Journal for the Education of the Young Scientist and Giftedness
2013, Volume 1, Issue 2, 21-31

Research Article

A New Model Program for Academically Gifted Students in Turkey: Overview of the Education Program for the Gifted Students' Bridge with University (EPGBU)

ABSTRACT: All over the world, studies related to design of appropriate educational programs for gifted students have been continuing. It is also important that these programs should be adapted to both realities of countries and developing educational technologies. In Turkey, the structure of The Education Program for the Gifted Students' Bridge with University (EPGBU) has basically been determined as mentoring and e-mentoring which are gifted education approaches. EPGBU has been prepared for the education of academically gifted students.

Key words: academically gifted students, mentoring, e-mentoring, The Education Program for the Gifted Students' Bridge with University (EPGBU)

This study was partially presented at ICTDE 2013 Conference as a proceeding.

Hasan Said TORTOP, Bulent Ecevit University, Centre for Special Education Services, Zonguldak, TURKEY.
E-mail: hasansaid@yahoo.com

Received: 11 Oct 2013
Accepted: 27 Nov 2013

ISSN: 2147-9518, http://jeysg.org

INTRODUCTION

Gifted Education in Turkey, as well as all over the world has been one of the academically popular topics (Friedman-Nimz, O'Brien & Frey, 2004; Gokdere, Kucuk & Cepni, 2004). This situation correlated with societies' awareness of gifted students' rights. These students face with us with their many rights (strategically, pedagogically, sociologically, economically e.g.) as the general education is inadequate (Levent, 2011). To meet their training and educational needs which is the most important of these rights, many strategies and education programs have been proposed in the world (Renzulli, 1977; Betts, 1986; Betts & Krecher, 1999; Kulik, 1992; Maker; 1982; Siegel, 2005; Sak, 2009; Tomlinson et al., 2002; Reis & Renzulli, 1978; Van-Tassel-Baska & Wood; 2009; Kaplan, 1986; Feldhusen & Kollof, 1986; Nash, 2001). With the establishing of Science and Art Centers (SACs) in Turkey, gifted education has been started at a different institution (MNE, 2007; Kunt & Tortop; 2013). Unlike SACs, Education Programs for Talented Students Model (EPTS) -a new program- founded in Anadolu University and coordinated by Professor Ugur SAK (Sak, 2011). Creating different education programs suitable for the culture and the educational system in Turkey is quite important for developing the gifted education in Turkey. The Education Program for the Gifted Students' Bridge with University (EPGBU) which was established by Asistant Professor Hasan Said TORTOP at Bulent Ecevit University in 2012-2013 educational terms, and carried out at Centre for Special Education Research & Application wishes to bring an innovation in gifted education in Turkey.

Mentoring and e-Mentoring at Science and Gifted Education

Mentoring programs are quite varied. Mentoring, a rapidly developing area for gifted education is called as telementoring or e-mentoring (Nash, 2001). Mentoring is one of the most effective approaches in the education of gifted students (Siegel, 2005; Nash, 2001; Sak, 2010). Mentoring program which is applying on online is called e-mentoring or telementoring (Kahraman, 2010; Ozdemir, 2012; Hunt, 2005). This approach removing the limitation of time and space, facilitating access to global resources and monitoring of student progress (Akin & Hilbun, 2007; Siegel, 2005; Nash, 2001; O'Neill, 1998; O'Neill, Weiler, Sha, 2005; MentorNet, 2002). Time and space limitations prevent the development of mentor relationships; e-mentoring allows high school or university level students who have low socio-economic level, to contact face to face communication with a scientist. It also allows mentees to make a career in science (Bonnett, Wildermuth & Sonnenwald, 2006). In the literature, the advantages of e-mentoring; students get the opportunity to communicate several specialists, there is no geographical limitation at mentor selection, appropriate consultation between students and mentors is easily done weekly, it allows the continuity of communication between mentors and students and to create archive, mentor-student communication can take place at any time via e-mail, they don't need an appointment, students get the opportunity to make a long-term project (Siegel, 2003).

The research was carried out by Gray (1982), on mentoring for gifted students' scientific research projects and about effects of mentoring. This strategy which is included in the Renzulli (1977) Type-3 Enrichment Program is highly effective for the education of gifted students. In US, it is seen e-mentoring programs in which the educators (teachers) of gifted students are mentee, and experts are mentors (IGET-Network, 2013). Lewis (2002) research results that 81% of the teachers stated that in telementoring program (2000-2002) students take more responsibilities. These research findings encourage educators to use e-mentoring programs. Bennett et al., (1998) did a project for female students' career development related science. In this study, after a certain period of time, conversation of students investigated that they talked about something, but not science after the certain period. Finished in 1998, "Telementoring Entering Young Women in Science & Computing" was conducted to increase 8-12 age female groups' interests towards science and positive results were obtained (Bennett et al., 1998). Bonnett, Wildemuth & Sonnenwald (2006) examined the quality of the interaction between the mentor-mentee in their study with rural and urban students in the Division of Biology at the University. After a long-term study, they presented their implications about e-mentoring program carried out two terms and a course. One of the most important studies in the literature is O'Neil's (1998) research. Also known as Project CoVis, this study was tested in

1992. It is an e-mentoring application with project-based pedagogy. In this study, mentors, students and teachers start with a problem scenario and the process goes on until the students present their projects. In this study, mentor-mentee dialogues were coded and analysed. As a result of this study, thanks to the application of e-mentoring for science teachers which were prepared in accordance with the project-based pedagogy, effective science applications were carried out. With this application, the students could do in-depth research. Unlike web-based events or Ask an Expert, e-mentoring requires more effort, but good results are come up.

