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Foreign language learning attitude as a predictor of attitudes towards computer-assisted language learning

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Abstract

This study aimed at investigating the relationship between attitudes towards computer-assisted language learning (CALL) and foreign language learning (FLL) attitudes. One hundred and thirty female students were selected according to simple random sampling. Their FLL and CALL attitudes were assessed by A-FLL and A-CALL questionnaires. The findings revealed that Iranian students showed general positive attitudes towards CALL and FLL. CALL attitudes and computer use were found to be positively related. However, attitudes towards CALL were not related to age, computer ownership, and access. Furthermore, a positive correlation between attitudes towards CALL and FLL attitude was found, suggesting that higher FLL attitudes could predict positive attitudes towards CALL.

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Keywords: CALL; foreign language learning; attitudes; Iranian students; computer use; computer ownership; age

1. Introduction

With the pervasive influence of technology on education, issues related to different aspects of computer and human interface have gained more attention during the last decade [1]. There is burgeoning interest now on the relationship between language ability and computer use for educational purposes. The finding of research in this regard has shown that computer technology coupled with English language, as the main language of technology [2], facilitates technology-enhanced learning in any subject area especially language learning in a second or foreign language setting. However, it is believed that a great concern should be devoted to psychological impact (i.e. attitude, anxiety, belief, etc.) that the subject matter as well as computer may have on individuals and their learning. Morris et al. [3] asserted that both positive and negative reactions are reflected in attitude, which can be considered as one of the strong predictors of behavioral intentions [4]; [5]; [6]. Thus, to fully understand learners' behavior of computer use for educational purposes, inquiry into their attitudes towards the subject matter itself and technology-enhanced environment seems necessary. Accordingly, this study aimed at investigating Iranian students' foreign language learning attitude, attitudes towards CALL and the relationship between these two variables.

1.1. Computer attitude

There is much evidence supporting the fact that attitude can impact individuals' behavior directly or indirectly [7]; [8]. In terms of the attitude-behavior relationship, Fishbein and Ajzen's [9] theory of reasoned action (TRA) has

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been one of the most influential frameworks used in attitudinal studies. According to TRA, a behavior or an action is influenced by a person's attitude while attitude is defined as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (p. 6). Numerous studies point to the relationship between positive attitudes towards computers and learners' success in both the subject matter learned and the use of communication technologies [10]; [11]; [12]; [13]. Similarly, it has been found that a negative attitude may lead to computer resistance [14], a phenomenon that can be found among experienced as well as inexperienced users.

In the context of computer use in language learning, it can be deduced that students' level of computer attitude determines the degree they intend to use computer in learning language [15], and their attitudes toward language learning determines favorable or unfavorable feelings towards language-related performance [16].

Computer use which is characterized as the total number of hours a week or a day individuals spend working with computer has been found to be one of the most important factors that influence computer attitudes [17]; [18]. There is evidence in the literature that computer experience leads to a positive attitude toward technology and decreases the level of computer anxiety [19]. More experience with computers increases the degree of self-confidence and self-efficacy in using computers and ultimately eradicate computer anxiety [20]. Being in the environment with computer and benefiting from its applications reduce the negative attitudes toward technology and lessen fear of using computer. It is also believed that computer experience and ownership are relevant [1] and can be good predictors of success in CALL [16].

1.2. Language learning and computer use

Using computers to facilitate language learning, called computer-assisted language learning (CALL), has been in the center of focus since the initiation of computer technology into the world [21]. Historically, CALL has experienced a continuous progression over the past three decades. Warschauer and Healey [22] divided the development of CALL implementation into three main phases: behavioristic CALL, communicative CALL, and integrative CALL. Each of these stages has been consistent with both a certain level of computer technology (e.g. PC, multimedia technologies, etc.) and a specific language learning and teaching approach (e.g. communicative, integrative, and constructivism, etc.). According to Culhane [23], the question of possibility of using computers for teaching language during late 1970s to early 1980s changed to the inquiry of 'why' to utilize computers in the language education during late 1980s to early 1990s, and currently the common challenge is 'how' to integrate computers in language teaching and learning. In line with this, Chapelle and Jamison [24] believe that research in CALL has focused on three main domains: software, task design, and learners.

