NEW PERSPECTIVE TO EDUCATIONAL TECHNOLOGY: INTERDISCIPLINARY COOPERATION
"AN EXAMPLE OF FACULTIES OF EDUCATION AND ENGINEERING"[1]

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ABSTRACT
During the phase of developing new technologies and models to be used in education and for their integration, not only the technical studies and research but also the human factor which is a significant factor for the education system should be taken into consideration. Hence, a reflection concerning the answer to the question of "To what extent should the interdisciplinary studies complement each other?" should be made. The purpose of this research is to reflect on the importance of interdisciplinary cooperation between Faculties of Engineering and Education. The study was carried out during 2007-2008 academic year. Total 57 academicians of vaious universities of Turkey were participated in the study (22 of them were selected from Faculties of Engineering and 35 of them were selected from Faculties of Education). Survey method is employed and a likert type questionnaire which inclued open-ended questions, was used as data collection tool in the study. The data analyzed by calculating mean scores of responses. Findings illustrate that cooperation between two Faculties and its share in increasing the quality of current education is essential for interdisciplinary cooperation. In addition, the significance of combining theoretical information with implementation and evaluating the outputs of these practices has been emphasized in the study. It is suggested that both disciplines should go hand in hand paving the way for educational and technological innovations.
KEYWORDS: *Interdisciplinary Cooperation, Technology, Faculties, Academic Research*

1. INTRODUCTION
Rapid changes in technology have resulted in new approaches in education (Strommen & Lincoln, 1992). The fact that these new approaches have been initiated by technological developments passed through serious evaluations in terms of academic, technical, economic and psycho-social dimensions. The national implementation strategies are very important in terms of ensuring the reality of innovations in education. In order to ensure that these innovations are realistic, the process of reflection of technology on education should be well - known conceptually and practically (Karasar, 2004). Developments in society in last ten years have led the academicians and researchers to focus on concept of interdisciplinary co-operation. It has also acted as a catalyser in terms of reflection on these ever-expanding opinions (Cook-Sather & Shore, 2007).

Mankind has often used the theoretical or practical innovations introduced a group of people or institutions. The way of using these has become the topic of social sciences and various theories have been developed in relation to these innovations. (Karasar, 2004). Technology in itself shall never be sufficient in terms of ensuring the necessary changes in education (Strommen & Lincoln, 1992). Therefore; researchers from various disciplines need to work together in order to conduct more qualified researches. In this way, "values" such as being open minded, tolerant against different points of view as well as the need for a communication which is based on a developed model rather than based on a single point of view shall be discussed. These views are already embedded in to nature of interdisciplinary studies but they are not stressed in single disciplines sufficiently. Interdisciplinary approach stresses the importance of integration generally, defined as the need to criticise and find a common basis when different disciplines collide with each other. Interdisciplinary studies require a process through which different understandings and approaches are integrated and composed of different methods and theories. Consequently, there is a need for a common platform in which the understanding of different disciplines shall be merged (Szostak, 2007).

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Since the information is rapidly disseminated and even worn-out in today's world, interdisciplinary studies are also significant for renovation and development (Aslan, 2006). Interdisciplinary concepts state that the diversity of different disciplines paves the way for richness, that these various disciplines are interconnected, problems in real life may not always bear one single explanation but many. However, possessing solutions which are actually in opposite sides in terms of science, mathematics and linguistics shall give the priority to cognitive, emotive and creative capacity in order to better expressions of the ideas and thoughts (Ozkok, 2005).

That the disciplines are differentiated among themselves in to countless number of sub disciplines poses a great obstacle against assessing the scientific information in all aspects and reflecting on it in a broader way. Cries for "expanding the scope of social sciences; hence gaining a momentum in interdisciplinary studies, ensuring a dense communication between different disciplines" which arise from the Western culture, show that it is high time a change is realized not only in social sciences but also in many other disciplines (Dural, 2007). With the ever increasing significance of interdisciplinary communication, there is also need for individuals who are able to establish connections between different areas in order to find solutions to individual and collective problems and who are able to evaluate the problems through different angles. Interdisciplinary concept refers to a method in which the problems are defined and solved as independent from their original fields and in which the borders of that discipline are diminished. It requires the cooperation of more than one individual from different disciplines and gathering around a common objective (Kocak, Marsap & Ozsoy, 2004). In case academic research evolves in this direction, scientific research shall also be more efficient and qualified, acting as a significant factor in the generation of information and serving the society (Erdem, 2006).

