



TURKISH K-12 EFL TEACHERS' ATTITUDES TOWARD ICT INTEGRATION INTO LANGUAGE INSTRUCTION

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Abstract

This study aims at revealing K-12 EFL teachers' attitudes toward ICT integration into language instruction and explicating the factors impeding their positive attitudes. One hundred and eighty five K-12 EFL teachers (45 males) from Turkish primary and secondary education involved in the study. The methodology deployed in the study is mixed-method, including both quantitative and qualitative approaches to gathering, analyzing, interpreting, and reporting data. The results of the study unearthed K-12 EFL teachers' fair ICT competence, their positive ICT attitudes, a number of barriers to and prominent suggestions for ICT integration into language education.

Key Words: Attitudes, language teachers, information and communication technology, foreign language teaching, ICT competence.

INTRODUCTION

The use of modern technology in teaching languages has gained momentum world-wide over the past decade (e.g., Chen, Belkada, & Okamoto, 2004; Warner, 2004). Information and communication technology (ICT) establishes an effective learning environment and it alters the learning and teaching process in which students are engaged in knowledge in an active, self directed and constructive way (Volman & Van Eck, 2001). Since countries view ICT as an effective tool for change and innovation in education (Eurydice, 2001; Papanastasiou & Angeli, 2008), they make investment in ICT. To illustrate, Turkey spent about \$ 400 per person, and allocated 11.7% of its budget to ICT. However, this rate is lower than those of Europe and Central Asia, which allocate 22% of their budget to ICT, but higher than the rates in developing countries (World Bank, 2007).

The Turkish Ministry of National Education (MNE) struggles to disseminate ICT at schools just like other countries do to resolve educational problems and enable innovation in education. According to the objectives of Lisbon Summit in 2002, the European Union has been trying to make a shift to information-based economy and community and maximize digital literacy (Commission of European Communities, 2005). In this regard, the MNE attempts to establish computer labs and provide Internet connection at schools. Statistically, the schools having Internet connection in 2005 rose from 40% (World Bank, 2007) to 68.1% in 2006 (SPO, 2008). In addition, by 2001, 67% of 520 thousand teachers were taught computer courses (MNE, 2002). Aside from the opportunities provided by schools, the MNE established 6412 computer labs and about 124 thousand computers were distributed to schools. By the end of 2007, this number amounted to 604,000. In 2008, nearly 87% of 45,973 schools in formal education had Internet connection (MNE, 2008a, 2008b).

In spite of heavy expenditure on ICT infrastructure, it is disregarded that it is the teacher who will employ it in the classroom as a part of the curriculum (Niederhauser & Stoddart, 2001). Even if a school has ICT hardware and software, whether they are utilized efficiently or inefficiently depends on teachers. Nevertheless, how these teachers perceive these reform efforts is highly linked with variables such as belief and experience, level of knowledge, attitude toward ICT, educational applications, achievement expectations and learning-teaching approaches (Lim & Khine, 2006).

Although a number of research studies have been conducted to investigate teachers' attitudes toward ICT integration into language instruction (e.g., Albirini 2006; Drent & Meelissen 2008; Afshari, Bakar, Luan, 2009), very few studies (e.g., Schoepp 2005; Empirica 2006) elucidated the factors obstructing K-12 EFL teachers' positive attitudes toward ICT implementation. Under the light of these facts, the main purpose of this research study is not only to investigate K-12 EFL teachers' attitudes toward ICT integration into language instruction but also unearth the factors obstructing their positive attitudes.

METHOD

Research Design

The methodology employed in this study is mixed-method, covering both quantitative and qualitative approaches to collecting, analyzing, interpreting, and reporting data. A mixed-method research design incorporates the strengths of both qualitative and quantitative approaches, offsets their different weaknesses and provides a more comprehensive and complete set of data. Onwuegbuzie and Leech (2004) state that mixed methods research as the third research paradigm can help bridge the schism between quantitative and qualitative research. Methodological work on the mixed methods research paradigm can be viewed in several recent books (Creswell, 2003; Johnson & Christensen, 2004). In this study, the strategy of inquiry utilized in the quantitative part of the study is a questionnaire, while the strategy of inquiry deployed in the qualitative part is an interview.