A large body of the research has focused on software and task design in CALL suggesting that computer technology has brought convenience for teaching and learning language skills such as pronunciation [25], grammatical structures [26], lexical items [27], reading comprehension [28], listening [29], communication skills [30], and culture [31]. Moreover, Barker and Torgeson [32] claimed that making use of various types of software programs, computer assisted instruction, and integrated learning systems provides students with more influential reading instruction and improves their phonological awareness.

A string of study in CALL has focused on learners' interaction with computer and how computers influence learners' autonomy, motivation, and attitudes to sustain learning languages with computers. Crystal [33], for instance, believes that using multimedia technology in teaching English as a foreign language can help to solve some classroom difficulties and can train students to be autonomous learners. Similarly, Oliva and Pollastrani's [34] study showed that computer provides opportunity for students to be less dependent on the teacher and have more freedom to experience on their own with natural language in natural or semi-natural settings.

Besides learners' autonomy, a great number of researchers have considered the importance of motivation students experience regarding language learning during using CALL. Roohi [35], for instance, indicated that using computer-assisted language learning provided EFL learners with increasing motivation, offering authentic materials for study, and more practice and skills acquisition. Vandewaetere and Desmet [36] believe that motivation and attitudes

towards language learning are such related constructs that can bring about successful application of CALL. Also, Masgoret and Gardner [37] asserted that motivation and achievement in second language learning in CALL environment are the strongest factors that have a positive relationship with attitude. Supporting this fact, Navadal [16] argued that interest in English is the best predictor of achievement in English with CALL. Similarly, Liu & Reed's [38] study of hypermedia and vocabulary learning indicated that students' achievement scores increased significantly by the means of hypermedia with videodisc, and consequently their computer anxiety reduced greatly and their attitudes increased significantly.

In line with this, some studies have focused on students' attitudes towards CALL in second [39] and foreign language setting [40] considering online synchronous technology [41] or off-line software-based learning environment [42]. Although all of them have reported positive attitudes towards CALL among the participants of their studies, language -related variables such as language proficiency, experience, or attitudes are taken for granted. This study thus, investigates answers to the following questions:

1. What are Iranian students' attitudes towards CALL and FLL?
2. Is there any relationship among attitudes towards CALL, FLL attitudes, computer access/use, and age?
3. How much of the variance in attitudes towards CALL could be predicted by independent variables of this study?

2. Method

2.1. Participants

One hundred and thirty female students were selected according to simple random sampling. The sample age ranged from 12 to 39 years old (mean= 17.54, SD=4.25). 33.8% of the sample (n= 45) were students of junior high school, 36.9% (n= 48) were students of high school, and 29.2% (n= 38) were university students. Of the sample, 56.2% (n=73) had access to computers at home and 49.2% (n=64) had access to computers at their academic centers. 23.1% of the sample (n= 30) reported to use computer or internet for one to two hours per week, 25.1% (n=33) for three to four hours per week, 20.8% (n=27) for five to six hours per week, and 30.8% for more than six hours per week.

2.2. Instruments

For the purpose of this study three questionnaires were used.

2.2.1. Personal information questionnaire

The first instrument was used to make a profile of participants' personal information such as age, access to the computer at school or university, computer ownership, and the amount of their computer use (never, one hour, two hours, three hours, and more than three hours specified by the respondents).

2.2.2. A-CALL questionnaire

The second instrument was the Attitude towards Computer-Assisted Language Learning (A-CALL) questionnaire [36]. A-CALL is a 20-item questionnaire which examines language learners' attitudes towards CALL. Each item is rated on a seven-point Likert scale ranging from 1 (totally disagree), over 4 (neutral) to 7 (totally agree). All items except items 2-5 and 19-20, have been written in a positive direction.

