The Validity and Reliability Studies of the Internet Use of Pre-Service English Teachers Survey: A Turkish Context

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Abstract – As the availability of computers and the Internet in schools and classrooms has grown, so has interest in the extent to which these technologies are being used and for what purposes. Recently there has been many studies on teachers' use of education technology in their classrooms and schools, the availability of this technology in their classrooms and schools, their training and preparation for their use and the barriers to technology use they encounter. Using the Internet effectively and the success of the Internet utilization is very much related to the users' attitudes toward the Internet. This study aims at investigating the reliability and the validity of the Internet Use of Pre-service English Teachers Survey modified from the Master Thesis of Sudsuang Yutdhana. The survey contains two subscales as Internet Attitude Scale and Self-perception of Computing Skills. The survey was administered to randomly selected third and fourth year 96 pre – service English Teachers at Dokuz Eylül University Buca, Faculty of Education, Department of English Language Teaching. The results indicated that Internet Use of Pre-service English Teachers Survey (IUPETS) is reliable and valid.
Key words: The Internet use, pre-service English teachers, validity, reliability.

Özet – İngilizce Öğretmen Adaylarının İnternet Kullanımı Anketinin Geçerlik ve Güvenirlik Çalışmaları: Türkiye Bağlamı – Son yıllarda okullarda ve sınıflarda mevcut olan bilgisayar sayısında ve bu bilgisayarların kullanılabilirlik düzeyinde meydana gelen artışla birlikte, bu teknolojiden ne ölçüde fayda sağlandığı ve hangi amaçlarla kullanıldığı da merak konusu olmuştur. Öğretmenlerin okullarda ve sınıflarda eğitim teknolojilerini kullanmaları, bu teknolojilerin okullara ve sınıflara ne ölçüde sunulduğu, öğretmenlerin bu teknolojiler ile ilgili yeterli eğitime sahip olup olmadığı ve öğretmenlerin bu teknolojileri kullanırken karşılaştıkları sorunlar birçok çalışmaya yön vermiştir. Eğitim teknolojileri içerisinde sayılan ve bu çalışmanın konusunu oluşturan Internet'in, etkili ve verimli bir şekilde kullanımı öncelikle kullanıcıların Internet'e karşı olan tutumlarıyla doğrudan ilişkilidir. Bu çalışmanın amacı, Sudsuang Yutdhana'nın master tezinde kullandığı İngilizce Öğretmen Adaylarının Internet Kullanımı Anketi'nin güvenirlik ve geçerlik çalışmasını yapmaktır. Anket; 'Internet Tutum Ölçeği' ve 'Bilgisayar Becerilerinin Algılanması' şeklinde iki alt ölçekten oluşmaktadır. Anket, Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi, İngiliz Dili Eğitimi Anabilim Dalı'nda öğrenim gören ve rastgele seçilmiş 96, üçüncü ve dördüncü sınıf öğretmen adayına uygulanmıştır. Elde edilen sonuçlar göstermektedir ki, İngilizce Öğretmen Adaylarının Internet Kullanımı Anketi geçerli ve güvenilir bir ankettir.
Anahtar kelimeler: İnternet kullanımı, İngilizce öğretmen adayları, geçerlik, güvenirlik.

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Introduction

Nowadays, the Internet is gaining immense popularity in foreign language teaching and more and more educators and learners are embracing it. Although the potential of the Internet for educational use has not been fully explored yet and the average school still makes limited use of computers, it is obvious that we have entered a new information age in which the links between technology and TEFL have already been established. Leading organizations like UNESCO and the World Bank share the view that the use of Internet technology is indispensable and must be managed in the most appropriate manner to facilitate access to quality education within the budget limitations of governments (Lee & Jor, 2004). Moreover; the development of the Internet brought about a revolution in the teachers' perspective. The arrival of the internet could offer a turning point in English teaching methodology with the potential to become an indispensable tool for language teaching in the future (Linder, 2004; Warschauer, 1996). If the internet is a means of accessing information then it should be a tool for teachers and learners (Forsyth, 1998).

