The Factors Affecting The Quality of In-service Training on Information and Communication Technologies [*]

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Abstract

In-service training (IST) has an important role in order to provide innovations, reforms and improvements as well as necessary training programs to the teachers and facilitate the changes. The aim of this study is to identify the underlying factors that affect the quality of the training by examining the scientific studies (theses and articles) conducted on IST related to information and communication technologies (ICT). In the study, meta-synthesis method (thematic content analysis), which is one of the content analysis methods has been employed. The scientific studies related to the subject have been reached by the databases that include academic publications in the fields of social science and education. The results and suggestions parts of 51 publications, which are identified as related to the subject from the databases, have been formed the findings of this study. The data obtained have been analyzed by using the PIE model which stands for planning, implementation and evaluation. The technical infrastructure, proper and ready environment, scheduling ISTs at available times of trainees, using distance education methods and evaluation of the trainees at the end of the course are the main factors that present the quality of IST within the scope of ICT.

Introduction

New technologies which have started to be part our lives are also changing the environment for education. These advancements in technology can enhance the productivity and interest of students and also motivate them to study. According to Kozma (1991), in order to organize the ideas of students, they must constantly be collaborative with the environment. These environments (media) can be defined as technology, symbol systems and adequacy of operation. The dependence on technology in education may require teachers to use new technologies during their classes (Erdemir, Bakıcı & Eyduran 2009; Slowinski, 2000). Taking this direction, the first step has been taken in 1997 by the Ministry of Education (MONE) with the Basic Education Act by establishing information technology classes in all primary schools (Akkoyunlu & Yilmaz, 2005). Therefore, teachers should be

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trained for the use of these new technologies in order to integrate them into the classroom. The ISTs have an important place for teachers to obtain necessary training programs in terms of being informed about innovations, changes and new advancements. Thus, ISTs are one of the most important ways for teachers to be informed about developments and innovations in technology and complete their professional development to use these technologies (Gonen & Kocakaya, 2006; Kayabas, 2008).

It has been necessary for teachers to have training programs at regular intervals via IST since knowledge is being changed rapidly. For that reason, it is very important for teachers to have effective and efficient IST in the subject of information and communication technologies (ICT) in terms of integration of technology (Kayabaş, 2008). However, these IST should be well planned and designed in the implementation and evaluation phases in order to have effective training. In his study, Usun (2004) stated that it is necessary to select appropriate hardware where this information will be applied and design IST process more carefully. Also in the literature it is highlighted that to give more effective ISTs, infrastructure should be enhanced (Ozen, 2008; Yigit & Altun, 2011).

Studies related with Factors Affecting the Quality of ISTs on ICTs

In their study, Ayas et.al (2006) identified the factors that affect IST as determination of the needs before the training: informing the trainees before training, selecting the instructor carefully, the duration and time, the physical properties of the facility where IST will take place, content of the courses offered, the gains that trainees obtained, whether these gains have been transferred to the implementation units, following the trainees up after completing and offering training support as well as evaluation (Ayas, Akdeniz, Çepni, Baki, Çimer & Çimer, 2006). In another study, it has been concluded that the training program must be well planned and designed to meet the needs and expectations, the courses should be implemented effectively, the instructor must combine contemporary teaching methods and techniques together and use them effectively during the class (Özmen & Kaya, 2013).

In-service training should be well planned and designed in the implementation and evaluation phases in order to have effective training. The planning, implementation and evaluation phases, which took place in the research questions, have been determined within the framework of PIE model. Newby et al. (2000) have expressed that the process of learning can be achieved by planning and implementation and evaluation should be performed in every stage of learning in PIE model. In the planning stage, planning and preparation shall be done before the class. For instance, the methods and strategies must be identified for training and proper environments should be prepared. As for implementation stage, media and media integration are provided for learning experiences. It is the stage, in which selection of teaching material, preparation of teaching environment, preparation of the students for the course have been performed and the students present their experiences. At the final stage, evaluation, the teacher evaluates the effectiveness, efficiency and satisfaction of learning.
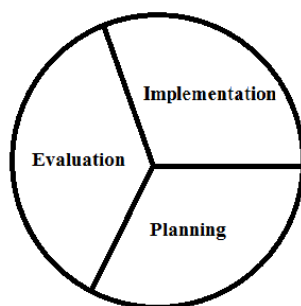

Figure 1. PIE Model: Planning, Implementation and Evaluation
(Newby, Stepich, Lehman, & Russell, 2000)

Although, there are many studies conducted on ISTs given in the area of ICT in the literature, no single study, which systematically collects scientific studies and thematically analyzes them, has been encountered in the literature about the factors that affect the quality of these ISTs yet. Therefore, in this study, it has been aimed to present all the underlying factors together affecting the quality of IST about ICT. In this way, while the results obtained from the studies conducted on this subject up until today was analyzed in accordance with planning, implementation and evaluation phases, the items specified can be used for designing new IST and evaluation of the current training programs. These items can also be used as a quality control list or survey for monitoring these ISTs programs. In this regard, the following questions were asked.

