A Review of Computer-Assisted Language Learning (CALL): Development, Challenges, and Future Impact

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Abstract

The use of computer technology has become compulsory in education particularly in foreign language teaching and learning. It is known as Computer Assisted Language Learning (CALL). Language teachers and learners usually take more interest to utilize technology like mobile phone, computer, and internet in their teaching and learning. CALL has unlocked innovative dimensions in learning. Further, CALL offers advanced learning and teaching methods such as Audio–Video, Cognitive and Communicative approaches. Learning with help of CALL improves students' cognitive and communicative abilities more as compare to traditional methods of teaching and learning. Cognitive learning makes learner responsible for his own learning and communicative approach improves learner communication skills in the language. It is necessary to consider major aspects of CALL. This paper discusses detail

information about Computer Assisted Language Learning (CALL). The overview focus is especially on the development of CALL, Challenges and Future Impact on language teaching and learning.

1. Introduction

The technology associates every field of studies like Business, Law, Natural Science, Humanities, and Education. It has a positive and negative role in society and education. We see numerous opportunities for advancement in the education field from which the teachers and the learner are getting benefits or suffer from it, are the gift of modern technology. English as an international language has increased the demand for English language for communication. For the jobs, the combination of technology and the English language has increased the demand for English for scholars, teachers, and students. English has accepted new challenges in technology-based learning in education. In response, its results may be constructive or destructive. Moreover, learners get benefits from e-learning in education. But different technology has diverse demands for teachers and learners. Bax (2003) declared the teachers and learners face many challenges in CALL learning. In addition, he expresses that many questions raised about the impact of CALL on language development, the effectiveness of CALL in language and its future for English language learning. The purpose of this article is to review the development, the challenges, and future trends in English language teaching and learning.

2. Objectives

Major objectives of the study were:

- To Discover Historical Development of The CALL around the world.
- To Determine the Challenges for the CALL in English Language learning.
- To investigate the Future Trends of the CALL in English Language learning.

3. Research Questions

- What were the historical developments of the CALL around the world?
- What were the challenges for the CALL in English Language learning?
- How will the CALL trends in English Language learning in the future?

4. Computer Assisted Language Learning (CALL)

CALL is a computer-based technology that facilitates teachers and learners in English language learning. Levey (1997) stated that CALL is the use of the computer application for the search and the study in language learning. It means that computers are directly involved in language learning. According to Bax (2003), CALL is the useful technology that provides innovative the environment to teachers for language teaching. Further, he focuses that new technology has changed the methods of language learning from the teachers to learners, from center to an individual. Georgious (2007) mentions CALL computer-based program to assist teachers and learners to learn the English language with innovative way. In addition, CALL new methods to make both teachers make students skillful in English communication and written composition.

5. Development of CALL

CALL based language learning is totally opposite to traditional learning. If we go through history, we will see that CALL has developed gradually in different phases. In education, it is especially new in language learning. In 1950 computer-based learning was used. Its name was Computer Assisted Instruction (CAI) but initially, it was used for other purposes not for language learning. In this regard, Boyle and Smith (1976) developed Computer Based Diagnostic Test (CBDT) for the French language. After this achievement, Collette (1980) utilized Computer Assisted Instruction (CAI) but it was a French program. According to Chappelle (1980) mentioned that two language teachers Rexlast and Graham Davies used computer technology learning in the United Kingdom.

Chappelle (1983) indicated that Richard Atkinson in 1972 first time practically used CALL at Stanford University in the United States of America for his Mathematical Learning Theory (MLT). In addition, this time CALL was also not used for language learning. This program was initiated with the collaboration with IBM. Atkinson also formed Computer Curriculum Corporation (CCC) in 1967. Further, Atkinson's effort provided guidance for English learning. Further development in CALL made in Canada where three corporations combined started a project in university for the French language.

Chappelle (2001) mentioned that the Programmed Logic for Automatic Teaching Operation (PLATO) program used to impart English, French, German, Spanish, and Italian. The features of this program supported audio and graphics. The Time Shared Interaction Computer Controlled Information (TICCI) developed to teach Arabic, Chines, Hindi, Hebrew, and Swedish. A worthwhile stride took in 1983 in Canada Annual Conference for the TESOL and it was chief footstep for the development of CALL in language learning in future. Moreover, Canada convention proved beneficial for two reasons. The first an agreement made on CALL manifestation and the second Computer Assisted Language Instruction Consortium (CALICO) developed the first time for the professional organizations. In 1983 at Lancaster University established the CALL program and it became very popular in education, marketing, and business. These progress of CALL opened new doors of language learning with extensive opportunities for teachers and learners.

5.1 Phases of CALL

No doubt CALL has provided creative methods for language teaching and learning. According to Healey (1998) pedagogical and technological phases of CALL, support to learn English with advanced approaches. Warschaucer (1998) has given three phases of CALL behaviorist CALL, communicative CALL, and interactive CALL.