When related literature is examined, it shall be evident that; individuals from different disciplines work in coordination and bring along the approach of their own discipline towards a common objective. Indiana Speech Training Aid (ISTRA) (Kewley-Port, Watson, Maki & Reed, 1987), Speech Viewer (Adams, Crepy, Jameson & Thatcher 1989), Speech Illumina Mentor (SIM) (Soleymani, Mccutcheon & Southwood, 1997), Speech Training, Assessment and Remediation System (STAR) (Bunnell, Yarrington & Polikoff, 2000), BALDI (Massaro, 2004), Articulation Tutor (ARTUR) (Bälter, Engwall, Öster & Kjellström, 2005) could be given as examples. Studies aiming to improve the speaking and hearing abilities of individuals with hearing and speech defects as well as teaching of languages have made cooperation among very different areas of disciplines necessary. It has been determined that all these studies have required expertise in areas such as technical design, human – machine interaction, speech therapy, pedagogy and computer sciences (Engwall, 2004; Engwall, Wik, Beskow & Granström, 2004; Eriksson, Bälter, Engwall, Öster & Kjellström, 2005; Engwall, 2006; Engwall, Bälter, Öster & Kjellström, 2006; Engwall, Bälter, Öster & Kjellström, 2006; Engwall, Abdou & Bälter, 2007). Another example is new generation "Haptic" devices which are based on human – machine interaction and which enable a new approach in learning – through – feeling have been adapted in various ways into learning media. This has also been a considerable development (Williams II, Chen & Seaton, 2003). It becomes widespread that studies about which haptic devices influence for good in the area of natural sciences, medicine and special education through the quality of learning are determined (Karal & Reisoglu, 2007). Integrating these device into education can be described as an interdisciplinary study.

There is also need for theoretical and practical studies in Turkey in order to adapt the changes in the technology to education environment (Karasar, 2004). Studies conducted in Education Faculties which aim to increase the quality in current education system have become eminent. A two-day workshop and evaluation meeting on *"Current Problems of Education and Solution Alternatives Through the Point of Education Sciences"* have been arranged within the scope of Ankara University, Faculty of Education Sciences on 10-11 February 2004 with the participation of deans of Faculties of Education throughout the country. As for the conclusion, it is stated that:

> "Since the education science is a social science which generates interdisciplinary information, problems of education system should be addressed collectively, education needs should be determined in accordance with collective needs, the sub educational sciences, their limits and borders, interaction with other disciplines should be discussed in academic platforms in order to ensure a multi dimensional academic approach and identity (MEB, 2004)."

Interdisciplinary studies to be conducted in universities through a multi faceted academicians approach shall have significant social and economical contributions; act as a significant factor in the solution of the problems and development of new systems. Therefore, the academicians coming from these two different disciplines shall unite the different approaches specific to their own areas of discipline hence facilitating the solutions of the problems, cooperating groups shall provide alternative approaches in terms of finding solutions to the problems. These studies shall make significant contribution in terms of improvement and renovation, since this shall also be reflected to other individuals receiving education in different disciplines; these individuals shall be able to think in

a wider scope, free of academic prejudices. Since the life itself is an interdisciplinary adventure, any experience in the interdisciplinary area can be considered as a fine preparation against life by students. Programs which are successful in that sense, shall not only be beneficial to the students but also be of great help to universities preparing their students against a complicated life (Szostak, 2007). On the other hand, interdisciplinary concept refers to a more comprehensive duty which supports creative and free reflection on topics worth studying, creating an intellectual culture and ensuring its sustainability (Cook-Sather & Shore, 2007). In the light of existing literature and relevant studies, in this study it is aimed to determine the views of academicians from Faculties of Engineering and Education about interdisciplinary studies and also to determine contributions of possible interdisciplinary studies to the education system.

