DEVELOPMENT AND EFFECTIVENESS OF COMPUTER ASSISTED INSTRUCTION IN ENGLISH GRAMMAR FOR STANDARD IX STUDENTS

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GUIDE:

PROF. SATISH P. PATHAK

RESEARCHER:

RAJESH V. PARMAR

CENTRE OF ADVANCED STUDY IN EDUCATION

FACULTY OF EDUCATION AND PSYCHOLOGY

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

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Introduction

The world is changing rapidly and the field of education is being influenced by the changes, as it applies to Media Services. The growth in use of multimedia within the education sector has accelerated in recent years, and looks set for continued expansion in the future. Teachers primarily require access to learning resources, which can support concept development by the learners in a variety of ways to meet their learning needs. The development of multimedia technologies for learning offers new ways in which learning can take place at suitable places. Enabling teachers to have access to multimedia learning resources, which support constructive concept development, allows them to focus more on being facilitators of learning while working with individual students. In fact, the use of multimedia for the teaching and learning of different subjects has become an innovative trend in education, now a day.

Computerization was promoted through the National Policy on Education (1986). It emphasized on the role of computers in enhancing the efficiency of the teaching - learning processes in making children more creative and in providing them with an individualized learning environment.

National Policy on Education (1986) has given way to computers in schools, there is a race in schools for buying computers and providing computer literacy to the children. It is more important to have an empirical study on Computer Assisted Instruction (CAI) in Indian frame work of education.

Das (2003) concluded that students have a positive attitude and outlook, towards computer education received in their respective schools. Some students had suggested a revamping of the traditional modes of teaching by introducing computers in teaching which they thought would make their education more exciting and interesting.

Computer technology has become an important tool in the teaching and learning process and in students' learning and their achievement in schools today. Bright (1987) believes that teaching and learning are difficult goals to achieve, and that the computer opens new ways for working for the achievement of these goals. The computer is an important tool that provides an educational environment with virtual situations that students can apply to real life.

According to Warschauer & Healey (1998), the use of the computer in and of itself does not constitute a teaching method, but rather the computer forces pedagogy to think in new.

Computers have emerged as fascinating technological tools in the educational arena. Their use in classrooms as a tool for teaching holds a great significance for language learning. Using computers in language learning can go a long way in developing study skills in learners of English as a foreign language.

Jayachandran (2007) stated that computers and language learning are closely interrelated and their judicious integration can enable students to organize and process their knowledge at the touch of a keyboard button. This innovative approach to language learning, which is a variation from the conventional classroom based instruction, will definitely yield exciting and rewarding results in language teaching.

According to AbuSeileek (2007), the use of computers by non-native speakers has become vital in learning EFL (English as a Foreign Language). Researchers and practitioners now realize the important role of computers in learning and teaching English as a second or foreign language and look for effective ways to integrate them into various types of English language courses.

Thus, computer has become a powerful instrument to successfully achieve a number of educational goals. Computers may have profound effect, not only on the development of children's minds, but also on the nature of education itself. A computer is a versatile technological instrument that can be used in fostering children's thinking and learning. Information Technology provides variety in the presentation of the content, which helps learners for better understanding and long retention of information, which is not possible otherwise.

The contribution of computer mediated learning exercises to the quality of instruction will be explicitly known only if the observable outcomes are specified, measured and interpreted through empirical researches. It is now high time to begin to explore the capacity of computers for meeting the educational need of providing a medium to help learners' structure and test their knowledge. The present study is a step in this direction.

The computer has created a revolution in education and the nature of learning process. One mode through which computers can be used in the teaching

learning processes is the Computer Assisted Instruction (CAI) technology (Traynor, 2003). Computer Assisted Instruction (CAI) is a set of voice, text, graphics, animation, video and other computer technology in one of the modern teaching methods.

According to Zhiguo (2002), CAI can play a multiplier effect in terms of emphasizing the teaching points, breaking the difficulty of teaching and improving the efficiency of classroom teaching became its clear image, strong sense of dynamic, informative, interactive and flexible advantages.

