

E-MENTORING FOR PROFESSIONAL DEVELOPMENT OF PRE-SERVICE TEACHERS: A CASE STUDY

Assist. Prof. Dr. Mehmet KAHRAMAN

**Department of Computer Education and Instructional Technologies
Faculty of Education, Afyon Kocatepe University, Afyon, Turkey**

Assoc. Prof. Dr. Abdullah KUZU

**Department of Computer Education and Instructional Technologies
Faculty of Education, Anadolu University, Eskisehir, Turkey**

ABSTRACT

This study focused on supporting the professional development of information technologies pre-service teachers with e-mentoring approach. The e-mentoring program was conducted in four basic phases; preparation, matching, interaction and finalizing. In the study, the data were collected via researcher journals, semi-structured interviews held with the participants, focus-group interviews and reflection reports written at the end of the program. The collected data were analyzed with the software of Nvivo 8 and divided into themes for presentation. The duration and frequency of interactions and the communication tools preferred differed from one matching to another. In addition, the interactions revealed gains professional development in terms of such areas as sharing knowledge and experience, guidance and goal setting, knowing more about the university and adaptation, easily access to counseling, developing self-confidence, developing communication skills, social and affective support, keeping one's knowledge updated and reinforcement. It was seen that the e-mentoring program had positive influence on their professional development besides the formal education given to the participants. The e-mentoring program helped students, academicians and graduates share their knowledge and experience with each other and develop their social networks. The participants had the opportunity to view their career as a whole and received guidance regarding the career processes.

Keywords: E-mentoring, personal guidance, pre-service teachers, professional development

INTRODUCTION

The diversification of skills and knowledge needed in the academic, social and business life are rising expectations from educational institutions. As a result, discussions regarding how well traditional education can meet the postgraduate demands have led to new quests in educational institutions. The mentoring approach used historically to meet such demands and for individuals to develop their knowledge and skills in line with the goals they have set is in a developmental process as there is an increasing amount of research on this approach and still a hot topic (Headlam-Wells, Gosland & Craig, 2006; O'Connor et al., 2015). In this respect, the re-structured traditional mentoring can be regarded as a life-long learning approach that, as an electronic mentoring (e-mentoring), provides new opportunities and sources. It is important to question not just the extent to which individuals' needs and the information provided in class environment overlap each other but also, more importantly,

whether the information has been acquired starting from the moment it is needed. Such questioning, which allows investigating how the knowledge and experience that the individual has found necessary yet failed to acquire in an educational institution will be obtained, is associated with the importance of mentoring (Kuzu, Kahraman & Odabasi, 2012).

MENTORING

Throughout the history, mentoring has been called with different names and applied in a number of fields. Mentoring is not a new concept; on the contrary, it is as old as the history of mankind. All people are in need of an advisor whom they share their problems with and whose views they ask for when they are in a difficult situation. That advisor mentors with his or her behavior and words, transfers his or her experience giving confidence and sheds light on problems. Thus, it could be stated that the application of mentoring in developing oneself in our culture dates back to quite old times. The trainers of princes in the Ottoman period as well as the Atabegs in the period of Seljuqs used to do the job of today's mentors (Uyumaz, 2008).

In related literature, there is general acceptance regarding the positive contributions of mentoring applications to academic achievement, career development and personal development (Bierema & Merriam, 2002; Jacobi, 1991). Jacobi (1991) states that there is no common definition of mentoring, and the researcher, depending on the definition presented in literature, and makes a similar saying that defining mentoring is like a blind person's defining an elephant. Sharing knowledge and experience in the process of mentoring is important. Perchiazzi (2009) states that the mentoring process is associated with the processes of tutoring, coaching and psychological counseling and it is a term covering all these concepts. In this respect, mentoring could be regarded not only as a process of learning and development covering the processes of tutoring, coaching and psychological counseling but also as a way of sharing one's knowledge, skills and experience based on mutual trust in line with the personal and professional development goals of an individual.

E-mentoring

As a result of the integration of new technologies, e-mentoring is considered to be a flexible alternative (sometimes as complementary) besides the traditional face-to-face mentoring (de Janasz & Godshalk, 2013; Murphy, 2011; Shrestha, May, Edirisingha, Linsey & Burke, 2009; Single & Single, 2005). E-mentoring is also important because it allows sharing knowledge and experience independently of time and place and because it provides easy and different interaction methods free of social prejudices. E-mentoring not only removes the statute difference more easily but also provides flexibility regarding the response time and allows reaching more people when compared to face-to-face mentoring (Akin & Hilbun, 2007; Hunt, Powell, Little & Mike, 2013).

