THE USE OF ICT TOOLS IN E-MENTORING: A CASE STUDY

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ABSTRACT

This is a case study designed with qualitative research pattern. It investigated the use of information and communication technologies in the e-mentoring process. The study group consisted of 44 undergraduate students as mentees and 8 graduate students as mentors. The program was carried out in group mentoring model in which graduate students were appointed as e-mentors for the undergraduate students for developing multimedia projects. The study data were collected using the project reports prepared by mentors and mentee groups, system logs of the interaction areas, observational notes of the researcher, and written forms seeking opinions of the mentees about the process. The data collected with different instruments were analysed with separate content analysis. It was found out that e-mail, social networking, phone conversations, SMS, instant mobile messaging applications, online storage, online documents, blog, LMS and teleconference technologies were utilized to provide interaction in the e-mentoring process. Among those, instant messaging and social networking sites proved the most effectively used ones, which the participants are also accustomed to in their daily lives. Most of the participants found the ICT tools used sufficient for interaction in the process. Still, some mentors and mentees stated that face-to-face interactions should also take place in the e-mentoring process.

Keywords: **E-mentoring, group mentoring, mentor, mentee, ICT tools, interaction.**

INTRODUCTION

Today understanding of education requires acquisition of knowledge through experience, not ready presentation of it. In today's setting, the need has emerged to create environments that enable learners to learn by doing and living. In such learning environments, mentoring practices are seen to become increasingly widespread. Mentoring means training and counselling of a relatively less experienced and competent person on occupational and personal development by a more experienced and skilled one (Anderson & Shannon, 1988). In this context, the person who is experienced is called 'mentor', and the less experienced person is called 'mentee' (Singh, Bains, & Vinnicombe, 2002; Jacobi, 1991). Related studies reveal that the term mentor is recognized in the international literature; on the other hand, the term mentee is replaced with alternatives such as apprentice, protege, or student at times (Kahraman, 2012). According to Ismail and Arokiasamy (2007), the rationale for mentoring is extended by social constructivist learning theory. Landsberg (2015) states that mentoring is a role that includes guidance and counselling. Homitz and Wadia-Fascetti (2008) think that the main function of a mentor is to help learners reach their goals by means of the right questions leading to independent thinking, but not to feed them with knowledge.

It is known that classical mentoring practices whereby an experienced and specialized mentor provides individual counselling in a sharing, supporting and encouraging role date back to Greek mythology (Mueller, 2004). The history presents far more than few examples of those who paved the way for successors with their knowledge, skills and experience and who were educators and problem solvers. Socrates and Plato as well as Medici and

Michelangelo can be mentioned as examples of mentor-mentee pairs (Wright & Wright, 1987).

The use of information and communication technologies (ICT) in mentoring practices has led to changing of the classical mentoring and rising of the concept of electronic mentoring (e-mentoring) (Kahraman, 2012). Ensheret al. (2003) list the functions and roles of e-mentoring under five headings: (1) greater access, (2) reduced costs, (3) equalization of status, (4) decreased emphasis on demographics, and (5) a record of interactions.

In the literature, only e-mail is used for interaction in a considerable part of the studies (Rickard & Rickard, 2009; Shpigelman, Weiss, & Reiter, 2009; Burgstahler & Crawford, 2007; Watson, 2006) carried out with e-mentoring. However, there are some studies employing the technologies such as video conferencing (Li, Moorman, & Dyjur, 2010), electronic chat (Smith-Jentsch, Scielzo, Yarbrough, & Rosopa, 2008), and online forum (Gareis & Nussbaum-Beach, 2008) alone. In some other studies, more than one technology is used. For example; e-mail, web cam (video call) and telephone were used together by Jacobs, Doyle, and Ryan (2015) in the process of e-mentoring for the professional development of physicians. Moreover, in their study, Thompson, Jeffries, and Topping (2010) used LMS (form and online chat), e-mail and telephone. In another research (Heirdsfield, Walker, Walsh, &Wilss, 2008) conducting an e-mentoring program on adaptation of newcomers to the university, interaction was performed via web page, e-mail and telephone. In the study by Headlam-Wells, Gosland, and Craig (2006), a web site was developed in which various technologies can be used in e-mentoring. The web site features discussion areas, an online meeting environment and a messaging system. Also it has an internal e-mail system.