2. METHODOLOGY
2.1. Selection of Sample Group and Sample of Research
Research sample comprises 57 academicians recruited in Faculties of Engineering and Education. Participants of the study were selected from Faculties of Engineering and Education of various universities of Turkey through random sample selection method. 22 academicians recruited in Faculties of Engineering whereas 35 academicians recruited in Faculties of Education have participated in the study. Table 1 below illustrates the distribution of participants:

Table 1. Distribution of Participants as per Departments and Divisions

Departments FEn[*]	Number of Academicians	Departments FEd[*]	Number of Academicians
Dept. of Computer Eng.	4	Division of Biology Education	1
Dept. of Electrical – Electronics Eng.	4	Division of Physics Education	2
Dept. of Geodesy and Photogrametry Eng.	1	Division of Chemistry Education	1
Civil Engineering	4	Division of Mathematics Education	2
Mechanical Eng.	2	Division of Turkish Language Education	2
Dept. of Geology Eng.	2	Division of Social Sciences Education	2
Dept. of Industrial Eng.	1	Division of Pre-School Education	1
Dept. of Forestry Eng.	1	Division of Mathematics Teaching for Primary Education	3
Dept. of Forestry Industry Eng.	2	Dept. of Computer Education and Instructional Technologies	9
Dept. of Environmental Eng.	1	Division of Science Education	4
		Division of Psychological Counselling and Guidance	5
		Division of Elementary Education	1
		Dept. of Teaching for the Hearing Disabled	2
		Dept. of Teaching for Mentally Retarded	1

[*]FEn: Faculty of Engineering   FEd: Faculty of Education

2.2. Data Collection Tool
Survey method is employed and a questionnaire is used as data collection tool in the research. Questionnaire, which is used as data collection tool in the research, has been prepared by the authors through examining relevant literature and previously conducted studies in order to determine the personal information and opinions of academicians in terms of interdisciplinary approach. The questionnaire has been divided into three main sections; first section consists of questions about background information of academicians, second section composed of quintet likert type items in order to specify the opinions of academicians on interdisciplinary approach and the final section in which the personal opinion of the academicians are taken through open ended questions. The alpha reliability coefficient of the questionnaire, which has been finalized by taking the opinion of relevant academicians, has been determined as .87. Also two open ended questions about "Contribution of a cooperation between the Faculties of Engineering and Education" and "Contribution of an interdisciplinary study to be conducted between Faculties of Education and Engineering to relevant parties and society" have been used to made it possible for the researcherers to support the opinion of the participants through qualitative data and to investigate the problems in a deeper way.

2.3. Analysis of the Data

Each item of the questionnaire has been analyzed independently in the process of data analysis. In order to interpret the findings of the research, frequency and percentage value of each item have been determined. Responses of participants to each item have been discussed according to the results. In order to determine the occurance levels of each item included in the data collection tool, options such as "I completely agree (5)", "I agree (4)", "Hesitant (3)", "I do not agree (2)" and "I do not agree at all (1)" have been used. Assuming that the intervals are equal, for arithmetic mean, score interval coefficient has been determined as 0.80 and shown in Table 2. Results have been determined in parallel to achieved values.

Table 2. Evaluation Interval of Arithmetic Mean

Interval	Option	Value of the interval
1.00–1.80	I do not agree at all	Very poor
1.81–2.60	I do not agree	Poor
2.61–3.40	Hesitant	Average
3.41–4.20	I agree	Good
4.21–5.00	I completely agree	Very good

Score Interval = (Highest value-Lowest value)/5 = 0.80

Not only quantitative but also qualitative data have been included in the research while determining the opinions of academicians through open ended questions. Data was analysed on the basis of answers provided by the academicians to open ended questions are coded. Themes have been formed according these codes and the results have been presented in the forms of tables. During the analysis of the data, researchers have preserved their impartiality.

3. FINDINGS

57 academicians have filled in the questionnaire in order to determine the views of academicians concerning interdisciplinary studies. Responses have been categorised into two groups depending on the content, namely; "Current situation in Interdisciplinary Studies" and "Recommendations concerning Interdisciplinary Studies". Table 3 below presents data about "The current situation in interdisciplinary studies"**:**

Table 3. Current Situation in Interdisciplinary Studies

Item No	Item	Arithmetic Mean	Evaluation Interval
1	The success of interdisciplinary studies can only be achieved as long as mutual confidence is ensured between the parties.	4,19	Good
2	Interdisciplinary studies contribute to the elimination of prejudices among different disciplines.	4,22	Very Good
3	Interdisciplinary studies support specialization in science.	4,15	Good
4	Interdisciplinary studies increase motivation in academic research.	4,42	Very Good
5	Academicians do not feel themselves ready to conduct an interdisciplinary study.	4,73	Very Good
6	Academicians are sufficiently supported by the universities when interdisciplinary studies are concerned.	4,50	Very Good
7	A tendency towards interdisciplinary approach exists in universities.	3,98	Good

When Table 3 is examined, it be seen that participants have defined the role of interdisciplinary studies as "very good" in terms of eliminating prejudices among different disciplines and increasing motivation in academic research. Moreover, participants have defined the role of interdisciplinary studies as "good" in terms of supporting specialization in science. General opinion is that the universities sufficiently support academicians when interdisciplinary studies are concerned and there is a tendency towards interdisciplinary approach in the universities. Participants have also stated that the academicians do not feel themselves ready to conduct interdisciplinary studies.