Electronic mentoring (e-mentoring) is also known as telementoring, cybermentoring, instant mentoring, distance mentoring, online mentoring or virtual mentoring. E-mentoring is conducted primarily with the use of electronic mail as well as with the use of other web-based and computer-aided tools. Clutterbuck & Lane (2004) state that effective application of e-mentoring requires computer literacy, appropriate computer equipment, internet access, effective communication skills, availability, arrangement of meetings, ensuring the privacy of the messages, willingness for feedback and establishing a sincere, honest and open environment.

E-mentoring is a newly-developing type of mentoring. Therefore, spread of beneficial applications will take time. In addition, there are problems experienced in matching the mentors with the mentees, in choosing the mentor and in maintaining the process (Poulsen 2013; Watson, 2006). In order to reach successful results in mentoring regarded as a process of solidarity and cooperation, interaction between individuals is essential and effective mentoring relationships are based on trust and trust is a key factor to successful mentoring (Kahraman, 2015). When viewed from this aspect, it could be difficult for parties to establish sincere and close relationships in the e-mentoring process. Therefore, e-mentoring is also applied as a support program in certain mentoring programs.

There are different options regarding the platform used for the e-mentoring module found in the center of the formal e-mentoring process. For this platform, where the e-mentoring process is coordinated, where interaction is established and where records are kept, it is possible either to choose one of the present software or to develop a new one. Besides choosing the platform, it is also important how to manage the e-mentoring process. It is important to provide support for the problems to be experienced both with the software and with the mentoring process. Therefore, while choosing any software, not only the basic and necessary features but also the technical support to be provided for the best execution of the process with least problem should be taken into consideration (Kuzu, Perchiazzi & Kahraman, 2012).

E-mentoring is certainly not an economical alternative to face-to-face mentoring but should be regarded as a flexible approach. The reason is that besides the cost of management, preparation, matching and evaluation found in the process of face-to-face mentoring, we will have to cope with such additional expenses of software and web-cost in the e-mentoring process. E-mentoring should be considered to be a cooperative learning approach that allows just-in-time, just-enough, just-for-you and synchronous or asynchronous sharing of knowledge and experience.

THE PROFESSION OF TEACHING AND PROFESSIONAL DEVELOPMENT

In our country, The Council of Higher Education has made education faculties responsible for teacher training. Professional development includes the processes that support the development of professional knowledge, skills, values and attitudes. Students, school administrators as well as parents will benefit from the developing professional behavior of teachers. Professional development is a process that starts with the pre-service period and continues with the start of teaching and with the in-service teaching period. Successful teachers are individuals who learn life-long and refine their skills throughout their development and who learn and apply new methods (Kuzu, 2014; Odabasi & Kabakci, 2007).

Today, the qualifications expected from a teacher have changed parallel to such developments as globalization, cultural and linguistic variety and fast access to information. In this respect, Tutkun and Aksoyalp (2010) point out that teacher training in the 21st century should be given at a multicultural and international level. Thus, as a vital element of social development and change, a teacher should be trained in a way to become sensitive to all the problems around, to put forward solutions to the problems and to be in a productive position.

Face-to-face mentoring has been conducted for a long time as a solution regarding professional development (Boreen, Johnson, Niday & Potts, 2009; Moir, Barlin, Gless & Miles, 2009; Pitton, 2006; Podsen & Denmark, 2006; Portner, 2008; Shulman & Sato, 2006; Strong, 2008; Trubowitz & Robins, 2003). Today, there are different applications related to the e-

mentoring process, which starts with teachers' undergraduate years (Heirdsfield, Walker, Walsh & Wilss, 2008) and continues with their senior years at university (Knapczyk, Hew, Frey & Wall-Marencik, 2005) and with their first years in teaching (Gareis & Nussbaum-Beach, 2008; Villani, 2009). Studies on e-mentoring are applications developed for overcoming an important difficulty both in helping teachers continue their profession and in maintaining their professional development (Achinstein & Athanases, 2006; Gareis & Nussbaum-Beach, 2008, Klieger & Oster-Levinz, 2015). These applications allow fresh teachers to adapt themselves to the profession and help them find academic and social support (Heirdsfield, Walker, Walsh & Wilss, 2008).

RESEARCH METHOD

The present study, which focused on supporting the professional development of pre-service teachers with the help of the e-mentoring application, was designed as a holistic single-case study. The study was carried out in the department of Computer Education and Instructional Technologies at Anadolu University in the academic year of 2010-2011. In the study, commercial software was used as an e-mentoring platform. The software had a completely web-based structure.

Participants of the Study

The participants of the study were undergraduate students, postgraduate students and graduates from the department of Computer Education and Instructional Technologies at Anadolu University as well as volunteering academicians from the same department. The participants were determined with the purposeful sampling method. Together with the validity committee, the number of the users registered to the e-mentoring platform became 76. Of all the participants registered to the e-mentoring platform, 24 of them were mentors; 32 were mentees; and 16 were both mentors and mentees.