Research Questions

- (1) What are K-12 EFL teachers' levels of ICT competence?
- (2) What are K-12 EFL teachers' attitudes toward ICT integration into language instruction?
- (3) What are the barriers that K-12 EFL teachers encounter when trying to infuse ICT into language instruction?
- (4) What are K-12 EFL teachers' suggestions for better ICT integration into language instruction?

Research Participants

One hundred and eighty five K-12 EFL teachers (45 males) from Turkish primary and secondary education participated in the study. More than half of the participants were in the age range of 30-39 year-old. Thirty percent of the responding teachers were 40 year-old and above. The information about their possession of computer at home or school, internet usage frequency, graduated university and faculty type, taken ICT related courses, certificate about ICT, inservice ICT training was also collected. The demographic information of these teachers is presented in Table 1.

Table 1: Demographic Variables of the Participants (N=185)

Demographic variables	Frequency	Percentage (%)
Gender		
1= male	45	24.3
2= female	140	75.7
Age		
1= under 30 years old	24	12.97
2= 30-39 years old	106	57.29
3= 40 years old and above	55	29.7
Home computer		
1= no home computer	63	34.05
2= have home computer	122	65.95
3= have home computer with Internet access	95	51.35
4= have home computer without Internet access	27	14.59

School computer		
1= no school computer	12	6.48
2= have school computer	173	93.52
3= have school computer with Internet access	160	86.48
4= have school computer without Internet access	13	7.02
Internet Usage (per day)		
1= none	20	10.81
2= less than 1 hour	77	41.62
3= 1-4 hours	58	31.35
4= 5-8 hours	30	16.21
Graduated University Type		
1= State university	169	91.35
2= Private university	16	8.65
Graduated Faculty Type		
1= Faculty of Education	137	74.05
2= Faculty of Arts and Sciences	48	25.95
Taken ICT Related Courses		
1= Computer	117	63.24
2= Instructional Technology and Materials Design	105	56.75
Certificate about ICT		
1= have certificate	18	9.72
2= no certificate	167	90.27
Inservice Training about ICT		
1= have inservice training	52	28.10
2= no inservice training	133	71.89

Instruments

A questionnaire was developed to investigate K-12 EFL teachers' level of ICT competence and their attitudes toward ICT integration into language instruction. The items developed in the questionnaire are based on the questionnaires designed by Isleem (2003), Chen (2008), Albirini (2006), Al-Senaidi, Lin & Poirot (2009). The questionnaire, implemented in the present study, had three main sections, the first section including general information about the respondents' age, gender, home and school computer possession, internet usage, graduated university type, graduated faculty type, taken ICT related courses, certificate about ICT and inservice training about ICT, the second section related to K-12 EFL teachers' levels of ICT competence having 15 items presented on a five point Likert scale, ranging from 'no capability at all', 'low capability', 'fair', 'good', 'excellent' and the last section relevant to K-12 EFL teachers' attitudes toward ICT integration into language instruction with 12 items presented on a five point Likert scale, ranging from 'strongly disagree', 'disagree', 'neutral', 'agree', 'strongly agree'.

In addition to the questionnaire, an interview was designed for the qualitative part of the study. Open-ended questions based on the research questions and the developed questionnaire (e.g. What barrier(s) do you encounter when trying to infuse ICT into language instruction? What do you suggest for effective ICT integration into language education?) were prepared before conducting the interviews.

Procedure

Validity of the questionnaire and the interview. Content and face validity of both instruments was established via the procedures of literature review, expert review and a pilot study. The panel of experts consisting of one



associate professor of educational technology and materials design, two native experts and two non-native senior EFL teachers were asked to evaluate the comprehensiveness, acceptability and clarity of both instruments. Based on the feedback received from five experts, some items in the questionnaire were modified and some were deleted. The revised questionnaire was piloted in five primary schools in Turkey, with a total of fifteen K-12 EFL teachers. These fifteen K-12 EFL teachers were also asked to comment on comprehensiveness, acceptability and clarity of both instruments. Further revisions were made on the questionnaire based on the teachers' feedback. Since K-12 EFL teachers had difficulty in comprehending some of the items in the questionnaire, the wording of some items was simplified by the researcher.

Reliability of the questionnaire. To check the reliability of the questionnaire, the instrument was analyzed through the Cronbach's Alpha Coefficient and the reliability was $\alpha = 0.81$, which showed a high level of reliability.