Stake and Mares (2001) applied enrichment program in which the scientists are mentors, for gifted students. In the study conducted by the pre-test and post-test design, there were not differences in gifted students' attitudes towards science. The study was conducted on 330 gifted students. It is pointed out that the study will be inadequate to explain the changes in development of gifted students by only pretest-posttest pattern and the study can observe the effects of multiple perspectives and multiple methods. The importance of the role of the parent process was emphasized. Instead of handling science in general, it was stated that it would be more useful to study on science fields such as engineering and medicine. Predictors affecting students' attitudes toward science were revealed in this study. Moreover, Bonnett (2002) conducted an important study on e-mentoring with scientists. In this study conducted at the University of North Carolina, the qualitative and quantitative analysis of the relationship between mentor-mentee was done via e-mentoring application with the participation of five scientists and five college students. In this research, necessary (successful) elements (matching scientists-students as mentor-mentee) for an effective mentoring are put forward.

Structure of the EPGBU

That prepared programs for gifted students should be composed of certain basic components is indicated by the significant names in the field of both gifted education and education programmers (Sak, 2010). In this respect, that EPGBU can be adapted to the development of education and have a basic philosophy has been paid attention. EPGBU has been developed with the philosophy that the most effective way for gifted students to improve their skills in academic field is to meet scientists (with mentoring program, Sak, 2010; Nash, 2001; Gray, 1982). As a result of intensive course work and test anxiety in public education of gifted students, absenteeism appears at Science and Art Centers (institutes which support gifted students in Turkey, it called SACs). The vast majority of gifted students and their families don't participate effectively in the programs prepared for gifted students because of these concerns especially in high school period (Kazu & Senol, 2012). Taking into account all these cases, in the education of gifted students in Turkey, it is tried to make gifted students meet scientists for mentoring and to develop an approach which will not increase the burden on students.

In this gifted education program (EPGBU), enrichment and acceleration approaches are given in addition to mentoring. Mentoring is the main approach of EPGBU. EPGBU is a program which can be carried out in coordination with gifted students at Special Abilities Development Stage and Project Stage (MNE SACs Directive, 2007) at SACs and enrolled Science High Schools (Science High School Directive, 2013), it also can be independently applied at universities in Turkey. EPGBU's aims are in the same way as science high schools' established for the purpose of training scientists in Turkey (Science High School Directive, 2013).

In Turkey, mentorship on scientific research projects are carried out at science fairs held at the national level. Scientific research projects competitions still continue at junior high school level "The Scientific and Technological Research Council of Turkey (STRCT) Secondary Students Scientific Research Projects Competition" and "This is My Work Science and Mathematics Project Work" at secondary education level. In these science fairs (competitions), the effects of ineffective mentoring are leading undesirable manners such as arising of students' unethical behaviour (dishonesty), the weakness of the qualitative aspects of projects (Tortop, 2013a, 2013b). Therefore, effective mentoring is rather important to help students prepare scientific research projects. Also in this respect, it would be thought that EPGBU fill a huge gap which is nurturing academically gifted students.

EPGBU consists of the five components; EPGBU Teaching Process, Students (Academically Gifted) Selection, Mentor Selecting for EPGBU and Orientation Training, EPGBU Curriculum Approach, and Evaluation. EPGBU consists of the following components;