Today's ICT tools offer a number of alternatives that can be used to provide top-level interaction in e-mentoring (Hamilton & Scandura, 2003; Griffiths & Miller 2005). Hence, it is expected that research on selection of ICT tools suitable for e-mentoring and the conveniences and limitations of each tool will contribute to the relevant literature. Indeed, Kahraman (2012) points out the need for studies dealing with the use of synchronous and asynchronous ICT tools in the interaction of participants in e-mentoring programs with insight into the effectiveness of these technologies.

The present study focuses on the ICT tools preferred by mentors and mentees in the case of free choice of technology during an applied e-mentoring program. It was investigated which ICT tools were opted for by participants to interact with, how long and in what ways they were used within the framework of the study, and what views the participants had about those tools. To this end, it was attempted to find out answers to the following research questions:

In the process of e-mentoring;

- **What were the preferred ICT tools in first place to create common interaction areas, and what changes took place in the use of the tools during the rest of the process?**
- **What purposes were the ICT tools used for, and what views did the participants have regarding these tools?**

METHOD

This research was planned as a qualitative case study. This method was preferred as it is an eligible method for in-depth investigation (McMillan, 1996) and elaborating the details (Gall, Borg & Gall, 1996). The intention of this study was to find out what ICT tools were used as a means of interaction along with the duration and purpose of using those tools throughout the e-mentoring program, and to explore in depth the study participants' opinions regarding those technologies. It was not intended to fetch far to make a generalization from the results obtained.

Participants

The study group was selected using criterion sampling, which is one of the selection strategies under purposive sampling method, since it requires participants to meet certain criteria (Patton, 2014). In this research, the mentors were supposed to be enrolled in a graduate program related to ICT, while the mentees attended the same program at undergraduate level. In addition, the mentees were selected among those who had not taken any courses related to multimedia design before; however, the former was supposed to have taken courses in multimedia design at undergraduate level and to have successfully completed those courses. Besides, it was a requisite for the participants to interact with the researcher throughout the e-mentoring application. Bearing these criteria in mind, the participants were selected among the undergraduate students taking the 'Design and Development of Multimedia' course and graduate-level students taking the course 'Designing Interactive Content in Multimedia Learning' offered by the researcher herself. All of the students participated on a voluntary basis. As a result, 44 undergraduate students and another 8 graduate students enrolled in Computer Education and Instructional Technology (CEIT) program took part as mentees and mentors, respectively. The undergraduate students consisted of 21 females and 23 males. As for the graduate-level students, there were 3 females and 5 males.

During the study, the graduate students were in charge of e-mentoring their undergraduate peers to develop a multimedia project. Group mentoring model was used as it was necessitated for the project process. In that model, a mentor undertakes responsibility for more than one mentee (Crisp & Cruz 2009; Zachary & Fischler, 2009). Lastly, the researcher assumed the role of coordinator throughout the implementation.

Procedure

In the study, the e-mentoring program was implemented in a three-phase structure proposed by Single and Single (2005, p.310). Figure 1 displays the activities carried out during the planning, implementation, and evaluation of the program.