- What are the factors affecting the quality of ISTs about ICT during the **planning phase**?
- What are the factors affecting the quality of ISTs about ICT during the **implementation phase**?
- What are the factors affecting the quality of ISTs about ICT during the **evaluation phase**?

Method

In this study, meta-synthesis method (thematic content analysis), which is one of the content analysis methods, has been used. Meta- synthesis can be defined as synthesis or critical review of studies conducted on a specific content area by creating themes or matrices (Calik & Sozbilir, 2014). The thesis and articles, conducted on IST in the area of ICT, have been investigated by the meta-synthesis method. In this context, 170 publications have been reached and 51 of these publications have been used in the conclusion and suggestion sections of the study (see Figure 2). The distribution of these publications is given in Table 1.

Table 1. Distribution of the Publications

	Thesis	Article
Turkey addressed	19	11
International	3	18

Data Collection

The articles and thesis in the Higher Education Council Theses Catalogue, Web of Science, EBSCO, IEEE / IET Electronic Library (IEL), ProQuest, Science Direct, Tokat-ULAKBIM databases have been found by the keywords of "Hizmet içi Eğitim" and "In-service Training" while collecting the data and the data obtained has been interpreted in the context of the research objectives. At the stage of data collection, each database has been searched separately according to the keywords. Therefore, it is likely to have the same publication in another database as well. In addition, the keywords that used for the research have different spelling variations (in-service training, inservice training etc.), which is another factor to be considered while reviewing the sources (see Figure 2). As a result, the reason why the number of the publications is high is due to the repeated data used in the studies and having the same studies through different variations.

The study includes Turkey addressed and international publications obtained from the specified and accessed databases up to 2013. The limitation of the study may be changed and a new review can be done by including more databases. Also this study has been limited to studies which resulted from specified keywords.

Data Analysis Process

The descriptive analysis method has been used to create the categories and the content analysis method has been used for creating the codes. Each category has been encoded by categorizing the documents along with the factors identified and the findings that have been presented. In the study, eight-step method of content analysis, developed by Fraenkel and Wallen (2000), has been used to analyze the data obtained (see Figure 2).

1
- **Identifying the Objectives**.
- It has been aimed to investigate Turkey addressed and international studies focusing on IST to be held in the subject of ICT in the literature.

2
- **Determining the Keywords**
- In the scope of this study, a two-phase process has been followed. Firstly, searches have been conducted by using the keywords like "Hizmet içi Eğitim" and "In-service Training". In these searches, different usage of these two terms have been considered ("Inservice Training", "In service Training, etc."). As a result of the first research, the second search has been conducted by using the keywords such as "Bilgisayar", "Bilişim Teknolojileri", "Computer", "ICT", which have been obtained during the first searching phase.

3
- **Determination of the Unit to be Analyzed**
- In the context of this research, the thesis and articles focusing on in-service training that include the subject or practices of information technologies have been investigated as two phases. In the first phase, the title and abstract of the study has been examined; and in the second phase, the conclusion and suggestions sections have been examined in detail.

4
- **Obtaining the Studies Related to the Subject**
- The databases, which are accessed to obtain the studies related to the subject of the study, have been reviewed in two phases. The titles and keywords of the studies have been examined one by one. As a result of this prcocess, a total of 412 publications have been reached. On the other hand, a total of 170 publications, directly related to the subject, have been accessed by reviewing the abstracts. In the last phase, especially the conclusion and suggestions part of these 170 studies have been reviewed in detail. As a result of this examination 51 publications have contributed to this study to be revelaled.

5
- **The Motive of the Study**
- In-service training is one of the most important units that can help teachers to achieve the capacity and capability they need. Considering that the courses that are taken within a framwork in these training, these programs should have a systematic structure. In order to have a more effective systematic structure, it is important to consider the quality of the courses offered by these in-service training programs. Therefore, this study is important for being a guide and suggestive material to have more effective in-service training in the subject of ICT by presenting the factors affecting the quality of the in-service training offeered within the framework of information and communication technologies.

