

**A Review of Computer Assisted Language Learning (CALL): How Context
Based Modifications of CALL Enhances Learning Efficiency**

A Dissertation Submitted in Partial Fulfillment of the
Requirements for the Degree of Bachelor of Arts in ELT

By

Md. Sadman Rafi

ID: 14103059

Department of English and Humanities

April, 2018



Inspiring Excellence

BRAC University, Dhaka, Bangladesh

TABLE OF CONTENTS

Acknowledgement	iv
Abstract	v
CHAPTER I – INTRODUCTION.....	1
1.1 Background of the Study.....	1
1.2 The Research Statement	2
1.3 The Research Questions.....	3
1.4 The Structure of the Paper	4
CHAPTER II - LITERATURE REVIEW	5
2.1 Defining CALL.....	5
2.2 Historical Background of CALL	6
2.3 Why Implement CALL in Classrooms?	8
2.4 Limiting Factors of CALL	9
CHAPTER III – RESEARCH METHODOLOGY	11
3.1 Nature of the Data.....	11
3.2 Research Objective.	12
3.3 The Significance of this Study.....	12
3.4 Limitations of the Study.....	12
CHAPTER IV – CASE STUDIES	14

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

4.1 Case A: The Case of Runyakitara.....	14
4.2 Case Study B: CALP for School Leavers.....	16
4.3 Case Study C: Elementary Chinese Learning for American Students.....	17
CHAPTER V – FINDINGS AND CONCLUSION	19
5.1 Discussion of the Findings.....	19
5.2 Suggestions for Further Research.....	23
5.3 Conclusion	23
Bibliography	25

Table of Figures

Table 1 Case A, pre-test scores.....	15
Table 2 Case A, comparison of pre-test and post-test scores	15
Table 3 Case C, results of the proficiency tests.	18
Table 4 The relevant contextual variables of the case studies and the modifications to CALL that arose from them.....	21

Acknowledgement

First and foremost, I would like to thank my dissertation supervisor S.M. Mohibul Hasan for his upmost support and encouragement. I have often failed to comply with his instructions and yet he kindly read my drafts and offered invaluable detailed advices on grammar, organization, and the theme of the paper.

Finally, I sincerely want thank to my parents, family, and friends - who provided advice and financial support. The production of this research paper would not be possible without the support of all of them.

Abstract

The 20th century was the most technologically progressive time of modern human civilization and the 21st century seems to have accelerated this progress even more. In this time period the methods of disseminating knowledge has gone through major changes. One of the most revolutionary of these paradigm shifts have been the introduction of the computer assisted language learning – the CALL method.

This paper will attempt to shed light on the definition of CALL, its historical background and extract its pros and cons through consulting various esteemed journal, books and periodicals. This paper will primarily focus on second hand data – namely multiple case studies- and the analysis of said data would be qualitative in nature.

Using the above mentioned data this paper will attempt to showcase how the various implementation of CALL around the world are highly context sensitive and try to establish whether the implementing CALL increases the efficiency and effectiveness of the learning process.

CHAPTER I – INTRODUCTION

This chapter will introduce the reader to the background of the study, the statement of the problem and the primary research questions. These pointers have been chosen based on the pattern provided by the Guide for Novice Researchers (Timothy J. Ellis, 2008). Finally, this chapter will conclude by presenting the structure of the paper proper.

