Barriers on ESL CALL Programs in South Texas

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ABSTRACT

This paper proposes a methodology to discover the barriers that influence English as second language (ESL) teachers in the use of computers in their classrooms. The participants in the study were sixty-seven ESL teachers who applied computer assisted language learning (CALL) in the classroom or computer lab in schools in Corpus Christi Independent School District (CCISD) and Kingsville Independent School District (KISD) in South Texas. The survey study included the participants' demographic data, twenty variables influencing the use of CALL, and five open-ended questions. The researcher designed and verified the reliability and validity of the questionnaire. The resulting survey data were then analyzed using Exploratory Factor Analysis (EFA) to capture the information in the survey and to identify a set of factors that hinder the use of CALL in ESL. The findings demonstrate that there are three key barriers that impact teachers who use CALL programs to teach ESL, and ESL teachers may change their roles as they implement CALL programs. These barriers are technology skills, funding for teaching through technology, and acceptance of technology. The results can help educators to understand better the impact of CALL and to anticipate the barriers of CALL program they may face.

INTRODUCTION

Background

In the last few years the number of teachers using Computer Assisted Language Learning (CALL) has increased markedly and numerous articles have been written about the role of technology in education. Although the potential of the Internet for educational use has yet to be fully explored 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 TESL (Teaching English as a Second Language) have already been established (Lee, 2000). The Internet has brought about a revolution in teachers' perspective, as the teaching tools offered through the Internet are gradually becoming more reliable. Nowadays, the Internet is gaining immense popularity in second language teaching, and more and more educators and learners are embracing it.

The Internet and the rise of computer-mediated communication in particular have reshaped the use of computers for language learning. The recent shift to global information-based economies means that students will need to learn how to deal with large amounts of information and be able to communicate across languages and cultures. At the same time, the role of the teacher has changed as well. Teachers are no longer the only source of information, but act as facilitators so that students can actively interpret and organize the information they are given, fitting it into prior knowledge (Dole, Duffy, Roehler, & Pearson, 1991). Students have become active participants in learning and are encouraged to be explorers and creators of language rather than passive recipients of it (Brown, 1991). Integrative CALL stresses these issues and additionally lets learners of a language communicate inexpensively with other

learners or native speakers. As such, it combines information processing, communication, use of authentic language, and learner autonomy, all of which are of major importance in current language learning theories.

Statement of the Problem

Proper infusion of technology is a national priority. In 2002 President Bush signed the No Child Left Behind (NCLB) Act into law. This law affects almost every facet of education as we know it. In order to improve student achievement through the use of technology, former U.S. Secretary of Education Rod Paige announced the new "Enhancing Education Through Technology" (ED Tech) initiative shortly after the signing of the NCLB act. The stated goals of ED Tech are to:

I. Improve student academic achievement through the use of technology in elementary schools and secondary schools;
II. Assist students to become technologically literate by the time they finish the eighth grade; and
III. Ensure that teachers are able to integrate technology into the curriculum to improve student achievement (NCLB, 2002).

In the meantime, The State Board for Educator Certification (SBEC) approved educator certification standards in Technology Applications for all beginning educators. According to Texas Education Agency (2002), current educators should strive to meet the following SBEC requirements:

I. All teachers use technology-related terms, concepts, data input strategies, and ethical practices to make informed decisions about current technologies and their applications;
II. All teachers identify task requirements, apply search strategies, and use current technology to efficiently acquire, analyze, and evaluate a variety of electronic information;
III. All teachers use task-appropriate tools to synthesize knowledge, create and modify solutions, and evaluate results in a way that supports the work of individuals and groups in problem-solving situations;
IV. All teachers communicate information in different formats and for diverse audiences; and
V. All teachers know how to plan, organize, deliver, and evaluate instruction for all students that incorporates the effective use of current technology for teaching and integrating the Technology Applications Texas Essential Knowledge and Skills (TEKS) into the curriculum.