The Agora Language Marketplace has done many studies about the language teachers' use of the Internet and the findings show how teachers' use is increasing in parallel with the tremendous general growth in the use of web (Teeler, 1999). Another study investigating the English language teachers' beliefs of the benefits of the Internet in EFL teaching confirmed that teachers are willing to integrate the Internet in teaching English despite some of the concerns they had (Al-Mekhlafi, 2004). Similarly, the findings of the 1999 Fast Response Survey System (FRSS) in America indicate that about half of the teachers with computers available in their schools or at home use them and the Internet for different purposes such as preparing classroom activities and finding sample lesson plans (National Center for Education Statistics, 2000). Additionally; Murray & McPherson (2004) assert that "since the Web is now an essential part of education in many countries, using the web to find information for classroom tasks mirrors what many learners will need to do in their lives. However, for learners to be able to apply their classroom learning outside the classroom, teachers will need to design tasks that are in fact similar to those outside the classroom". According to Dudeney (2000), "to the busy teacher the internet can be an infinite resource of texts, visual stimuli, listening material, vocabulary, information, video files, live TV and radio, newspapers from around the world … The list is endless" (p. 1). Likewise, Warschauer, Shetzer, & Meloni (2000) suggest, "the most valuable contribution of the Internet to English language teaching is its role in facilitating teachers' access to professional material, contacts, and resources" (p. 11). Related literature indicates that the Internet today has an important role and great potential in foreign language learning and teaching. In the light of all these valuable comments made by the researchers it can be said that the Internet is a magnificent world as a source of materials for language teaching if it is used effectively and profitably in the hands of talented teachers. Since the teachers are the backbones of education and the

immediate users of the Internet in the classroom together with their students, their attitudes and beliefs on the use of this magical device is also crucial.

Using the Internet as an instructional tool is very popular in the world today. Although Turkey is a developing country and the use of the Internet in the field of English language teaching is a new area, there have been some attempts towards the use of the Internet in the language classroom since the mid-1990s. However, there is still the necessity of making new studies and contributions. In Turkey, there has been some studies on the attitudes of students towards the Internet and the results in these related studies (Isman & Dabaj, 2004; Usun, 2003) stated that learners have positive attitudes towards the Internet. Similarly; Aydın, in his study, proposed that EFL learners have positive attitudes towards the Internet (2007). This study also aims at making a fresh contribution to the field of the use of Internet in language learning and teaching, primarily focusing on the attitudes of pre-service English teachers towards the Internet. Internet Use of Pre-service English Teachers Survey (IUPETS) used in this study was previously used in international studies, and these studies assess teachers' attitudes of Internet use.

Method

Participants

The universe of the study consisted of pre-service English teachers who were attending to Education Faculties and the Departments of English Language and Teaching. As for the sample of the study, the survey was administered to randomly selected third and fourth year 96 pre-service English Teachers, at Dokuz Eylül University Buca Faculty of Education, the Department of English Language and Teaching.

Data Collection Instruments

The instrument used to accomplish the research purposes was a survey questionnaire. Internet Use of Pre-service English Teachers Survey, modified from Smerdon *et al*. (2000), was adapted into this study from the Master Thesis of Sudsuang Yutdhana (2004). The questionnaire was used to survey the Internet use of English pre-service teachers. It was also to investigate their needs and opinions of using Internet applications for English Language Teaching. The survey contains two subscales as Internet Attitude Scale and Self-perception of Computing Skills.

Internet Attitude Scale (IAS)

IAS contained 8 items in Likert type (strongly agree=4, agree=3, disagree=2, strongly disagree=1) and aimed to measure the degree of the attitudes of the students toward the

use of the Internet in the classroom setting. High scores in the Internet Attitude Scale indicated that pre-service teachers considered the use of technology, primarily the Internet, useful for language teaching.