6
- **Achieving a Sample Planning**
- The sample of the study is explained in the 4th phase in detail. The sample of the study consists of 51 publications that reflect the factors affecting in-service training conducted on the subject of ICT.
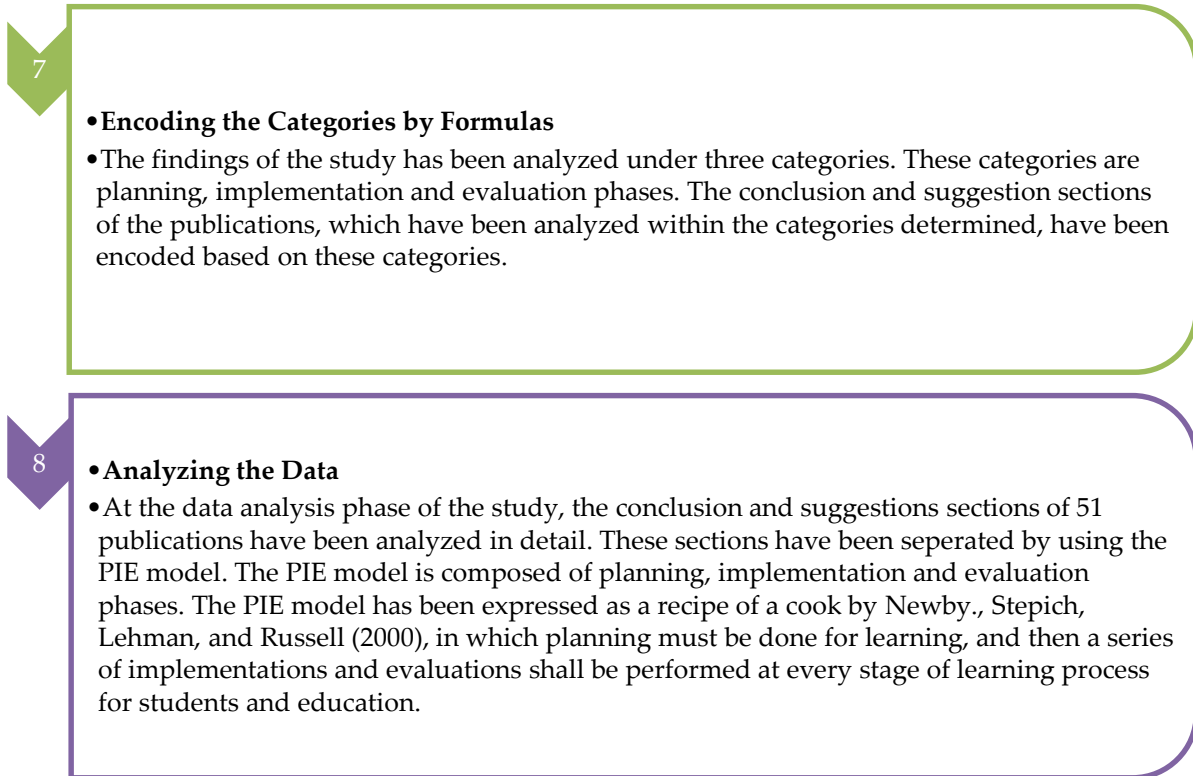
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- **Encoding the Categories by Formulas**
- The findings of the study has been analyzed under three categories. These categories are planning, implementation and evaluation phases. The conclusion and suggestion sections of the publications, which have been analyzed within the categories determined, have been encoded based on these categories.

8

- **Analyzing the Data**
- At the data analysis phase of the study, the conclusion and suggestions sections of 51 publications have been analyzed in detail. These sections have been seperated by using the PIE model. The PIE model is composed of planning, implementation and evaluation phases. The PIE model has been expressed as a recipe of a cook by Newby., Stepich, Lehman, and Russell (2000), in which planning must be done for learning, and then a series of implementations and evaluations shall be performed at every stage of learning process for students and education.

Figure 2. Data Collection and Analysis

Credibility and Trustworthiness of the Research

The expert opinion has been obtained at every data analysis step of the research in order to ensure the credibility of the study. The findings of the study, presented as a result of the document analysis, have been referred to some other sources in order to increase the credibility. In addition, four doctoral students have reviewed 10 publications that were selected randomly from 51 publications, which create the findings of the study. Reviewers were asked to thematically analyze conclusions and suggestions part of the 10 randomly selected studies with respect to PIE model in order to find factors on ISTs about ICT. As a result of this review, factors emerged in this peer-review were compared with the factors of the study and it has been observed that the findings of the research are consistent with the publications at a level of 95%.

Finally, in order to ensure the trustworthiness, supporting citations have been used by investigating the publications that support and cover the content of the subject in the literature. In addition, the databases have been accessed and screened by the researches at different times and places and the same results have been found.

Findings

The findings of the study have been categorized according to the planning, implementation and evaluation steps. The references and frequencies that support these items are given in Table 2.

The Factors Affecting the Planning Phase

A total of 9 factors have been determined that needs to be considered during the planning phase. The references and frequencies that support this fact are given in Table 2.

Table 2. The Factors Affecting the Planning Phase

Factors	References	f_T	f_F	f_{To}
Proper Technical Infrastructure and Media	M1, M3, M5, M8, M11, M14, M18, M19, M20, M23, M28, M30, M31, M33, M34, M35, M36, M37, M38, M40, M41, M47, M50	21	2	23
Suitable Schedule for Trainees Participating In-Service Training	M9, M15, M17, M18, M33, M34, M36, M37, M38, M39, M44, M48, M50, M51	10	4	14
Offering IST Regarding the Use of CFT at Schools	M1, M3, M5, M13, M20, M25, M29, M31, M32, M39, M47, M50	9	3	12
Achieving Sustainability for IST	M1, M7, M9, M22, M29, M32, M33, M36, M42, M51	9	1	10
Performing Necessity Analysis before IST	M3, M9, M10, M19, M20, M22, M25, M36, M40, M51	9	1	10
Determination of Readiness of the Trainees for IST	M9, M13, M18, M27, M28, M47, M48, M49, M51	7	2	9
Organizing IST Under Control of the Experts	M4, M19, M20, M23, M33, M36, M40, M41, M51	5	4	9
Giving Enough Time for IST	M13, M14, M18, M38, M40, M44, M48, M51	3	5	8
Obtaining the Opinions of Trainees after Completion of the Course for the Quality of IST	M12, M40, M51	2	1	3