Data Collection Tools

In the research process, different data collection tools were used. These tools included researcher's journal, application form, the logs in the platform, the audio-records of the validity committee, audio-records of the semi-structured interviews, audio-records of the focus-group interviews and reflection reports.

Data Analysis and Interpretation

The data collected were analyzed with the content analysis method, one of the qualitative data analysis techniques. For content analysis, first, the data were organized. Following this, the data were read again to get an overall view, and the common themes were gathered. Finally, the themes were supported with sample quotations (Creswell, 2009). In the study, for the content analysis method, the qualitative data analysis package program of NVivo 8.0 was used.

FINDINGS

Findings Regarding the Expectations from the E-mentoring Program

When the data collected via the researcher's journals and via the participants' responses in the semi-structured interviews as well as their responses to the application form regarding the e-mentoring program were examined, such themes as sharing knowledge and experience, socialization, learning mentoring and guidance and academic and career development were obtained. And some insights for these findings are as follows below.

Sharing Knowledge and Experience

Sharing knowledge and experience was one of the overall expectations of the participants from the e-mentoring program who reported that besides theory, practical skills were also necessary in the profession of teaching. The participants stated that they would be able to learn more easily via the knowledge and experience of well-educated people and that they would thus develop themselves more rapidly with the help of such mentoring. It was pointed out that e-mentoring programs would remove certain limitations of face-to-face interaction and facilitate sharing knowledge and experience. According to the participants, the e-mentoring program would allow them to overcome the communication barriers that they were likely to encounter at any time of the day while trying to contact with people on face-to-face basis.

Academic and Career Development

The participants gave special importance to such subjects as receiving help during their academic development, receiving help with the selection of the courses and increasing the achievement level in courses. Another point important in academic development is related to the recent developments in computer software and equipment. In this respect, the participants reported that they were willing to learn computer package programs as well as such subjects as software-related programming, coding, graphic design and web-design. In addition, the participants gave special importance to career development and expressed their expectations regarding career development and post-graduate education. They also mentioned their willingness to get informed about scholarships. As an expectation, the participants who considered studying abroad wanted to be informed not only about Erasmus exchange programs but also about international scholarships.

Learning Mentoring and Guidance

Almost all the participants stated that they had never heard of the concept of mentoring and that they raised their awareness of this subject thanks to the program. In this respect, the participants reported that they wanted to develop their counseling and guidance skills within the scope of the e-mentoring application.

Socialization

The participants expressed their expectations regarding socialization and stated that especially certain out-of-class activities would be beneficial for their own development. In this sense, it was reported that meetings and symposiums would contribute to socialization as well as professional development. In addition, they also emphasized the need not only for sharing their happiness and sadness in their lives but also for receiving support regarding academic career and courses in the e-mentoring process.

When the expectations of the participants were examined, it was seen that their expectations differed in line with their special needs depending on their own situations. After determining the general and special goals of the e-mentoring program, the necessary arrangements should be made in a way to meet the demands and needs of the participants. As structured mentoring programs are arranged in line with the needs and expectations of participants and of the organization conducting the program, each mentoring program has its own originality.

Findings Regarding the Organization of the E-Mentoring Program

In the present study, while organizing the e-mentoring program, four phases were taken as basis: preparation, matching, interaction and finalizing. The preparation phase started with the related decision taken in November in 2009 and continued till the phase of matching carried out in February in 2011. A workshop on e-mentoring was organized on the 11th of

June in 2010 in the department of Computer Education and Instructional Technologies at Anadolu University. At the end of the workshop, participation certificates were given to all the participants in the workshop.

The most important component of e-mentoring is to choose an appropriate platform that will execute and manage the process. At the end of the examinations, commercial software was chosen as the e-mentoring platform. The participants were gathered in the seminar hall of the Education Faculty at Anadolu University on the 23rd of February in 2011, and they reported in writing to the coordinator whether they wanted to the role of a mentor or a mentee. In line with their demands, learning partnerships were conducted by the coordinator on the software.

As the semi-structured mentoring approach was used for the application, the general steps in the execution of the program were determined, and not much intervention was performed on the execution of the process. The management and coordination of the e-mentoring process were executed by the researcher and by the thesis supervisor. In addition, the suggestions put forward by the validity committee established following the matching phase were quite beneficial for the management.

The study continued till the end of the Spring Term in 2011. With the end of the courses, the participants were asked to write down their reflection reports to allow them to share their impressions and overall evaluations regarding the e-mentoring process. The reflection reports delivered by the participants provided important findings regarding the overall evaluation of the e-mentoring process.

Findings Regarding the Interactions in the E-Mentoring Process

Although there are a number of factors determining a productive interaction in the e-mentoring application, the most prominent among them is the appropriate learning partnership (matching) of the mentors and the mentees. The interaction that occurred between the phases of matching and finalizing was established with different communication tools in different environments.