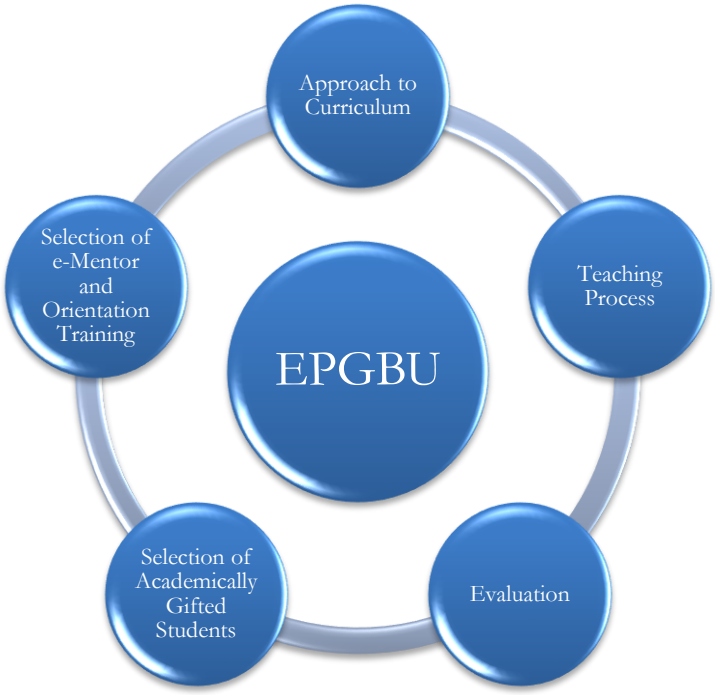

Figure 1. The Structure of EPGBU

EPGBU Teaching Process

The teaching process in EPGBU is shaped on the creation of interest of gifted students in certain scientific fields, deepening in these fields and producing something (e.g. project, article, and book. Mentors are involved in these processes. Teaching process consists of three phases. Scientific Fields & Mentor Determining Period, Deepening in the Science Specialty and Research Design Period, Scientific Research and Reporting Period. Each period consists of 12 weeks. During the teaching periods, the required acquisitions such as scientific creativity, thinking skills to do scientific research effectively, are given by mentors face to face and online. This teaching process is repeated until the end of high school period of academically gifted students.

First Stage: EPGBU Scientific Field & Mentor Selecting Process

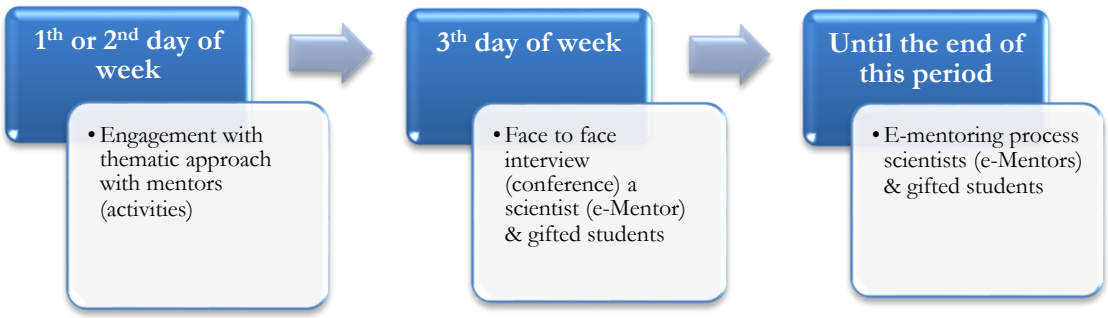

Figure 2. EPGBU scientific field & mentor selecting period

This period involves the process of determining e-mentors and scientific fields by gifted students with engaging the scientific fields of scientists. In this period determined as 12 weeks, themes of scientists working scientific fields are selected. In the first and second days of the week, activities about these themes are made by mentors or teachers who work at SACs and Science High School (they have master or doctoral degree in science, technology, engineering, and mathematics (STEM)). These activities both engage academically gifted students to these themes and provide to develop their scientific creativity, thinking skills, self-regulation skills, scientific process and research skills, and knowledge of history and philosophy of science. The gifted students, who are engaging certain scientific field, participate science activities that conducted by scientists on selecting scientific field in the third day of the week at university. Gifted students ask all the questions about this science specialty face-to-face to the scientists. And then gifted students' asking questions and scientists' (e-Mentors) answering of questions process continues online until the end of the period.

Second Stage: EPGBU In-Depth Study at the Scientific Field and Designing Scientific Research Period

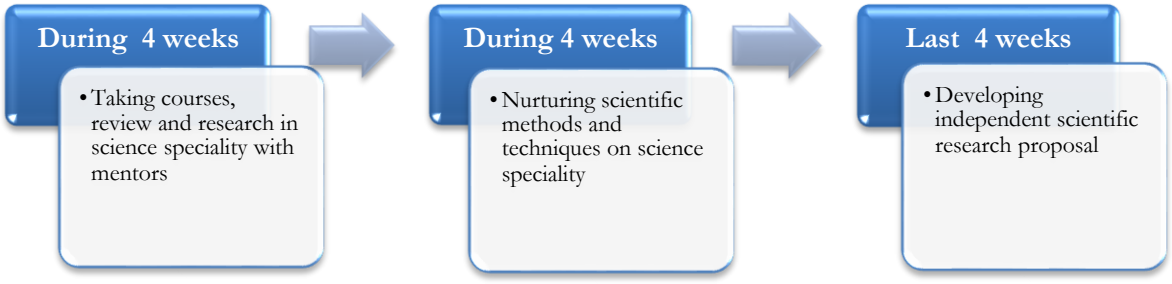

Figure 3. EPGBU in-depth study at the scientific field and designing scientific research period

This period consists of 12 weeks. It is a period that gifted students prepare scientific research with the help of their mentors and e-mentors. E-mentors suggest to the gifted students online courses to elaborate their science speciality for increasing students' competences on the scientific field. These courses are prepared online by the e-mentors. E-mentors, who are helping students to specialize in the scientific field, make enrichment of the e-media (such as related links, presentations sharing, and guidance at papers, thesis and proceedings guidance). E-mentors nurture to gifted students required scientific research methods and techniques their science speciality. These methods and techniques are special techniques such as designing experiment, doing observation, interviewing, and literature review. In this process, the gifted students getting idea of the scientific research and towards the end of the period present to the e-mentors the scientific research proposal. With the presentation of a scientific research proposal, this academic period finishes. In this period, mentors or teachers who work at SACs and Science High School (they have master or doctoral degree in science, technology, engineering, and mathematics (STEM)) simultaneously keep on activities with gifted students for gaining scientific creativity, thinking skills, self-regulation skills for science learning, scientific process and research skills, and knowledge of history and philosophy of science.