Self-perception of Computing Skills Scale (SCSS)

SCSS contained 10 items evaluating the instructional needs of the students. The scale was divided into two subscales as basic skills and educational needs. In the Basic Skills subscale there were 6 items and in the Educational Needs subscale there were four items. The scale was formed in Likert type (very necessary=3, necessary=2, not necessary=1).The increase in the scores showed that the students' needs about basic computer skills and their educational needs also increased.

Data Analysis

Methods used to test the reliability of the IUPETS were Cronbach's alpha correlation coefficients, corrected item-total correlation, and test-retest reliability. Principal components analysis and confirmatory factor analysis were also used to examine the validity of the IUPETS. SPSS 11.0 for Windows was used to perform statistical analysis.

Results

In the Internet Use of Pre-service English Teachers Survey (IUPETS) there were two subscales as Internet Attitude Scale and the Self-perception of Computing Skills Scale. The validity and reliability checks of these two subscales were done separately.

Internet Attitude Scale

Reliability

The internal consistency of the Internet attitude Scale was calculated by using Cronbach's alpha coefficient for the total score. Cronbach's alpha coefficient of the scale was 0,73. These coefficients showed that the Internet Attitude Scale (IAS) is an internally consistent measure across for pre-service English teachers.

Item Total Correlations

Item total correlations for the eight items of the IAS scores were also calculated (see Table 1). Among the items included in the scale, 7 items out of 8 showed moderate

item total correlations ranging from 0,38 to 0,52. It is normally accepted that item total correlations are positive and even more than 0,25. This indicates that the inner consistency of the scale is high. In addition, it is advisable to omit the items which does not meet the criteria.(Fraenkel and Wallen, 2000; Büyüköztürk, 2007). For this reason one of the items in the scale was omitted because the item total correlation of it was 0,22.

Table 1: *Item Total Correlations for the Internet Attitude Scale*

Items	***Item total correlations***
1. Internet applications can play an important role in the classroom	0,49
2. Internet applications can be used in the class to enhance the teaching of important skills	0,52
3. Internet applications are best used for drill, remediation or reinforcement of facts	0,43
4. Internet applications are best used in the classroom to promote students' analytical, creative and other high order thinking skills	0,50
5. Internet applications can be used in the classroom to provide alternative learning approaches for students who are having difficulty in learning	0,41
6. Using internet applications is an appropriate activity for some students	0,42
7. Using internet applications can be used in the classroom to make learning more interesting for all students	0,38

Test-Retest Reliability

Test-retest reliability of the Internet Attitude Scale was tested by giving the scale to 49 students in a 2-week interval. There was a positive correlation between the total scores of the two tests (r =0,92).

Validity: Factor Analysis

A principal component analysis was conducted on the 7-item in the Internet Attitude Scale (n=96). Bartlett's test of sphericity, which examined whether correlations in the data set provide suitability for factor analysis, was adequate [x^2=109,788, df=21, p<0,001]. Also, the Kaiser-Meyer-Olkin measure of sampling adequacy was 0,80, also indicating a satisfactory set of data for factor analysis (Staquet, Hays, & Fayers, 1998).

To assess the construct validity of the IAS, an exploratory factor analysis was performed. The factor structure of IAS was analyzed for overall sample (see Table 2). All seven items were found to be loaded satisfactorily on a single factor. For the whole

sample, the single factor accounted for 39% of the total variance, factor loadings ranged from 0,54 to 0,70, and the eigenvalue was equal to 2,74.

Table 2: *Factor Loadings for the Internet Use Scale (IAS) Items*

Item	*Factor loading*
2. Internet applications can be used in the class to enhance the teaching of important skills	0,70
4. Internet applications are best used in the classroom to promote students' analytical, creative and other high order thinking skills	0,68
1. Internet applications can play an important role in the classroom	0,66
3. Internet applications are best used for drill, remediation or reinforcement of facts	0,61
6. Using internet applications is an appropriate activity for some students	0,60
5. Internet applications can be used in the classroom to provide alternative learning approaches for students who are having difficulty in learning	0,58
7. Using internet applications can be used in the classroom to make learning more interesting for all students	0,54
Eigenvalue	2,74
Total of variance	39,05

Based on the results of the exploratory factor analysis, the data were also tested by confirmatory factor analysis (CFA) using Lisrel 8.51 (Joreskog & Sorbom, 1989). (See Figure 1). CFA was used because it allowed us to specify a factor structure a priori, test theoretical expectations of the underlying relations among the variables, and evaluate, via various measures of fit indexes, how well the proposed measurement models fit the empirical data (Byrne, 2001).