1.1 Background of the Study

What it means to be educated or even just literate has changed in last 100-150 years. Traditional teaching methods (such as GTM) have often proven incapable of preparing the students of today for their responsibilities of the technology rich tomorrow. Unlike the times of classical antiquity (Greek, Roman philosophy) or even the barely two century old Victorian era a curriculum designed today does not retain its potency even two decades in the future. This pace of progress has made the vast majority of the traditional wisdom regarding the education system increasingly obsolete. Furthermore, these outdated methods tend to have no relevance to the lives of the technologically literate learners of today which – in turn – saps the motivation for study of many aspiring students. For Garcia the main goal of education is not to provide a list of content but to teach them[the students] how to learn autonomously and how to maintain an attitude of continuous independent learning to meet their needs and wants (García M. R., 2000). It is highly unlikely a demotivated student will be able to learn autonomously

However, this issue has not gone unnoticed by the best thinkers of recent times. Projects such as TICCIT and PLATO (explained in literature review) had pioneered the basics of what would

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

be called Computer Assisted Language Learning today. As noted by Liddell, the efforts of these projects bore fruit in the 1990s alongside the personal computing revolution which saw the mass adoption of affordable personal computers in homes, schools and offices. CALL research and implementation have achieved exponential growth since the 1990; this field has been noted as a “growth area” by many analysts (Liddell, 1994)

All has not been well, unfortunately. During the mass adoption of the CALL method many financial, management and training issues have come to the attention of the curriculum planners.

1.2 The Research Statement

The research statement – also known as the problem statement – gives any research initiative a solid foundation to build upon their argument. The importance of basing research on a well-articulated problem statement is well accepted across disciplines such as information systems, education, and engineering (Creswell, 2005) . Kerlinger noted that “without some sort of statement of problem, the scientist can rarely go further and expect the work to be fruitful” (Kerlinger, 2000). In the words of Leedy, “The research problem serves as the starting point for the research and is a unifying thread that runs throughout all the elements of the research endeavor” (Leedy, 2005)

The primary research statement or the goal of this dissertation will be to define CALL with help of previously conducted academic research and discover the advantages and disadvantages bestowed by this method in an academic setting while the analysis of various CALL related case studies from around the world will showcase how the context aware implementation of the basic CALL premise goes a long way in enhancing the potency of this method.

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

1.3 The Research Questions

Research questions “narrow the purpose [or goal of the study] into specific questions that the researcher would like answered or addressed in the study” (Creswell, 2005). They help the researcher focus on the relevant issues while trimming irrelevant information. Leedy describes the purpose of research questions succinctly in the following statement, “By attaining answers to those research questions, the study goals are met and a contribution towards solving the problem [statement] is made” (Leedy, 2005).

And thus, this paper will attempt to achieve the goal of section 1.2 through the answering of the following research questions:

- A. What is Computer Assisted Language Learning (CALL)?
- B. What is the reasoning behind implementing CALL in a classroom setting?
- C. What are the potential pitfalls when implementing CALL in an academic situation?
- D. How do the different socio-economic environments of learners across the world affect the way a CALL curriculum is implemented?

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

1.4 The Structure of the Paper

The main body of this paper has been divided into four parts for better legibility and cohesion. The first of these four is the Literature review section. This section will try to define CALL and discuss its historical background through the input of various relevant researchers and academic papers. Additionally, the advantages and limitations of this method would also be discussed in this section.

The next section – titled “Research Methodology” - will elaborate on the research methodology and/or techniques employed in this paper. The penultimate section of main research body –named “Case Studies”- will present the various case studies involving the implementation of CALL

Finally, the fourth section of the main research body “Findings and Conclusion” will discuss the findings – mostly patterns, common themes or even contrasting elements – found in the case studies section and try to relate it to the research question. And then the paper will conclude after presenting a few recommendations for future research.

CHAPTER II - LITERATURE REVIEW

2.1 Defining CALL

Computer assisted language learning (CALL) can simply be defined as the following, “the search for and study of applications of the computer in language teaching and learning” (Levy, 1997). CALL falls under the umbrella of Educational technology which –in turn- can be defined as, “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (Robinson, Molenda, & Rezabek, 2017). While Educational technologies has existed for centuries the foray into the field of CALL is a relatively new development, only really coming into its own since the 1950s.

Various research findings show that allowing students to work with and ultimately automatously learn through computers increases their willingness to learn and learning efficiency greatly (Jonassen, 2000). This increased willingness and efficiency is the primary incentive behind implementing CALL in an academic setting.