Third Stage: EPGBU Independent Research and Reporting Period

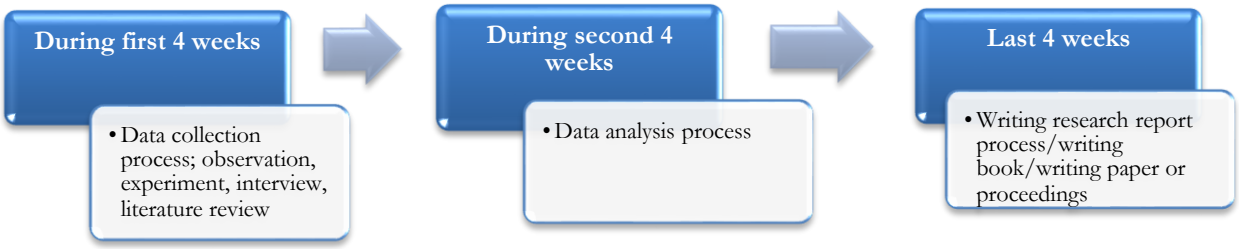

Figure 4. EPGBU independent research and reporting period

During this period, gifted students do the scientific research with their e-mentors. With the skills related the scientific research methods and techniques from the previous period, they carry out their scientific researches. The first 4 weeks of this period is data collection phase. The second four weeks is data analysis phase. The last 4 weeks is research report writing phase. In this phase, gifted students are given education about the scientific research writing skills (such as scientific ethics, APA style). This period ends with completing of gifted students' production such as writing scientific research reports, writing books, paper or proceedings. In this period, mentors or teachers who work at SACs and Science High School (they have master or doctoral degree in science, technology, engineering, and mathematics (STEM)) simultaneously keep on activities with gifted students for gaining scientific creativity, thinking skills, self-regulation skills for science learning, scientific process and research skills, and knowledge of history and philosophy of science.

This cycle for educating of academically gifted students continuing on at EPGBU (see, Figure 5).

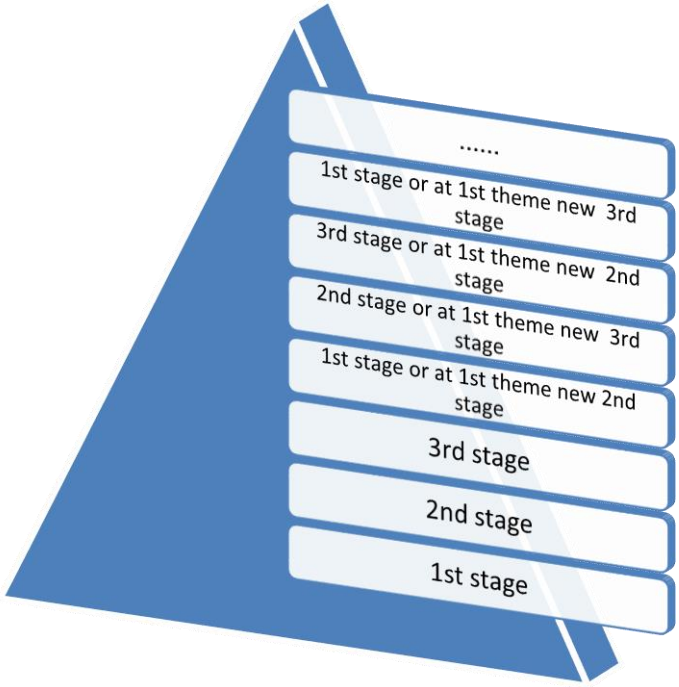

Figure 5. EPGBU teaching process

Students Selection

For EPGBU, there are three different student groups. This situation is made parallel with the structure of General Curriculum of Turkish Ministry of National Education. First Group: 1-4th grade, Second Group: 5-8th grade, Third Group: 9-12th grade. The EPGBU curriculum units for these students groups are designed to integrate the outcomes of the courses at higher

level groups at general education curriculum with EPGBU curriculum outcomes (e.g. scientific creativity, self-regulation skills for science learning' outcomes) in the frame of thematic approach.

EPGBU put forward the selection criteria of gifted students belonging high interest and curiosity in scientific research and science. EPGBU accepts all of the approaches for identification accepted today to identify gifted students (Raven, WISCR e.g.). Additionally, in the process of student selection at EPGBU, their learning styles, scientific creativity and motivation for scientific research are important features for the success of the program and the attendance of students who enrol this program.