Maximum likelihood estimates were calculated from the covariance matrix (Thompson & Daniel, 1996) and several fit indexes were computed. Although the chi-square statistic and degrees of freedom are reported, the minimum value of the discrepancy, divided by the degrees of freedom (chi-square /df) is evaluated because the chi-square statistic is not particularly useful given that large samples will produce significant chi-square values. Various rules of thumb ranging from 2 to 5 have been suggested as cutos for chi-square /df (Marsh & Hocevar, 1985). The GFI and CFI statistics range from 0 to 1, and values greater than .95 indicate a good model fit. For RMSEA, a value of .05 or less indicates a good fit, a value of 0,08 indicates a reasonable fit (Bentler & Bonett, 1980; McDonald & Ho, 2002). These aforementioned criteria were used to examine the model fit in the present study. And the Internet Attitude Scale was evaluated for fit according to these criteria.

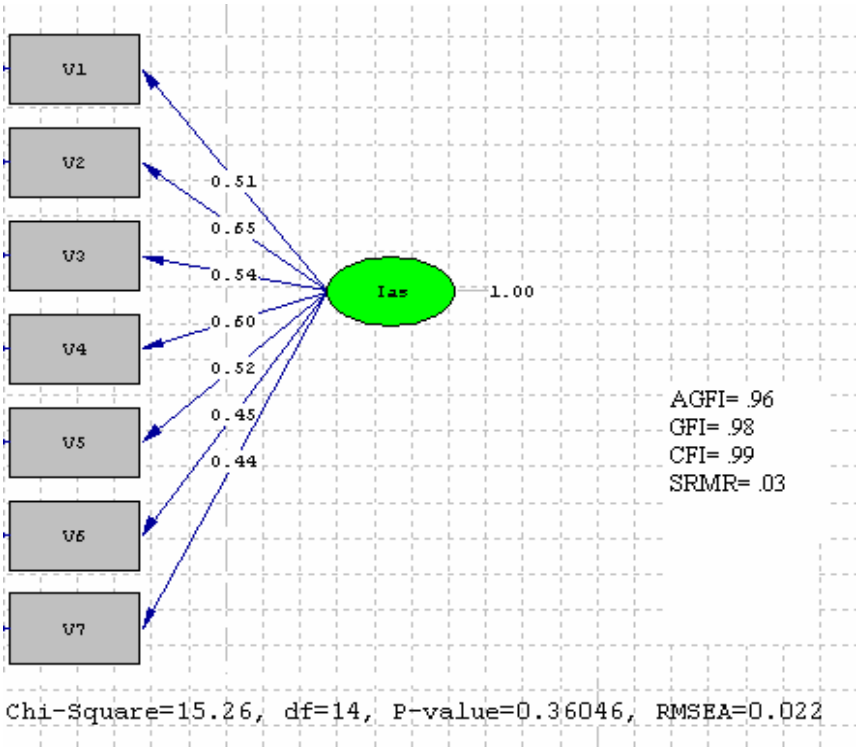


Figure 1: *CFA Results for the Internet Attitude Scale*

Note. df = degrees of freedom; X^2/df value below 3 is acceptable; GFI= Goodness-of-Fit Index; CFI=Comparative-Fit-Index; GFI and CFI values greater than 0,95 indicate a good model fit; RMSEA = Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Error of Approximation; RMSEA and SRMR values smaller than 0,05 or less indicates a good fit.

Self-perception of Computing Skills Scale

Reliability

The internal consistency of the SCSS was calculated by using Cronbach's alpha coefficient for the total score. Cronbach's alpha coefficient of the scale was 0,70. These coefficients indicate that the SCSS is an internally consistent measure across for pre-service English teachers. Basic computer skills 0,54, integrating internet applications with TEFL 0,83.