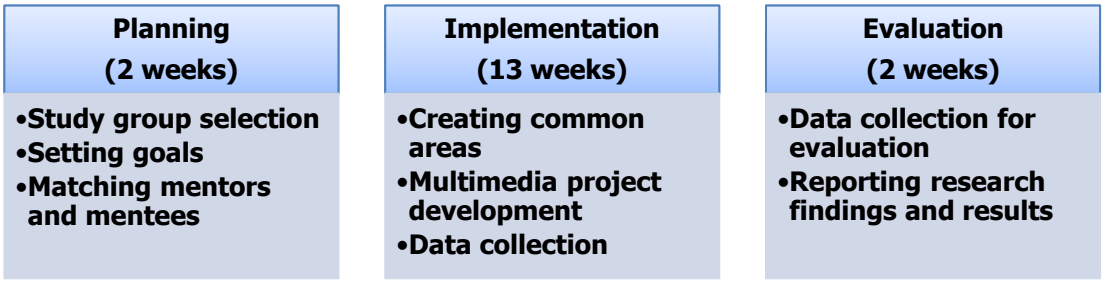

Figure 1. E-Mentoring Program Phases and Activities

The planning of the e-mentoring program lasted two weeks. In this period, the study group was selected first. The undergraduate students, mentees, and the graduate students, mentors, were given information about the e-mentoring program, and their expectations and recommendations were noted regarding the process. Then, the objectives were set accordingly. The objectives of the mentees were related to what kind of works, how and in what order the works would be undertaken while developing a multimedia project. On the other hand, the mentors were supposed to focus on how to coordinate a multimedia project and what qualities a good multimedia material would feature. At the end of the planning phase, the mentors and mentees were matched gradually. In the matching, initially the mentors formed groups of 3-4 people with the participants they had chosen themselves. Later, each group was asked to write a letter introducing themselves. In those letters, the members of the group included their names, contact information, their perceived strengths and weaknesses about the project development process, and their expectations from the e-mentors. The letters were given out to the mentors randomly. After examining the information about the group(s) selected by each mentor, some changes were made in the mentor-group matching. The changes were made according to an estimated extent to which the mentor could contribute, in the light of the reported talents and expectations of

the students in the group because the expectations of mentors and mentees must overlap with each other for successful mentoring (Eby & McManus, 2002). Final pairs of mentor-mentee are shown in Table 1.

Table 1. Mentor-Mentee (Group) Matching

Mentor	Gender	Program	Mentee Group
M1	Male	PhD	G1 (4mentees), G2 (3 mentees)
M2	Male	PhD	G3 (4 mentees)
M3	Male	PhD	G4 (3 mentees)
M4	Female	Master	G5(3 mentees), G6(3 mentees)
M5	Female	Master	G7 (3 mentees), G8 (3 mentees)
M6	Female	Master	G9 (4 mentees), G10 (3 mentees)
M7	Male	Master	G11 (4 mentees), G12 (4 mentees)
M8	Male	Master	G13(3 mentees)

As seen in Table 1, some mentors were counselling just one group while others were in charge of counselling for two groups, which was due to the full-time or non-working status of the mentors. For example, mentors M1, M2 and M8 are employed as teaching staff at university in other cities. So, M1 preferred to work with two groups, while the others said that they could help one group only. After completion of the planning phase, e-mentoring program was launched, and it lasted for 13 weeks. During this period, multimedia project work was carried out and interaction areas were formed among the co-ordinators, mentors and mentee groups. Kuzu, Kahraman, and Odabası (2012) argue that there should be three interaction areas in the e-mentoring process as the common area, the mentor's area and the mentee's area. The participants were not given any information about the technologies they could use to create an area of interaction because they had sufficient knowledge and skills to use ICT. Both mentors and mentees were set free to choose and use the technology that suits their needs. Information is given in Figure 2 about the persons, their roles and the areas of interaction in the e-mentoring program carried out in the study.

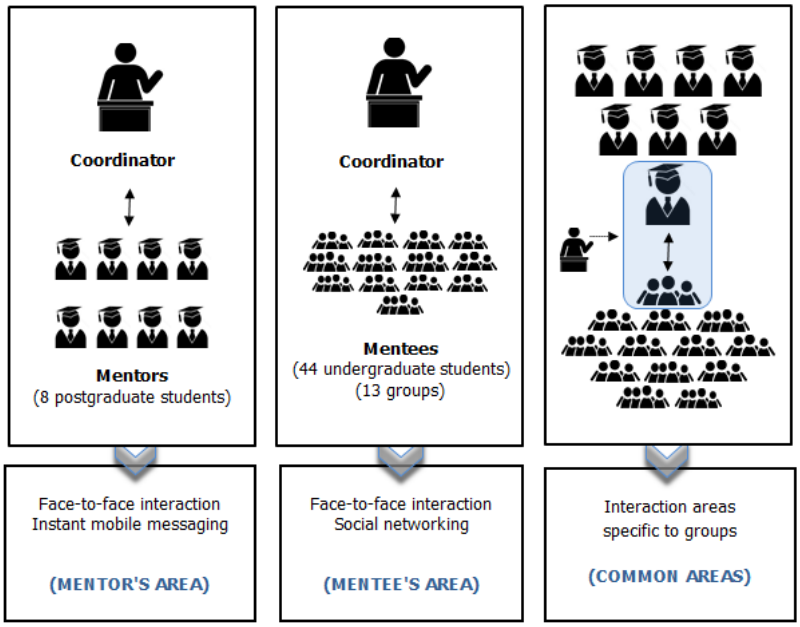

Figure 2. The roles and interaction areas in the e-mentoring program

Ozdemir and Ozan (2013) point out that mentors and mentees should be given frequent feedback in the process of e-mentoring based on the idea of development and learning. In reference to this, the coordinator researcher used the WhatsApp instant messaging application for mentors and the Facebook social networking site for the mentees to communicate outside face-to-face (FtF) interactions. The preferences of the mentors and

