A Brief Review of Literature on Immediate Feedback Studies in CALL

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Abstract

The role of computer and technology in education is a subject which still shows a lot of scope for further exploration. Out of myriad possibilities that computer offer, the advantage of immediate feedback that it provides, forms the center of discussion in this paper. The paper puts forth certain research questions such as how the provision of immediate feedback works amongst the language learners and what its advantages are over traditional corrective feedback. The answers to these questions are sought through integrated cross sectional literature review which is very much related to this subject and is potent enough to provide explanation to these questions. This paper reviews the literature on the studies on immediate feedback in Computer Assisted Language Learning (CALL).Technology and Computer based learning is all pervasive in language education for its quick response. The use of feedback through computers being significant, it is necessary to look at how immediate feedback has been effectively used in the past two decades. The paper further develops discussion various advantages of the possibilities of immediate feedback from computer and technology in education.

Keywords: Computer, technology, education, self-study, feedback.

Introduction

The purpose of this study is to review the literature on the significant use of immediate feedback in the CALL studies conducted in India. The specific use of immediate feedback in L2 acquisition is relevant for most Indian learners of English. India is a multi-lingual country with 22 official and 1,652 different spoken and written languages (Mallikarjun, 2003). So these learners of varied linguistic backgrounds require good and relevant feedback while learning English through CALL programs.

The rise of technology and the influence of computers in the day to day life have grown by leap and bounds especially during the past two decades. Seldom there remains any discipline where the use of computer and technology was not explored. Among the fraternities that explored the uses of computer and technology for its easy and quick functioning, education and pedagogy remain in the forefront. Computer has crept in to the education scenario particularly during the last decades of the twentieth century initiating the emergence of computer mediated communication in general and computer assisted language learning (CALL) in particular. This does not necessarily mean that use of technology in learning occurred only after the arrival of computers. The history of CALL states that by mid 1960s itself, the use of computer and technology in second and foreign language teaching has been in constant development (Chapelle,

2001; Salaberry, 2001). In the eighties, the application of technology in language classrooms included the use of film, radio, television, language labs with audio/video tapes, computers and interactive video (Cunningham, 1998). The recent development of microcomputers with sophisticated audio and graphic capabilities has allowed computers to become easily accessible to all teachers and learners virtually (Chapelle, 2001).

The pedagogical benefits of computer mediated communication as facilitated through email and programs like Deadalus Integrated Writing Environment (DIWE), became one of the most commonly discussed topics in foreign language literature (Salaberry, 2001).The learner gets ample freedom to select the topics to make possible adjustments in the tasks and to get the help from the pear learners whenever it is required. This is another advantage of using technology in learning which is also termed as computer mediated communication. Unlike many individual CALL applications, CMC seems to promote meaningful human interaction that can foster the language learning process. That is, advocates claim that CMC can be excellent collaborative, meaningful, and cross-cultural human interactions among members of a discourse community created in cyberspace (Warschauer, et.al, 1996). There are of course a lot of other reasons for the quick expansion of the use of computer and technology in education. The prime among them is the immediate feedback that all the technical equipment provides. Synchronous programs such as online chatting, video conferencing and other tools facilitate this more. The quick response from the devices increases the dynamicity of learning process among the learners where they need not wait for the results of their activities for a delayed period of time. In this process learning never becomes a monotonous activity. The immediate feedback from the computers helps the learners in myriad ways. A manual correction of a text has got many limitations and the prime one of them is the amount of time required. For lengthy texts, manual corrections done by the teachers alone will not make sure that the text is error free. Language teachers most often fail to do complete analysis of the scripts written by the learners and may fail to notice some minute mistakes that the learners make. Computers identify this and provide a quick feedback with necessary suggestions to the mistakes which will ultimately help the learner to get their mistakes corrected. However the end result of this mechanism is not to dissuade the learners from their language activities but to motivate them to achieve perfection. Apart from checking grammatical errors in the written scripts immediate feedback could be provided to the pronunciations through certain specially equipped software. The criterion for analyzing machine pronunciation is that it should correlate significantly with the values given by the human experts.

The two main goals of this review are,

1) To understand the significance of immediate feedback in various CALL programs.
2) To explore the research evidence to show how immediate feedback has fostered better learning and recall in CALL research studies in India.

Background

The study is amply supported by the theories on interaction and feedback. Among them the noticing hypothesis of Schmidt (1995) is worth mentioning here. The noticing hypothesis suggests that "what learners notice in input becomes intake for learning". Immediate feedback to the learners for analysing the quality of their intake makes the learning process more effective for the learners.