Item Total Correlation

Item total correlations for the 10 items of the SCSS scores were also calculated. Since the item total correlation value of the 3 items in the scale were below 0,25, they were excluded from the scale. Thus; the item total correlations of the remaining 7 items were ranging from 0,28 to 0,56.

Table 3: *Item Total Correlations for Self-perception of Computing Skills Scale*

Item	***Item Total Correlation***
5. Creating activities	0,36
6. Creating lesson plans	0,56
7. Gathering information from ESL/EFL websites	0,28
1. Basic skills of using Internet applications	0,32
2. Basic computer skills	0,42
3. Chatroom	0,41
4. Webboard	0,55

Intercorrelations Among the SCSS Domains

An intercorrelation among the five SCSS domains was 0,66, and Self-perception of computing skills scale domains were interrelated. These modest correlations provide evidence that pre-service teachers can distinguish between the separate domains of the SCSS.

Test-Retest Reliability

Test-retest reliability of the Self-perception of computing skills scale was tested by giving the scale to the 49 students in a 2-week interval. There was a positive correlation between the total scores of the two tests (r =0,96).

Validity: Factor Analysis (Self-perception of Computing Skills Scale)

A principal component analysis was conducted on the 10-item the SCSS (n=96). Bartlett's test of sphericity, which examines whether correlations in the data set provide suitability for factor analysis, was adequate [x^2=297,328, df=28, p<0,001]. The Kaiser-Meyer-Olkin measure of sampling adequacy was .69, also indicating a satisfactory set of data for factor analysis (Staquet, Hays, & Fayers, 1998).

To determine the number of factors to extract, a scree test was used (Cattell, 1966). The resulting scree plot displays the relationship between eigenvalues and factors. The scree plot suggested a two-factor solution. For the whole sample, two factors accounted for 58% of the total variance, factor loadings ranged from 0,41 to 0,89. (Table 4)

Table 4: *Factor Loadings for Self-perception of Computing Skills Scale (SCSS) Items*

Item	***Factor Loading***	
	Factor 1 (Education needs)	*Factor 2 (Basic skills)*
5. Creating activities	0,89	
6. Creating lesson plans	0,84	
7. Gathering information from ESL/EFL websites	0,67	
1. Basic skills of using Internet applications		0,86
2. Basic computer skills		0,85
3. Chatroom		0,53
4. Webboard		0,41
Eigenvalue	1,57	29,20
Total of variance	2,96	29,59

Based on the results of the exploratory factor analysis, the data were also tested by confirmatory factor analysis (CFA) using Lisrel 8.51 (Joreskog &Sorbom, 1989). (See Figure 2).

The aforementioned criteria were used to examine the model fit in the present study. And the Self-perception of Computing Skills Scale was evaluated for fit according to these criteria.

Conclusion

The aim of this study was to carry out the validity and reliability studies of the *Internet Use of Pre-service English Teachers Survey*. As the result of the study it can be said that IUPETS is valid and reliable for Turkish pre-service English teachers. The survey in question has been used in other studies abroad but the validity and reliability studies of the survey has not been confronted yet. For this reason, the findings in this study cannot be compared with other findings.

The mean scores of the Internet Attitude Scale and Self-perception of Computing Skills Scale point out that pre-service English teachers have positive attitudes towards the use of Internet in language teaching. Moreover; the mean scores of Self-perception of Computing Skills Scale state that the basic skills of pre-service teachers about the use of Internet is at a moderate level and needs to be improved. Also they have some educational needs related to the use of Internet in language classes. Since the item total correlation value is below .25, 1 item from the Internet Attitude Scale and 3 items from Self-perception of Computing Skills Scale were omitted. The omitted item in the Internet Attitude Scale was "Using Internet applications in my classroom is likely to be disruptive to student learning and social development". This indicates that pre-