Examination of the interactions of the information technologies pre-service teachers in the e-mentoring process revealed such dimensions as the duration and frequency of the interaction, the communication tools favored by the participants to communicate with each other and the solution to the time inconsistency. When the duration and frequency of the interactions of the participants in the e-mentoring program were taken into consideration, it was seen that there were cases specific to each matching. It could be stated that the mentors and the mentees interacted with each other when they needed.

The e-mentoring platform used included asynchronous communication tools based on a forum or e-mail. Therefore, the participants used such different communication tools as Facebook, MSN, Skype and mobile phone in each matching.

In addition, a majority of the participants stated that they wanted to establish face-to-face communication and that face-to-face communication was more effective in our culture. Some of the participants reported that they wanted as much face-to-face interaction as possible besides the electronic environment. The participants found it beneficial that the special interaction area provided for the mentor and the mentee by the e-mentoring platform helped them pursue their goals more easily.

One of the important advantages of the e-mentoring application was that it put forward a solution to the problem of time limitation. Especially out of the working hours and at weekends, the e-mentoring platform provided important opportunities for communication. In addition, the platform created an environment which allowed the participants to express their thoughts that they would abstain from doing so on face-to-face basis. The participants reported that they updated and reinforced their knowledge.

Findings Regarding the Gains from the E-Mentoring Program

The gains obtained from the e-mentoring program in terms of professional development and the findings obtained via the interpretation of the data are presented in Figure 1.

The gains obtained from the e-mentoring program in terms of professional development and the findings obtained via the interpretation of the data are presented in Figure 1.

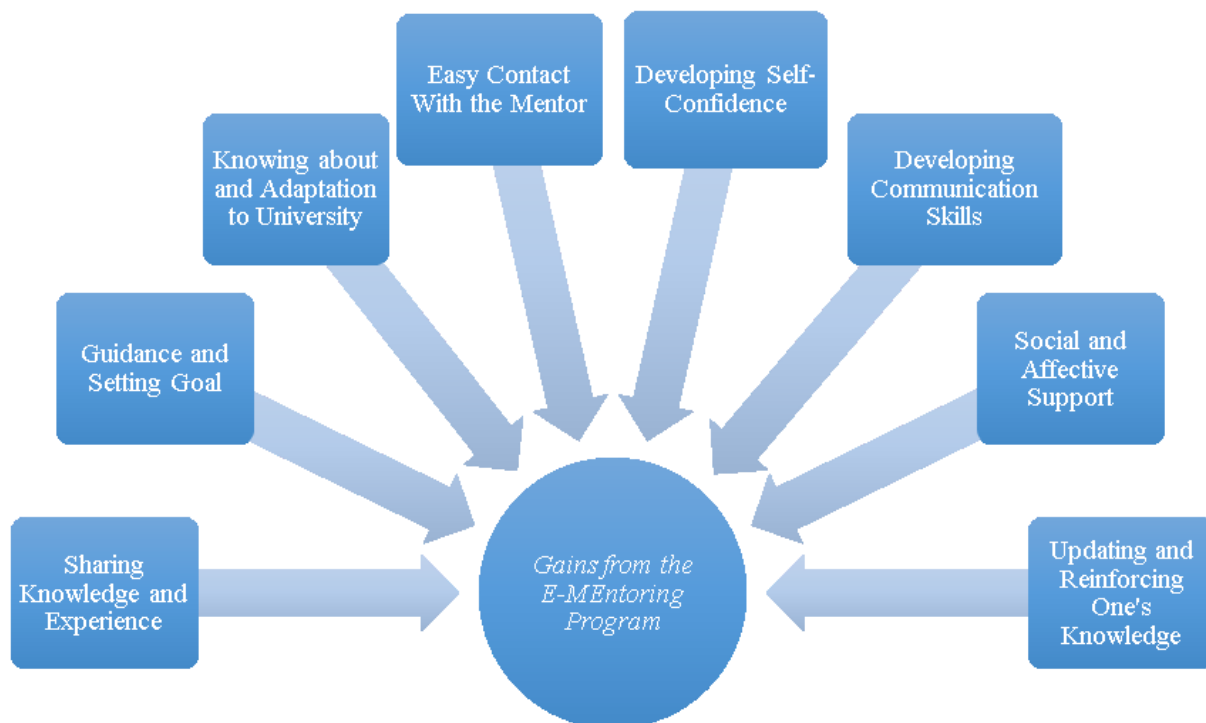


Figure: 1
Gains from the E-Mentoring Program

It was seen in the e-mentoring program that different subjects were raised regarding the professional development of the participants for each mentor-mentee matching in the interaction process. Some of these subjects could be said to be consistent across all the participants. Especially in common forum areas, all the participants shared regarding different subjects in line with their own interests and hobbies especially in common forum environments. These sharing helped create a pool of information within the department.