5.1.1 Behaviorist CALL

Dina (2013) mentioned that behaviorist CALL originated in 1950 but implemented in 1960/70. Its current name is structural CALL. In this phase, the function of the computer was like a tutor. In addition, it worked like a tool that used to give instructions to the learners. Learners followed as it was the computer instructions. Features of behaviorist CALL based on drills, vocabulary, and grammar and translation text. PLATO is a famous program of this phase. Main features of this phase included, teachers had access to the same material to teach the language again and again. In addition, based on individual feedback and provided learners

with their choice of data.

5.1.2 Communicative CALL

Communicative stage of CALL started from 1970-1980. Further, this phase is the product of a behaviorist CALL. Han (2009) mentioned, the communicative phase totally depends on communication between technology and learners. Moreover, the curriculum was based on communication between learners to computers and learner to learner for productive results. Different programs were developed but computer games were dominant among all sorts of programs. Taylor (1998) revealed that the main function of the computer in this phase like a motivator because most activities were used for the communication. Activities included critical thinking, writing tasks, conversation, games, and listening. Various activities were developed to grip on written composition such as grammar, punctuation, spelling check, and text composition. Thus, these activities of CALL helped a lot the learners to learn and use the language easier. Chappelle (2001) mentioned that a CALL course in this stage was based on text construction, communication, and different close exercises. The huge achievement of this phase was the development of cognitive and corpus linguistics. A program Computer Assisted Concordance Activity (CACA) was developed to find words and phrases with accurate meaning and references.

5.1.3 Interactive CALL

The purpose of the interactive CALL was to sustain the interaction between technology and language learning. In addition, the focus of this phase was on four natural skills of language learning such as listening, speaking, reading, and writing. This phase helped to overcome the difficulties of the learner in English which were in behaviorist and communicative CALL. Chappelle (2001) mentioned that activities in the interactive phase were task-based approaches that helped learner convenient environment for their language learning. According to Bax (2003) utilization of www and multimedia computer in 1990 was the major accomplishment of interactive CALL. Here Warschaucer's (2000) table presents complete detail of CALL phases.

Table 1. The development phases of the CALL

Stages	1970-1980 St/B CALL	1980-1990 Communicative CALL	21st Century Interactive CALL
Technology English Teaching Paradigm	Mainframe Computers Grammar Trans. & Audio Lingual	Personal Computers (P.C) Communication Language Teaching	Multimedia & Internet Content Based ESP/EAP
View of Language	Structural/Beh. (Formal St.sys)	Cognitive (Mental Constructive Sys)	Scio-Ling (Development of Social Interaction)
Nature of Computers	Drill & Practice	Communicative Exercises	Authentic Discourses
Main Objectives	Accuracy	Accuracy & Fluency	Accuracy, Fluency & Activity

6. The Different Terminologies for CALL Phases

CALL phases have given diverse names in different periods in the history of CALL development. Warschaucer and Healey (1983) CALL phases are Behaviorist CALL, Communication CALL, and Interactive CALL.

After fourteen years Warschaucer (1998) revised names of CALL phases. He changed the name of behaviorist CALL to structural CALL but he kept same names of the other two phases. His revised phases are Structural CALL (1970–1980), Communicative CALL (1980–1990) and Interactive CALL (2000). Bax (2003) suggested three similar phases of CALL. In addition, his suggested phases and dates are Restricted CALL (1960 – 1980), Pen CALL (1960 – 1980) and Integrated CALL still to be achieved.

7. Challenges for CALL

The use of computer technology is frequent in language teaching and learning. According to Davis (2010), two major kinds of computer applications are utilized for language learning. The first is a generic software tool such as presentation software, word-processing software, web-browser, and data analysis software. Moreover, second types of software are designed especially for language learning and come under the category of CALL. But CALL learning has still numerous challenges. According to Bax (2006) CALL faces following challenges in language teaching and learning.

7.1 Personal Challenges

Many teachers and students face problems due to unawareness about the use of CALL in language teaching and learning in the classrooms. Chen (2008) mentioned that many teachers neither support nor give much time to methods of CALL in their teaching. In addition, he mentions that due to the expensiveness of CALL software institutions and teachers avoid purchasing. Such type of unavailability creates the unproductive and less innovative environment in the classroom. According to Chen (2008) teachers and learners express a personally negative attitude towards technology-based learning because they consider it time taking. Further, Egbert (2002) mentioned personal challenges in teaching and learning such as expensive, unavailable for every person, difficult to handle, requires more skills, and learners are usually unaware of software.

7.2 Technical Challenges

Technical challenges create difficulties for both teachers, learners, and administrator in English language teaching and learning. According to Egbert (2002) teachers and learners face technical problems in the classroom like the uncomfortable infrastructure of the classroom, inexperience of teachers to operate computers, inexperience of learners to operate computers, less technical skills in handling CALL, unavailability of resources, lack of professional development, lack of effective assessment in CALL environment.