A-CALL consists of four subsets of items: Factor one (effectiveness of CALL vs. non CALL) has four items (2-5), factor two (surplus value of CALL) includes 10 items (1, 6-12, 16-17), factor three (teacher influence) has three items (13-15) and factor four (degree of exhibition to CALL) consists of four items (18-20). In order to establish construct validity of the instrument, Vandewaetere and Desmet [36] used an exploratory factor analysis and determined the number of factors underlying the 20 questions. This resulted in four factors which explained 54.25% of the total variance. They reported Cronbach's alpha of 0.74, 0.80, 0.86, and 0.91 for these factors.

A-CALL has been translated into Persian and its psychometric characteristics have been found [15]. The construct validity of the Persian version has been estimated by factor analysis, revealing six underlying factors for the instrument that explain more than 57% of the total variance. The reliability of the instrument has also been reported to be 0.75 using the internal consistency method. The Cronbach's alpha of A-CALL for this study was found to be 0.71 and 0.69 respectively.

2.2.3. FLL questionnaire

The third instrument was the Attitude towards Foreign Language Learning (A-FLL) questionnaire [36]. A-FLL comprises of three main sets of items and ten subsets: cognitive components (6 items); affective/evaluative (13 items) including extrinsic motivation (3 items), intrinsic motivation (7 items), and teacher influence (3 items); behavioural/personality (13 items) consisting of inhibition (2 items), exhibition (3 items), tolerance of ambiguity (3 items), and learning effort (5 items). To estimate A-FLL's reliability, Vandewaetere and Desmet [36] have used internal consistency technique and Cronbach's alpha of three subscales reported to be: 0.94, 0.85, 0.79, 0.92, 0.85, 0.64, 0.75, and 0.70 respectively.

To be able to use A-FLL for the purpose of this study, it was first translated into Persian, and then back translated to ensure the accuracy of translation. Then the translated version was proofread by language experts and required changes were done. The reliability of Persian version was calculated through internal consistency technique and the Cronbach's alpha found to be 0.83.

3. Results

In order to find answers to research questions, one sample t-test, correlation method, and multiple regressions was used.

3.1. Attitudes towards CALL and FLL

The results from one-sample t-test at the cut-off point 4 revealed that participants had significantly positive attitudes towards CALL (mean=4.86, t=67.21, df=129, p=.000) and foreign language learning (mean= 4.74, t=80.29, df=129, p=.000).

3.2. Attitudes towards CALL, computer access/use, and age

In order to find the relationship between attitudes towards CALL and computer access (at home, school or university) and use, correlation technique was used. The results revealed a positive and significant correlation between A-CALL and computer use (r =0.24, p<0.01). However, no relationship was found between A-CALL and computer access at home and academic centre. Also no relationship was found between attitudes towards CALL and age.

3.3. Attitudes towards CALL and FLL

Correlation between A-CALL and A-FLL found to be positive and significant (r=0.32, p<0.01).

3.4. Predictors of attitudes towards CALL

In order to determine the effects of variables predicting attitudes towards CALL, multiple regressions analysis was conducted. The summary of the multiple regressions results is presented in Tables 1 and 2. The results indicated that 14% of the variance in attitudes towards CALL was explained by two independent variables of this study (FLL attitudes and computer use). The test statistic was significant at the 0.05 level of significance (F (2, 127) = 11.501; p=0.000).

Table 1. Analysis of variance

Sources	Sum of squares	DF	Mean square	*F*	R^2	Adjusted R^2	*p*
Model	3939.391	2	1969.696	11.501	0.153	0.14	0.000
Error	21750.486	127	171.264				
Total	25689.877	129					

Table 2. Multiple regressions on dependent variable (attitudes towards CALL)

Variables	B	β	*t*	*p*
FLL attitude	0.305	0.310	3.791	0.000
Computer use	0.476	0.227	2.775	0.006

As Table 2 illustrates, the results of multiple regressions indicate that both independent variables of this study affect attitudes towards CALL at the 0.05 level of significance. Considering the absolute values of the standardized estimate β of FLL attitudes (B = 0.305, t = 3.791, $p < 0.05$) and computer use (B = 0.227, t = 2.775, $p < 0.05$), it is obvious that FLL attitude is a stronger predictor of attitudes towards CALL in comparison to computer use.