Definition of Terms

There are two terms that are discussed widely in this paper, namely CALL and feedback. The meaning of both the terms must be explicated. The term CALL here signifies Computer Assisted Language Learning. It's a widely popular means in language learning and its possibilities are myriad as the technology is growing rapidly day by day. Another term that is used in this paper is immediate feedback. The paper discusses the advantages of immediate feedback from the CALL programmes over the delayed feedback from the teachers in oral method of teaching in a classroom. The term immediate feedback is used frequently in CALL programmed instruction.

Research Gap Identified

The review of literature described above regarding the advantages of CALL throws light on the fact that immediate feedback is not studied in most of the CALL research studies conducted in India. Many studies use power point and MS Word in content delivery and task presentation. Quite often the teacher facilitates and evaluates the answers of the students. The advantages of getting feedback for corrective measures are proved by many studies (R.C.Anderson 1971). Providing feedback immediately can be easily integrated in the learning mode using CALL programmes. Delayed feedback and immediate feedback allows the learner to learn better. According to Kulik and Kulik (1988) immediate feedback helped learners to perform better in the actual classroom on the study by J Metcalfe et.al (2009). It is noted that, "When there are commission errors to correct, it may be less beneficial to delay feedback. These errors may, indeed, become entrenched during the delay, and it may be helpful to weed them out quickly".

With the dearth of literature on studies related to effectiveness of immediate feedback in CALL, many researchers, teachers and CALL practitioners have used CALL programs for presentation and explanation of language content and skills. Very rarely CALL programs have been used for corrective feedback immediately with a specific plan for the teacher.

Method

The following methods were used to search for appropriate studies that can be included in the meta-analysis. Qualitative research synthesis was conducted on the literature on uses of immediate feedback in Computer Assisted Language Learning. Despite the prominent use of feedback in Computer Assisted Language Learning environments there seems to be sporadic evidences from empirical studies. Immediate feedback though one of the main advantages of CALL is the picture of immediate feedback for learning. Many studies have not indicated the specific effects of feedback on learning and retention. And even if there were a few studies the typology related to feedback was inconsistent. Actually, effective immediate feedback in Computer Assisted Language Learning exhibits the Computer to verify the learner's answer as correct or wrong with possible clarifications to rectify the errors for further learning. This study has analysed using qualitative meta-analysis approach rather than quantitative meta-analysis not because data was unavailable but it was specifically not available related to immediate feedback in CALL studies. The qualitative variants in this meta-analysis study allows a holistic description of the study because a quantitative analysis will exclude any study that has been reported qualitatively. There are a few scholars namely Noblitt and Hare (1988) who exposed the prospect of synthesizing both qualitative and quantitative information in qualitative mode. As an instance for this, Glasarand Strauss's grounded theory approach was developed as grounded meta-analysis

approach by Hosler and Scalese-Love (1989). Keeping this as an example, the current study adopted qualitative meta-analysis and thematic synthesis.

Data Collection

A set of criteria was framed to choose relevant research for this study. The criteria included selection of articles from experimental control group studies, receiving no computer presented feedback.

The search on available data was systematic within the repository consisting of electronic databases like IEEE, Eric, Shodganga, major technology and learning journals and conference proceedings. Totally 50 studies were reviewed and only around 26 were included in the Meta analysis. During the data analysis a few studies were excluded as low quality studies based on the following criteria

1) Lack of methodological features like sample size and procedure
2) No clarity in the role of immediate feedback

Results

Totally 26 articles were considered for meta- analysis and have selected particularly 17 articles for the same and they have been divided in to three sections namely,

1) Articles that discuss immediate feedback of Computer Assisted Language Learning and
2) List of studies that don't discuss the significant use of immediate feedback in CALL studies in India

Based on the criteria we didn't include the nine papers. The papers explicitly were only on CALL and were without looking into aspects of immediate feedback which is an important criterion of CALL and were also written in non-Indian context.

Review of Literature based on the advantages of CALL over traditional language learning methods

The term feedback or electronic feedback is required to be defined at the outset. Essentially it is a slippery term that signifies a lot of dissimilar approach to teaching and writing. The term often refers to automated feedback provided by the computer to those who teach writing mainly as mastery of a compendium of sub skills. Feedback includes prompts, hints and also scaffolding and pumping. Guidance moves is also common in computer assisted language learning program. Corrective feedback in SLA is considered as a natural way of language learning (Ellis, 1997). Treatment of errors in traditional classrooms is a complex process. Many taxonomies of feedback strategies proposed in SLA are quite different from that found in CALL programs (Long, 1977; Allwright, 1975; Chaudron, 1977; Seedhouse, 1997; Lyster&Ranta, 1997).