The fact that the participants in the program were those ranging between freshman students and academicians from different career steps allowed the students and the teachers as well as the academicians to share their knowledge and experience. The e-mentoring program increased the interaction between the classes in the department. In addition, this interaction facilitated the adaptation process of the new-comers to the department. The e-mentoring

application was reported to make it possible to create a more productive environment for the counseling system executed at universities.

Feedback was also provided regarding the fact that the participants had two-way interactions in the e-mentoring process. The e-mentoring platform led to one-on-one socialization between the mentor and the mentee and created an environment which both the graduates and academicians contributed to.

Findings Regarding the Difficulties Experienced

When the difficulties and problems experienced in the e-mentoring program were examined, it was seen that there were different aspects with respect to the researchers/organization, mentors and mentees. When viewed from the perspective of organization or of coordination, some of the difficulties were experienced as the researchers not only organized and coordinated the process but also executed the research process. Therefore, undertaking the responsibilities of a group in many mentoring programs has always become a difficulty going on throughout the process.

Choosing software for the e-mentoring platform constituted an important problem. Initially, the Docebo learning management system was preferred as the software. It was seen in the preparation phase that the software would not be sufficient to support the process. For this reason, commercial software was chosen as the e-mentoring platform. However, various problems and difficulties were experienced regarding this software in time.

The language of the platform was one of the prominent difficulties experienced by the participants regarding the software used as the e-mentoring platform. The most important aspect of the e-mentoring software was that it was web-based commercial software developed especially for the e-mentoring process. However, it did not support any other language except for English. The initial intention was to adapt it into Turkish, yet it was seen as a result of the correspondences with the related firm that this adaptation would not be possible in a short time. Depending on the fact that such programs as Flash, Photoshop and other similar programs used in courses in the department of Computer Education and Instructional Technologies supported only English Language, the software was used as it was. Although the participants liked the sub-structure of the software used, they suggested it to be conducted via Facebook for easier access. The messages sent for warning or information purposes regarding the interaction in the e-mentoring platform had positive influence on some of the participants, while some other participants found these scripted messages irritating.

Due to the technology dimension of the e-mentoring program, its application in the department of Computer Education and Instructional Technologies was thought to facilitate the e-mentoring process. However, the difficulty experienced by the participants in using the platform did not confirm this thought.

The fact that the most critical phase of mentoring was the phase of matching and that there was on-going search for best-matching was one of the most important difficulties experienced by the researchers. In order to overcome this difficulty, first, the participants were given a detailed application form to obtain information about them. There were different options regarding how to do the matching. Matching conducted by coordinators in line with the application forms in hand is a favored method in such formal mentoring applications. It could also be preferable for mentees to choose from the pool of mentors or for mentors to choose from the pool of mentees. Moreover, it is also possible for the software to do the matching in line with the profile information about the participants within the

system. As the semi-structured mentoring approach was preferred, the participants were gathered at the beginning of the Spring Term in 2011, and the participants were asked for their views about the matching. Following this, those who wanted the role of a mentor or of a mentee reported their demand to the coordinator in writing. In line with their demands, the learning partnerships were conducted by the coordinator via the software. The expectation that the participants would demand the same mentor and that their preferences overlapped one another caused difficulties in meeting the demand during the matching.

In addition, at the meeting, it was not possible to match all the participants. Besides those who were some absent at the meeting, there were also others who failed to decide on their mentors. For a few weeks, the researchers contacted personally with those who were not matched. In this way, guidance was provided for appropriate selection of mentors and mentees. Despite all these, there were still participants who were not matched in the system.

Another subject was the mentoring model to be applied. At the beginning, the intention was to conduct one-on-one peer mentoring. However, during the on-going process, besides the one-on-one peer mentoring, gradual mentoring was conducted as well. In addition, as the mentoring program was applied for the first time, each mentee was asked to choose only one mentor.

When the difficulties experienced in the interaction process were examined specifically in each matching, it was seen that individuals with a different cultural structure had different reflexes against the same application. The expectation differences between the mentors and the mentees influenced the interactions negatively. Another subject to consider is that we start a number of activities emotionally in a social sense and then lose our necessary motivation.

When the e-mentoring program was evaluated in general, one of the difficulties experienced was seen to be related to contacting with the participants. For communication with the participants, the e-mentoring platform announcements, the private-messaging system of the platform and the e-mail account of mentor.empower@gmail were used. Moreover, in cases when these messages were not replied to, SMS and phone were used. During the interviews held with the participants, it was seen that some of the participants had difficulty accessing the Internet. It was also observed that some of the participants did not check their e-mail accounts for more than a week and did not log in the platform.