Note: f_T=Turkey addressed studies, f_F = International studies, f_{To} = Total frequency

Considering the findings presented (Table 2), it has been seen that the technical infrastructure and suitable environment (f_{To}=23), organizing the ISTs in available times of trainees (f_{To}=14) and offering ISTs regarding the use of ICT at schools (f_{To}=12) have been discussed in many studies, respectively. The meaning of each factor emerging is described in detail below.

1) Technical Infrastructure and Suitable Environment

It is necessary to have ready to use and properly working technical infrastructure in the department, where computer-aided, web-based and distance education systems offered during IST. Yılmaz and Kocasarac (2010) have stated that "The program was successful in general; however, there were some deficiencies such as reorganization of the website, content development and technical problems in the centers, where courses are offered, to be eliminated" (p. 60).

2) Suitable Schedule for Trainees Participating IST

The working status of the trainees participating the IST to be held in ICT may not be suitable all the time. Since the availability of the trainees differs for each one, it will be more encouraging and effective to arrange these trainings at an appropriate time for most of them. According to Yildiz and Aribas (2012), who support this argument; "These in-service trainings must be organized at a period, in which the weather conditions will not cause any trouble, or in holidays" (p. 65).

3) Offering IST Regarding the Use of ICT at Schools

During the planning phase of the IST to be offered, the use and integration of ICT in the classrooms must be considered according to the curriculum knowledge of trainees and courses must be planed based on technical and physical conditions of the school. According to Cure (2007), "In-service trainings must be provided by Ministry of Education for teachers regarding the use of ICT during the class and how they can integrate ICT to the course and the teachers must be supported by giving concrete examples during these trainings." (p. 72).

4) Achieving Sustainability for IST

Rapid developments in technology take place in education as well as every part of our lives. Therefore, the structure of education should be kept up to date to keep up with this technology. According to Turkhan (2008); "The sustainability of in-service training must be achieved by utilizing the distance education system for teachers, who have to blow away the cobwebs all the time" (p. 130).

5) Performing Necessity Analysis Before IST

The trainees, who will be participating information technologies IST, have some expectations. If the expectations of the trainees fulfilled, it is expected from them to be motivated better and indicate more active participation. According to Kiper (2008), "Since in-service training regarding IT have positive effects on the use of IT by the teachers in classrooms, IST can be offered by considering the needs of teachers during the preparation phase of these training" (p. 65).

6) Determination of Readiness of the Trainees for IST

Since technology is a structure that is constantly evolving and changing, people may not be well-adapted to these changes in this structure. It is necessary to learn the use of technology to keep up with these technological changes. The educational level of the trainees attending IST to be held in the field of ICT may vary because of such reasons. Therefore, IST should be planned by considering these criteria during planning phase of the training to be offered. According to Yıldız and Arıbaş (2012), "Teachers should take a pre-test to measure their status of readiness before attending an IST, their need for learning must be measured and they have to attend a course suitable for their levels" (s. 65).

7) Organizing IST Under Control of the Experts

The places, where IST will be held in the field of ICT, should be fully equipped, fully functional based on the use of technology and consist of people who can use the system. Both the instructors that will teach in the course held in the field of information technology and the people that are responsible of infrastructure should be experts in terms of using the technology. According to Ozan and Dikici (2001), "The academic staff involved in the training is required to participate in the planning phase as well. Thus, the instructor will spend more attention to implement a plan, in which he/she was also involved during the preparation phase. The academic staff should give lectures in accordance with their expertise." (p. 239).

8) Giving Enough Time for IST

For IST to be held in the field of ICT, the sufficient time should be provided before planning by receiving the opinions of experts. This duration should be as much as possible for trainees to fully learn and implement the subject. According to Cesur (2010), "The effectiveness of the program can be increased by extending the face to face training hours, in particular." (p. 79).

9) Obtaining the Opinions of Trainees after Completion of the Course for the Quality of IST

The opinions of trainees should be obtained time to time during and after the training in order to increase the quality of IST. In this way, the deficiencies will be eliminated for the future IST, the mistakes will not be repeated if there are any and the problems occurring during the course will be minimized. According to Gökbulut (2006), "Apart from the evaluation survey given to the trainees at the end of the course, they can also be asked to write their opinions down to the suggestions section to shed light for future studies to be delivered to the authorities. In this way, the authorities will be able to plan the future in-service trainings by considering these opinions." (p. 39).

Factors Affecting the Implementation Phase

A total of 8 items have been reflected to the findings section, which has been found in the publications while making research for the implementation phase. The references and frequencies supporting these 8 items are given in Table 3.