Contemporary CALL research can be divided into three different fields - software, task pedagogy and learner-computer interaction (Chapelle, 2001). Researching software tends to be most common type of CALL research. As software is the most visible element of any CALL initiative most institutes and researchers tend to focus primarily on it. The software in this field may serve the function of a tutor, learning tool, practice medium or even a combination of them (Murray, 1993). Research into the field of learner-computer interaction seems be the sparsest of

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

the three. Research into the impact of personal attitude of learners and instructors seem to almost non-existent. (Vandewaetere & Desmet, 2009)

2.2 Historical Background of CALL

The modern CALL programs can trace their origins all the way back to the late 1950s. With the advent of commercial digital computers the programmer from institutions such as MIT and IBM started to research into the educational capabilities of the machines. However, these efforts at the time was known as CALI (Computer-assisted language instruction) instead of CALL; CALI begin to be popularly called CALL by the associates in the field 1980s due to the shifting nature of the field – more focus was put into making the learning process more intuitive for the learner than making the instructions easier for the teacher. (Davies & Higgins, 1982)

Before venturing into the advancements made in the 1980s I would like to talk about the PLATO (Programmed Logic for Automatic Teaching Operations) project which has often been considered the progenitor of the modern CALL idea (Levy, 1997). Primary contribution of the PLATO project was the standardization of the supplementary materials of a CALL focused classroom. It stressed the inclusion of audio input for learners, graphics and flexible response analysis (Chapelle, 2001) . Two of the major tenants of the PLATO program was; a) a computerized way for the students to “talk” (electronic notes, early local email systems) to the their instructors and even the central computer and b) making the teachers directly involved into the material development process via the non-programmer friendly TUTOR system which allowed anyone with just a basic understanding of computers to be able to develop course materials.

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

Although the PLATO project started many of the things that would come to be considered the core of the CALL program it was the TICCIT (Time-Shared Interactive Computer Controlled Information Television) program in 1977 that combined the disparate elements of various early CALI initiatives into a coherent whole which started to resemble the modern CALL programs. TICCIT was a computer terminal system with a mainframe computer as its core which had the capability of combining audio, video and text – which in essence made it into the first multimedia capable computing system (Merrill, 1988). The TICCIT program was revolutionary for its time however, due to the immense cost of operating a mainframe based system in the 1970s this program did not manage to achieve mainstream success (Chapelle, 2001).

In the 1980s the cost of personal computers were starting drop low enough for the average person in the education field to own one. In order to the meet the rising demand for CALL programs projects such as Athena Language Learning Project (ALLP) were started. However, it was the 1990s when the CALL programs really began achieve widespread adoption. Faster-cheaper computers, wider computer literacy and easier to use computing interfaces allowed – for the first time- someone without any background in the computing or IT background to use CALL software and/or hardware and derive learning benefits from them.

This section along with section 2.1 answers the following research question, “What is Computer Assisted Language Learning (CALL)?”

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

2.3 Why Implement CALL in Classrooms?

The primary incentive for implementing CALL into classrooms is the learning advantages it brings. Especially in the case of second language acquisition curriculums the inclusion of CALL initiatives have been met with positive responses from both the instructors and the learners. (Kung, 2002). The primary objective this section is to answer the following research question, “What is the reasoning behind implementing CALL in a classroom setting?”

CALL programs have the potential to provide multi-sensory stimuli and opportunity for multi-stage yet intuitive tasks. Instead of focusing on content memorization CALL programs allow the students to engage with their learning process in a way which is natural to how the human brain processes information. This kind of learning and natural processing co-operation should lead to increased learning efficiencies according to the Multiple Intelligence Theory (MIT) proposed by Gardner (Gardner, 1999).

