

Satisfying and Frustrating Aspects of ICT Teaching: A Comparison Based on Self-Efficacy

Deniz Deryakulu, Sener Buyukozturk, Sirin Karadeniz, and Sinan Olkun

Abstract—The purpose of this study was to determine the most satisfying and frustrating aspects of ICT (Information and Communications Technologies) teaching in Turkish schools. Another aim was to compare these aspects based on ICT teachers' self-efficacy. Participants were 119 ICT teachers from different geographical areas of Turkey. Participants were asked to list salient satisfying and frustrating aspects of ICT teaching, and to fill out the Self-Efficacy Scale for ICT Teachers. Results showed that the high self-efficacy teachers listed more positive and negative aspects of ICT teaching than did the low self-efficacy teachers. The satisfying aspects of ICT teaching were the dynamic nature of ICT subject, higher student interest, having opportunity to help other subject teachers, and lecturing in well-equipped labs, whereas the most frequently cited frustrating aspects of ICT teaching were ICT-related extra works of schools and colleagues, shortages of hardware and technical problems, indifferent students, insufficient teaching time, and the status of ICT subject in school curriculum. This information could be useful in redesigning ICT teachers' roles and responsibilities as well as job environment in schools.

Keywords—ICT teachers, frustrating aspects of ICT teaching, satisfying aspects of ICT teaching, teacher self-efficacy.

I. INTRODUCTION

ICT (Information and Communications Technologies) is an elective course which occupies 1 or 2 hours in the Turkish elementary and secondary schools' curriculum. The teaching of ICT in Turkish public schools has a relatively short history. Computers began to be used in Turkish schools in mid 1980s. However, the widespread implementation started in 1998. Studies have shown that the Turkish ICT teachers (formerly called computer teachers) had many job-related problems which lead to job-stress and burnout in most of them [1]-[2]-[3]. According to these studies [1], [2], [3], the most common job-related problems (stressors) that the Turkish ICT teachers experienced were role conflict; inadequate teacher induction policies; lack of technical support and required technological

infrastructure; the status of ICT subject in school curriculum; large class sizes; inattentive and indifferent students; and inappropriate curriculum and textbooks. As can be seen, these factors are mostly related to the job description and job environment of ICT teachers. Reference [4] found that negative work setting characteristics resulted in greater work stressors that in turn were associated with increased teacher burnout and thus resulted in decreased job satisfaction. *Teacher satisfaction* has been considered to be one of the most important factors affecting the quality of instruction in general and student achievement in particular [5].

Reference [6] has categorized teacher satisfaction factors as *content* and *context*. Content factors are related to the teaching process itself such as achievement in teaching, and the nature of the job itself, whereas context factors are related to the job environment such as salary, school policy, and inter-personal relations among colleagues. The content-type factors correspond to self esteem and self-actualization that contribute most powerfully to teacher satisfaction [5].

Another concept that closely related to the teacher satisfaction is *teacher self-efficacy*. Teacher self-efficacy is the teacher's perception of his/her own competence and on the ability of teaching as a professional discipline to shape students' knowledge, values and behavior [7]. In other words, a teacher's efficacy belief is a judgment of his/her capabilities to bring about desired outcomes of student engagement and learning [8]. Reference [9] found a number of factors that appear to diminish teachers' sense of efficacy. These factors included excessive role demands, poor morale, lack of recognition, inadequate salaries, low status, professional isolation, uncertainty, and alienation [10].

Reference [11], on the other hand, summarized the results of a number of empirical studies on teacher efficacy. These studies showed that teacher efficacy predicted a multitude of critically important variables in instructional settings such as student achievement and motivation; student self-esteem and attitudes; school effectiveness; teachers' adoption of innovations; the success of program implementation; teachers' classroom management strategies; teacher absenteeism; teachers' professional commitment; and teacher stress and burnout. Research also suggests strong links between perceived self-efficacy and stress [12]. According to this link, individuals with a stronger sense of perceived self-efficacy experience low stress in threatening (or problematic) situations, and experience situations as less stressful owing to their belief in their ability to cope [13]. For example, in a study [14], it was found that self-efficacy could moderate

D. Deryakulu is with Ankara University, Faculty of Educational Sciences, Department of Computer & Instructional Technologies Education, 06590 Cebeci-Ankara, Turkey (phone: +90 (312) 363-33-50; fax: +90 (312) 363-61-45; (e-mail: deryakul@education.ankara.edu.tr).