Table 3. Factors Affecting the Implementation Phase

Factors	References	f_T	f_F	f_{To}
The Use of Distance Education	M1, M2, M5, M6, M7, M11, M24, M26, M28, M30 M34, M35, M41, M42, M43, M44, M51	12	5	17
Preparing the Technical Infrastructure	M1, M3, M5, M8, M12, M15, M18, M19, M20 M23, M29, M38, M39, M40, M47	11	4	15
Encouragement of the Trainees by Directors and Instructors	M1, M12, M23, M27, M29, M33, M36, M41, M47, M50	7	3	10
Determining the Status of Trainees on the Use of ICT	M1, M5, M6, M12, M13, M14, M17	5	2	7
Providing Materials for Trainees to Exchange Their Ideas	M1,M4,M7,M12,M13,M23, M51	5	2	7
Effective Use of ICT	M1,M6,M9,M22,M41,M47, M49	5	2	7
Suitable Infrastructure in the Departments	M31,M35,M36,M39,M41	4	1	5
Giving Support for Practices	M12,M14,M18,M23	2	2	4

1) The Use of Distance Education

The IST to be held in the field of ICT is supposed to be reconsidered at all levels and in all aspects and interpreted very well before going through the implementation phase. There are some issues important for IST such as transportation of the trainees, cost of accommodation and food, practices that cannot be repeated due to the lack of time and the workload on the personnel of the organization providing the course and the instructors. In this regard, for IST to be held either in the field of ICT or some other subjects, the distance education applications can be preferred as an alternative. According to Delil (2005), "Using web-based distance education applications for in-service training will provide great advantages in terms of time, cost and labor productivity." (p. 94).

2) Preparing the Technical Infrastructure

The technological infrastructure of the department, where IST will be held in the field of ICT, must meet the requirements to implement the practices. Therefore, the problems related to technical infrastructure of the institutions should be eliminated while planning the IST to be held in the field of ICT in order to avoid such problems. According to Can (2010), "First of all, implementation of E-inservice trainings depends on infrastructure of the institution. Therefore, the necessary infrastructure should be provided for our public institutions and organizations." (p. 120).

3) Encouragement of the Trainees by Directors and Instructors

The prejudices against technology or previous experiences of the trainees may lead them not to want to attend or leave the IST to be held in the field of ICT before completing the course. In such cases, both directors of the departments, where the trainees work, and instructors teaching the course and experts in the organization should encourage the trainees. According to Zengin (2007), "The instructors should exhibit a strong belief in terms of general e-learning technology and its advantages. They also need to seem strong against challenges. However, some concerns may arise such as lack of skills to make this happen. At this point, the need for support of management should be felt." (p. 111).

4) Determining the Status of Trainees on the Use of ICT

The development in technology may vary in different ages and generation in terms of speed of use and learning. Therefore, each age group may be classified according to their perspectives and use of technology by giving them a pre-test before IST. According to Calimfidan (2007), "It has been observed that most of the challenges and problems that teachers are facing are caused by physical infrastructure and lack of pre-knowledge and skill for the use of computer. Therefore, these two factors, the target group has to have, must be considered while planning a web-based distance education practice for the employees of an institution." (p. 85).

5) Providing Materials for Trainees to Exchange Their Ideas

In education, the teaching provided by the instructors may not be enough all the time. In some cases, the students or trainees can achieve the learning by communicating and interacting with each other. In this context, some practices should be provided for trainees to exchange their ideas during the IST to be held in the field of ICT. These practices can be provided by both traditional classroom environment and web-based distance education practices and materials. According to Keleş and Çelik (2013), "During the in-service training towards computer-aided teaching; the strategy, method and technique of the technology must be discussed along with the competence, the teachers of the same majors should exchange ideas with each other and they have to share their experiences regarding which technology and how it should be used in the classroom and out of classroom activities." (p. 184).

6) Effective use of ICT

It is very important for education received during or after IST to be used in practice. Trainees who participated in the training should be reminded constantly if necessary and awareness should be created regarding this issue as much as possible. The practices must be prepared in this direction to achieve more effective use of IST to be held in the field of ICT. According to Delil (2005), "The selection of the courses to be offered in the web-based in-service training must be performed properly, and the information and courses that are not needed for today's working life shall not be offered." (p. 94).

7) Suitable Infrastructure in the Schools

It is important to use the in-service training given in the field of ICT to trainees. Therefore, the ICT infrastructure of the school, where trainees work, should be suitable for practices to be implemented after the training program. According to Bayır (2005), "The problems experienced in distance education caused by lack of the computers of the participants and low speed of internet are considered as the factors affecting the training negatively. Therefore, it must be taken care of that the hardware and infrastructure problems of the institutions should be resolved before distance education practices get started." (p. 127).

8) Giving Support For Practices

The experts providing IST in the field of ICT should support the trainees who have difficulties during the practices. According to Yılmaz and Kocasarac (2010), "The guide teachers must be followed and technical and administrative assistance should be provided if necessary." (p. 61).

The Factors Affecting the Evaluation Phase

A total of 4 items have been reflected to the findings section, which has been found in the publications while making research for the planning phase. The references and frequencies supporting these 4 items are given in Table 4.