According to Lee we should integrate language learning technologies into SLA (Second Language Acquisition) programs to reap the following rewards: a) a chance at proving practices before mass deployment through experiential learning, b) offer students more with learning motivation, c) enhance the students sense of achievement, d) increase authentic study material supply, e) encourage greater interaction between teacher-students and student-peers, f) emphasize the individual needs, g) gain independence from a single source of information, and h) attain greater global understanding. (Lee, 2000)

Three separate learning methods – namely – a) incidental reading – where learners read the text with the aim of completing the given activities successfully, b) reading comprehension – answering traditional comprehension questions and c) text manipulation – where students study a

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

text in terms of content and structure are all benefited with the addition computerized methods in the learning process (Jones & Fortescu, 1988).

2.4 Limiting Factors of CALL

So far, this paper has featured the advantages gained by adopting CALL practices. However, there are some limitations to where and when a CALL program can be initiated. This limitations can be financial, software or hardware based. There are even some edge cases when a CALL program might be more of a detriment than a helpful element.

The first disadvantage of implementing a CALL program would be the disruption of equity of education via the increased educational costs. Students from low-income families might fall behind in academic achievements in comparison to students of well-off families; the lack of access to computers at home might render them incapable of completing homework, assignments, projects or even exam studies in the most optimal manner. In the same vain low-budget schools might not be able to afford enough computers in their labs or even afford a computer labs in the first place. Combinations of these two factors would likely create a very unfair educational environment for the afflicted students (Gips, DiMattia, & Gips, 2004).

The next potential limiting factor of CALL is the state of computer literacy of the teachers and students. Any CALL initiative have to first insure that the student and teacher body has at least a basic level computer literacy. If such literacy cannot be guaranteed at the outset then additional computer lessons might be in due. Arranging additional courses might run into financial, human resource or management problems. Another related issues is software or hardware malfunctions during lessons. The instructors need to be flexible enough to carry on a

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

lesson without the computer aids in such a scenario. This would complicated their lesson planning and can even lead to wasted class days.

The above examples should be sufficient as answers to the research question, “What are the potential pitfalls when implementing CALL in an academic situation?”

CHAPTER III – RESEARCH METHODOLOGY

3.1 Nature of the Data

This paper will primarily deal with second hand data. The data – particularly the case studies – will be collected from formally published journal and books. Case studies with substantial data sets and/or conclusive results will be represented in this paper. In this paper second hand data collection was chosen over first hand data collection due the need of data from multiple case studies from different countries/economic conditions which would be prohibitively costly and time-consuming to have conducted in person.

Additionally, the data collection will be qualitative in nature. Qualitative data can be characterized as “Data that approximates or characterizes but does not measure the attributes, characteristics, properties, etc., of a thing or phenomenon.” (Qualitative data, 2017) The nature of qualitative research (which produces qualitative data) is elegantly summed up by the following statement, “Qualitative research is empirical research where the data are not in the form of numbers.” (Punch, 1998) Qualitative data is one of the two primary forms of data collected for academic research; the other form being quantitative data. The characteristics of quantitative research and data are as follows, “Quantitative research deals in numbers, logic, and an objective stance. Quantitative research focuses on numeric and unchanging data and detailed, convergent reasoning rather than divergent reasoning.” (University of Southern California, 2018)

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

3.2 Research Objective.

The objective of this paper is to showcase the impact of personalization and modification of the basic CALL program and how these modifications allow CALL to function optimally in different socio-economic situations.

3.3 The Significance of this Study

Even though CALL has shown immense potential and even achieved success in many schools, colleges and other educational institutes around the world its implantation has not been without complications and downright failures. It must be communicated to all parties that CALL is a diverse matrix of activities (Levy, 1997) and each instance of implementation requires its own personalized version of CALL. Trying brute force a standardized version of CALL would defeat its very purpose of being more flexible and reactive to modern tech infused educational environment.