mentees were taken into account in the selection of these tools. After the mentor-mentee matching was done, the common areas were created. The researcher, who was involved in each of these common areas whereby interaction between the mentors and groups was provided, assumed observation only and collected data without any intervention. The data obtained during and after the implementation phase were analysed during the assessment phase, revealing the results of the e-mentoring program. This phase was completed in two weeks.

Data Collection

During the e-mentorship program, the coordinator was present in the same setting as mentors and mentees for a long time. Time and space-independent communication became available with the help of the interaction areas created in the study, apart from FtF interaction. As a result, a friendly relationship was built based on mutual trust between the coordinator and the participants including both mentors and mentees. It is known that accurate and complete answers might be provided for the data collection tools in such environments, which in turn improves validity of the research (Streubert & Carpenter, 2011). Also data triangulation was conducted to obtain more valid and reliable data in the study. In this type of triangulation, more than one data source is employed and the data obtained are compared with each other (Creswell, 2003). The data collection tools used in the research along with the respective sub-problems to which these tools served in seeking answer is shown in Figure 3.

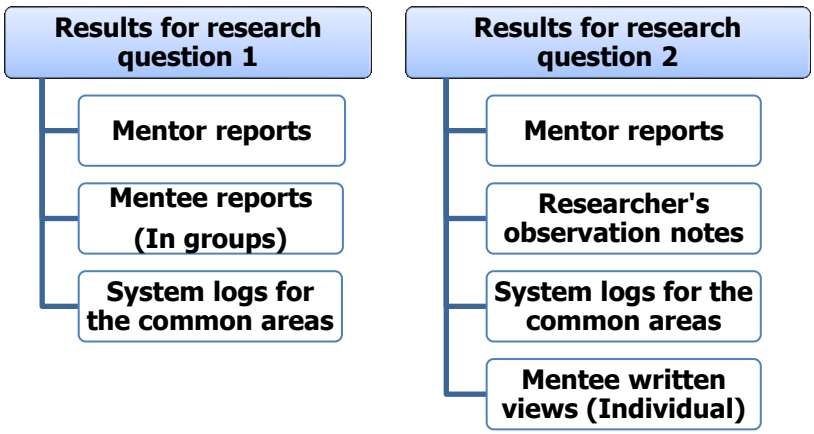

Figure 3. Data Collection Tools and Purposes of Use in the Study

Within the scope of the e-mentoring program, the multimedia project works were realized in accordance with the ADDIE design model steps. After each step, the mentee groups were asked to give a written report describing the work done at that step and to make an oral presentation about the report. In the same way, the mentors submitted a written report describing how they managed the project process after each step and made a summary presentation. The coordinator researcher also held FtF conversations with each of the mentors and mentees for an hour each week. During the conversations; the functioning of the e-mentoring process as well as the challenges and solutions were discussed. On the basis of these conversations and oral presentations, observational notes were kept by the researcher throughout the program for collecting data. In addition, system logs of each interaction area (coordinator-mentors, coordinator-mentees, mentor-mentees) created using ICT were used to this end. Moreover, opinions of the mentees were obtained in writing after the implementation. One form was completed by each respondent and the forms contained open-ended questions concerning the ICT tools used in common areas.