Administration of the questionnaire to the subjects. The questionnaire was administered to 185 K-12 EFL teachers from different public primary and secondary schools in Turkey in two years time (from 2008-2009 Academic Year to 2009-2010 Academic Year). Especially, local conferences, seminars, symposia that the researcher joined provided him with the opportunity to get together with K-12 EFL teachers working in different parts of Turkey and administer the questionnaire to them.

Conducting the interviews. Semi-structured interviews were used to collect in-depth data from fifteen K-12 EFL teachers. Open-ended questions were developed in advance. All interviews were recorded via the use of a voice recorder or transcribed for data analysis.

Data Analysis. Dual steps were followed by the researcher in the analysis of the gathered data. Firstly, the quantitative study was analyzed through the use of descriptive statistics. The data were coded and prepared for analysis by utilizing the statistical analysis software SPSS 16.0. The mean, standard deviation, frequency and percentage scores were calculated for each item in the questionnaire. Secondly, the qualitative study was analyzed from the transcriptions of the conducted interviews.

RESULTS

K-12 EFL Teachers' Levels of ICT Competence

Participants were asked to respond to 15 items to indicate their level of computer competence. The 5-point scale of responses ranged from one (no capability at all) to five (excellent). Table 2 summarizes the results of descriptive statistics (percentages, means, and standard deviations) of K-12 EFL teachers' responses on the ICT Competence Scale. Over half of the respondents (94.1%) indicated that they employed computers with good or excellent competence ($M=4.54$; $SD=.76594$). Similarly, 91.3% of respondents stated that they used television / video with good or excellent competence ($M=4.06$; $SD=.63083$). Other ICT tools which respondents utilized with good or excellent competence included: e-mail (90.8%) ($M=4.01$; $SD=.82085$), radio cassette recorder (88.6%) ($M=3.82$; $SD=.64465$) and chat and forum (84.3%) ($M=3.74$; $SD=.81113$). However, low capability was reported in the use of word processors (5.4%) ($M=2.42$; $SD=.68867$), spreadsheets (6.5%) ($M=2.45$; $SD=.75850$), presentation software (7%) ($M=2.71$; $SD=.74387$), databases (12.4%) ($M=2.90$; $SD=.84135$), web browser (12.4%) ($M=2.78$; $SD=.86846$), search engines (12.5%) ($M=2.64$; $SD=.88515$), projector system (13.5%) ($M=2.55$; $SD=.91383$), video camera (5.4%) ($M=2.15$; $SD=.66125$), simulation programs (4.9%) ($M=2.17$; $SD=.62168$), and drawing tools (11.9%) ($M=2.46$; $SD=.89682$) since very few number of respondents reported that they were able to employ them with good or excellent competence. Overall, most respondents stated that they had "fair" competence in using ICT tools. The mean score of the ICT Competence Scale was 3.02, with a standard deviation of .770 indicating that the majority of the respondents felt that they had fair competence in deploying most of the ICT tools as presented in Table 2.

Table 2: Means, Std. Deviations and Percentages of K-12 EFL Teachers' Level of ICT Competence

Items	Percentage (%)					Mean	SD
	NC	LC	F	G	E		
1. Computers	1.1	2.7	2.2	29.2	64.9	4.54	.76594
2. Word processors	1.6	61.6	31.4	3.2	2.2	2.42	.68867
3. Spreadsheets	4.3	55.1	34.1	3.8	2.7	2.45	.75850
4. Presentation software	2.7	34.1	56.2	3.2	3.8	2.71	.74387
5. Databases	2.2	25.9	59.5	4.3	8.1	2.90	.84135
6. Web browser	3.8	32.4	51.4	5.9	6.5	2.78	.86846
7. Television/Video	0.5	2.7	5.4	72.4	18.9	4.06	.63083
8. E-mail	3.2	3.8	2.2	70.3	20.5	4.01	.82085
9. Chat and forum	4.9	4.3	6.5	80.0	4.3	3.74	.81113
10. Search engines	5.4	41.6	40.5	7.6	4.9	2.64	.88515
11. Projector system	4.9	53.5	28.1	8.1	5.4	2.55	.91383
12. Radio cassette recorder	2.2	4.3	4.9	85.9	2.7	3.82	.64465
13. Video camera	3.2	86.5	4.9	2.2	3.2	2.15	.66125
14. Simulation programs	2.7	83.8	8.6	2.7	2.2	2.17	.62168
15. Drawing tools	5.9	58.4	23.8	7.0	4.9	2.46	.89682
Total						3.02	.770