"Learning style is explained as educational conditions which shows how students can learn best (Hunt, 1979; 27). Some research stated that in distance education, the possibility of failure of students who need concrete experiences and can't think in abstract form is quite high (Dille & Mezack, 1991). According to the quota, students have high scores on abstract conceptualization, are selected for EPGBU. Kolb Learning Style Inventory has been developed by Kolb (1985). This scale was adapted by Aksar and Akkoyunlu (1993) in Turkey.

The scientific research motivation of students who will be selected for EPGBU, is supposed to be high. In the literature, there is a motivation scale related to science (Tuan, 2005). This scale is used to selection of students. However, the development of the motivation scale for the scientific research is important in terms of selecting students for the program.

Another scale to select students is Scientific Creativity developed by Hu and Adey (2002). Students who have a high level of scientific creativity are selected for EPGBU.

Mentor Selecting for EPGBU and Orientation

They are the mentors who enable the formation of speciality of science interest of gifted students at EPGBU model. Mentors, from all disciplines at university (medicine, engineering, basic sciences, history etc.) consists of volunteer scientists. The scientists who have a sense of humour, competent in his/her scientific field, appropriate pedagogical approach for gifted students, and the capable of effective leadership are selected carefully. Mentor candidates are trained about as follows topics;

- Giftedness and education of gifted students
- EPGBU model
- Scientific creativity, self-regulation skills for science learning, thinking skills (such as critical thinking skills, problem solving), scientific research methods, history and philosophy of science.
- Mentoring and e-mentoring
- Designing of the science activities for EPGBU

EPGBU Assessment Model

The evaluation of program outputs on the contribution of the academic development of EPGBU for gifted students are done at the end of each stage and period. At each stage, the level of realization of the objectives is determined. Formative and summative evaluations are carried out in the process of EPGBU. The products (scientific research project, papers, books, etc.) which are produced by gifted students at EPGBU are evaluated qualitatively and quantitatively. For example, the evaluation of the scientific research projects is done by mentors according to Scientific Research Projects Evaluation Scale. Besides, e-portfolio, e-journals prepared by gifted students are the instruments which can be used at the formative evaluation of the EPGBU. In summative evaluation process, the EPGBU will be evaluated by pre-test and post-test measurements with the help of Scientific Creativity Test (Hu & Adey, 2002), Scientific Research Skills and Science Process Skills Test (Burns, Okey, & Wise, 1985; Koksal, 2009), the Self-Regulated Learning Scale (Self-Regulated Learning Scale developed by Pintrich and De Groot (1990); adapted to Turkish by Uredi (2005), Self-Regulation Skills for Science Learning Scale developed by Tortop (2013d)), Career Selection Inventory (Pilavci, 2007) and Student Views on EPGBU Scale.

EPGBU Curriculum Approach

In the preparation of the curriculum approach for EPGBU, important approaches or models for gifted education were taken into consideration. The curriculum models which used to design EPGBU curriculum are Curriculum Compacting Model (Reis & Renzulli, 1978), The Parallel Curriculum (Tomlinson, Kaplan, Renzulli, Purcell, Leppien, & Burns, (2002), and Integrated Curriculum Model (VanTassel-Baska & Wood, 2009). Most of these approaches or models finally aim at gifted students to have independent research skills. EPGBU Curriculum Approach has been designed taking into account the skills needed to

be a successful scientist, such as scientific creativity, scientific research and process skills, self-regulated science learning (Neber & Schommer-Aikins, 2002), history and philosophy of science knowledge, thinking skills (e.g. critical thinking, problem solving) which a scientist needs. EPGBU aims to support the development of academically gifted students.

EPGBU has been developed to help gifted students to improve their scientific creativity, thinking skills, scientific process and research skills, self-regulation skills for science learning and to increase the basic competence of the philosophy and history of science. EPGBU consists of these components; Scientific Creativity, Self-regulation Skills for Science Learning, Thinking Skills, Scientific Process and Research Skills, History and Philosophy of Science (see Figure 6).