S. Buyukozturk is with Baskent University, Faculty of Education, Department of Secondary Science and Mathematics Education, Ankara, Turkey (e-mail: senerb@baskent.edu.tr).

S. Karadeniz is with Bahcesehir University, Faculty of Arts & Science, Department of Computer & Instructional Technologies Education, Istanbul, Turkey (e-mail: sirin.karadeniz@gmail.com).

S. Olkun is with Ankara University, Faculty of Educational Sciences, Department of Elementary Education, Ankara, Turkey (e-mail: sinanolkun@gmail.com).

work-related stress, in the sense that low levels of self-efficacy are related to high levels of occupational stress.

The present study examined the most satisfying and frustrating aspects of ICT teaching, and compared these aspects in terms of ICT teachers' self-efficacy. In this study, we assumed that to determine a list of the most satisfying and frustrating aspects of teaching would provide job motivators and job stressors of ICT teachers. By doing this, we hope to discover discipline-specific factors affecting the effectiveness and efficiency of ICT teaching. Thus, the following research questions were addressed:

- 1) What are the most satisfying aspects of ICT teaching?
- 2) What are the most frustrating aspects of ICT teaching?
- 3) Are there any differences (both quantitatively and qualitatively) between the high and the low self-efficacy teachers' responses concerning satisfying and frustrating aspects of ICT teaching?

II. METHODS

A. Participants

A total of 119 ICT teachers from 47 different cities of Turkey participated in the study. The distributions of participants in terms of sex, school level, school type, and source of graduation were as follows: 60 (51%) were female, 58 (49%) were male; 98 (82%) were elementary school teachers, 21 (18%) were secondary school teachers; 117 (98%) were public school teachers, 2 (2%) were private school teachers. Of the 119 teachers, 115 (97%) were reported to have a graduation from the accredited ICT teacher education programs, 4 (3%) from the other types of programs. The mean age was 27 ($SD=2.12$), and the mean teaching experience was 4.5 years ($SD=1.64$).

B. Data Collection

Two instruments were used in this study. Participants' personal information such as age, sex, school type, and years of teaching experience were measured using open-ended questions. They were also asked to list clearly the most satisfying (positive) and frustrating (negative) aspects of ICT teaching. Participants' teacher self-efficacy was measured using the *Self-Efficacy Scale for ICT Teachers* (SES-ICT). The original scale is a 12-item self-report scale that measures ICT teachers' self-efficacy perceptions. This scale was shown to be a valid and reliable instrument to measure perceived self-efficacy in Turkish ICT teachers [15]. The items of this scale were scored on a 5-point Likert-type scale from 1 (*never*) to 5 (*always*). Higher scores were associated with higher levels of teacher self-efficacy. For this scale, $M=51.86$, $SD=5.82$, the mode=53, the median=53, the minimum point=21, and the maximum point=60. In this sample, Cronbach's alpha reliability coefficient was found to be 0.86 for this scale.

III. FINDINGS

We divided the participants into two groups as the "High

Self-Efficacy Teachers" and the "Low Self-Efficacy Teachers" by using the median of the SES-ICT. Table I shows the descriptive information about these groups.

TABLE I
PARTICIPANTS' TEACHER SELF-EFFICACY

<i>Study Groups</i>	Range of SES-ICT Scores	n	%
High Self-Efficacy Teachers	53 and over	62	52
Low Self-Efficacy Teachers	52 and below	57	48
<i>Total</i>		<i>119</i>	<i>100</i>

Analysis revealed no statistically significant differences between male and female ICT teachers' self-efficacy [$t=0.870$, $p=0.386$]. Analysis also revealed no statistically significant differences between high and low self-efficacy teachers on the measures including age [$F(11,107)=0.843$, $p=0.593$], school level [$F(2,116)=0.825$, $p=0.441$], and years of teaching experience [$F(11,106)=0.615$, $p=0.812$]. Table II shows the high self-efficacy teachers' responses concerning satisfying and frustrating aspects of ICT teaching.