Even though there remains variety of strategies for the treatment of students' errors, it is only recently that systematic and scientific studies of effectiveness of feedback strategies have been carried out (Doughty & Varela, 1998; Seedhouse, 1997; Lyster, 1998a; Lyster, 1998b). However the results of these studies indicate that it is on the multiple variables including the particular aspects of the language being corrected and the characteristics of students that the relative effectiveness of feedback strategies are depended on.A Study by Robinson, Underwood, Rivers,

Hernandez, Rudisill, and Ensenat (1985) compared the effectiveness of different kinds of feedback in CALL tasks consisting of learner-computer interactions. Another study also supports the strategy of pinpointing learners' errors as carefully as possible. Nagata (1993) found that learners of Japanese who received ' intelligent' feedback about their use of particles performed significantly better on both post-tests and end – of- semester tests than those students who had received only an indication of where they had made an error (Nagata, 1993). In a study on the Impact of CALL education on language classroom, the researchers have identified that most of the teachers as participants revealed that extra practice in "CALL Activity in Use"(Joy Egbut et.al, 2002). Immediate feedback has not been recorded as a CALL activity use for pre-service teachers to use in their lesson plan and classroom.

Liou, Wang & Hung-Yeh (1992) in their work titled "Can Grammatical CALL help EFL writing?" speaks about the research conducted among 42 EFL students. The study proves that Combination of instruction and CALL seems to contribute to L2 learning more than just traditional instruction.

Azevedo (1995) his work "The Effects of Computer-Presented Feedback on Learning from Computer-Based Instruction: A Meta-Analysis" conducts A Meta-Analysis of literature concerning the effects of feedback on learning from computer based instruction. As per his findings, the learners in the computer-presented feedback group performed better than 79% of the learners in control group.

Nagata (1996) in her work "Intelligent Computer Versus Workbook Grammar Instruction" speaks about CALL computer instruction in grammar conducted among 26 college Japanese students. The study states that computer instruction is more effective for teaching grammatical skills and intelligent feedback is important.

Nagata (1997) in her another work "Computer Assisted Meta-Linguistic Instruction to Teach Grammatical Structures" discusses about two programs to test students' use of the Japanese particle. Her study centers around 14 second year college students studying Japanese Computer exercises with metalinguistic feedback. The study states that it helped students understand complex grammatical concepts.

Plankans (2001) in his work "Incorporating ESOL Learners' Feedback and Usability Testing in Instructor Developed CALL Materials" discusses about the use of usability testing to systematically evaluate instructor developed materials. He found out that the instructor developed materials can be more useful and user friendly.

Schulz (2003) in his work "Grammatical Errors and Feedback: Some Theoretical Insights" has discussed about Theoretical aspects of providing error feedback for language learners. Based on his study it has been proved that error correction is a worthy activity and both the error diagnosis process and the provision of feedback ought to be based on a sound theoretical understanding.

Heift (2004) in work "Corrective Feedback and Learner Uptake in CALL" discusses about the effects of corrective feedback on learner uptake in CALL. His study proved that the study participants showed the most learner uptake for feedback that provided an explanation of the error in the student input.

Metcalfe (2009) in his work "Delayed Versus Immediate Feedback in Children's and Adult's Vocabulary Learning" discusses about the effects of delayed and immediate feedback on

grade 6 children learning school relevant vocabulary. In his point of view delayed feedback produced better results than immediate feedback at the end of the experiment.

Iraji et.al (2014) in his work "Corrective Feedback and Learners' Uptake across Gender in an EFL Context" talks about the investigates the role of oral corrective feedback used in communicative-based classes and also the role of teacher's gender in provision of corrective feedback that leads to learners' uptake of different linguistic features. According to his findings the uptake happened more for male learners' classes regardless of teacher's sex.

Lavolette (2015) explores the accuracy of feedback from Criterion, a program developed by Educational Testing Service in is work "The Accuracy of Computer Feedback and Students' Response to it". In his observation immediate feedback is more beneficial than delayed.

The following table is inclusive of a few articles that discuss about the importance of immediate feedback of CALL programmes over the traditional language learning method.