As such, this paper will attempt to analyze multiple case studies involving the implementation of CALL to extract the elements that lead to success of said initiatives. By doing so this paper hopes to become a useful guidance tool for those who attempt to implement CALL in their own educational environment and become a brief digest of the corpus of study in this field.

3.4 Limitations of the Study

The most visible limitations of this paper is the lack of first hand data and a lack of quantitative data collection. This papers aim of representing disparate cases of CALL

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

implementation around the world has the unfortunate side effect of causing a deficiency of locally conducted data collection.

CHAPTER IV – CASE STUDIES

In this chapter the paper will discuss various case studies conducted on CALL focused classrooms.

4.1 Case A: The Case of Runyakitara

This case study focuses on an western Ugandan CALL curriculum (Katushemererwe & Nerbonne, 2015). Runyakitara is the collective name of the four native languages of the regions - Runyankore, Rukiga, Runyoro and Rutooro. Runyakitara has 6 million speakers. Even though the language had a sizable number of native speakers and had been used commonly around the western Uganda region most of the speakers of the language were not capable of reading or writing well in their native tongue. The author of the case study speculates that the cause of this phenomenon was the dominance of English in the education and job spheres of Ugandan society. As such, the author and his colleagues took it upon themselves to create a CALL system suitable for improving the reading and writing skill of the native population

This case offered a different set of challenges compared to the usual ESL context CALL systems tend to be employed in. The authors of the case study decided to focus purely on software to improve the performance of the applicants in this study. They created a program called “RU_CALL” to help the local populace in their studies. The RU_CALL program focused primarily on expanding the knowledge of vocabulary, the syntax, nouns, verbs and spellings of the learners and it also provided the learners with the opportunity to test their own progress at their own time.

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

The authors of the study conducted a pre-test before the deployment of the RU_CALL program. The results of this test would serve as the control set against which the expected improvements due to the CALL program would be measured against. The total number of participants in the test were 26.

	Pre-test experiment (N=26)		
	Vocabulary	Grammar	Grammar + writing
Mean	60.0	63.5	54.8
Standard deviation	16.9	18.2	16.5

Table 1 Case A, pre-test scores

After the deployment of the RU_CALL program a similar test was conducted with all 26 participants:

Variable	Learners	Mean score	Standard deviation
Pre-test	26	59.73	17.4
Post –test	26	74.61	9.17

Table 2 Case A, comparison of pre-test and post-test scores

Both the standard deviation and the mean of the scores had improved after deployment of the RU_CALL. On a scale of 1-5 a staggering 77% of the participants awarded the initiative a score of 5. When interviewed afterwards the participants mentioned the self-study and self-assess nature of the RU_CALL program put them at ease and gave the courage to try out new things. Additionally, the authors of the study mentioned that even their instructors had incomplete grasp

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

of the target language at times; so, an impartial and feature rich program allowed both parties to double check their own competencies without the fear of ridicule.

4.2 Case Study B: CALP for School Leavers

The following case study was conducted in New Zealand in the year 2000 (Smith, 2012). The New Zealand Qualification Authority (NZQA) prepared a Computer Learning Assistance Program (CALP) for a group of 17 students who had regularly ditched classes and had showed no interest in regular study. The participants came from various schools with a wide array of problems - lack of self-confidence, rebelliousness, drugs, homelessness, alcoholism, depression and lack of English competence. Most the participants shared one opinion – the general education curriculum employed in NZ schools were not adequate or even tolerable for them.

Over the course of a 24 week long full time course the students were provided with various types of learning opportunities. The observers noticed that both instructor based lessons and pair work activities garnered little positive response from the participants. However, participants reacted very positively to the personal computing time provided to them. They especially appreciated the multimedia and interactivity rich softwares and activities. The author of the study speculated that this appreciation might be due to the fact that “the student is kept busy and feels safe” while engaging in such multimedia activities. As their interactions with their instructor decreased and time spent with the computers increased the students became more enthusiastic about their learning process. These students already had a great deal of personal issues plaguing them, additional scorn – intentional or not- from the instructors or well-performing students might have completely demotivated them. The author of the study brought attention to the following quote by Hanson-Smith to hammer home this point, “computers are patient, they speak

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

clearly, and they don't (in their best incarnations) give off subtexts implying that the user is dumb” (Hanson-Smith, 1997).