Table 4 reflects the arithmetic average values of responses given by the participants to the questionnaire items regarding "Recommendations concerning interdisciplinary studies".

Table 4. Recommendations Concerning Interdisciplinary Studies

Item No	Item	Arithmetic Mean	Evaluation Interval
8	Interdisciplinary studies and communication are necessary.	4,52	Very Good
9	In order to introduce an added value to the relevant discipline, it is crucial that interdisciplinary approach is adopted.	3,05	Average
10	Academicians may be encouraged to participate in interdisciplinary studies.	4,07	Good
11	Education activities aiming to encourage interdisciplinary studies should be performed by academicians.	3,84	Good
12	Universities should establish research units in order to conduct interdisciplinary studies.	4,14	Good

When Table 4 is concerned, it could be stated that the participants have defined the necessity of interdisciplinary studies and communication as "very good". However, they have also stated that adopting interdisciplinary approach is not a significant factor for them in introducing an added value to the relevant discipline. The establishment of research units in universities in order to conduct interdisciplinary studies and performing education activities aiming to encourage interdisciplinary studies by academicians have been defined as "good". In addition to this; academicians may be encouraged to participate in interdisciplinary studies" recognised at "good" level.

As for the answers given to open ended questions for example; "In which way does the cooperation between Faculties of Engineering and Education contribute to each other?" and "What would the contribution of an interdisciplinary study to be conducted between Faculties of Engineering and Education be to the relevant parties and to society?" have been compiled in the form of themes and presented in Tables 5, 6, 7, 8 and 9 below.

Table 5. Contribution of a cooperation between the Faculties of Engineering and Education

Themes	Academicians of Faculty of Education	Academicians of Faculty of Engineering
Education and Teaching Aspect	-Educational Sciences has a role of shaping the society. -FEn should benefit from educational theories and practices to better education in engineering. -FEd. may facilitate FEn. employing its expertise in content development, planning, teaching methods, techniques and evaluation	-It provides a better and more efficient engineering education. -Engineers should possess knowledge on concepts in order to think realistic in practice. -Educators who provide education in engineering should benefit from educational sciences.
Quality Education	-Improve the quality of education and students of FEn will have knowledge on how they learn and change attitude -Educational psychology course for all engineering students... for establishing healthy relations with other and being in peace with themselves and with others.	-FEn contributes to FEd in terms of increasing the quality of education and supporting the education methods for practice.
Field of expertise	-For better understanding of geography, we need engineering sciences such as environmental engineering, engineering sciences with statistical information, geodesy etc. -Education in science and mathematics is directly related to engineering sciences. -To conduct studies in engineering departments in order to benefit from educational sciences.	-Methods used in engineering branches can be revised mutually

FEn: Faculty of Engineering   FEd: Faculty of Education

Through themes such as "education and teaching aspect, quality in education, field of expertise"; academicians have stressed the contribution of an interdisciplinary study to the current education system. A view of an academican from FEd about quality in education as follows:

"Since increasing the quality of education is the main purpose of Education Faculty; joint scientific studies towards cooperation between Faculties of Education and Engineering could be performed. Such initiatives shall increase the quality of educational studies. They will also ensure that students receiving education in engineering sciences will have knowledge on how they learn and change their attitudes."

It is also stated that in order to increase the quality of education in Engineering Faculties, pedagogical expertise of Education Faculty could be used. They have also emphasized the benefits of distance learning projects which have become more and more popular recently. There are also opinions stating that disciplines are used for a achieving common goals and sharing knowledge. The opinion of the academician from FEd is as follows:

"Faculty of Education may share its knowledge and experience with Faculty of Engineering in the field of content development, planning, teaching methods, techniques and evaluation."