Although mentoring programs are shaped based on a certain need, it is important to maintain the process. However, the mentoring process is a dynamic process based on human relationships. In this process, it is difficult to raise the necessary consciousness and to maintain this consciousness. However much deficiency the program organized has, it is essential for participants to be willing to take active role.

DISCUSSION

Mentoring is a social learning method as old as the history of mankind. Today e-mentoring through the use of new synchronous and asynchronous communication tools is still a means for professional development. Establishing effective mentoring programs maximize the teaching and learning opportunities in and out of formal education. This research is an attempt as a semi structured e-mentoring program for professional development of pre-service teachers.

As Klieger & Oster-Levinz, (2015) state a mentoring program influenced by the expectations of schools, teacher education institutions as well as student teachers. Accordingly before starting the e-mentoring program expectations of parties are specified by the participants' responses with the interviews. And as a result regarding the expectations from the e-mentoring program *sharing knowledge and experience, socialization, learning mentoring and guidance, academic and career development* were obtained. de Janasz & Godshalk (2013) clarified that the satisfaction in formal mentoring programs may be due to expectations at the start of the e-mentoring. Thus mentoring process is require mutual expectations of each other (Poulsen, 2013). For this reasons it may be considered to look for comprehensive expectations of organization, mentees and mentors and all involved parties for the future works.

In total there are many gains from the e-mentoring program as *guidance and setting goal, adaptation to university, developing self-confidence, developing communication skills, social and affective support, updating and reinforcing one's knowledge*. Some of these gains are not the case in every partnership. Such as *adaptation to university* is the case for just the junior mentees. The *social and affective support* finding is coherent with Desimone et al., (2014) emotional support for novice in-school and out-of-school environments.

In addition, our findings have highlighted the fact that the interaction occurred between the phases of matching and finalizing was established with different communication tools in different environments. And we identified that the mentors and the mentees were interacted with each other when they needed. This supports previous research results with Son & Kim (2013) that interactions are developmental and mutually beneficial for partnerships.

Also the results of our study suggest that the mentoring process is a dynamic process based on human relationships. As structured mentoring programs are arranged in line with the needs and expectations of participants and of the organization conducting the program, each mentoring program has its own originality. Thus this supported by Kemmis, Heikkinen, Fransson, Aspfors, & Edwards-Groves (2014) with their examination of quite different practice architectures in the form of different material-economic, social-political and cultural-discursive arrangements.

During the e-mentoring program also some difficulties experienced. Specifically in each matching; it was seen that individuals with a different cultural structure had different reflexes against the same application. This is supported Shpigelman, C.-N., & Gill, C. J. (2013) view; as mismatch within the dyad, in which one or both parties mismatch in values, work styles, and/or personality.

The findings of this study are not generalizable, the perspectives and experiences emerged may be transferable to similar situations and similar settings.

CONCLUSION AND SUGGESTIONS

Due to the new technological developments, the current understanding of education makes out-of-class learning and life-long learning increasingly necessary. It is considered by field experts to be important to have a mentor for such reasons as supporting individuals' personal and professional development, guiding their career and helping them adapt to new environments (Kuzu & Akbulut, 2013).

The program has become a beneficial support system in which mentors transfer their knowledge and experience to mentees and in which mentees can increase their readiness levels following their university education. In addition, it was also observed that sharing starting with this process will transform into lasting friendships.

Information technologies pre-service teachers are supposed to have to make continuous professional development necessary parallel to the developments in the field of computers. Teachers' professional development applications are regarded as a continuous, infinite process open to change and development.

It is possible to overcome the problems and difficulties regarding the e-mentoring program. However, in contexts where human relationships are important, it should be remembered that one could encounter with different problems and difficulties. In general, it could be stated that the e-mentoring program raised awareness of the subject in the department. Maintaining the program for long years is thought to be beneficial for all parties.

Teachers' professional development applications should be regarded as a process open to continuous development, and appropriate arrangements should be taken into consideration in the e-mentoring process. Structured face-to-face mentoring studies in Turkey have remained limited. Today, especially the web-based online learning environments have become varied, and search for effective use of these environments has increased. Parallel to these developments, it could be stated that studies on e-mentoring will be one of the subjects that researchers will get engaged with for a long time.

Authors' Note: This paper is based on the first author's PhD dissertation at the Anadolu University in Turkey.

BIODATA and CONTACT ADDRESSES of the AUTHORS



Mehmet KAHRAMAN, Ph.D. is an assistant professor in Computer Education and Instructional Technologies Department at Afyon Kocatepe University Afyonkarahisar, Turkey. He received his PhD in Computer Education and Instructional Technologies from Anadolu University in 2012. He has managed the EU Education & Training projects since 2004. He involved in opening of ECDL Test Centers and holds relevant computer certificates. His research interests are e-learning, 21st century skills, distance education, project-based learning, digital fluency and e-mentoring.