NC= no capability at all, LC= low capability, F= fair, G= good, E=excellent

K-12 EFL Teachers' Attitudes toward ICT Integration into Language Instruction

Participants were also asked to respond to the questionnaire items related to their attitudes toward ICT integration into language instruction. Table 3 displays the results of descriptive statistics (percentages, means, and standard deviations) of K-12 EFL teachers' attitudes toward ICT integration into language instruction. Higher scores indicated positive attitudes towards ICT, while lower scores indicated less positive attitudes. Almost all of the respondents (90.3%) indicated their agreement or strong agreement that they can improve their teaching skills with the help of ICT. Likewise, the majority of the respondents (89.7%) agreed or strongly agreed that preparing course materials was easier with the help of ICT.

Other items in response to which the majority of the participants expressed their agreement or strong agreement included: item four "I think that ICT supports my teaching" (87.1%) (M=4.01; SD= .82085), item five "I am not sure that I am ICT competent for the use of ICT in my class" (80.6%) (M= 3.72; SD= .69525), item six "I think that ICT saves my time in the class" (89.2%) (M= 3.91; SD= .67479), item seven "I think that I become more productive when I use ICT in my class" (93.5%) (M= 4.02; SD= .70677), item eight "I think my students can improve their language skills better if I use ICT tools in my teaching" (86.5%) (M= 3.85; SD= .73373), item nine "ICT makes it easy to reach instructional resources" (91.9%) (M= 3.93; SD= .60443), item ten "I think that more time should be allocated to ICT use in language teaching" (90.8%) (M= 3.89; SD= .58902), item eleven "I am sure that preparing course materials is easier with the help of ICT" (89.7%) (M= 4.36; SD= .92294), and item twelve "I believe that more studies should be directed to the integration of ICT into curriculum" (88.7%) (M= 3.87; SD= .65167).

On the other hand, relevant to the most frequent negative attitudes toward ICT integration into language instruction, 34.1 % of the respondents expressed their disagreement or strong disagreement that they did not integrate ICT tools in their EFL teaching as much as other resources (M= 3.16; SD= 1.16361) Similarly, 37.9 % of the respondents disagreed or strongly disagreed that they could cope with the problems that could emerge while using ICT (M= 3.23; SD= 1.20010). In general, K-12 EFL teachers' attitudes towards ICT were positive, with an overall mean of 3.85 and a standard deviation of .79222, as shown in Table 3.

Table 3: Frequency Percentages on the Attitude Scale (n= 185)

ICT attitudes scale Items	Percentage (%)						Mean	Std.
	SD	D	N	A	SA			
Item 1	11.9	22.2	6.5	56.8	2.7	3.16	1.16361	
Item 2	2.2	35.7	19.5	22.2	20.5	3.23	1.20010	
Item 3	0.5	4.9	4.3	58.4	31.9	4.16	.76306	
Item 4	1.6	2.7	8.6	55.7	31.4	4.12	.80129	
Item 5	1.6	7.0	10.8	78.4	2.2	3.72	.69525	
Item 6	2.2	2.7	5.9	79.5	9.7	3.91	.67479	
Item 7	2.2	3.2	1.1	77.3	16.2	4.02	.70677	
Item 8	3.2	2.7	7.6	78.4	8.1	3.85	.73373	
Item 9	1.6	2.7	3.8	84.3	7.6	3.93	.60443	
Item 10	1.1	4.3	3.8	85.9	4.9	3.89	.58902	
Item 11	3.2	2.2	4.9	34.6	55.1	4.36	.92294	
Item 12	1.6	4.3	5.4	82.2	6.5	3.87	.65167	
Total						3.85	.79222	

Scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Barriers in ICT Integration into Language Instruction