According to the state's requirements on teaching through technology, ESL teachers in Texas may encounter barriers when using computer-assisted language learning programs. The majority of studies on teacher technology education explore the following issues: (1) what teachers should be learning in technology courses (Hargrave & Hsu, 2000), and (2) how teachers think about and use computers in the classroom (Ertmer, Addison, Lane, Ross, & Woods, 1999; Levy, 1997). Much of this research shows that teacher-education technology courses and programs have a limited impact on how teachers think about and implement technology-supported teaching.

Purpose of Study

The first purpose of this study is to identify the barriers that CALL coursework has on classroom computer use and address how language teachers use computer integration in their teaching. The second purpose is to explore how these barriers impact teachers who use CALL programs to teach ESL.

Research Question

The following research question was addressed in this study:
What barriers do ESL teachers encounter when using CALL programs in south Texas?

Significance of the Study

This study explores how ESL teachers learn about computer-assisted activities and the factors that influence whether they use computers in their classrooms. The results of this study can help teacher

educators better understand the impact of CALL coursework on classroom computer use and to anticipate the barriers they may face.

DATA COLLECTION

The questionnaire design was complicated by the fact that some factors, such as "acceptance of technology" might not be intuitive to subjects and hence not directly measurable and hence must be measured by a set of measurable variables. Twenty measurable variables were identified based on the author's professional expertise. The objectives of this study were to extract the key factors from the set of measurable variables in the questionnaire.

Several measures were used to ensure the validity and reliability of the research instrument. The validity of the instrument was examined by a panel of experts (N=3). Each panelist examined the instrument for content, clarity, and appropriateness. In order to ensure the reliability of the instrument, the Cronbach Alpha correlation Statistical Procedure was applied to test for internal consistency.

Subjects of the Study

According to Thomas (2005), most researchers study the people, institutions, and events that are convenient - those that happen to be at hand. In this study, the researcher used the following samples as the source of subjects. The target populations were from elementary schools, middle schools, high schools, colleges/universities and ESL/EFL private schools in Kingsville and Corpus Christi, Texas. The participants in the study were English as second language (ESL) teachers who applied CALL in the classroom or computer lab. The teachers' experience ranged from more experienced (more than 20 years experience, n= 5) to less experienced (5 or fewer years of experience, n= 31). A total 69 ESL teachers were surveyed, and 67 ESL teachers returned the survey. The return rate on this survey was 97%.

The population in the study was 67 ESL teachers, of whom three (4.48%) were males and sixty-four (95.52%) were females. Teachers' teaching level: thirty-five (52.2%) were elementary school teachers, fourteen (20.9%) worked in middle school, thirteen (19.4%) taught in high school, two (3.0%) worked in college/university and three (4.5%) were from ESL/ EFL private school. Thirty-one teachers (46%) had taught less than 5 years, six (9%) between 5-9 years, twenty-three (34%) between 10-14 years, two (3%) had taught between 15-19 years, and five (8%) more than 20 years of experience. Educational credentials of ESL teachers: fifty-five (82.1%) had a bachelor's degree, nine (13.4%) had a master's degree, and three (4.5%) had a doctorate degree.

The next item from the output is the Kaiser-Meyer-Olkin (KMO) and Bartlett's test. The KMO measures the sampling adequacy which should be greater than 0.5 for a satisfactory factor analysis to proceed. The KMO measure is .685. We can see that the Bartlett's test of specificity is significant. The rule of thumb is that the KMO value should be greater than 0.5 for a satisfactory factor analysis to proceed.

Summary of Methodology

First, the survey instrument was developed. Letters of permission to conduct the study were mailed to each superintendent in the selected Independent School Districts. The data were collected by visiting the participants, by returned questionnaires, and by an on-line survey. Follow-up phone calls, e-mails, and letters were sent to non-respondents. In the next section, the data are analyzed by using Statistical Package for the Social Science for Windows 12.0 (SPSS).