At the end of the 24 week course 12 students managed to pass the curriculum while 5 dropped out. The whole endeavor was deemed a success as without this course all 17 students would have failed to pass.

4.3 Case Study C: Elementary Chinese Learning for American Students

This CALL implementation was conducted on a class of 14 American Foreign exchange students in Jinan University, China (Hong-yan, 2007). The goal of the curriculum was to allow the 14 participants to achieve elementary level proficiency in Chinese within 14 weeks. All the students were above the age of 18 in this class. The instructor was a Chinese native speaker with advanced proficiency in English.

The learning process in this curriculum has three distinct phases. The first 4 weeks consisted of learning to speak and understand to basic Chinese. Voice recognition software helped students practice their learning on their own.

On the 5th week the course reached its second stage. The learners were given instructions on how to write down Chinese characters on paper. They were provided with multimedia instructions on how to write Chinese characters. When the multimedia instructions were too complicated to follow or replicated the instructor provided onsite examples on how to write those Chinese characters.

The third phase began when students were allowed to use Chinese word processors to create computer documents in Chinese. The error checking algorithm included in the provided word

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

processing software gave the students a preliminary verdict regarding their accuracy and then the students submit the finalized documents to the instructors for final evaluation.

Interestingly, as more and more weeks passed by relationship between the instructor and the students became more and more cordial. The students became open to the idea of asking for help – even at seemingly trivial hurdles. This seemed to have greatly improved their learning efficiency.

Within the 14 weeks 4 proficiency tests were conducted. The results of said tests are given below:

	Mean	Median	Std. Deviation	Interquartile Range
Test 1	89.57	93.50	11.93	9.50
Test 2	90.07	90.50	8.08	12.25
Test 3	91.86	93.50	7.47	14.00
Test 4	92.89	94.75	6.66	8.13

Table 3 Case C, results of the proficiency tests.

As can be seen from the table above the students have been able to demonstrate constant improvement.

This case study has presented us with a nice balance of instructor instruction and computer instructions. The higher average age and higher willingness to learn (the learners had volunteered for the student exchange program) is likely to be the cause for this.

CHAPTER V – FINDINGS AND CONCLUSION

5.1 Discussion of the Findings

In chapter IV this paper has presented three different case studies. Even though in all three scenarios a CALL based initiative was in place their implementations were very different.

In Case A the Runyakitara speaking Ugandans lacked reading and writing proficiency. In addition, their instructor was also not very proficient in the target language. The CALL program in this case focused entirely on constructing a software platform for the students which they could use for self-studying and self-practicing their grammatical, spelling and vocabulary skills.

In Case B the New Zealander students were deeply disinterested in having traditional teacher-student interactions. Most of them suffered from psychological or physical ailments. Like Case A this case also focused on the software based approach to CALL. However, unlike Case A this implementation focused more on the entertainment and interactivity aspects of computer based studies

In Case C the paper presents a scenario where both the computer and instructor have been able to make meaningful contribution to the students learning process. Here, the students have access to multimedia instructions, voice recognition software, word processors and proofreading algorithms while at same time been in constant contact with their instructor. They had become comfortable with the idea of sharing their issues and difficulties with their instructors.