In response to the open-ended question regarding what barriers K-12 EFL teachers encounter when trying to infuse ICT into language instruction, most teachers expressed that lack of ICT competency, lack of technical support, lack of time, lack of effective ICT training and inadequate institutional support were the main barriers that prevented them from infusing new technologies into language instruction. To illustrate, comments illustrating these views were as follows:

"I am not enthusiastic about incorporating ICT tools into my teaching practices because I do not have the necessary knowledge and skills to utilize ICT tools." (Teacher 5, Age 35)

"As an EFL teacher working at a primary school context, I am trying my best to use ICT in my classroom. Unfortunately, technical problems such as waiting for websites to open, not being able to connect to the Internet, and malfunctioning computers negatively affects my teaching. If we had a technician in our school, he would provide us with technical support when needed. Hence, we would deliver English lessons smoothly in our school." (Teacher 8, Age 32)

"Although I feel myself competent in utilizing computers and the Internet in the classroom, I do not use them regularly in my lessons. Since I am teaching twenty-five hours a week, I have no time to prepare internet-based lessons for my students and use ICT tools in my lessons." (Teacher 10, Age 35)

"We do not have adequate training opportunities for us related to the use of ICT tools in a foreign language classroom. Unfortunately, we lack sufficient amount of in-service ICT training programs in our school." (Teacher 12, Age 28)

"In our school, we are willing to develop online English lessons for our students. However, our school has a very limited budget and it cannot provide us with sufficient financial support related to our technology project." (Teacher 14, Age 42)



K-12 EFL Teachers' Suggestions for Better ICT Integration into Language Education

In response to the open-ended question regarding suggestions for better ICT integration into language education, most teachers suggested that: (a) government support should be provided to renew the infrastructure of telecommunication especially in rural areas and purchase computing equipment for those schools, (b) technical support should be provided, (c) adequate ICT training should be presented and (d) effective planning should be made for ICT infusion into language instruction. To illustrate, comments exemplifying these views were as follows:

"In some schools, since high-speed Internet and computing equipment are still lacking, K-12 EFL teachers cannot infuse ICT into their teaching. At this point, government support should be provided to renew the infrastructure of telecommunication in schools located in rural areas and purchase computing equipment for those schools." (Teacher 14, Age 40)

"Technical problems that we sometimes experience during our lessons demotivate us to employ ICT in our teaching. Computer slowdown, computer lockup and freeze, data loss, not responding printers, not opening websites are some of the technical problems that affect our teaching negatively. We should have a technician in our school to provide us with technical support when necessary. Only then can we conduct technology furnished lessons effectively." (Teacher 8, Age 32)

"In my viewpoint, language teachers should be provided with in-service ICT training programs. At this juncture, workshops, seminars and conferences should be organized in schools to teach language teachers how to put teaching materials online and deliver English courses online." (Teacher 12, Age 35)

DISCUSSION

In the literature, a number of research studies have been conducted concerning ICT competencies of faculty members, prospective teachers, and K-12 teachers in the world as well as in Turkey (Yildirim 1999; Yildirim, 2000). To illustrate, Yildirim (1999) and Yildirim (2000) stressed that the best way to stimulate teachers to employ computers in the classroom is to maximize level of competency and that this can be achieved by offering several computer literacy courses tailored according to the individual's level of confidence, anxiety, and competency. In this vein, most of the primary and secondary education institutions presented in-service training (e.g. workshops, seminars, and hands-on experience) for EFL teachers to make them competent users of new technologies in the foreign language classroom.

Relevant to attitudes toward ICT integration into language instruction, the results of the study showed that K-12 EFL teachers' attitudes towards ICT were positive. A plethora of research studies about teachers' attitudes toward technology use have been conducted by researchers (Drent & Meelissen, 2008; Al-Zaidien, Mei & Fook, 2010) and most of available literature indicates that the success of technology use in the educational contexts is largely based on teachers' attitudes toward technology use (Kellenberger & Hendricks, 2003, Albirini, 2006). For instance, Al-Zaidien et al. (2010) investigated the level of ICT use for educational purposes by teachers in Jordanian rural secondary schools. The results of the study indicated that, teachers had a low level of ICT use for educational purpose, they held positive attitudes toward the use of ICT, and a significant positive correlation between teachers' level of ICT use and their attitudes towards ICT was found. The results also suggested that ICTs use for educational purposes should be attributed more prominence than it currently receives. The result of this study may be attributed to the fact that K-12 EFL teachers' attitudes toward ICT play a key role in their adoption and actual use of ICT tools in the classroom (Afshari, Bakar, Luan, 2009) and that a positive ICT attitude is one of the main factors that has a direct positive impact on the innovative employment of ICT by the teacher (Drent & Meelissen, 2008).