Instrumentation

The researcher developed the survey, which consisted of twenty-nine items divided into six sections (appendix A). Section 1 surveys the demographics of the participants. Each respondent was asked to provide personal information such as gender, current teaching level, years of teaching experience and educational qualifications. Section 2 asks the respondents about the school's funding for the computer assisted language learning program. Section 3 includes items concerned with the availability of computer

hardware and software. Section 4 includes statements regarding the respondents' technical and theoretical knowledge of the use of computer assisted language learning programs. Section 5 includes statements eliciting the basic views of respondents toward the use of technology in the classroom, their insights of administrative and actual support, and their self-estimated use of technology. Section 6 includes open-ended questions for respondents' suggestions and barriers on the use of CALL programs to teach ESL.

DATA ANALYSIS

The major steps in statistical analysis are summarized as follows:

<u>Factor Analysis</u>

The objectives of Exploratory Factor Analysis (EFA) are to identify the underlying factors influencing the outcome of measurable response variables through survey data. The analysis can be further complicated by the fact that some or all these factors may not be measurable directly. Hence, during the survey design stage, the researcher may propose measurable variables which may contribute to the response of the study. Based on measured data from the survey, factor analysis is used to explore the correlation among measurable variables and determines whether the relationship can be summarized in a smaller number of factors.

The information in the survey data is captured by the Pearson Product-Moment correlation coefficient matrix. The key idea of factor analysis is to extract "factors" from the correlation matrix such that the content of the correlation matrix may be reconstructed with small number of these factors in contrast with the full set of measurable variables proposed. Factor analysis consists of the following steps.

> Step 1: Compute the N x N correlation coefficient matrix where N is the number of measurable variables in the survey questionnaire.

> Step 2: Compute Bartlett's test of specificity to determine whether correlation exists between measurable variable. Notice that if Bartlett's test is not significant, this implies that correlation matrix is not significantly different from the identity matrix and hence the set of measurable variables are not correlated and hence each measurable variable is indeed a factor influencing response. In this case no factor extraction is possible. The analysis will be terminated here. Otherwise go to step 4.

> Step 3: Compute the Kaiser-Myer-Olkin (KMO) Measure of sampling adequacy. The rule of thumb is that the KMO value should be greater than 0.5 for a satisfactory factor analysis to proceed.

> Step 4: Factor extraction based on Principle component analysis: Compute the eigenvalues of the correlation matrix. The magnitude of the eigenvalues exceeding a certain pre-predetermined threshold will identify one significant factor. The rule of thumb is that if the sum of the eigenvalues exceeds 1.0 a significant factor (with some exceptions) is indicated. The number of factors can also be determined graphically by a Scree plot (Thompson, 2004).

> Step 5: Compute the Pattern/Structure Communality Coefficient for each measurable variables. Communality variable measures the amount of variance, and information contents can be recovered by the identified set of factors extracted in Step 4.

> Step 6: Varimax Orthogonal Factor rotation and Kaiser Normalization.
> The survey data were analyzed using EFA described above with SPSS for Windows 12.0. The three key barriers for using the CLASS program in ESL instruction are summarized in the following table:

Table 1. *Factor Analysis and Reliability of the Research Instrument*

Barrier	Variables	Communalities	Eigenvalues	% of Variance	α coefficient
Technology skills	6	.773	7.008	38.864	.846
	7	.961			
	11	.775			
	12	.950			
	15	.856			
	16	.963			
Funding for teaching through technology	1	.589	5.327	29.541	.841
	2	.590			
	3	.963			
	4	.836			
	5	.976			
	8	.963			
	9	.836			
	10	.976			
	19	.834			
Acceptance of Technology	13	.961	3.719	20.621	.759
	14	.864			
	17	.951			
	18	.741			
	20	.720			

CONCLUDING REMARKS

This paper proposed a complete methodology to survey and identifies key barriers affecting the use of CALL programs in ESL instructions using sampling survey and exploratory factor analysis techniques and SPSS 12.0 statistical analysis packages. The barriers are technology skills, funding for teaching through technology, and acceptance of technology.