Data Analysis

Data analysis was performed with content analysis guided by the Miles – Huberman Model (Miles & Huberman, 1994). When each step of project development was complete; mentor reports, mentee reports, system logs, and observational notes were subjected to content

analysis. During the analysis; a code list was not formed at first. Instead, codes were reached in line with the concepts derived from the analysed data. The codings obtained with each of the data collection instruments were noted down separately and the results that could be applied to the same problem status were compared. The abovementioned simplification of the data was repeated periodically until completion of the data analysis process. On the contrary, analysis of the mentees' written feedback forms was launched with starting codes. The codes were classified into three groups as sufficient, partially sufficient and insufficient ICT tools used by mentees. However, the latter was not included as a theme in results because there were found no codes associated with insufficient tools. Coding was done manually throughout the whole data analysis operation instead of employing any software developed to this end. Apart from that, the results of the analysis were tabulated, also displaying occasional quotations from reports and written forms.

FINDINGS

This part is devoted to the study results in order of the research questions.

ICT Tools Used to Create Common Areas and Their Use during E-mentoring

The study data including the mentor reports, mentee reports and system logs of the common areas were analysed separately and compared to each other. As a result, it was figured out what ICT tools were preferred by mentors and mentees for interaction and how their preferences changed during the process. The ICT tools which were used even only once were also included in evaluation. The ICTs used are presented in Table 2 below by following the steps of the project.

Table 2. ICT Tools Used to Create Common Areas and Their Use during E-Mentoring

		Phases of project/ Common areas			
Mentor	**Group**	**Analysis**	**Design**	**Development**	**Implementation & Evaluation**
M1	**G1**	**E-mail** **Social Networking**	**Social Networking**	**Social Networking**	**Social Networking**
	G2	E-mail Social Networking	Social Networking	Social Networking	Social Networking
M2	**G3**	**FtF Interaction** **E-mail** **Social Networking** **Phone conversation** **Instant Messaging**	**FtF Interaction** **Social Networking** **Phone conversation** **Instant Messaging**	**Social Networking** **Instant Messaging**	**Social Networking** **Instant Messaging**
M3	G4	FtF Interaction E-mail Social Networking Instant Messaging	FtF Interaction E-mail Social Networking Instant Messaging	FtF Interaction E-mail Instant Messaging	FtF Interaction E-mail Instant Messaging
M4	**G5**	**FtF Interaction** **E-mail** **Instant Messaging** **Online Storage** **LMS** **Teleconference**	**FtF Interaction** **Phone conversation** **SMS** **Instant Messaging** **Online Storage**	**FtF Interaction** **Instant Messaging** **Online Storage**	**FtF Interaction** **Instant Messaging** **Online Storage**
	G6	FtF Interaction E-mail Instant Messaging Online Storage LMS Teleconference	FtF Interaction Social Networking SMS Instant Messaging Online Storage	FtF Interaction Instant Messaging	FtF Interaction Instant Messaging

M5	**G7**	**E-mail Phone conversation Instant Messaging Online docs**	**E-mail Instant Messaging Online docs**	**Instant Messaging**	**Instant Messaging**
	G8	E-mail Instant Messaging Online docs	FtF Interaction E-mail Instant Messaging Online docs	Instant Messaging	Instant Messaging
M6	**G9**	**E-mail Social Networking Instant Messaging**	**E-mail Social Networking Instant Messaging**	**E-mail Social Networking Instant Messaging**	**E-mail Social Networking Instant Messaging**
	G10	E-mail Social Networking Instant Messaging	E-mail Social Networking Instant Messaging	E-mail Instant Messaging	E-mail Instant Messaging
M7	**G11**	**E-mail Social Networking Blog**	**E-mail Social Networking**	**Social Networking**	**Social Networking**
	G12	E-mail Social Networking Blog	E-mail Social Networking	Social Networking	Social Networking
M8	**G13**	**FtF Interaction Instant Messaging**	**FtF Interaction Social Networking Phone conversation**	**Social Networking Phone conversation**	**Social Networking Phone conversation**

Table 2 shows that the common areas for interaction were created by means of 11 different tools during the first project phase, analysis namely. The variety seems to have gradually decreased in the following phases; leading to the use of 8 different tools in the design phase, 7 in development, and 6 in the implementation and evaluation phase. At the stage where the first interaction occurred between the groups and their mentors, more than one tool was seen to be involved. It was observed that each mentor made interaction with their group(s) using at least two types of ICT tools. For instance, M4 used five different tools in addition to FtF interaction. It is seen that at this stage, all of the mentors except for M8 and all of the 12 groups of mentee used e-mailing. With the use of instant messaging, 9 common areas were created and another 8 areas of interaction with social networking. It seems that social networking became the most popular tool in the design phase. The applications such as instant messaging and e-mailing seem to be the most prominent technologies at this stage. In the next stage, development, mobile messaging and social networking seem to be the most frequently used tools. At this stage, the mentors used up to three different areas of interaction. Lastly, at the implementation and evaluation stage, all of the mentors continued to use the same common areas and ICT tools as in the previous phase.