List of articles that discuss the advantage s of immediate feedback of CALL

Table-1

Sl.no	Name of the Author	Title of the Paper	Year of Publication	Subject discussed	Number of Participants	Method	Major findings
1	Liu et.al	Can Grammatical CALL Help EFL Writing Instruction?	1992	Research report on whether grammatical CALL can help English writing instruction in Taiwan R.O.C	42	Quantitative	Immediate feedback helpful=83% Less pressure in CALL than in classroom=73%
2	Azevedo	The Effects of Computer-Presented Feedback on Learning from Computer-Based Instruction: A Meta-Analysis.	1995	A Meta-Analysis of literature concerning the effects of feedback on learning from computer based instruction.	53	Quantitative	Learners in the computer-presented feedback group performed better than 79% of the learners in control group.
3	Nagata	Computer Vs. Workbook Instruction in second Language Acquisition	1996	Computer feedback is more effective than simple workbook answer sheets for developing learners' grammatical skill in producing Japanese particles and sentences.	26	experimental	Computer assisted immediate feedback is more effective than text book exercises to learn the essential grammatical lessons in Japanese

4	Nagata	Effectiveness of computer assisted metalinguistic instruction for teaching grammatical structures such as Japanese particles	1997	Effectiveness of computer instructed metalinguistic instruction for teaching complex grammatical structures such as Japanese particles	14	experimental	Computers' ongoing metalinguistic feedback can lead learners to perform significantly better than translation feedback group
5	Plakans	Incorporating ESOL Learners' Feedback and Usability Testing in Instructor Developed CALL Materials	2001	The use of usability testing to systematically evaluate instructor developed materials	Not mentioned	experimental	Instructor developed materials can be more useful and user friendly
6	Schulze	Grammatical Errors and Feedback: Some Theoretical Insights	2003	Theoretical aspects of providing error feedback for language learners	Not mentioned	Not mentioned	Error correction is a worthy activity and both the error diagnosis process and the provision of feedback ought to be based on a sound theoretical understanding
7	Heift	Corrective Feedback and Learner Uptake in	2004	The effects of corrective feedback on learner uptake in CALL	177	Quantitative	Study participants showed the most learner uptake for feedback that

		CALL					provided an explanation of the error in the student input.
8	Metcalfe et.al	Delayed Versus Immediate Feedback in Children's and Adult's Vocabulary Learning	2009	Effects of delayed and immediate feedback on grade 6 children learning school relevant vocabulary	not mentioned	experimental	Delayed feedback produced better results than immediate feedback at the end of the experiment
9	Iraji et.al	Corrective Feedback and Learners' Uptake across Gender in an EFL Context	2014	Investigates the Role of Oral Corrective Feedback Used in Communicative-Based Classes and also the role of Teacher's Gender in Provision of Corrective Feedback that Leads to Learners' Uptake of Different Linguistic Features	8	Descriptive design (both quantitative and qualitative)	The uptake happened more for male learners' classes regardless of teacher's sex.
10	Lavolette	The Accuracy of Computer Feedback and Students' Response to it	2015	Explores the accuracy of feedback from Criterion, a program developed by Educational Testing Service	36	experimental	Immediate feedback is more beneficial than delayed

The table above contains the list of articles and its particular features. The following review of literature is a description of those facts presented in the table.

List of articles that do not discuss the significant use of immediate feedback in the CALL studies in India

Table-3

Sl. no	Name of the Author	Title of the Paper	Year of Publication	Subject discussed	Number of Participants	Method	Major findings
1	Zyoud	Development of Computer-Assisted English Language Teaching for VIII standard Gujarati medium students	1999	the achievement of students in terms of vocabulary, grammar and comprehension by the material	46	Experimental	The students started interacting with the computer without the interference of the teachers. The computer exercises helped the students to become familiar with the vocabulary, grammar and comprehension
2	Rajendrasingh P Rathod	Try- out Learning of Selected Topic of Standard IX Students in English Grammar	2000	The study was to compare the changes that students experience when branching program materials are introduced over the traditional learning method of English grammar.	90	Experimental	The branching program was found most effective than the traditional method and took very short time to achieve results.
3	I M Badiyani	Try-out of Computer Aided Language Learning Package for Teaching of Action Verbs in English Language	2005	to try out the CALL package in place of traditional method of instruction	57	Experimental	The results from the students using CALL package proved to be much better than those students who follow traditional methods of instruction

4	M D Acharya	Effectiveness of Games, Work-card and Self-Instructional Material on English Language Learning.	2005	Role of Self-instructional materials in language learning	146	Counter experimental study	The study proved that though there were no significant variation among the students who learned through games, when compared to work card and self-instructional materials, the games approach is far more effective
5	R B Sakiya	Effectiveness Work-card and Programmed Learning as a self learning technique with Reference to Teaching of English Grammar	2006	preparation of work card material and programmed learning material on the three units of English grammar such as Active and Passive voice, Tenses and Clauses	294	Not mentioned	The work card material is far more effective than the programmed learning method for the boys who had high and low achievement level in English. Whereas the results for the girls having both high and low level achievement were identical
6	M S Choudhary	A Comparative Study of Programmed Learning and Computer Assisted Learning on Direct-Indirect Speech	2007	Comparison between programmed learning and Computer Assisted learning on direct and indirect speech	270	Not mentioned	the conventional method was more effective when compared to the computer assisted learning for the topic of 'direct-indirect speech' of standard-IX.
7	Harshad Metha	Development and Effectiveness of Computer Assisted Instruction	2007	students reactions towards learning English grammar through Computer Assisted Instruction package	48	experimental	The study proves that the CAI Package developed to teach adjective in English grammar is far more