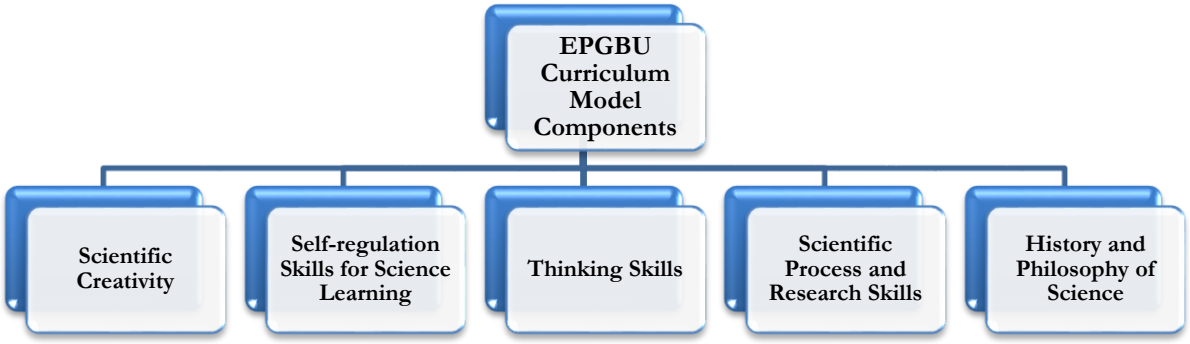

Figure 6. EPGBU curriculum model components

EPGBU curriculum model basis contains gifted education approaches which are acceleration, enrichment and mentoring/e-mentoring. The applicability of the programs available for gifted students' development about acceleration and radical acceleration is difficult and impossible within existing regulations in Ministry of Education of Turkey curriculum (Tortop, 2012). In this respect, taking into account the development of gifted students, within the country's current education curriculum, appropriate acceleration approach is presented for gifted students (Sak, 2010). Acceleration is seen at EPGBU; students reaching a certain level of readiness at EPGBU model, during the deepening in certain scientific fields, will confront with the contents that they will meet at higher class courses such as outcomes of EPGBU 1-4th grade group included 5-8th grade level outcomes of general curriculum, outcomes of EPGBU 5-8th grade group included 9-12th grade level outcomes of general curriculum, and outcomes of EPGBU 9-12th grade group included at university courses level.

While developing EPGBU units, outcomes of a higher educational level and the outcomes of EPGBU curriculum components are composed. However, this high-level information will not be given knowledge cluster; on the contrary it will be given pure and useful way. So, students gain the information in a funny way, not in a boring way.

In order to do scientific research, necessary information and acquisitions will be presented in the enrichment approach. In enrichment applications, there are three groups; content, process and product enrichment approaches (Sak, 2010). In process enrichment approach, thinking skills which is a component of EPGBU curriculum model is developed. In content enrichment approach, gifted students specialize in the scientific fields in which they do scientific research. In product enrichment approach, at the end of EPGBU, gifted students produce products related scientific fields such as scientific research projects/papers/research reports/books.

Mentorship is one of the most effective approaches in the education of gifted students (Sak, 2010), is used at EPGBU. Online mentorship approach is called as e-mentoring or telementoring. E-mentoring has got many advantages such as it removes time and space limitation, it is cheap, reach the global resources quickly, it allows us to monitor students' development by recording mentor-mentee dialogues (Yang, 2001; Kahraman, 2010; Nash, 2001; Siegel, 2005). As scientists work hard, e-mentoring is seen as the most effective and ideal

way (approach) for the education of gifted students.

The aims of EPGBU are realize with both mentoring and e-mentoring approach. So, alongside students' deepening in a certain scientific fields, gifted students get the skills of doing scientific research, producing creative ideas, thinking skills (e.g. creative, critical, reflective, divergent, problem solving thinking skills) and knows what the scientific criteria, they gain what are the theory and the law such basis philosophy of science knowledge.

Also, EPGBU is in line with the Ministry of Education Turkey Curriculum. It contributes to the realization of educational goals of gifted students educated at SACs or Science High Schools in Turkey. EPGBU is an educational program which students–enrolled at SACs (at Special Skills Development and Project stages) and Science High Schools- can adapt well. Moreover, the students who receive education at Science High Schools with the aim of being scientist (MNE, 2013) do their scientific research in accordance with EPGBU which present mentoring approach with scientists.

CONCLUSION

In Turkey, the seeking after the model about the education of the gifted students and efforts to develop strategies for the training of gifted is keep going on. Science High Schools establishing for the training of the academically gifted students as a scientist in academic fields and SACs established to support gifted students in the field of science and art, are important institutions for gifted students education in terms of their missions and visions (MNE, 2007; MNE, 2013, Ataman, 2004; Sak, 2010; Kunt & Tortop, 2013). However, high school and university entrance examination system leaves a serious burden on students for these institutions to fulfil their missions. This situation leads to increase the absenteeism at SACs in the academic years especially including these exams (Kazu & Senol, 2012). It can be considered that EPGBU, which partially removes the constraint of time and place in students' development in important fields of science, allows the students gain the skills needed to be a scientist (such as self-regulation (Neber & Schommer-Aikins, 2002), scientific creativity, thinking skills, scientific process and scientific research skills) through educated by scientists (mentors) and direct communication with scientists (e-mentors), has an important contribution to the education of the academically gifted students.

REFERENCES

Akarsu, F. (2004). Üstün yetenekliler. [Gifted Students] Şirin, M., R., Kulaksızoğlu A, ve Bilgili A., E., (Ed) *I.Türkiye Üstün Yetenekli Çocuklar Kongresi Makaleler Kitabı* içinde, (127-154). Çocuk Vakfı Yayınları, Yayın No:64, İstanbul.

Akin, L., & Hilbun, J. (2007). E-mentoring in three voices. *Online Journal of Distance Learning Administration, 10*(1), 1.