Purposes of Using ICT and Thoughts on the ICT Tools Used

The mentor reports, the researcher's observation notes, and the system records of the common areas of interaction were analysed at once. In this way, the themes were elicited regarding purposes of FtF interaction and using ICT tools throughout the e-mentoring project. It was found out that some of the mentors preferred FtF interaction, while some others did not make any interaction with their groups except via the electronic interaction areas they created using ICT throughout the e-mentoring. It seems that the latter mentors made one-to-one interactions for the sake of initial communication, giving information and coordination. Opinions of some mentors on this subject are given below.

> **M2: *"We made face-to-face talks because I thought the interaction in the virtual environment would not take the place of the real life interaction."***
> ***M3: "It was important to speed up the process, coordinate the group members and ensure seriousness."***
> ***M8: "There are many technologies that can be used for communication and interaction in the electronic environment. However, I think that it is***

better to not only interact via these but also converse face to face, it would be more useful to provide a mixed interaction environment."

Table 3 displays the purpose of using different ICT tools in the process and some mentors' opinions on the tools used.

Table 3. Purposes of Using ICT Tools Throughout the E-Mentoring Program

ICT tool	Purpose of use	Sample views
E-mail	➢ First contact ➢ Sending files	"I contacted both groups via e-mail. Generally, reports and documents were sent." (M6) "I first communicated with my groups via e-mail. Greeting and first communication occurred this way." (M7)
Social networking	➢ First contact ➢ Giving information ➢ Coordination ➢ Sending files Sharing files	"We have never been disconnected thanks to both the desktop and the mobile app. Continuous interaction was provided thanks to instant notifications. It was a highly effective tool because it supports file, picture, and video sharing." (M1) "It proved our most effective means of communication. I created separate social networking groups for both of my groups. They could contact me easily and promptly when they had questions." (M7)
Phone conversations	➢ Instant communication ➢ Access without Internet	"When group members wanted to contact me immediately, we preferred a phone call. It also provided access to students without web access." (M3) "I preffered when I needed to give feedback to the groups immediately. I told the group members that they could call me whenever they wanted." (M8)
SMS	➢ Instant communication ➢ Access without Internet	"It provided access to students without web access." (M3) "Suitable for instant communication and updating." (M4)
Instant Messaging App	➢ Giving information ➢ Coordination ➢ Instant communication ➢ Discussion ➢ Sending files	"It allowed easy access to all group members with one message." (M3) "It was the communication tool I used most effectively and efficiently. Each student was able to follow what was written in the group since they were in the group. A sufficient app also for documents, audio, video and image sharing." (M6)
Online Storage	➢ Sharing files	"Useful for sharing large files." (M3) "We used for sharing the video footages of the group with me and I used it to review these footages." (M7)
Online Docs	➢ Sharing files	"Useful for file sharing and making changes on files. It also supports cooperation." (M4)
Blog	➢ First contact	"At first I thought of working with my groups via blog. But it was not very useful because I could not follow them quickly." (M7)
LMS	➢ First contact	"It was useful for greeting my groups." (M4)
Teleconference	➢ First contact	-

As can be understood from Table 3, the means of interaction between the mentors and their groups were varied. These include e-mailing, social networking, blogging, LMS and teleconferencing. Of these; blog, LMS and teleconference were not used for any other purpose in following stages. Like other ICT tools, online document was used for working on a common file; while online storage was preferred for sharing large files. The group members without internet access were accessed via phone calls and SMS by some mentors. These technologies were also preferred in order for the mentees in the group to reach their

mentors at any time they wanted. As for social networking and instant mobile messaging applications, they were seen to be used for different purposes throughout the e-mentoring program. For example, social networks were used for the purpose of first contact, giving information, coordination, file sending and file sharing. Instant messaging was preferred for giving information, sending small files, ensuring coordination, and creating instant communication and discussion environment.