Assist. Prof. Dr. Mehmet Kahraman
Afyon Kocatepe University,
Faculty of Education,
Department of Computer Education and Instructional Technologies,
ANS Campus, Afyonkarahisar, TURKEY
Phone: +90 272 246 33 12 ext: 20380
Mobile: +90 505 821 90 15
E-mail : kahraman@aku.edu.tr



Abdullah KUZU, PhD. is an associate professor in Computer Education and Instructional Technologies Department at Anadolu University Eskişehir, Turkey. He received his PhD in Computer Education and Instructional Technologies from Anadolu University in 2005. He conducted action research projects on online learning and offers courses on qualitative research design and multimedia learning. His studies resulted in many articles and multiple chapters in published books. He is currently manager, researcher and adviser in a number of projects focused on e-mentoring, computational thinking, STEM and robotic use in educational settings.

Assoc. Prof. Dr. Abdullah KUZU
Anadolu University
Faculty of Education
Department of Computer Education and Instructional Technologies,
Yunusemre Campus, Eskişehir, TURKEY
Phone: +90 222 335 05 80 ext: 1925
Mobile: +90 505 401 29 40
E-mail : akuzu@anadolu.edu.tr

REFERENCES

- Achinstein, B., & Athanases, S.Z. (2006). *Mentors in the making: Developing new leaders for new teachers*. New York: Teachers College Press.
- Akin, L., & Hilbun, J. (2007). E-mentoring in three voices. *Online Journal of Distance Learning Administration*, 10(1). Retrieved from <http://www.westga.edu/~distance/ojdl/spring101/akin101.htm>.
- Bierema, L. L., & Merriam, S.B. (2002). E-mentoring: Using computer mediated communication to enhance the mentoring process. *Innovative Higer Education*, 26(3), 211-227.
- Boreen, J., Johnson, M. K., Niday, D., & Potts, J. (2009). *Mentoring beginning teachers: Guiding, reflecting, coaching*. York, Maine: Stenhouse.
- Clutterbuck, D., & Lane, G. (2004). *The situational mentor*. Aldershot: Gower Publishing.
- Creswell, J. W. (2009). *Research design*. California: Sage Publications.
- de Janasz, S. C., & Godshalk, V. M. (2013). The Role of E-Mentoring in Proteges' Learning and Satisfaction. *Group & Organization Management*, 38(6), 743–774.
- Desimone, L. M., Hochberg, E. D., Porter, A. C., Polikoff, M. S., Schwartz, R., & Johnson, L. J. (2014). Formal and Informal Mentoring: Complementary, Compensatory, or Consistent? *Journal of Teacher Education*, 65(2), 88–110.
- Gareis, C. R., & Nussbaum-Beach, S. (2008). Electronically mentoring to develop accomplished professional teachers. *Journal of Personnel Evaluation in Education*, 20(3), 227–246.
- Headlam-Wells, J., Gosland, J., & Craig, J. (2006). Beyond the organisation: The design and management of e-mentoring systems. *International Journal of Information Management*, 26, 372–385.

- Heirdsfield, A. M., Walker, S., Walsh, K., & Wilss, L. (2008). Peer mentoring for first year teacher education students: the mentors' experience. *Mentoring & Tutoring: Partnership in Learning*, 16(2), 109-124.
- Hunt, J. H., Powell, S., Little, M. E., & Mike, A. (2013). The Effects of E-Mentoring on Beginning Teacher Competencies and Perceptions. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children*, 36(4), 286-297.
- Jacobi, M. (1991). Mentoring and undergraduate academic success: A literature review. *Review of Educational Research*, 61(4), 505-532.
- Kahraman, M. (2015). *Key points for developing trust in e-mentoring*. Abstract book of the II. International Dynamic, Explorative and Active Learning (IDEAL) Conference, 69, Amasya University, Turkey
- Kemmis, S., Heikkinen, H. L. T., Fransson, G., Aspors, J., & Edwards-Groves, C. (2014). Mentoring of new teachers as a contested practice: Supervision, support and collaborative self-development. *Teaching and Teacher Education*, 43, 154-164.
- Klieger, A., & Oster-Levinz, A. (2015). The influence of teacher education on mentor teachers' role perception in professional development schools. *Journal of Education for Teaching*, 41(2), 115-127.
- Knapczyk, D. R., Hew, K. F., Frey, T. J., & Wall-Marencik, W. (2005). Evaluation of online mentoring of practicum for limited licensed teachers. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children*, 28(3-4), 207-220.
- Kuzu, A., Perchiazzi, M., & Kahraman, M. (2012). *Elektronik mentorluk platformlari [Electronic mentoring platforms]*. Abstract book of the 6th International Computer & Instructional Technologies Symposium, s. 265, Gaziantep, Turkiye.
- Kuzu, A., Kahraman, M., & Odabasi, H. F. (2012). E-Mentoring: A New Approach in Mentoring. *Anadolu Universitesi, Sosyal Bilimler Dergisi*, 12(4), 173-183.
- Kuzu, E. B. (2014). Bilisim teknolojileri ogretmen adaylari arasinda cevrimici sosyal aglari ogretim amacli kullanimi [Use of online social networks for educational purposes among pre-service IT teachers] (Unpublished doctoral dissertation). Graduate School of Educational Sciences, Anadolu University, Turkey.
- Kuzu, E. B., & Akbulut, Y. (2013). Use of online social networking sites among pre-service information technology teachers. *World Journal on Educational Technology*, 5(3), 358-370.
- Moir, E., Barlin, D., Gless, J., & Miles, J. (2009). *New teacher mentoring: Hopes and promise for improving teacher effectiveness*. Cambridge: Harvard Education Press.
- Murphy, W. M. (2011). From E-Mentoring to Blended Mentoring: Increasing Students' Developmental Initiation and Mentors' Satisfaction. *Academy of Management Learning & Education*, 10(4), 606-622.
- O'Connor, R., DuBois, D., Bowes, L., O'Connor, R., DuBois, D., & Bowes, L. (2015). E-Mentoring for Improving the Career Planning of Youth (15-24): A Systematic Review. Retrieved from <http://campbellcollaboration.org/lib/project/351>