RECOMMENDATIONS

Based on the results that ESL teachers' encounter with CALL programs, the following recommendations are made:

1. If computer assisted learning for language is to be used, it needs to incorporate multimedia and include offline experiences so that the students can be immersed in the language.
2. A computer cannot teach the nuances of language, such as inflection and connotation. A full language learning experience has to include elements of the culture to complement the academic aspect and correctness of language.
3. The most effective human interaction in teaching and learning should be combined with the effective use of technology.
4. A combination of Web-based classes and traditional teaching programs is the best way to teach ESL.

RECOMMENDATIONS FOR FURTHER STUDIES

Areas that may be explored by future studies include exploring teaching styles that foster the use of collaborative, critical thinking activities, and the use of real world technology applications. Research can also focus on the connection between technology and instruction. One way to study these factors is by conducting a comparative study of classrooms where technology is used to teach language.

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APPENDIX A: Survey Instrument

SECTION 1. Demographic Data

This is a survey study concerned with the barriers ESL teachers face when using CALL approach in south Texas

                            Sincerely,
                            Shao-Chieh Lu

1. My gender is: (Mark only one)

□ Female

□ Male

2. I currently teach the following grade level: (Mark only one)

□ Elementary (K-6)

□ Middle school (7-9)

□ High school (10-12)

□ College

□ ESL/ EFL private school

3. How many years have you taught second language learners: (Mark only one)

□ Less than 5 years

□ 5-9 years

□10-14 years

□15-19 years

□ More than 20 years

4. My highest educational degree is best described as: (Mark only one)

□ Non-degreed

□ Undergraduate

□ Masters

□ Doctorate

SECTION 2. Financial Barriers

Always agree= 5, Often agree= 4, Usually agree= 3, Sometimes agree= 2, and Never agree= 1.

1.	Funding is provided for technology in ESL programs.	1 2 3 4 5
2.	Funding for ESL programs supports the web-based activities.	1 2 3 4 5
3.	There is funding for ESL teachers on technology training.	1 2 3 4 5
4.	Funding supports the maintenance of computer hardware and software.	1 2 3 4 5
5.	Funding provides computer labs in ESL programs.	1 2 3 4 5

SECTION 3. Availability of Computer Hardware and Software

Always agree= 5, Often agree= 4, Usually agree= 3, Sometimes agree= 2, and Never agree= 1.

6.	I use a computer lab for language teaching.	1 2 3 4 5
7.	I access ESL software from lab or library at my school.	1 2 3 4 5
8.	My school integrates the web into ESL curriculums.	1 2 3 4 5
9.	Internet access is available to ESL classrooms.	1 2 3 4 5
10.	There is technology based materials for ESL teachers.	1 2 3 4 5

SECTION 4. Technical and Theoretical Knowledge

Always agree= 5, Often agree= 4, Usually agree= 3, Sometimes agree= 2, and Never agree= 1.

11.	I adapt technology skills in teaching ESL.	1 2 3 4 5
12.	I prepare my handouts and exams using computers.	1 2 3 4 5
13.	I intend to advance my knowledge on the CALL approach.	1 2 3 4 5
14.	I use PowerPoint or multimedia as a teaching tool.	1 2 3 4 5
15.	Using computer-based materials, I provide content addressing specific ELL needs. (ELL refers to English Language Learner)	1 2 3 4 5

SECTION 5. Acceptance of Technologies

Always agree= 5, Often agree= 4, Usually agree= 3, Sometimes agree= 2, and Never agree= 1.

16.	Computers help me save a lot of time on preparing lesson plans.	1 2 3 4 5
17.	I think the CALL approach inspires English language learners.	1 2 3 4 5
18.	I enjoy teaching ESL through technology.	1 2 3 4 5
19.	I feel free to learn the new technology skills for teaching ESL.	1 2 3 4 5
20.	In my opinion, the CALL approach offers opportunities for better language practice.	1 2 3 4 5

SECTION 6. Open-ended Questions

1. Does your institute or university provide Internet classes or Web-based classes for students? Have you taught a class through the Internet or Web? If yes, do you have any kind of experience in these classes that you would like to share?