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

Case Study	Contextual Variable	Modification to CALL Implementation
Case A: The Case of Runyakitara	<ul style="list-style-type: none"> • Learners lacked reading and writing proficiency • Instructor possessed low proficiency in the target language • Learners were eager to learn 	<ul style="list-style-type: none"> • Creation of software platform (RU_CALL) focused on self-study and self-practice • Mainly utilized text based tools and pre-recorded media.
Case B: CALP for School Leavers	<ul style="list-style-type: none"> • Learners possessed low motivation for learning • Most learners suffered from psychological or physical ailments 	<ul style="list-style-type: none"> • Creation of software and computing activities focused on learning through entertainment • The curriculum focused on improving learner motivation
Case C: Elementary Chinese Learning for American Students	<ul style="list-style-type: none"> • Both the instructor and the learners are highly motivated • Extensive access to computing resources 	<ul style="list-style-type: none"> • Implementation of a multi-stage CALL curriculum which combined both self-study

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

	<ul style="list-style-type: none"> • Opportunity to practice the target language with native speakers. 	<ul style="list-style-type: none"> and peer-study opportunities • Usage of voice-recognition software, multimedia instructions and error-checking algorithm.
--	---	--

Table 4 The relevant contextual variables of the case studies and the modifications to CALL that arose from them

As it can be seen from above, each of these cases have their own quirks. It's highly unlikely that switching around the solutions for any of these cases would lead to any improvement in the participants learning efficiency. On the contrary, it's very likely that any learning efficiency provided by the implementation of CALL would be lost.

If the Ugandan students from Case A were given the entertaining multimedia tools from Case B then it's highly likely that the entire program would have amounted to nothing. The core deficiency of the students in case A were their reading and writing skills and neither of these two skills benefit from the tools used in case B.

Conversely, if the New Zealander students from Case B were provided with the setup from Case C it's also likely to have failed in producing a positive effect. The school skipping students from Case B needed entertainment to keep their attention tethered to the learning process. They also disliked being in the attention of their instructor. As a result the utility focused software and

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

inquisitive, interactive instructor from Case C is likely to have convinced them to drop out from course more often than not.

Even though all three cases are examples of some sort of classroom CALL implementation their methods for improving learning efficiency seems to be incapable of being swapped around at will. The different socio-economic conditions of these three cases calls for the utilization of a context based implementation of CALL. Constructing a one-size-fits-all variety of CALL seems to be a tall order.

In essence, this entire section has been a response to the research question, “How do the different socio-economic environments of learners across the world affect the way a CALL curriculum is implemented?”

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

5.2 Suggestions for Further Research

As the paper draws near to its conclusion some of its shortcomings have become more and more apparent. Additional case studies from other parts of the world would have fleshed out the discussion section even more. As discussed in the “limitations of the study” this paper is almost entirely reliant on second hand and qualitative data. Also, it lacks a case study involving students from Bangladesh.

As such, if presented with the opportunity the author of this paper would like to produce a sister paper to this one. This new paper would focus on first hand, quantitative data and be more representative of the CALL situation in Bangladesh.

5.3 Conclusion

In the last two centuries humanity has experienced an unparalleled pace of technological progress. Especially in the last fifty years society has witnessed the advent of digital computers, space travel, long distance communication etc.

Such sweeping changes to the society's very way of life has also meant that the old ways of educating learners has become increasingly less relevant and more ineffective. The old language pedagogy has been challenged by new technology enhanced methods of learning - such as CALL. Methods like CALL has enabled teachers to integrate information technology into their classrooms through software programs, CD-DVD, websites or blogs.

This paper has attempted to produce a brief digest of the various aspects of CALL -such as its definition, its historical origins, its advantages and disadvantages etc. Via the discussion of the various ways CALL has been implemented around the world this paper has -hopefully- been

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

able to illustrate that personalizing the application of CALL based on the socio-economic context of the learning environment has led to increased learning efficiencies.