Ataman, A. (2004). Üstün zekalı ve üstün yetenekli çocuklar [Gifted and Talented Children] Şirin, M., R., Kulaksızoğlu A, ve Bilgili A., E., (Ed) *I.Türkiye Üstün Yetenekli Çocuklar Kongresi Makaleler Kitabı* içinde, (155-168). Çocuk Vakfı Yayınları, Yayın No:64, İstanbul.

Bennett, D., Tsikalas, K., Hupert, N., Meade, T., & Honey, M. (1998). *The benefits of online mentoring for high school girls: Telementoring Young Women in Science, Engineering, and Computing Project, year 3 evaluation.* Newyork: Center for Children & Technology.

Betts, G. T. (1986). *The autonomous learner model: For the gifted and talented.* Greeley, CO: ALPS Publishing.

Betts, G.T. & Kercher, J.K. (1999).*The autonomous learner model: Optimizing ability.* Greeley, CO: ALPS Publishing.

Bonnett, C. (2002). *Mirroring and managing in electronic mentoring: Factors in interactivity between student–scientist pairs.* Unpublished master's paper, University of North Carolina, Chapel Hill.

Bonnett, C., Wildermuth, B. M., Sonnenwald, D. H. (2006). Interactivity between protégés and scientists in an electronic mentoring program. *Instructional Science.* 34, 21-61.

Burns, J. C., Okey, J. R., & Wise, K. C. (1985). Development of an integrated process skill test: TIPSII. *Journal of Research in Science Teaching, 22* (2), 169-177.

Dille, B., & Mezack, M. (1991). Identifying predictors of high risk among community college telecourse students. *The American Journal of Distance Education, 5*(1), 24-35.

Feldhusen, J. F., & Kolloff, P. B. (1986). The Purdue three-stage enrichment model for gifted education at the elementary level. In J. S. Renzulli (Ed.), *Systems and models for developing programs for the gifted and talented.* Mansfield Center, CT: Creative Learning Press.

Gokdere, M., Kucuk, M, ve Cepni, S., (2003). Gifted science education in Turkey: Gifted teachers' selection, perspectives and needs. Asia Pacific Forum on Science Learning and Teaching, 4,(2), Article 5.

Gray, W.A. (1982). Mentor-Assisted Enrichment Projects for the Gifted and Talented. Educational Leadership, November, 16-21.

Hunt, D. E. (Eds.). (1979). *Learning style and student needs: An introduction to conceptual level.* Reston, VA: National Association of Secondary School Principals.

Hunt, K., (2005). E-mentoring: solving the issue of mentoring across distances. *Development and Learning in Organizations* 19(5), 7–10.

IGET-Network, (2013). Retrieved from: http://www.iget-network.org/programs/e-mentoring/

Kahraman, M. (2010). *E-mentoring for professional development of information technologies teachers candidates*. Doctoral Thesis. Anadolu University. Eskisehir, Turkey.

Kaplan, S.N. (1986). *The Grid: A model to construct differentiated curriculum for the gifted*. J.S. Renzulli (Ed), Systems and models for developing programs for the gifted and talented. Mansfiled Center, Connecticut, USA: Creative Learning Press, Inc.

Kazu, İ.Y. & Senol, C., (2012). Views of teachers about gifted curriculum (Case of BİLSEM). *E-International Journal of Educational Research. 3*(2), 13-35.

Koksal, A.E. (2002). *The acquisition of science process skills through guided (teacher-directed) inquiry*. PhD Dissertation. Middle East Technical University, Ankara, Turkey

Kulik, J.A. (1992): *An analysis of the research on ability grouping: Historical and contemporary perspectives*. Storrs, CT: National Research Center on the Gifted and Talented.

Kunt, K. & Tortop, H.S. (2013). The metaphoric perceptions of gifted students about Science and Arts Centers in Turkey. *Journal of Gifted Education Research*. 1(2), 117-127.

Kuzu, A., Kahraman, M., ve Odabaşı, F., (2012). Mentörlükte Yeni Bir Yaklaşım: e-Mentörlük. Anadolu Üniversitesi Sosyal Bilimler Dergisi. 12(4), 173-183.

Lamb, P & Aldous, D. (2013). The role of E-Mentoring in distinguishing pedagogic experiences of gifted and talented pupils in physical Education. Physical Education and Sport Pedagogy. 1-20.

Levent, F. (2011). Üstün yetenekli çocukların hakları el kitabı, anne baba ve öğretmenler için. [Handbook of gifted children' rights, for parents and teachers]. Çocuk Vakfı Yayınları:İstanbul.

Lewis, C. W. (2002). International Telementoring Program Executive Summary: Evaluation Results from Teacher Survey. Fort Collins: Research and Development Center for the Advancement of Student Learning, Colorado State University.

Maker, C.J. (1982). Curriculum development for the gifted. Rockville, MD: Apsen Systems.

MentorNet, (2002). 2000-2001 MentorNet Evaluation Report. http://www.mentornet.net/documents/about/results/evaluation.