The opinions of the academicians from Fen are as follows:

"Distance learning projects could be regarded as the best example.
"Computer based methods used in the development of education content can be improved by means of a cooperation with the department of computer engineering. Moreover, methods used in engineering branches can be revised mutually"

In these opinions the importance of cooperation and how faculties study areas influence each other was stressed.

Table 6. Contribution of a cooperation between Faculties of Education and Engineering

Themes	Academicians of Faculty of Education	Academicians of Faculty of Engineering
Finding Solutions Developing products/	-*Developments and improvements in engineering contribute to finding solutions to problems encountered in education field.* -*Cooperation shall pave the way for new developments and products* -*Contributions in Ergonomics and human behaviour, relation between education and production, industrial psychology.*	-*National and international projects could be implemented faster, better and more qualified through interdisciplinary studies.*
Implementation	-*Technological innovations in Engineering Faculties could be used in Education Faculties.* -*Reflecting theory to practice and ensuring implementation"* -*Connection could be established between life and serving appropriately to society.*	---
Developing Integrated and Different Opinions	-*Cooperation will help academicians have a more comprehensive insight concerning science.* -*Cooperation of different disciplines will be beneficial referring to 'differences' as "richness".* -*It may lead to new ideas and studies.*	-*A new perspective in education field will be ensured hence education will have new expansions through new developments.* -*Since engineers are also academicians, they will be able to transfer knowledge in a much more efficient way.*

Through themes like "Finding Solutions /Product Developing, Implementation, Developing Integrated and Different Perspectives"; the importance of interdisciplinary studies in raising multi dimensional individuals, free from prejudices have been mentioned. The opinion of the academician from FEd is as follows:

"Cooperation of different disciplines will be beneficial in terms of learning different personalities, perceiving different values, being aware of the fact that different cultural architectural structures may exist in different cultural codes…"

An academician from FEn pointed out:
"When engineering practices are used in education…Use of technology shall also bring quality along. It shall also be possible that different occasions and events will be assessed through different frames"

It is also pointed out that in terms of Finding Solutions to problems and Developing Products, cooperation of academicians of Engineering and Education Faculties may pave the way for completing two disciplines. The opinion of the academician from FEd is as follows:

"I think developments and improvements in engineering shall contribute to finding solutions to problems encountered in education field or increasing the quality of education".

Table 7. Contributions of cooperation between Faculties of Education and Engineering

Themes	Academicians of Faculty of Education	Academicians of Faculty of Engineering
Tools – Instruments and Material Development	*-Designing various machines and preparing necessary infrastructure for engineering sciences, FEn may be useful.* *-FEd shall act as guidance for developed learning materials.*	*-New education tools and instruments may be developed.*
Information Sharing / Introduction of Discipline	*-Common points of two Faculties may be determined.* *-To reflect on possible ways of cooperating with and benefiting from the knowledge of Fed.*	---
Education Technology	*-In the light of educational technology knowledge on education is completed through knowledge on engineering sciences.* *-FEn may contribute to computer aided education studies and distance learning activities through infrastructure support"*	*-Use of new education approaches in technology training"* *-Developing and improving distance learning education systems."*
Learning Media	*-FEn and Fed may benefit from each other in terms of preparing new learning media.* *-Physical aspects of working environment, working motivation.*	---

Through themes like "Tools – Instruments and Material Development, Information Sharing/Introduction of Discipline, Education Technology, Learning Media" it has been stressed that new perspectives and practices could be developed through combining theoretical knowledge of Faculty of Education and technical infrastructure of Faculty of Engineering. An academician from FEd inserted:

"Joint studies and activities with academicians of Faculty of Education can be done in terms of adapting different technologies and scientific studies conducted in Faculty of Engineering to the field of education…"

Using the advantages of getting acquainted with different disciplines, merging the existing knowledge and melting it in the same pot in developing education technologies like distance learning and computer aided education has been mentioned. Academicians from FEn and FEd pointed out:

"Joint studies are significant in terms of developing and improving distance learning education systems."
"….Distance learning activities could be given as a very good example indeed."

It has also been stated that equipping learning environment in such a way that it shall meet the requirements of relevant parties will increase the efficiency and psychological satisfaction. The opinion of the academician from FEd is as follows:

"Developing new learning media, increasing the efficiency of studies, improving working environment, industrial psychology studies aiming to increase job satisfaction."

Table 8. Contribution of an interdisciplinary study to be conducted between Faculties of Education and Engineering to relevant parties and society.