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

Bibliography

- Alresheed, S., Leask, M., & Raiker, A. (2015). Integrating Computer-Assisted Language Learning in Saudi Schools: A change model. *TOJET: The Turkish Online Journal of Educational Technology*, 69-77.
- Chapelle, C. (2001). *Computer Applications in Second Language Acquisition: Foundations for teaching, testing and research*. Cambridge: Cambridge University Press.
- Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research (2nd ed.)*. New Jersey: Pearson.
- Davies, G., & Higgins, J. (1982). *Computers, language and language learning*. London: CILT.
- García M. R., A. F. (2000). A Comparative Study in Motivation and Learning through Print-Oriented and Computer-Oriented Tests. *Computer Assisted Language Learning*, 457-465.
- Gardner, H. (1999). *Intelligence Reframed: Multiple Intelligences for the 21st Century*. Basic Books.
- Gips, A., DiMattia, P., & Gips, J. (2004). The effect of assistive technology on educational costs: Two case studies. In K. Miesenberger, J. Klaus, W. Zagler, & D. Burger, *Computers Helping People with Special Needs* (pp. 206-213). Springer.
- Hanson-Smith, E. (1997). Technology in the Classroom: Practice and Promise in the 21st Century. *TESOL Professional Papers# 2*.
- Hong-yan, Z. (2007). Computer-assisted elementary Chinese learning for American students . *US-China Education Review*, 55-60.

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

- Jonassen, D. H. (2000). *Computers as mindtools for schools: Engaging critical thinking*. New Jersey: Prentice Hall.
- Jones, C., & Fortescu, S. (1988). *Using computers in the language classroom*. New York: Longman.
- Katushemerewe, F., & Nerbonne, J. (2015). Computer-Assisted Language Learning (CALL) in Support of (Re)-Learning Native Languages: The Case of Runyakitara. *Computer Assisted Language Learning*, 112-129.
- Kerlinger, F. N. (2000). *Foundations of behavioral research (4th ed.)*. New York: Harcourt College Publishers.
- Kung, S. C. (2002). A framework for successful key-pal programs in language learning. *CALL-EJ Online*, 3 (2).
- Lee, K. W. (2000). English teachers' barriers to the use of computer assisted language learning. *The Internet TESL Journal*.
- Leedy, P. D. (2005). *Practical research: Planning and design (8th ed.)*. New Jersey: Prentice Hall.
- Levy, M. (1997). *Computer-Assisted Language Learning: Context and conceptualization*. Oxford: Oxford University Press.
- Liddell, P. (1994). Learners and second language acquisition: A union blessed by CALL? *Computer Assisted Language Learning*, 163-173.
- Merrill, M. D. (1988). *Applying Component Display Theory to the design of courseware*. New Jersey: Lawrence Erlbaum Associates.

A REVIEW OF COMPUTER ASSISTED LANGUAGE LEARNING

Murray, F. (1993). *A Separate Reality: Science Technology and Masculinity*. Washington, DC: Taylor and Francis.

Punch, K. (1998). *Introduction to Social Research: Quantitative and Qualitative Approaches*. Thousand Oaks: SAGE Publications.

Qualitative data. (2017, November 17). Retrieved from Business Dictionary.:

<http://www.businessdictionary.com/definition/qualitative-data.html>

Robinson, R., Molenda, M., & Rezabek, L. (2017, October 12). *Educational Technology*.

Retrieved from <http://www.aect.org>:

http://www.aect.org/publications/EducationalTechnology/ER5861X_C002.pdf

Smith, P. L. (2012). Computer Assisted Language Learning (CALL) for TEYL. *The International TEYL Journal*.

Timothy J. Ellis, Y. L. (2008). Framework of Problem-Based Research. *Informing Science: the International Journal of an Emerging Transdiscipline*, 17-33.

University of Southern California. (2018, March 29). *Organizing Your Social Sciences Research Paper: Quantitative Methods*. Retrieved from USC Libraries:

<http://libguides.usc.edu/writingguide/quantitative>

Vandewaetere, M., & Desmet, P. (2009). Introducing psychometrical validation of questionnaires in CALL research: the case of measuring attitude towards CALL. *Computer Assisted Language Learning*, 349-380.