4. Discussion

This study provides important insights into attitudes towards CALL and foreign language learning attitude among Iranian students across levels of education. Based on the results of this study, Iranian female students have positive attitude towards FLL and integration of CALL into language education in general. This finding is in agreement with other studies that reported positive attitudes towards CALL in foreign language setting [15]; [39]; [40]; [41]; [42].

Furthermore, the study did not reveal any relationship among attitudes towards CALL, age and computer accessibility at home or educational center. This supports the fact that students who study English as a foreign/second language show positive attitudes towards CALL application and language learning itself, regardless of some personal variables such as age, gender, and computer accessibility. Akbulut [40], For instance, claimed that foreign language learners reveal positive attitudes towards CALL due to the potential of computers to sustain autonomous learning, creativity, achievement, and instrumental benefits. Simialry, Rahimi and Yadollahi [15], along with Fančovičová and Prokop [43], concluded that attitudes towards CALL are not affected by computer ownership, age, level of education, or students' professional orientation because of the ubiquity of technology in the 21st century.

As all participants in this study were female students, the findings cast doubts on the proposition that girls' less positive attitude to ICT in primary and secondary school is often the predictor of their future negative attitudes towards technology and causes low participation of women in ICT training and ICT related professions [44]. The findings are consistent with the evidence found in the literature that female students showed more positive attitudes towards computer use in language learning as well as English learning than males [45] and they are more positively willing to use internet than men [46]. Thus, similar to other recent studies, the study confirms that the old stereotypic gender divide in terms of both computer-use attitude and language attitude is closing [40]; [47]; [48]. Even if gender difference exists, it is psychological gender rather than biological gender which has more effect on computer-related attitude [49].

The final findings revealed that two independent variables of this study (i.e. computer use and A-FLL) played significant role in predicting attitudes towards CALL. This supports previous research according to which frequency of computer use [50]; [51] and language attitudes [36] are good predictors in determining the attitudes toward computer integration, especially in the realm of language education.

It is important to highlight that the present study is just an introduction to investigating the significant role of language learning attitude on CALL attitudes, and consequently the successful application of CALL in language learning. As the proportion of the variance predicted in this study is low (around 14%) more survey into this matter is required to find other important factors affecting attitudes towards CALL in different settings.