TABLE II
HIGH SELF-EFFICACY TEACHERS' RESPONSES CONCERNING SATISFYING AND FRUSTRATING ASPECTS OF ICT TEACHING

<i>Categories</i>	f	%
<i>Satisfying Aspects of ICT Teaching</i>		
1- Dynamic nature of ICT subject	76	46.0
2- Higher student interest	49	30.0
3- Having opportunity to help other subject teachers	32	19.0
4- Lecturing in well-equipped labs	8	5.0
<i>Total</i>	<i>165</i>	<i>100</i>
<i>Frustrating Aspects of ICT Teaching</i>		
1- ICT-related extra works of schools and colleagues	115	45.8
2- Shortages of hardware and technical problems	33	13.1
3- Indifferent students	23	9.2
4- Insufficient teaching time	16	6.4
5- Lack of appreciation from colleagues	14	5.6
6- The status of ICT subject in school curriculum	14	5.6
7- Perceived needlessness of ICT subject by other subject teachers and school administrators	12	4.8
8- Large class sizes	7	2.8
9- Insufficiency of ICT curriculum	6	2.4
10- Difficulty of classroom management in labs	5	2.0
11- Inappropriate teaching materials	3	1.2
12- Rapidly changing nature of ICT subject	3	1.2
<i>Total</i>	<i>251</i>	<i>100</i>

As can be seen in Table II, according to the high self-efficacy ICT teachers, the most satisfying aspects of ICT teaching were the dynamic nature of ICT subject, higher student interest, having opportunity to help other subject teachers, and lecturing in well-established labs, whereas the most frequently cited frustrating aspects of ICT teaching were ICT-related extra works of schools and colleagues, shortage of hardware and technical problems, indifferent students, insufficient teaching time, lack of appreciation from colleagues, and the status of ICT subject in school curriculum. However, perceived needlessness of ICT subject by other subject teachers and school administrators, large class sizes,

insufficiency of ICT curriculum, difficulty of classroom management in labs, inappropriate teaching materials, and the rapidly changing nature of ICT subject were found to be relatively less frequently cited frustrating aspects of ICT teaching. Table III shows the low self-efficacy teachers' responses concerning satisfying and frustrating aspects of ICT teaching.

TABLE III
LOW SELF-EFFICACY TEACHERS' RESPONSES CONCERNING SATISFYING AND FRUSTRATING ASPECTS OF ICT TEACHING

Categories	f	%
<i>Satisfying Aspects of ICT Teaching</i>		
1- Dynamic nature of ICT subject	66	44.9
2- Higher student interest	50	34.0
3- Having opportunity to help other subject teachers	17	11.6
4- Lecturing in well-equipped labs	14	9.5
<i>Total</i>	<i>147</i>	<i>100</i>
<i>Frustrating Aspects of ICT Teaching</i>		
1- ICT-related extra works of schools and colleagues	59	28.8
2- Shortages of hardware and technical problems	37	18.0
3- Insufficient teaching time	23	11.2
4- The status of ICT subject in school curriculum	23	11.2
5- Perceived needlessness of ICT subject by other subject teachers and school administrators	19	9.3
6- Indifferent students	14	6.8
7- Difficulty of classroom management in labs	8	3.9
8- Insufficiency of ICT curriculum	8	3.9
9- Rapidly changing nature of ICT subject	6	2.9
10- Inappropriate teaching materials	4	2.0
11- Large class sizes	3	1.5
12- Lack of appreciation from colleagues	1	0.5
<i>Total</i>	<i>205</i>	<i>100</i>

As shown in Table III, according to the low self-efficacy ICT teachers, the most satisfying aspects of ICT teaching were the dynamic nature of ICT subject, higher student interest, having opportunity to help other subject teachers, and lecturing in well-established labs, whereas the most frequently cited frustrating aspects of ICT teaching were ICT-related extra works of schools and colleagues, shortage of hardware and technical problems, insufficient teaching time, the status of ICT subject in school curriculum, and perceived needlessness of ICT subject by other subject teachers and school administrators. However, indifferent students, difficulty of classroom management in labs, insufficiency of ICT curriculum, rapidly changing nature of ICT subject, inappropriate teaching materials, large class sizes, and lack of appreciation from colleagues were found to be relatively less frequently cited frustrating aspects of ICT teaching.

IV. DISCUSSION

This study addressed the perceptions of ICT teachers about the most satisfying and frustrating aspects of ICT teaching in Turkish schools. In addition, the study also compared these aspects based-on ICT teachers' self-efficacy beliefs. Results showed that frustrating aspects of ICT teaching were listed more than satisfying aspects of ICT teaching by both the high self-efficacy and low self-efficacy teachers. Although the high

self-efficacy teachers listed more positive and negative aspects of ICT teaching than did the low self-efficacy teachers, as opposed to our expectations, the lists of both groups in terms of its content were very similar. While the results showed no noteworthy qualitative differences between the high and low self-efficacy groups, the issues raised by the teachers either satisfying or frustrating aspects of ICT teaching were very informative.