As a part of the study data, the questionnaires of open-ended questions given to mentees to find out whether the ICT tools used to provide interaction in the e-mentoring process were satisfactory. Then, the questionnaire forms were analysed and summarized in Table4.

Table 4. Opinions of Mentees On Sufficiency of ICT Tools Used for Interaction

	Number and ratio of mentees					
	Sufficient		Partly sufficient		No comment	
Sufficiency of ICT Tools	f	%	f	%	f	%
Used during E-mentoring	33	75.0	9	20.5	2	4.5

As shown in Table 4; 75% of the mentees find the tools of interaction in the e-mentoring process sufficient. One example is given below:

> **A student from G8: "*The technologies we used proved sufficient for communication and interaction. We first communicated by e-mail. E-mail was very slow in communication. Later, we started communicating with Google Hangouts. There was an internet problem that originated from us. Nevertheless, our contact with Hangouts was highly productive. We had a phone call when we could not reach our consultant on Hangouts. In the report writing process, GoogleDocs was very useful for us. The mentor could easily identify the mistakes on the reports we had given."***

It is seen that 20.5% of the mentees did not find the tools used fully sufficient. Examination of their justifications reveals that in fact some did not raise negative comments about the ICT tools used; rather, they found the use of technology insufficient just because they believed that FtF interactions or more of them were necessary. Below are given some citations about this point of view:

> **A student from G8: "*I think all of the technologies we used to communicate with our mentor were sufficient to carry out the project. But I would rather have had more face-to-face meetings."***
> **A student from G5: *"Of course, no technology we used was as effective as face-to-face interactions. Since we couldn't manage to always talk face to face, the video conversation application helped us a lot. When something came to mind of the group members or we had an urgent thing to consult about, the WhatsApp group was used. When it was impossible to explain via typing, the mentor was called by phone. In activities covering typing (literature review, script writing, storyboard, etc.) Google Drive was used".***

Some mentees reported problems due to the insufficient technical infrastructure. One of the ideas in this regard is quoted below:

> **A student from G6: "*The technologies used were right, but we could not have a collective conversation because my group mates did not have instant messaging. At such times, I transferred our meetings with our mentor to them via other ways."***

DISCUSSIONS and CONCLUSION

In this study, the participants had sufficient knowledge and experience in using ICT; so, they were not briefed on the technologies that could be used in the e-mentoring process before launching the project. No instructions or guidance were given to the participants in deciding the ICT tools to use during the e-mentoring process, and their choices were thoroughly examined.

Throughout the whole e-mentoring program, the mentors were constantly interacting with the mentee groups. This is thought to be related to the fact that the participants are good technology users. DiRenzo, Linnehan, Shao, and Rosenberg (2010) suggest that in consulting services maintained in electronic environments, those who have experience in using the internet are more likely to use the technology regularly and show continuity of communication with the other party compared to their inexperienced peers. Some of the mentors counselling for two groups first tried to use the interaction areas created with the same ICT tools to treat both groups equally. However, they were seen to switch to other technologies over time. This implies that no technology can be used in e-mentoring independently of the qualities, preferences and technology access by mentees. Landefeld (2009) indicates the importance of availability of the necessary technologies for participants in e-mentoring applications.

In the study, mentors preferred to use more than one tool while interacting with groups in the process of e-mentoring. Some of the tools offer synchronous communication while some others provide asynchronous communication. In general, it can be said that there is a tendency to use synchronous and asynchronous communication technologies together in e-mentoring applications (Smith-Jentschet al.,2008). Also in this study; as the process progressed, diversity of technology decreased making some tools the main domain of interaction while using some others in the case of immediate needs only. It could be explained with the technological facilities owned by the mentees and the activities required by particular phase of the project. Given the fact that reaching more people is one of the most important features that distinguish e-mentoring from classical mentoring (Akin & Hilbun, 2007), the choice of social networking and instant messaging may not be surprising at all. The reason for the high popularity of these two tools in this study might be their convenience for instant contact. As a matter of fact, Jacobset al., (2015) suggest that e-mentorship program participants prefer to engage in real-time communication using synchronous technologies.