References

1. M. Baloglu and V. Cevik. Multivariate effects of gender, ownership, and the frequency of use on computer anxiety among high school students, Computers in Human Educatio, vol. 24, (2008) 2639-48.
2. F. Jafar, The use of English in Internet communication by Jordanian students. Al-Basaer - A Refereed Scientific. vol.12 (2008) 9-34.
3. S. A. Morris, N. L. Gullekson, B. J. Morse, and P. M. Popovich, Updating the attitudes toward computer usage scale using American undergraduate students. Computers in Human Behavior. vol.25 (2009) 535-43.
4. I. Ajzen, Nature and operations of attitudes. Annual Review of Psychology. vol. 52 (2001) 27-58.
5. C. J. Armitage and M. Conner, Efficacy of the theory of planned behavior: A meta-analytic review. British Journal of Social Psychology. vol. 39, (2001) 469-93.
6. R. Fazio and R. Petty, Attitudes: Their structure, function, and consequences. New York, NY: Psychology Press.2008.
7. I. Ajzen and M. Fishbein, Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall. 1980.
8. F. D. Davis, User acceptance of information technology: System characteristics, user perception and behavioural impacts. International Journal of Man–Machine Studies. vol.38 (1993) 475-87.
9. M. Fishbein and I. Ajzen, Belief, attitude, intention and behavior: An introduction to theory and research. California: Addison-Wesley Publishing Company. 1975.
10. M., Igbaria, and S. Parasuraman, A path analytic study of individual characteristics, computer anxiety, and attitudes toward microcomputers, Journal of Management. vol. 15 (1989) 373-88.
11. M. Maurer, and M. Simonson, Development of validation of a measure of computer anxiety. In M. Simonson (Ed.), Proceedings of
Selected Research Paper Presentations, Annual Meeting of the Association for Educational Communications and Technology, Dallas, Texas.
(Eric Document Reproduction Service, Document ED 243,411), Dallas, TX. (1984) 318-30.
12. S. Brown, R. Fuller, and C. Vician, Who's afraid of the virtual world? Anxiety and Computer-Mediated Communication. Journal of the Association for Information Systems. vol. 5 (2004) 99-107.
13. M. Brosnan, Technophobia: The psychological impact of information technology. Routledge, London. 1998.
14. G. Conti-Ramsden, K. Durkin, A. J. Walker, Computer anxiety: A comparison of adolescents with and without a history of specific
language impairment (SLI). Computers & Education. vol. 54 (2010) 136-45.
15. M. Rahimi and S. Yadollahi, Computer-Assisted Language Learning: Iranian Students' Attitudes. Paper presented in the second national Conference on modern instructional methods. SRTTU, Tehran, Iran. 2010.
16. F. Navdal, Home-PC usage and achievement in English. Computers & Education. vol. 49 (2007) 1112-21.
17. J. Beckers, and H. Schmidt, Computer experience and computer anxiety, Computers in Human Behavior, vol. 19 (2003) 785-97.
18. N. Bozionelos, Computer anxiety: relationship with computer experience and prevalence, Computers in Human Behavior, vol. 17 (2001) 213-14.
19. D. Matthews, and L. Shrum, High-speed Internet use and academic gratifications in the college residence, Internet and Higher education, vol. 6 (2003) 125-44.
20. M. Baloglu and V. Cevik, A multivariate comparison of computer anxiety levels between candidate and tenured school principals. Computers in Human Behavior, vol. 25 (2009) 1102–1107.
21. E. Hanson-Smith, Computer-assisted language learning. In R. Carter and D. Nunan (Eds.) The Cambridge guide to teaching English to speakers of other languages. 107-113. Cambridge University Press, UK, 2002.
22. M. Warschauer and D. Healey, Computers and language learning: An overview. Language Teaching. No. 31(1998) 57-71.
23. S.F. Culhane, The electronic textbook for content-based second language learning. Paper presented at LET 2003