Table 4. The Factors Affecting the Evaluation Phase

Factors	References	f_T	f_F	f_{To}
Evaluation of the Trainees	M1, M7, M9, M16, M20, M22, M36, M40, M43, M45, M46	6	5	11
Monitoring and Evaluation of the Units Whether They Use or not	M36, M37, M51	3	0	3
Regular Evaluations	M4, M6, M16	2	1	3
Evaluations Performed by Those in Charge (Director, Instructor)	M4, M15	1	1	2

1) Evaluation of the Trainees

As there is an evaluation at the end of each training session, it is inevitable to have an evaluation at the end of each IST as well. According to Ergin, Akseki and Deniz (2012), "It is necessary to perform an evaluation based on objective criteria at the end of in-service training practices." (p. 65).

2) Monitoring and Evaluation of the Units Whether They Use or not

After completing the IST held in the field of ICT, it is important to have the answers to such questions such as do trainees use the education they have received, how often and when they use these practices. According to Gül (2012), "It is necessary to make evaluations at the end of a long period of time to see the use of smart boards." (p. 84).

3) Regular Evaluations

The trainees are supposed to be evaluated periodically during IST in order to have a successful training session. According to Ozan and Dikici (2001), "The courses must be subjected to an ongoing evaluation to observe the progress of the teachers during in-service training. These evaluations will allow us to see both success of the institution and progress of the teachers." (p. 240).

4) Evaluations Performed by Those in Charge (Director, Instructor)

These evaluations can be performed through examinations taken by the trainees as well as opinions of the instructors of the course or directors of the departments, where trainees work. According to Ozan and Dikici (2001), "The directors, instructors and teachers of the institutions proving in-service training should hold regular meetings and discuss if they is any problems." (p. 240).

Discussion

In the planning phase, it is important to have suitable technical infrastructure and environment (f_{To}23) for IST to be held in the field of ICT. Therefore, it has the highest frequency in the study as well. In addition, this item has been the prominent item in the implementation phase. The second important item is organizing the training sessions in accordance with availability of the trainees. This item is important for not only IST to be held in the field of in ICT, but also for other IST.

In the implementation phase, the use of distance education practices is the item that becomes prominent. In addition, it is the second item in terms of higher frequency (f_{To}=17). This system can be implemented in all the fields to be offered by IST and brings great advantages in terms of time, cost and labor efficiency. In the evaluation phase, the prominent item is evaluation of the trainees. This item can be considered for all other IST. Since the evaluation indicates the status of a study and level of achievement, it is important to evaluate the work done.

The technical infrastructure and suitable environment, which become prominent for all the phases and the use of distance education, are more important for ICT; while the other items coming to the forefront may be important for any IST. This may be because of the limited number of IST being held in the field of ICT. The results of the study, the databases searched and the keywords used for the research may be some other reasons.

It has been identified that there are some common results between the results of IST held in the field of ICT and regular IST. The study carried out by Ayas at al. (2006) focusing on effectiveness of in-service training supports the findings of this study in terms of identifying the need for IST, who will attend these IST, pre-briefing before IST, the capacity and selection of the instructor of IST, duration, time and period of IST courses, location of IST and properties of the center, content of IST courses, the process and presentation of the courses offered by IST, the gains received by teachers from these IST and transferring into practice, post-course follow-up and support after IST and evaluation of the IST courses.

According to the study of Day (1999) that is called lifelong learning; some criteria such as planning, identification of the needs, practices, the date of course and flexible times, consistent content and evaluation are consistent with the results of the study as part of IST.

Hayes (1995) has listed the basic principles of IST as 12 items in his study. It has been determined that the items of his study such as the training given to the teachers must be classroom-centered, teachers should involve in preparation phase of the courses, the instructors of the courses must be professionals, the existing knowledge of the participants should be valued, the environments of the course facilities must be suitable for practices of the teachers, opportunities should be provided for teachers to exchange their ideas, programs should be prepared for teachers to follow up the practices taking place at schools are consistent with the results of the study.

In the study of Yalın (2001) conducted on evaluation of IST; it has been indicated that IST to be offered should be based on educational needs of the trainees, the trainees must be picked in accordance with their educational needs and objectives, IST must be evaluated systematically and objectively, the instructors must be professional in their fields. It has been determined that the results of the study of Yalın are consistent with results of this research.

As a result of the study, it is important to monitor the following factors that reflect IST to be held in the field of ICT apart from other fields;

- Suitable technical infrastructure and environment,
- The sustainability of ICT during integration period,
- Organizing the IST especially under control of the experts,
- The use of alternative methods such as distance education,
- Considering the prejudices of the trainees towards ICT and the use of ICT practices,
- The use of materials that allow trainees to exchange their ideas,
- Effective use of ICT at schools,

Monitoring the teachers to see whether they use the practices they have learnt from IST at schools.