Themes	Academicians of Faculty of Education	Academicians of Faculty of Engineering
Culture of Compromise /Multi dimensional individuals	*-The new cycle in which scientists of different disciplines work together will appear consequently shall create new perspectives.* *-Multidimensional individuals will be raised.*	*-Researchers need multi dimensional information and knowledge while dealing with a single problem.* *-It is very important in terms of raising engineers.*

Elimination of Prejudices	*-Two different faculties of the same university will get the chance to get better acquainted with each other.* *-The elimination of discrimination.*	---
A different dimension	*-Two perspectives, which are completely opposite to each other, may complement one another through cooperation between sciences of education and engineering.* *-Scientific studies may be related to social, cultural and educational areas as well as technical dimension.*	*-A different approach may be adopted in problems encountered in education.* *-Disciplines complement each other.*

Through themes like "Culture of Compromise/Multidimensional Individuals, Communication/Elimination of Prejudices, A different dimension" it has been emphasized that in today's world, scientific studies require a multidimensional approach and include different disciplines. It has also been stated that in order to come up with new expansions and find a solution, a culture of compromise must be established in science. In other words, different parties cooperating with each other should refrain themselves from prejudices and learn more about it each other. The opinion of the academician from FEd is as follows:

"*Coming closer leads to unity, unity leads to strength. Aren't these two concepts indispensable elements of universe?*"

"*When scientists of different disciplines work together, a culture of compromise will be established and the real value of science will be understood. We can even hope that broad minded individuals will revive studies….*"

Academicians have stressed the significance of converting differences of Engineering and Education Faculties into diversity, using this diversity as complementing factor in future joint studies similarly an academician from FEn pointed out that:

"*In order for one person to be able to answer all the questions; many years of study and knowledge are needed. However, in today's competing world, this would be impossible. In order to do this, scientists of different fields should work together in one single problem but with different perspectives. This situation could be resembled to systems with parallel processors, however in this case a group of brains thinking simultaneously and parallel to each other. This is a must in order to shorten the process of evaluating the ever increasing amount of information.*"

The opinion of the academician from FEd is as follows:

"*Discipline of education and engineering which are completely opposite to each other, may complement one another through cooperation between sciences of education and engineering. Cooperation of opposing sciences will increase the credibility of employees*"

Table 9. Contribution of cooperation between Faculties of Education and Engineering to parties and society

Themes	Academicians of Faculty of Education	Academicians of Faculty of Engineering
Material	*-Develop more efficient and complicated education tools/materials.*	---
Coming to a conclusion/fin ding solutions	*-Improving designing skills, developing products which could receive patents can be possible through interdisciplinary studies.* *-Interdisciplinary studies will provide new ideas to parties and new products to society.* *-Different dimension will emerge in the studies, an exchange of ideas will be ensured.*	*-Cooperation of different disciplines, contribution of parties to each other will provide new products, approaches and perspectives to society.*
Education	*-Faculties of Education can support education services in all types of disciplines.* *-Discussion of new education methods and techniques to be used in educating engineers.*	*-Education is a concept which we can frequently come across with during our private and professional life.*

Quality of the studies	*-Changing conditions require interdisciplinary studies.* *-More qualified individuals with a unique way of thinking may be raised through interdisciplinary studies.* *-Society will embrace a progress in terms of education also both technology and production.* *-To make the research findings and conclusions in social sciences which are more flexible more evident (for some necessary research types).*	*-An interdisciplinary study to be conducted between Faculties of Education and Engineering will not only increase the communication but also ensure high level of motivation.*

In the light of the answers given to the question of what would be the contribution of an interdisciplinary study between Faculties of Engineering and Education to the society and relevant parties, themes like "Material Development, Coming to a conclusion/finding a solution, Education, Quality of the studies" have been formed. It is stated that interdisciplinary studies to be conducted in that sense will yield to positive results in terms of education and its quality. The opinion of the academician from FEd is as follows:

"Faculties of Education make use of scientific and pedagogical approaches of the age, hence supporting education services in all types of disciplines"
"If we are to take distance learning activities as an example, we can say that such activities will have a great contribution to increasing the quality of education"

The opinion of the academician from FEn is as follows:
"… Each individual transfers his/her knowledge (academicians, engineers, doctors), to somebody else. It is certain that if such a transfer of knowledge is realized in the light of education sciences, it shall increase the success of this activity"

It is mentioned that assessment of social problems through an interdisciplinary approach will increase the quality of the studies and have positive contributions on concluding and realizing these types of studies. The opinion of the academician from FEd is as follows:

"More qualified individuals with a unique way of thinking may be raised through interdisciplinary studies. Thanks to a partnership between Faculties of Engineering and Education, the quality of these Faculties research will increase and a different dimension will be introduced in educational sciences."