National Conference, Kansai Gaidai University, Japan. 2003.
24. C. Chapelle, and J. Jamieson, Computer-Assisted Language Learning as a predictor of success in acquiring English as a second language. TESOL Quarterly. vol. 20 (1986), 27-46.
25. S. T. Lee, Teaching Pronunciation of English Using Computer Assisted Learning Software: An Action Research Study in an Institute of Technology in Taiwan. Unpublished Ph.D. dissertation. Australian Catholic University. Australia. 2008.
26. R. S. Al-Jarf, The effects of online grammar instruction on low proficiency EFL college students' achievement. The Asian EFL Journal Quarterly. vol. 7(2005).166-90.
27. W. Tsou, W. Wang, H. Li, How computers facilitate English foreign language learners acquire English abstract words. Computers & Education. vol. 39 (2002) 415-428.
28. A. Akyel and G. Ercetin, Hypermedia reading strategies employed by advanced learners of English. System. vol. 37(2009) 136-52
29. D. Lasagabaster and J. Sierra, Students' Evaluation of CALL Software Programs. Educational Media International. vol. 40 (2003) 293-04.
30. N. Arnold, Reducing foreign language communication apprehension with computer-mediated communication: A preliminary study. System. vol. 35 (2007) 469-86.
31. Y. L. Chen A mixed-method study of EFL teachers' Internet use in language instruction. Teaching and Teacher Education. vol.24 (2008) 1015–28.
32. T. A. Barker and J. K. Torgesen, An evaluation of computer-assisted instruction in phonological awareness with below average readers. Journal of Educational Computing Research. vol. 13 (1995) 89-103.
33. D. Crystal, English as a global language. Cambridge: Cambridge University Press. 1997.
34. M. Oliva, and Y. Pollastrini, Internet resources and second language acquisition: An evaluation of virtual immersion. Foreign Language Annals. vol. 28 (1995), 551-63.
35. E. Roohi, Exploring the Effects of Using CALL as a Discriminator of L2 Performance of Iranian EFL Learners. Paper presented in the 7th International TELLSI Conference. Yazd University, Yazd, Iran. 2009.
36. M. Vandewaeterea, and P. Desmet, Introducing psychometrical validation of questionnaires in CALL research: The case of measuring attitude towards CALL. Computer Assisted Language Learning. vol. 22 (2009) 349-80.
37. A. Masgoret and R. Gardner, Attitudes, motivation and second language learning: a Meta-analysis of studies conducted by Gardner and Associates. Language Learning. vol.53 (2003), 123-64.
38. M. Liu, and W.M. Reed, The effect of hypermedia assisted instruction on second language learning through a semantic-network-based approach. Journal of Educational Computing Research. vol.12 (1995) 159-75.
39. R. Ayres, Learner attitudes towards the use of CALL, Computer-Assisted Language Learning Journal. vol. 15 (2002) 241-49.
40. Y. Akbulut, Exploration of the attitudes of freshman foreign language students toward using computers at a Turkish state university.The Turkish Online ournal of Educational Technology (TOJET). vol. 7 (2008) 18-31.
41. S. M. Mahfouz and F. M. Ihmeideh, Attitudes of Jordanian university students towards using online chat discourse with native speakers of English for improving their language proficiency, Computer Assisted Language Learning. vol. 22 (2009) 206-27.
42. B. Yun-hong, On university students' attitudes towards computer-aided English learning. vol. 6 (2009) 32-6.
43. J. Fančovičová and P. Prokop, Students' attitude toward computer use in Slovaki. Eurasia Journal of Mathematics. Science & Technology Education. vol. 4 (2008) 255-62.
44. S. V.Turner, P. W. Bernt, and N. Pecora, Why women choose information technology careers: Educational, social and familial influences. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA. 2002.
45. A. Ates, U. Altunay, and E. Altun, The effects of computer assisted English instruction on high school preparatory students' attitudes towards computers and English. Journal of Theory and Practice in Education. vol. 2 (2006) 97-112.
46. S. Birisci, M. Metin, and M. Karakas, Prospective elementary teachers' attitude towards computer and Internet use: A sample from turkey. World Applied Sciences Journal. vol. 6 (2009) 1433-40.
47. H. N. Odogwu and J. I. Nyala, Female Students' Competence in the use of ICT and their Future Career. European Journal of Scientific Research. vol.43 (2010) 554-62.
48. A. O. Agbatogun, Self-concept, computer anxiety, gender and attitude towards interactive computer technologies: A predictive study among Nigerian teachers. International Journal of Education and Development using Information and Communication Technology (IJEDICT). vol. 6 (2010).. Retrieved June 2010 from http://ijedict.dec.uwi.edu/viewissue.php.

49. Ö.F. Ursavaş and H. Karal, Assessing pre-service teachers' computer phobia levels in terms of gender and experience, Turkish sample. International Journal of Behavioral, Cognitive, Educational and Psychological Sciences. vol.1 (2009) 71-5.
50. K. J. Garland and J. M. Noyes, Attitudes and confidence towards computers and books as learning tool: a cross-sectioned study of student cohorts. British Journal of Educational Technology. vol. 36 (2005) 85-91.
51. T. M. Link and R. Marz, Computer literacy and attitudes towards e-learning among first year medical students. BMC Medical Education. vol. 6 (2006) 1-8.