Conclusion and Suggestions

The results that have been obtained from the study are important because they highlight factors in planning, implementation and evaluation of an IST to be held in the field of ICT.. According to the results, the factors identified in Turkey addressed studies indicate differences compared to the results obtained from international studies. The frequency of the factor, which is the factor of appropriate technical infrastructure and environment, is 21 for Turkey addressed publications, whereas this value is 2 for international publications. Therefore, we can conclude that the problems related to technical infrastructure and environment of the IST is a local problem and it is not be resolved yet. In addition, it has been also remarkable to see its frequency higher in the planning and implementation phases and this may indicate that effects of problems emerged in planning phase may continue in implementation and evaluations phases. Similarly, the factor of ensuring continuity of ISTs is 9 in Turkey addressed publications while this value is 1 in international publications. Again compared internationals studies, Turkey addressed studies indicates that there is a problem in continuity of ISTs in Turkey. Therefore, sustainability of the ISTs should be considered during planning phase of the study. In the evaluation phase, the frequency of the factor of monitoring and evaluating whether it has been used in the practice in the institutions is 3 in the Turkey addressed publications while there is no any international publication for this factor. Therefore, we can conclude that there must be evaluations to be performed after IST.

For future studies, the results can be converted to a questionnaire and after testing the validity and reliability, it can be administrated. The questionnaire can be administrated to the teachers, who have received IST in the field of ICT, in order to increase the quality and effectiveness of IST and the results of the questionnaire can be compared with the findings of this study. In this way, it will be observed that to what extent the answers given by the teachers and findings of this study reflect the ISTs held in the field of ICT.

On the other side, findings of this study can be used as a criteria list in the evaluation of ISTs to be conducted. The quality of the training can be increased by making adjustments based on the responses given to the question, which is "What can be done to get better quality training?" While the integration of technology in education becomes indispensable each passing day, it is also important to gain this technology by IST. Therefore, the applicability of the findings of this study as a criteria list for the future training can be tested, and the criteria can be improved by taking the opinions of teacher into account and new criteria can be added in order to get better results. Further studies can be conducted to compare bibliographic properties of studies.

In the present study, databases and language of the studies can be expanded so that new factors that may emerge and existing factors can be supported with these new publications. Keywords used in this study can be determined in a more systematic process. In this way, publications which are not analyzed yet can be included in the study. Follow up studies can be administrated in certain time-periods (3-5 years) so that changes in times can be traced. Particularly, qualitative data analysis programs can be employed in the data analysis process to make analysis process faster and easier.

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Zengin, S. (2007). *E-learning and in-service training: an exploration of the beliefs and practices of trainers and trainees in the Turkish national police*. Unpublished doctoral thesis, North Texas University, ABD.

Appendix 1. List of analyzed publications

M1	Cure, F. (2007*). Milli Eğitim Bakanlığı tarafından uygulanan web tabanlı uzaktan hizmet içi bilgisayar eğitimi programının değerlendirilmesi*. Unpublished master thesis, Marmara University Institute of Educational Science, İstanbul.
M2	Tekin, O. (2007). *Uzaktan eğitim yöntemi ile verilen hizmet-içi eğitim programının öğretmenlerin öz-yeterlilik algıları ve tutumlarına etkisi- Muğla ili örneği.* Unpublished master thesis, Muğla University Institute of Social Sciences, Muğla.
M3	Kiper, A. (2008). *İlköğretim öğretmenlerinin bilgi teknolojilerini derslerde kullanım durumları ve bilgi teknolojileri ile ilgili almış oldukları hizmet içi eğitimler hakkındaki görüşleri (Sakarya ili örneği)*. Unpublished master thesis, Gazi University Institute of Educational Science, Ankara.
M4	Ozan, M. B., & Dikici, A. (2001). Hizmet içi eğitim programlarının etkililiğinin değerlendirilmesi (Fırat Üniversitesi, Marmara Üniversitesi ve TÜBİTAK örneği). *Fırat Üniversitesi Sosyal Bilimler Dergisi, 11*(2), 225–240.
M5	Calımfidan, M. (2007). *İnternete dayalı uzaktan eğitim ve uzaktan hizmet içi eğitim yöntemleri ile bilgisayar eğitimi hakkında öğretmen görüşleri.* Unpublished master thesis, Yeditepe University Institute of Social Sciences, İstanbul.
M6	Ozdem, C. (2007). *Uzaktan hizmet içi eğitim yöntemi ile bilgisayar eğitimi uygulamasının değerlendirilmesi.* Unpublished master thesis, Gazi University Institute of Educational Science, Ankara.
M7	Turkhan, H. (2008). *Milli Eğitim Bakanlığının bilgisayar eğitimi uygulamalarında verilen uzaktan hizmet içi eğitimin değerlendirilmesi.* Unpublished master thesis, Yeditepe University Institute of Social Sciences, İstanbul
M8	Baran, F. (2008). *Milli Eğitim Bakanlığı'nın uzaktan hizmet içi eğitim yöntemiyle bilgisayar eğitimi uygulamasına ilişkin öğretmen görüş ve önerileri.* Unpublished master thesis, Yeditepe University Institute of Social Sciences, İstanbul.
M9	Yildiz, H., & Aribas, S. (2012). Intel öğretmen hizmet içi eğitim kursunun değerlendirilmesi, *Milli Eğitim, 193*, 55-66.
M10	Usun, S. (2004). Hizmet içi eğitimde bilgisayar destekli öğretime yönelik personel ve yönetici görüşleri. *Kastamonu Eğitim Dergisi, 12*(1), 19-30.
M11	Akahori, K., Horiguschi, H., Suzuki, K., & Nambu, M. (2001). Development and evaluation of web-based in-service training system for improving the ict leadership of schoolteachers. *Journal of Universal Computer Science, 7*(3), 211-225.
M12	Brito, C., Duarte, J., & Baía, M. (2010). Ict and in-service teahcers' training: Numbers and trends. *Digital Education Review, 11*, 67-76.
M13	Liu, M. H. (2012). Discussing teaching videocases online: Perspectives of preservice and inservice EFL teachers in Taiwan. *Computers & Education, 59*(1), 120-133.
M14	Yilmaz, H., & Kocasarac, H. (2010). Hizmet içi öğretmen eğitiminde yeni bir yaklaşım: Yenilikçi öğretmenler programı ve değerlendirmesi. *Ahi Evran Üniversitesi Eğitim Fakültesi Dergisi, 11*(3), 51-64.
M15	Kselsey, T. W., & Mincemoyer, C. C. (2001). Exploring the potential of in-service training through distance education. *Journal of Extension, 39*(2), 1-7.
M16	Jung, I. (2001). Issues and challenges of providing online inservice teacher training: Korea's experience. *The International Review of Research in Open and Distance Learning, 2*(1), 1-18.