MNE (Ministry of National Education of Turkish Republic, Gifted Students Strategy and Executive Plan 2013-2017, (2013). 2013-2017 Üstün Yetenekli Bireyler Strateji ve Uygulama Planı. http://www.tubitak.gov.tr/sites/default/files/10_ek-1_ustunyetenekliler.pdf .

MNE, SACs Directive (BİLSEM Yönergesi), (2007). http://mevzuat.meb.gov.tr/html/2593_0.html .

MNE, Science High School Directive (Fen Lisesi Yönetmeliği), (2013). http://mevzuat.meb.gov.tr/html/50.html .

Nash, D. (2001). Enter the mentor. *Parenting for High Potential*, 12, 18-21.

Neber, H. & Schommer-Aikins, M. (2002). Self-regulated science learning with highly gifted students: the role of cognitive, motivational, epistemological, and environmental variables. *High Ability Studies, 13*(1), 59-74

O'Neill, D.K. (1998). Engaging science practice through science practitioners: Design experiments in K-12 telementoring. Doctoral dissertation, North Western University.

O'Neill, K., Weiler, M. & Sha, L. (2005). Software support for online mentoring programs: A research-inspired design. *Mentoring and Tutoring, 13*(1), 109-131.

Ozdemir, T.Y. (2012). *E-mentoring model for maintaining the provincial education inspectors and assistant inspectors? professional development.* Doctoral Thesis. Educational Sciences Institute. Fırat University. Elazig, Turkey.

Pintrich P.R., De Groot E.V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology,* 82(1),33-40

Reis, S.M. & Rezulli, J.S. (1978). Using curriculum compacting to challenge the above-average. *Educational Leadership*, 59(2), 51-57.

Renzulli, J. S. (1977). *The Enrichment Triad Model: A guide for developing defensible programs for the gifted and talented*. Mansfield Center, CT: Creative Learning Press.

Robinson, A., Shore B. M., & Enersen, D. L. (2007). *Best practices in gifted education: An evidence-based guide.* Waco, TX: Prufrock Press.

Sak, U. (2009). *Üstün yetenekliler eğitim programları. Üstün zekalı ve üstün yetenekli öğrencilerin eğitimlerinde model bir program*. Maya Akademi Yayıncılık: Ankara.

Sak, U. (2010). *Üstün zekalılar özellikleri tanılanmaları ve eğitimleri*, Maya Akademi, Ankara.

Sak, U. (2011). An overview and social validity the education programs for talented students model (EPTS). *Education and Science.* 36(161), 1-17.

Scandura, T. A. (1998). Dysfunctional mentoring relationships and outcomes. *Journal of Management,24*(3), 449-467.

Siegel, D. (2003). Mentors on the net: Extending learning through telementoring. *Gifted Child Today, 26*(4), 51-54.

Siegel, D. (2005). *Developing mentorship programs for gifted students*. TX: Prufrock Press, Inc.

Stake, J.E. & Mares, K, R. (2001). Science enrichment programs for gifted high school girls and boys: predictors of program impact on science

confidence and motivation. *Journal of Research in Science Teaching.* 38(10), 1065-1088.

Tomlinson, C.A., Kaplan, S.N., Renzulli, J.S., Purcell, J., Leppien, J. & Burns, D. (2002). *The parallel curriculum: A design to develop high potential and challenge high-ability learners.* Thousand Oaks, CA: Corwin Press.

Tortop, H.S. (2012). Radical acceleration in educational process of highly gifted students and the situation Turkey. *Higher Education and Science.* 2(2), 106-113.

Tortop, H.S. (2013a). Overview of a national science fair in Turkey from the focus on administrators', teachrs', students' view and quality of science projects. *Journal of Adiyaman University Social Science Institute.* 6(11), 255-308.

Tortop, H.S. (2013b). Science teachers' views about the science fair at primary education level. *Turkish Journal of Qualitative Inquiry*. 4(2), 56-64.

Tortop, H.S. (2013c). The education program for the gifted students' bridge with university (EPGBU). International Conference on Talent Development & Excellence. 25-28 September 2013. Antalya, Turkey.

Tortop, H.S. (2013d). Development of the self-regulation skills for science learning scale for students. Unpublished research document.

Uredi I. (2005). *The contributions of perceived parenting styles to 8th class primary school students' self-regulated learning strategies and motivational beliefs.* Unpublished Doctoral thesis. Yildiz Technical University, Social Sciences Institute. Istanbul, Turkey.

Van Tassel-Baska, J. & Wood, S.M. (2009). *The integrated curriculum model.* J.S. Renzulli, E.J. Gubbins, K.S. McMillen, R.D. Eckert & C.A. Little (Eds.), Systems and models for developing programs for the gifted and talented. Mansfield Center, CT: Creative Learning Press.

Van Tassel-Baska, J. (1998). Characteristics and needs of talented learners, In, Vantassel-Baska, J. (Ed), *Excellence in educating gifted and talented learners,* (3rd ed, 173-191), Love Publishing, Colorado.

Yang, Chia-Hsin (2001).The application of Internet teaching in grade 1–9 curriculum. *Taiwan Education*, 607, 2–9.