Related to the barriers that K-12 EFL teachers encounter when trying to infuse ICT into language instruction, the results of the study indicated that lack of ICT competence, lack of technical support, lack of time, lack of effective ICT training and inadequate institutional support were the major factors hindering ICT integration into language instruction.



The results of the study were in line with those of recent research into the barriers to the integration of ICT into education including teachers' lack of ICT competence (Al-Oteawi, 2002; Empirica, 2006), lack of technical support (Lewis, 2003), lack of time (Beggs, 2000; Al-Alwani, 2005; Schoepp, 2005), lack of effective ICT training (Schoepp, 2005) and inadequate institutional support (Chen, 2008). However, this study did not provide evidence in support of other important barriers repeatedly reported in literature including negative attitudes towards ICT (Schoepp, 2005; Empirica, 2006) and lack of teacher confidence (Dawes, 2001).

As to suggestions for better ICT integration into language education, the results of this study exhibited that provision of government support, technical support, adequate ICT training, and making effective ICT planning were five main ways to maximizing ICT infusion into language education. In some schools located in rural areas, internet services and computing equipment may be still lacking. At this point, government support should be supplied to renew the infrastructure of telecommunication in those places and to buy computing equipment for those schools. Sicilia (2005) states that "technical barriers impede the smooth delivery of the lesson or the natural flow of the classroom activity" (p.43). In this vein, Lewis (2003) stresses that teachers can overcome the barriers preventing them from employing ICT with good technical support. Cuban, Kirkpatrick, and Peck (2001) indicates that technical staff should be employed in schools to maintain computers and easy accessibility to high speed Internet access.

K-12 EFL teachers need in-service training programs to ensure that they keep abreast with current technologies. These programmes should adequately provide teachers with skills necessary to infuse technology in their classes. Previous literatures (Cuban, Kirkpatrick, & Peck, 2001; Vaughan, 2002, Schoep, 2004) show that providing access to ICT is not sufficient; teachers need training in methods for incorporating ICT into their classroom. Necessary in-service training programs can be provided for K-12 EFL teachers by using other methods such as workshops, seminars, and conferences. These in-service training programs can be more effective if they are planned and designed according to the K-12 teachers' subject area needs and based on "teaching with ICT" rather than "basic ICT applications". In this respect, the most prominent component of effectively incorporating ICT into curriculum is building a thorough technology plan (Rogers, 2005).

CONCLUDING REMARKS, LIMITATIONS AND FUTURE DIRECTIONS

The results of this study indicated that K-12 EFL teachers had fair competence in deploying most of the ICT tools. Results also showed that teachers' attitudes were positive toward integration of technology into language instruction. Moreover, it was found in the study that lack of ICT competency, lack of technical support, lack of time, lack of effective ICT training and inadequate institutional support were the main barriers preventing teachers from integrating new technologies into language instruction. Lastly, it was revealed in the study that provision of government support, technical support, adequate ICT training, and making effective ICT planning were five main ways to catalyzing ICT incorporation into language education.

Over the last two decades, there have been prominent changes in the classroom such as computer access and direct broadband Internet access in the classroom. However, very few number of K-12 teachers are currently involved in and enthusiastic about incorporating computing technology into instruction. Unfortunately, most teachers are still undecided to employ computing technology in the classroom (e.g., Cuban, 2001). At this juncture, then, for effective ICT infusion into K-12 schools, Turkey should design or adopt its own national policies, technology plans, and ICT standards for all stakeholders in K-12 schools. Existing policies, plans, and standards related to this issue should be updated, developed, and spread. It is crucial that ICT resources (hardware, software, and fast Internet access) be supplied in every school. It can be suggested that at least one computer with Internet access and LCD projector be provided in every classroom. Besides the supply of resources, K-12 schools and teachers need technical backup to employ them. To realize this aim, some new divisions in schools (instructional technology centers, school technical support centers, etc.) may be organized to provide teachers with the necessary technical support.



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