Despite the lack of any imposition at all, it was found out that more than half of the mentors held FtF interactions with their groups. This means of interaction mostly took place during the first two stages of the project because the number of such meetings decreased in the subsequent stages. It seems that the mentees were satisfied with the FtF interactions. Since some mentees did not have the opportunity of FtF meeting with their mentors, this means of interaction was regarded as a handicap. Shpigelman at al. (2009) point out that the lack of FtF interactions between mentors and mentees is considered as a deficiency in the e-mentoring context. Ensher, Heun, and Blanchard (2003) refer to three types oftechnology use in e-mentoring: The first type only involves the use of technology (such as e-mail, web sites, chat rooms and instant messaging). In the second type, most of the interaction (more than 50%) is assumed through online tools, while the rest is done by phone conversations and FtF talks. The last type offers technology-auxiliary, which means that mentoring is predominantly realized face to face still supplemented by e-mails, instant messaging, chat-rooms, websites, and so on. As understood, e-mentoring is completely flexible in allowing FtF interactions or in what context they could be possible. It seems that what matters is to have a good analysis of the participants' access to technology, working conditions, and their expectations.

Kahraman (2012) argues that e-mentoring applications originally started with e-mailing and although different technologies have been involved in the course of time, e-mailing still has a significant place in e-mentoring programs. Likewise, in the present study, e-mail

was taken as the first means of communication in the e-mentoring process. Later, it was mostly used for file sending not being the basic means of communication any longer. Apart from that, LMS it is widely used in e-mentoring programs in the context of Europe (Kahraman, 2012). However, it was used by only one mentor for a short period of time in this study. The other non-persistent tools referred to only on demand during the e-mentoring in this study include blogging, teleconferencing, phone calls, SMS, online storage, and online documents.

In the scope of our study, as another frequently followed means of interaction, social networking sites were used by mentors in order to make announcements, to brief mentees, to coordinate the team, to send files, to review the files and give feedback. The mentees informed their mentors about their work using the social networking and received comments by sharing products specific to each phase of the multimedia project (script, story board, raw footage, edited videos, and evaluation tools). Both mentors and mentees added their favorite Internet links to the social network, creating a discussion environment and exchanging ideas. In this respect, social networking was seen to become an area of uninterrupted interaction between the mentors and mentees. Provided that successful mentoring requires frequent and regular interaction (Bierema & Merriam, 2002), social networking proved its potential to achieve this. As was in the case of social networking sites, instant mobile messaging applications were extensively used in the e-mentoring process. In terms of purpose of use, social networking has things in common with instant messaging: Giving information, coordination, instant communication, creating a discussion environment, and sending files. As the project progressed, that tool became more popular for mentors to reach every student in the group.

The social networking sites and instant messaging applications might have been preferred by the mentors and mentees during the e-mentoring process because they are used frequently in their everyday life as well. This finding seems to be supported by Todd, Moon, and Langston (2016). In this research, the mentors and mentees were told to select and use the most appropriate ones among the various technologies offered. The results of the study reveal that the participants preferred the technologies they already had known and used before. It is also known that self-efficacy for a technology boosts the use of that technology and belief in its benefit (Guriting, Chunwen, & Ndu, 2007).

RECOMMENDATIONS

In the light of the results, the following suggestions could be brought regarding the use of ICT in the e-mentoring programs:

- To start with; rather than using only one interaction area in the e-mentoring programs, one can use more than one area created with supplementary ICT tools. Secondly, some areas of interaction may be constantly used while some others for immediate needs only, bearing in mind the objectives of the e-mentoring program, literacy and knowledge levels of mentors and mentees, and participants' expectations and access to technology. Also it is suggested that FtF interactions should be used as a supplement if deemed necessary, not as an alternative to the interaction areas created by ICT.
- The use of well-known technologies by mentees and mentors in the e-mentoring applications would probably affect the communication and interaction process in a desired way. Social networking sites can be used for the purposes of giving information, making announcements, sending files, and ensuring coordination. In this scope, Facebook may be preferred due to its popularity and students' familiarity with it. As another thing, instant messaging applications could be helpful since they allow access to a large number of people instantaneously.
- If a mentor is responsible for more than one student or a group, they should not create and insistently use the same technology for each student or group. Instead, the mentors had better remember that mentees may differ from each other in technology access, capabilities and expectations, and guide ICT selection accordingly.

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