyst" titles should be given to young graduates. At least a discussion on this right should be realized in the public.
9. Because of the interdisciplinary characteristic of statistics, the applicability opportunities of statistical methods in other scientific research areas or disciplines such as engineering or the social sciences should be increased.
10. The statistical studies depend totally on collaborative team work since the levels of specialization are very high. Thus the collective abilities of students in teams or collective atmospheres should be increased.
11. The development of oral and written communication skills is at the core of statistics education. Statistical data analyses and the conclusions reached should be open for everybody else participating in the other fields of scientific study. This point is

[54] "*Statistics is not just for an elite. Society at large will benefit if a broad cross-section of students emerge statistically literate and with an appreciation for the power of statistics and the desirability of decisions being made on the basis of solid data." (Wild, 2005, p. 213)*

especially important for any scientific area or a discipline to have some common study opportunities with different branches of scientific study. Therefore an advanced ability to communicate with other scientific areas is crucial for statistics as well.

12. A good statistics education should teach students how to learn by themselves. The aim of education is not make students memorize all the scientific knowledge. Rather the motto that the education lasts for life long should be adopted by everybody.
13. . A good statistics program should aim to develop advanced computer and programming skills of students. Besides, "t*eachers should consider computing as a tool for learning statistics, not simply for doing statistics. Because graphics and manipulations aid learning, we should encourage students to use software to explore , visualize, and interact with data and simulations, not simply to automate calculations." (Moore, 1997, p. 131)*

14. The successes of statistical applications are dependent strongly upon how healthily the collected data are. Therefore the students of statistics should have some abilities in data collecting methodologies and related technologies. Statistics curricula should serve this purpose.
15. The graphical presentations have become very important in business life's communications. Students should develop ways of thinking by the help of histograms, charts, graphics (and other means of visual presentations of statistical data) and develop some abilities to make explanations of the data for the people who don't have any sufficient background in statistical reasoning.[55]
16. Some discussions in the public should be organized on what is meant by "statistical thinking" and on what is meant by the state of being "culturally healthy" for a scientific area or a discipline.
17. Some surveys on the present situations and the problems of the graduates of statistics departments in the business life should be realized.
18. There should be some surveys on the pedagogical values of the textbooks offered during statistics education.
19. Specifically, the performances of math courses offered in statistics departments should be investigated.

[55] *"Variation or variability is the centerpiece of statistics , and that thinking about variability is the main message of statistics. This is a grandiose claim since the whole of science is concerned with variation. When there is no variation there is no scientific problem."* (Smith, 1999, p 249)

20. "*Time spent on teaching is often viewed as time taken away from research, and research is what leads promotion and tenure. Faculty should also be encouraged to collaborate in educational research related to their teaching, adressing issues such as those raised relating to the use of technology. Publication of this "educational " research should be counted the same as published statistical research."(Garfield, (1997, pp. 140-141)*
21. *There is currently little tangible incentive, and in fact significant disincentive , for statisticians in academia to spend time on improving introductory courses. Could we honestly encourage young professors, seeking tenure, to spend the time required to fundamentally improve their introductory courses at the expense of publications? This is a problem with the system, and cannot be resolved easily by individuals working in isolation.(Hoerl, et al., 1997, p. 152)*

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