First of all, "the dynamic nature of ICT subject" was found to be the most satisfying aspects of ICT teaching. In general, the findings of the study concerning satisfying aspects of ICT teaching are consistent with the literature. For example, several studies which carried out in England [16], [17], showed that the "special features of ICT as a school subject" and the "practical nature of ICT subject" were among the most important factors in choosing to teach ICT. Similarly, "excitement and stimulation of learning and using new technologies--continuous change" was found to be the most cited enjoyment theme for the USA technology teachers [5]. We assume that the ICT teachers like to learn new developments and innovations in their occupational fields. They also like to teach these developments and innovations to their students and other teachers in their schools. This finding is also encouraging for many respects. For example, it shows that the ICT teachers would like to share their knowledge and skills with others in the learning environment, which is a chance for the schools.

Secondly, "the higher student interest" was found to be the second satisfying aspect of ICT teaching for the Turkish ICT teachers. Indeed, when students saw the value of learning ICT for themselves, this may made ICT teachers feel useful and satisfied. Teachers' job satisfaction was found to be strongly associated with forming positive relationships with students and continued involvement in their subject [16]. However, studies have shown that while some students in ICT classes were engaged in course related learning activities, some were more interested in irrelevant activities such as gaming or mailing [1], [17]. When students were engaged in irrelevant activities in regular class hours, ICT teachers generally felt frustrated due to the indifference and inattentiveness of students.

Thirdly, "having opportunity to help other subject teachers" was one of the satisfying aspects of ICT teaching. Similarly, "helping other staff use ICT" was found to be one of the satisfying aspects of ICT teaching for the English ICT teachers [18]. It is controversial that the Turkish ICT teachers like to have opportunity to help others on the one hand, and they are frustrated with ICT-related extra works of schools and colleagues, on the other. In other words, they both like to help others but at the same time, they feel overloaded with works coming from others. This result may be due to the fact that the majority of ICT classes have frequently been interrupted to get immediate assistance of ICT teachers by the school administrators and/or other subject teachers in Turkish schools [1], [2], [3].

Fourthly, "lecturing in well-established labs" was the last satisfying aspect of ICT teaching. Undoubtedly, without well-equipped computer labs it is impossible for ICT teachers to continue their classes properly. It is also discouraging that the ICT teachers seemed to be frustrated mainly with some physical conditions in computer labs (e.g. shortages of hardware, out-of-date software, technical problems, internet connection problems, lack of technical support).

Other frequently cited sources of frustration are related to the nature of ICT curriculum, devoted time for teaching ICT, and perceived needlessness of ICT subject by other subject teachers and school administrators. As stated earlier, the status of ICT subject in the Turkish school system is elective and the total teaching time is merely one or two hours per week. Accordingly, the ICT teachers frequently considered the status of this subject to be a restrictive factor decreasing the effectiveness and efficiency of their teaching practices. Moreover, because the ICT subject was elective, the majority of students regarded this subject to be unimportant.

Furthermore, it is interesting to note some of the frustrating factors that were not frequently cited such as lack of appreciation from colleagues, the difficulty of classroom management in computer labs, inappropriate teaching materials (e.g. textbooks, software), large class sizes and the rapidly changing nature of ICT subject. Due to rapidly changing nature of their field of study, the ICT teachers need to continuously update their content knowledge. According to them, however, the main barrier was the lack of long-term professional development opportunities. All these issues seem to affect negatively the ICT teachers' effectiveness and efficiency in their classes, and are related to the importance and resources allocated to the ICT education and use in the Turkish educational system. Therefore, the authorities of Ministry of National Education should take into consideration the results of this study in order to redesign ICT teachers' roles and responsibilities as well as job environment in schools. Without a doubt, teacher educators in universities should also take into consideration the results of this study in order to improve the content and context of ICT teacher education programs.

Information about "job-satisfier" is essential if the ICT education profession is to better understand the recruitment and preparation of new teachers [5]. As is known well, exposure to chronic job stressors, with low self-efficacy increases the probability of ineffective teaching and student failure. Teachers' job satisfaction will be the root cause of their further professional development. Further research is recommended for examining the relationships among ICT teachers' job stressors and satisfiers, instructional practices and the buffering effect of teacher self-efficacy.

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