- Odabasi, H. F., & Kabakci, I. (2007). *Ogretmenlerin mesleki gelismelerinde bilgi ve iletisim teknolojileri [The significance of information and communication technologies in professional development of teachers]*. Uluslararası Ogretmen Yetistirme Politikaları ve Sorunları Sempozyumu Bildiriler Kitabı, s. 39-43, 12-14 Mayıs 2007, Baku: Azerbaycan.
- Perchiazzi, M. (2009). *Apprendere il mentoring. manuale operativo per la formazione dei mentor*. Massa-Italya: Transeuropa.
- Pitton, D. E. (2006). *Mentoring novice teachers: Fostering a dialogue process*. Thousand Oaks, California: Corwin Press.
- Podsen, I. J., & Denmark, V. M. (2006). *Coaching & mentoring first-year and student teachers*. Larchmont, NY.: Eye on Education.
- Portner, H. (2008). *Mentoring new teachers*. Thousand Oaks, California: Corwin Press.
- Poulsen, K. M. (2013). Mentoring programmes: learning opportunities for mentees, for mentors, for organisations and for society. *Industrial and Commercial Training*, 45(5), 255–263.
- Shpigelman, C.-N., & Gill, C. J. (2013). The Characteristics of Unsuccessful E-Mentoring Relationships for Youth with Disabilities. *Qualitative Health Research*, 23(4), 463–475.
- Shrestha, C. H., May, S., Edirisingha, P., Linsey, T., & Burke, L. (2009). From face-to-face to e-mentoring: Does the "e" add any value for mentors? *International Journal of Teaching and Learning in Higher Education*, 20(2), 116-124.
- Shulman, J. H., & Sato, M. (2006). *Mentoring teachers toward excellence: Supporting and developing highly qualified teachers*. San Fransisco: Jossey-Bass Publications.
- Single, P. B., & Single, R. M. (2005). E-mentoring for social equity: Review of research to inform program development. *Mentoring & Tutoring: Partnership in Learning*, 13(2), 301-320.
- Son, S., & Kim, D.-Y. (2013). What Makes Proteges Take Mentors' Advice in Formal Mentoring Relationships? *Journal of Career Development*, 40(4), 311–328.
- Strong, M. (2008). *Effective teacher induction and mentoring: assessing the evidence*. New York: Teachers College Press.
- Trubowitz, S., & Robins, M. P. (2003). *The good teacher mentor: setting the standard for support and success*. USA: Teachers College Press.
- Tutkun, O. F., & Aksoyalp, Y. (2010). 21. yüzyılda öğretmen yetistirme eğitim programının boyutları [Dimensions of teacher training curricula in the 21st Century]. *Selcuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 24, 361-370.
- Uyumaz, E. (2008). *Türkiye Selcuklu Devleti'nde atabeglik muessesesi [Institution of the atabeg in the Turkish Seljuk State]*. Retrieved from <http://www.turkleronline.net/turkler/makaleler/atabeglik.htm>
- Villani, S. (2009). *Comprehensive mentoring programs for new teachers*. California: Corwin Press.
- Watson, S. (2006). Virtual mentoring in higher education: teacher education and cyber-connections. *International Journal of Teaching and Learning in Higher Education*, 18(3), 168-179.