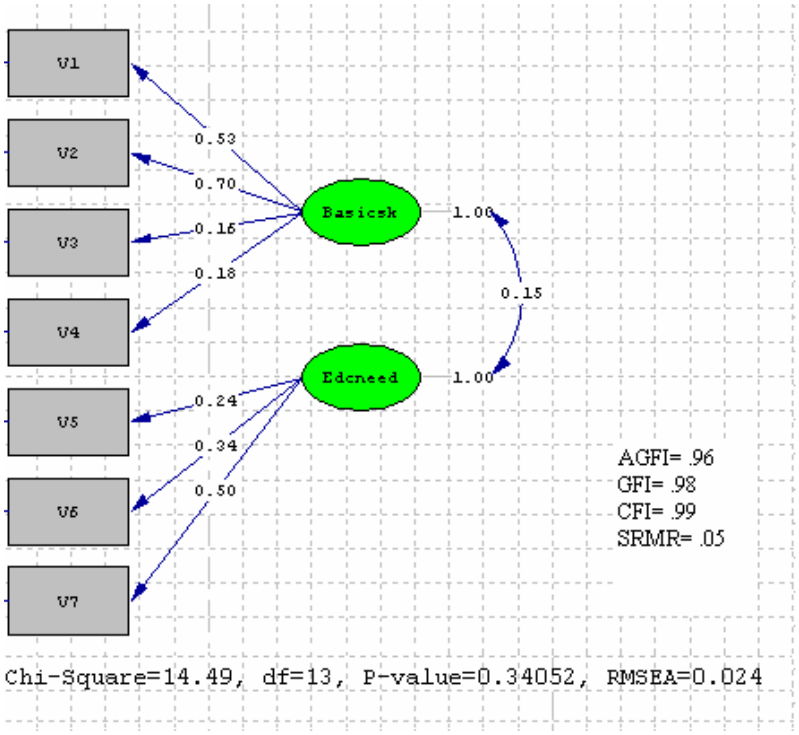


Figure 2: *CFA Results for the Self-perception of Computing Skills Scale*

Note. df = degrees of freedom; X^2/df value below 3 is acceptable; GFI= Goodness-of-Fit Index; CFI=Comparative-Fit-Index; GFI and CFI values greater than 0,95 indicate a good model fit; RMSEA = Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Error of Approximation; RMSEA and SRMR values smaller than .05 or less indicates a good fit.

service English teachers do not find Internet disruptive to students' learning and social development. The items omitted from the Self-perception of Computing Skills Scale were "World Wide Web", "Website creation" and "Website evaluation". This may point out that most of the pre-service English teachers do not want to receive any training in how to cope with these areas. Exploratory and Confirmatory factor analysis results showed that both IAS and SCSS were valid. As a final point, IUPETS is a valid and reliable scale which can be used to measure the attitudes of pre-service English teachers towards the use of Internet in language teaching.

One of the limitations of the study is that the survey is only applied to pre-service

English teachers who are attending to Dokuz Eylul University Buca the Faculty of Education. It is limited to the scales and the variables given above. So this study can be carried out again with larger groups of pre-service English teachers.

We have to realize that no medium, in and of itself, is likely to improve learning in a significant way when it is used to deliver instruction. Nor is it realistic to expect the Web, when used as a tool, to develop in students any unique skills. The key to promoting improved learning with the Web appears to lie in how effectively the medium is exploited in the teaching and learning situation (Owston, 1997). ELT teachers should embrace the use of the Internet technology combining it with their knowledge of language pedagogy. The Internet can be made relevant to the teaching goals of the ELT teacher if the teacher can harness its motivational power. From this perspective, the attitudes, beliefs and expectations of the foreign language teacher are of crucial importance in framing their role in the classroom and in defining the effectiveness of the Internet facilities in the process of language learning and teaching. Not only the experienced language teachers but also pre-service teachers should be scrutinized concerning the factors mentioned above so that as prospective teachers, they will be more conscious and informed about the use of technology, especially the Internet, in language teaching. If pre-service teachers are given such questionnaires as the one in this study, namely, Internet Use of Pre-service English Teachers Survey (IUPETS), they will broaden their horizons on the use the Internet.