2. In your opinion, what are the barriers on the use of computer assisted language learning?

3. Do you think teaching through technology can inspire the students in learning?

4. Which teaching style do you prefer? Traditional teaching program or teaching through the technology? Or both of them?

5. Do you have any kind of suggestions that come from your teaching experience or learning experience on computer assisted language learning (CALL) approach?

APPENDIX B: Letter of Request for Superintendent Approval

Letter request approval to conduct the study

Dear Superintendent:

I am presently conducting research for my master graduate research project on the Barriers ESL Teachers Face When Using CALL Approach in South Texas. This study is in cooperation with the department of Bilingual Education in Texas A & M University-Kingsville, and under the guidance and direction of Dr. Roberto Torres, associate professor of the Bilingual Education program.

For the purpose of my research study, after your approval and the principals' approval, a short survey will be delivered to your school campus. I would sincerely appreciate your approval and permission for me to conduct this survey in your Independent School District.

I will be happy to share the results of my study with you after the completion of this study. I truly appreciate your time and support of this project.

Please reply to this letter at your earliest convenience and notify me of your approval.

Sincerely,
Shao-Chieh Lu
Researcher
KSSL005@tamuk.edu
Tel. 361-593-2922

To Whom It May Concern:
    I gave the permission to Shao-Chieh Lu to conduct the survey at

_____
(Name of School)   (Date)

                                        Sincerely,
(Signature)→

                                                    Superintendent

(Print your name)→

This research project has been approved by the Texas A&M University-Kingsville Human Research Committee, and the Dean of Graduate Studies, which may be contacted at (361)-593-2808

APPENDIX C: Letter of Request for Principal Approval

Letter request approval to conduct the study

Dear Principal:

I am presently conducting research for my master graduate research project on the Barriers ESL Teachers Face When Using CALL Approach in South Texas. This study is in cooperation with the department of Bilingual Education in Texas A & M University-Kingsville, and under the guidance and direction of Dr. Roberto Torres, associate professor of the Bilingual Education program.

For the purpose of my research study, after your approval and the principals' approval, a short survey will be delivered to your school campus. I would sincerely appreciate your approval and permission for me to conduct this survey in your Independent School District.

I will be happy to share the results of my study with you after the completion of this study. I truly appreciate your time and support of this project.

Please reply to this letter at your earliest convenience and notify me of your approval.

Sincerely,
Shao-Chieh Lu
Researcher
KSSL005@tamuk.edu
Tel. 361-593-2922

To Whom It May Concern:

    I gave the permission to Shao-Chieh Lu to conduct the survey at

_____

(Name of School)   (Date)

                                                          Sincerely,

(Signature)→

                                                          Principal

(Print your name)→

This research project has been approved by the Texas A&M University-Kingsville Human Research Committee, and the Dean of Graduate Studies, which may be contacted at (361)-593-2808

APPENDIX D: Consent Form

Dear teacher:

The questionnaire you have received is used to investigate how you teach through computers or technology. The survey usually takes 20~30 minutes to complete. There is no right or wrong answer. Please feel free to answer ALL the questions according to your teaching experience. Responses will only be used for the purpose of this study. Thank you for your participation.

Sincerely yours,
Shao-Chieh Lu
Candidate in M.Ed

Consent Form

I understand the purpose of this survey. I understand that the researcher will not use my name in any way. Therefore, I volunteer to participate in this survey. I give permission to the researcher to use all the information in her study. I have been informed by the principal investigator of this project, Shao-Chieh Lu, of this and understand that there is no cost, risk or threat to my safety as I participate in this survey. I have also been informed that my name or any other identifying personal information will not be disclosed at any time, even during or after I have completed the survey and that the data will be used for research purposes or for a presentation at conferences. My participation is limited to answering the survey and addressing follow up questions when necessary; and I may discontinue my participation in this project at any time without any consequences.

Signature: _____

Date: _____

This research project has been approved by the Texas A&M University-Kingsville Human Research Committee, and the Dean of Graduate Studies, which may be contacted at (361)-593-2808