M17   Abuhmaid, A. (2011). Ict training courses for teacher professional development in Jordan. *The Turkish Online Journal of Educational Technology-TOJET, 10*(4), 195-210.

M18   Outen, D. (1994). *Increasing the Basic Computer Skills of Junior High School Teachers through Inservice Training.* Unpublished doctoral thesis, Nova South Eastern University, Florida.

M19   Yılmaz, H. ve Dugenci, M. (2010). HİEe farklı bir yaklaşım: E-HİE. *XII. Akademik Bilişim Konferansı Bildirileri*, 67-74.

M20   Özen, R. (2008). Inservice training (inset) programs vıa distance education: primary school teachers' opinions. *TOJDE, 9*(1), 217-232.

M21   Besoluk, S., Kurbanoglu, N. I. ve Onder, İİ. (2010). Educational technology usage of pre-service and in-service science and technology teachers. *Elementary Education Online*, *9*(1), 389-395.

M22   Kim, J. H., Jung, S. Y. ve Lee, W. G. (2008). Design of contents for ICT literacy in-service training of teachers in Korea. *Computers & Education*, *51*(4), 1683-1706.

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M25   Karagiorgi, Y. ve Charalambous, K. (2006). ICT in-service training and school practices: In search for the impact. *Journal of Education for Teaching*, *32*(4), 395-411.

M26   Chio, K. S. (2012). Effective practices in providing online, in-service training to health professionals in low-resource settings. *International Journal of Training and Development*, *16*(3), 228-234.

M27   Santos, A. ve Pedro, N. (2012). The relationship between teachers' training, personal sense of efficacy and ICT integration: Analysing its strength and stability, *International Conference on Information Communication Technologies in Education, 5-7 July*, Bildiriler Kitabı, pp. 343.

M28   Chen, H. R. ve Tseng, H. F. (2012). Factors that influence acceptance of web-based e-learning systems for the in-service education of junior high school teachers in Taiwan. *Evaluation and Program Planning*, *35*(3), 398-406.

M29   Aduwa-Qgiegbaen, S. E. O. (2008). In-service teachers' attitude to computers and their perception of obstacles to their use in primary and secondary schools in nigeria, *European Journal of Scientific Research*, *21*(1), 175.

M30   Usun, S. (2009). Information and communications technologies (ICT) in teacher education (ITE) programs in the world and Turkey: (A comparative review). *Procedia-Social and Behavioral Sciences*, *1*(1), 331-334.

M31   Kiper, A. ve Tercan, S. S. (2012). The usage of information technologies in classroom environment among primary school teachers and their perception on in-service training programs on it (Sample of Sakarya). *TOJET*, *11*(3), 386-392.

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M35   Bayir, G. O. (2005). *Hizmet içi eğitimde kurumsal ağ kullanımında izlenen yöntem ve öğretim dili bilgisinin öğrenci başarısına etkisi.* Unpublished doctoral thesis, Ankara University Institute of Educational Science, Ankara.

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M37   Bayrak, G. (2012). *Öğretmenlerin lcd panelli etkileşimli tahtalar hakkındaki hizmet içi eğitim sonrası görüşleri.* Unpublished master thesis, Ataturk University Institute of Educational Science, Erzurum.

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M41   Delil, Y. (2005). *Yönetici asistanları ve büro çalışanlarının hizmet içi eğitimleri için bir web tabanlı uzaktan eğitim programı önerisi.* Unpublished master thesis, Gazi University Institute of Educational Science, Ankara.

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