References

Al-Mekhlafi, A. (2004). The internet and EFL teaching: the reactions of UAE secondary school english language teachers. [electronic version] *Journal of Language and Learning, 2* (2), 107.

Aydın, S. (2007) Attitudes of EFL learners towards the Internet. *The Turkish Online Journal of Educational Technology-TOJET, 6* (3) Retrieved September 20, 2008, from <http://www.tojet.net/articles/632.htm>.

Bentler, P.G. and Bonett, D.G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psycological Bulletin, 88*, 588-606.

Büyüköztürk, Ş. (2007). *Sosyal bilimler için veri analizi el kitabı, istatistik, araştırma deseni, SPSS uygulamaları ve yorum.* (second edition) Ankara: Pegem A Yayıncılık.

Byrne, B.M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International Journal of Testing*, *1*, 55-86.

Dudeney, G. (2000). *The internet and the language classroom.* UK: Cambridge Uni. Press.

Forsyth, I. (1998). *Teaching and learning materials and the Internet*. London: Kogan Page.

Fraenkel, J.R. and Wallen, N.E. (2000). *How to design and evaluate research in education* (fourth edition). Boston: McGraw Hill.

Isman, A. and Dabaj, F. (2004) Attitudes of students towards Internet. *Turkish Online Journal of Distance Education-TOJDE, 5* (4). Retrieved December 8, 2008, from ERIC <http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/27/f8/76.pdf>.

Joreskog, K.G., & Sorbom, D. (1989). LISREL 7: A guide to program and applications (2nd ed.). Chicago: SPSS.

Lee, C., Lai, E. and Jor, G.(2004). *Web-based teaching and English language teaching: A Hong Kong experience*. *Hong Kong:* Chinese University of Hong Kong.

Linder, D. (2004). The Internet in every classroom? Using outside computers. [electronic version]. *ELT Journal 58* (1),.

Marsh, H.V. and Hocevar, D. (1985). Application of confirmatory factor analysis to the study of self-concept: firsr and higher order factor models and their invariance across groups. *Psychological Bulletin, 97,* 562-582.

McDonald, R. P. and Ho, M. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods*, *7*, 64-82.

Murray, D.E. and McPherson, P. (2004). Using the Web to support language learning. Sydney: Macquaire University

Owston, R.D. (1997) Research news and comment: The world wide web: A technology to enhance teaching and learning? *Educational Researcher, 26* (2) Retrieved November 18, 2008 , from <http://www.jstor.org/stable/1176036>.

Smerdon, B., Cronen, S., Lanahan, L., Anderson, J., Iannotti, N., and Angeles, J. (2000). Teachers' tools for the 21st Century: A report on teachers' use of technology. *National Center for Education Statistics*. U.S., Washington.

Staquet, M., Hays, R.D., and Fayers, P.M. (1998). Quality of live assessment in clinical trials, methods and practice. New York: Oxford University Press.

Teeler, D. and Gray, P. (1999). *How to use the Internet in ELT.* Longman

Thompson, B. and Daniel, L.G. (1996) Factor analytic evidence for the construct validity of scores: A historical overview and some guidelines. *Educational and Psychological Measurement, 556,* 197-208.

Usun, S. (2003) Educational uses of the Internet in the world and Turkey: A comparative review. *Turkish Online Journal of Distance Education-TOJDE, 4(3)* Retrieved February 5, 2009, from <http://tojde.anadolu.edu.tr/tojde11/articles/usun.htm>.

Warschauer, M. (1996). Comparing face-to-face and electronic communication in the second language classroom, *CALICO Journal, 3* (2), 7-26.

Warschauer, M., Shetzer, H., and Meloni, C. (2000). *Internet for English teaching.* Illinois, USA: Pantagraph Printing

Yutdhana, S. (2004). *A needs analysis of Thai high school teachers in using Internet applications for teaching English as a foreign language*, a published master thesis, Washington State University, USA.