Beside these opinions one of the academicians from FEd concluded that:
"...Interdisciplinary studies may only be useful in case they do not jeopardize the purity of disciplines individually. Literature sociology can never substitute literature or sociology. It should not be "against them" but "with them"…"

4. CONCLUSIONS AND RECCOMENDATIONS

Technological, economical, social and political developments recorded since the second half of 20 th century, have led the societies into a process of rapid change and development. The most important characteristics of this age, namely "information era" is that it is not only about producing and storing the information but also about producing the information and finding the easiest, most widespread, efficient and quickest way to transfer this information to individuals (Barkan & Eroglu, 2004). In this context, components of information era and structure of scientific studies should be discussed. Thanks to developing technology, it has become evident that different discipline fields come closer to each other. Especially following the developments in Information and Communications Technology (ICT), limiting the disciplines within their own borders of research will never help the individuals get to know a new approach of the relevant discipline. Since borders between different disciplines have become less visible; adopting a single approach while solving the problems shall not be valid anymore (Can, 2006). These developments have urged researchers to conduct interdisciplinary studies. Distance learning projects could be given as an example in terms of combining technical infrastructure with content and providing it to users.

When findings of this study are considered, the significance and necessity of interdisciplinary cooperation becomes clear. On the basis of results of the study it can be concluded that interdisciplinary studies would result in a success if relevant parties have develop trust to each other. In the study, the significance of elimination of prejudices has also been mentioned. Therefore, in order to ensure the efficiency of academic studies,

interdisciplinary studies should help eliminate prejudices among different disciplines, encourage to develop new ideas and dimensions for the colleagues and personnel who are in contact with experts of other disciplines. If the case is examined in terms of Faculties of Education and Engineering, diversity and richness arising from different perspectives of two disciplines shall have a complementing effect in these studies and for finding solutions to societal problems. What is even more important here is to determine that the points of intersection and unification of two study area of these faculties correctly, hence conducting a planned interdisciplinary study. Academicians have also reflected on the significance of planning and implementation of a scientific interdisciplinary study. It is clarified that this can only be achieved through developing scientific research education and culture.

In terms of education technologies; while integrating widespread practices like distance learning activities to education system, cooperation of academicians of Engineering an Education Faculties will facilitate combining theoretical information with technical infrastructure. In addition to this, the quality of the system, which has been developed through multi dimensional perspective, will increase. Richness and diversity provided by this multi dimensional perspective will be benefited while finding solutions to problems. Arranging learning media, developing materials, and computer aided education could be given as examples.

Another result achieved through qualitative data of the study focuses on how to provide more efficient education by academicians recruited in Faculties of Engineering. Academicians of Faculties of Engineering and Education have pointed out that Faculty of Engineering could benefit from the knowledge of Faculty of Education in topics like; planning of the education, teaching methods and techniques, time management and evaluation. Hence, cooperation between two Faculties and its share in increasing the quality of current education system have been stressed. Moreover, regarding technological systems and models designed to increase the effectiveness in learning process, the significance of combining theoretical information with implementation and evaluating the outputs of these practices have been emphasized.

Determination of areas in which Faculties of Engineering and Education can cooperate as well as conducting joint studies will be a positive step in the universities in order to increase the quality of higher education. Hence; open minded scientists equipped with more integrated approach will be raised. In this way sharing of knowledge between different disciplines can be possible. For instance, in the case that M.A. and PhD degree theses are prepared with the support of two advisers from both disciplines, would be much more unique. A similar approach can be adopted in projects implemented by researchers.

As a consequence participants which are from faculties of education and engineering have a considerably point of view about interdisciplinary studies. Especially the one of the important contribution of interdisciplinary studies between these two faculties is integration of new technologies into the education. It is suggested that there will be new approaches that pale to gain in the process of integrating technology into the education by sharing knowledge. It is important to emphasize the importance of introducing interdisciplinary cooperation in B.A. degrees or even during earlier stages of education life.

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