		Programme for Teaching of Adjective in English Language				effective than the traditional one

The facts presented in the above table is explicated in the following review of literature

Review of literature that do not discuss the significant use of immediate feedback in the CALL studies in India

Zyoud (1999) in his work "Computer- Assisted English Language Teaching for VIII standard Gujarati medium students" discusses about the achievement of students in terms of vocabulary, grammar and comprehension by the material. The sample consisted of 66 students from Rosary school Baroda as the experimental group and 46 GEB school Baroda as the control group. The results were positive that the students started interacting with the computer without the interference of the teachers. The computer exercises helped the students to become familiar with the vocabulary, grammar and comprehension.

Rajendrasinh P. Rathod (2000) in his research has prepared try- out learning of selected topic of standard IX students in English grammar. His study was to compare the changes that students experience when branching program materials are introduced over the traditional learning method of English grammar. The sample size was 90 students from class IX. The study proved that the branching program was found most effective than the traditional method and took very short time to achieve results.

I.M.Badiyani (2005) has conducted a study on CALL and developed a Try-out of computer aided language learning package for teaching of action verbs in English language. The objective of the study was to try out the CALL package in place of traditional method of instruction. His experimental group was inclusive of 3 groups of 29 students and 3 groups of 28 students each formed his control group. The results from the students using CALL package proved to be much better than those students who follow traditional methods of instruction.

M.D.Acharya (2005) has conducted a study on Effectiveness of games, work-card and self-instructional material on English language learning. Her sample size for the research was 146 students from class IX of Gujarathi medium school in Kadi. The researcher used counter experimental design for the study. The study proved that though there were no significant variation among the students who learned through games, when compared to work card and self-instructional materials, the games approach is far more effective.

R.B. Sakhiya (2006) in her study "Effectiveness Work-card and Programmed Learning as a self-learning technique with Reference to Teaching of English Grammar" discusses her preparation of work card material and programmed learning material on the three units of English grammar such as Active and Passive voice, Tenses and Clauses. The study was intended to evaluate the+- effectiveness of the work card material and the programmed learning material on English grammar and its relationship with achievement level and sex of the students. Her sample consisted of 294 students of standard IX of Gujarati medium schools of Rajkot city. Her study proved that work card material is far more effective than the programmed learning method for the boys who had high and low achievement level in English. Whereas the results for the girls having both high and low level achievement were identical.

M.S.Chaudhary (2007) describes constructing programmed learning for the students of standard IX in his thesis "A Comparative Study of Programmed Learning and Computer Assisted Learning on Direct-Indirect Speech" for the students of std-IX in English". His total sample consists of 270 students from class IX from three schools in Mehsana district, selected through

cluster sampling method. The results of his study showed that, the conventional method was more effective when compared to the computer assisted learning for the topic of 'direct-indirect speech' of standard-IX.

Harshad Metha (2007) in his thesis "Development and Effectiveness of Computer Assisted Instruction Programme for Teaching of Adjective in English Language" speaks about students reactions towards learning English grammar through Computer Assisted Instruction package. Her sample consisted of 48 students of grade IX. The study proves that the CAI Package developed to teach adjective in English grammar is far more effective than the traditional one.

Conclusion

Immediate feedback is a unique facility that computers provide to its users. The advantages of this facility are far reaching as far as language learners are considered. More than any manual feedback system and correction program, electronic feedback is what turns instrumental in quick learning, creating an impact on quick positive results. While Metcalfe et al (2009) in their initial experiments found that delayed feedbacks to the learners makes it more effective when compared to immediate feedback which they observed as a confound in their further research, the short retention level which is quite obvious in delayed feedback makes it a failure while analysing it in a long run. From the review of literature conducted in this paper, even though a few scholars in Europe like Ken Hyland (2006) and Fiona Hyland (2006) have done some exploration on this aspect, it is very much evident that a serious study is necessary on the aspect of electronic feedback system that the computer assisted language learning program offers. This paper has recorded review of some of the available literature related to studies that mention immediate feedback as an important aspect of CALL.

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