7.3 Pedagogical Challenges

The traditional method is still in practice in teaching the English language. It is slow, less innovative and time taking. CALL learning emphasis modern language learning methods with the help of technology. With the passage of time the English language and its ways to impart instructions have become fast, easy and innovative for foreign language learners. But teachers and learners still face numerous pedagogical challenges in CALL. Dewach (2002)

mentioned the practice of traditional methods on English language learning, teachers use still talk and chalk, learners use traditional method pen and paper, translation method in the English language, curriculum and textbooks unsupportable to CALL and unawareness of CALL common pedagogical challenges for CALL in different learning environments.

7.4 Socio-cultural Challenges

English is international language but Culture of teachers and learners in Pakistan totally different from the people of this language. Understanding of culture of English native people will help to learn the English language easy and fast. In addition, there are socio-cultural challenges for CALL in English language teaching and learning. Al-Oteawi (2003) mentioned socio-cultural challenges for CALL such as unmatched teachers and learners' attitudes towards English, unadoptable cultural tenets, and fear of English will replace learner's native language.

7.5 Institutional Challenges

CALL is a new field in English language learning. It is relatively different from old methods of linguistic learning. Developed countries prefer CALL in the English language because of it productive for both teachers and learners. CALL learning has become popular in Pakistan as well. But many colleges and universities are unfamiliar with CALL. However, CALL is the modern trend in education but it has many challenges at the institutional level. Albirini (2006) stated common challenges in CALL usages because it is expensive to apply, requires separate classes/labs, unprofessional technical staff, unprofessional teaching staff, and curriculum developers unfamiliar about CALL in institutions.

8. Future Trends

The English language is taught with traditional and CALL methods but future trends of language learning would be totally different. According to Cobb (2017) in the future role of teachers will less and involvement of technology would be more in language learning. Technology-based programs and devices perform the function of the facilitator. Following will be major trends in language learning in future.

8.1 Artificial Intelligence

Development of Artificial Intelligence (AI) already used in language learning. Computers understand human language and response according to instructions. Future trends would be more developed than the current trends which are utilized in language. Bennett (210) mentioned that highly advanced robots might be involved in the English language in the future. It means robots will play teachers role for the language teaching. Further, Bennett argues that from two decades' efforts have been making to convince people to communicate another person rather than the computer. Cobb (2017) mentioned that physically transparent and the robot will replace teachers in the language in education because the robot would be more advanced, faster, commit fewer errors than human. In addition, robots will produce more accurate outputs in education as compared to the human. Language learning environment would be interactive rather than exercise-based. According to Bannette (2010), big data could be stored in robots that would easy to utilize in a variety of purposes for learning.

8.2 Corpora for Language Learning

Teachers and learners feel difficulties to find relevant books, articles, and data for language because of limited sources. Provided material to learners is usually either uncompleted or limited. Cobb (2017) stated that due to corpora, it is expected that there will be no such types of problems in the future for language learning. Because big data or corpora will change the scenario in education but people have still little awareness about it. Further, Cobb mentions that corpora learning will help linguistics to get huge data at one place like entire book, entire library and entire language books of an author. Moreover, language methods, access to material and analysis of material will convenient as compared to traditional methods of language learning. In this regard, Huttman, Bannette, and Cobb (2017) mentioned that corpora will effective in teaching genre, extensive reading and pragmatic in linguistics.

8.3 Tracking

Involvement of tracking in language will help to obtain teachers and learners data. Such types of data will help to understand background knowledge, culture, and standard of education and learner's area interest in language learning. Linguistics corpora track will guide to obtain required data of learners at the university level. According to Kessler (2013) suggested that tracking will help to obtain valuable data student's performance and behavior using digital machines in or out of the classroom. Cobb (2017) discussed another angle of tracking that with the development of Learning Management System (LMS) and Social Media (SM) will help the teachers to understand student's area of interest, abilities, and learning experiences. According to the provided information, the teacher will be able to make his/her plan for language teaching in the classroom. Even teacher can make a separate plan for individuals to make teaching more effective.

9. Conclusion

Considering CALL additionally tool for English teaching and learning. In this connection in the article, role and aspects of technology-based learning have been discussed in detail. Moreover, it is focused that how Warschaucer's (1998) CALL phases can be effective for language learning in the classroom? How CALL is more productive than traditional language learning? Logics are also discussed that why CALL is widely used in the language in education? Challenges should be kept in mind when CALL is implemented to impart instruction in the classroom. If teachers and administrators will be able to make better plans that mentioned challenges can be overcome easily. In this regard, challenges will help to understand the drawbacks of teaching and learning. Further, it is explained in detail by following current trends of teaching language institutions, teachers, students, and administrators should be used CALL modern methods of language learning. Consequently, future English language learning would innovative, fast, and machine-based. It would be more based on intelligent methods that will be able to open a new world for language teaching and learning.

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