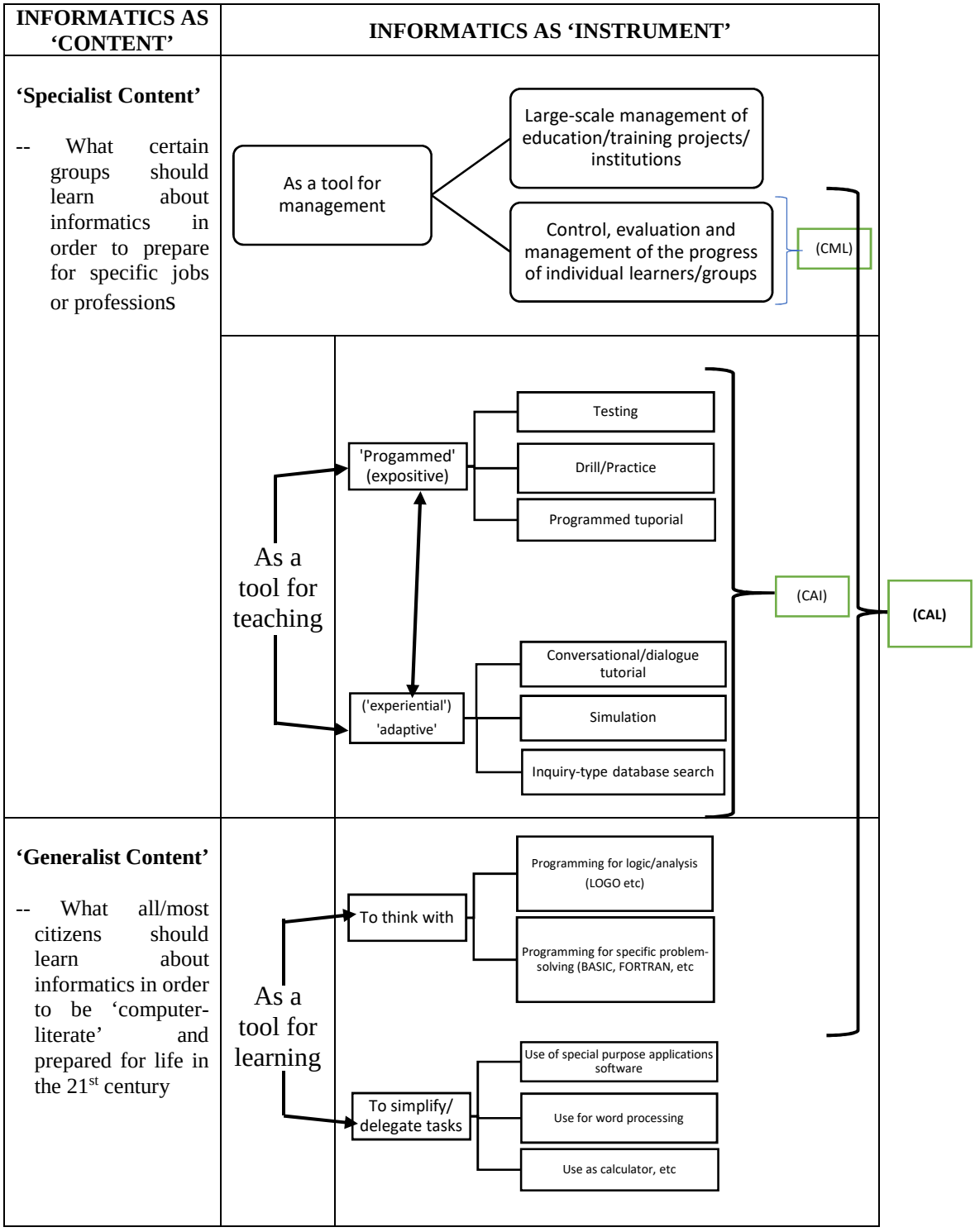
This visual-spatial learning methodology is of great importance to many learners and with relative ease, the education professionals can now create and utilize computer assisted and computer based learning techniques. In Computer Assisted Instruction, students interact with the content through instructional software or lessons delivered with the help of the computer.

The method of instruction through CAI includes drill and practice, tutorials, games, simulations, discovery learning, problem solving and multimedia instruction. Presentation software like PowerPoint and animation software like Flash and others can be of great help to the teachers while delivering information. Computers also help for individualization and self-pacing, immediate feedback, consistent correction procedure, immediate knowledge of correct responses, well sequenced instruction, motivation etc.

Concept of CAI

Investigator drew a list of modes of computer assisted learning, indicating which of these could in general be considered ‘instruction’. Investigator also identified the differences and the areas of overlap between the terms used in the field – computer managed learning and instruction (CML and CMI), computer assisted learning and instruction (CAL and CAI), computer based learning, instruction and training (CBL, CBI, CBT) all meanings are more or less similar to CAL/CAI to most authors, but endowed by others with slight shades of special meaning.

Romiszowski (1987) presented a table that shows the ‘field’ of ‘computers in education’ divided into ‘sectors’ (as an aid to the analysis and discussion of the topic):



(Figure : 1.1)

(*Source: Romiszowski, A. J.* (1986). *Developing Auto-Instructional Materials.* Kogan Page: London / Nicholas Publishing: New York.**)**

Computer is divided into two main sectors, which we may call 'informatics as content of education' and 'informatics as an instrument of education'. This

distinction separates the problems of designing curricula for computer specialists or for general computer literacy, from the problems of utilizing computers in the educational process. Investigator's aims here are concerned with the use of computers as an instrument of education.

Romiszowski (1987) has divided this sector of the field into three sub-sectors, dealing respectively with the use of computers as an *administrative tool*, as a tool to assist the teacher (a teaching tool) and as a tool to assist the learner – *a learner's tool*, as the figure 1.1 illustrates, the learner may use the computer to help him learn or to take over routine tasks and thus reduce the drudgery of the learning process.

Alongside the specific examples of applications of computers in education (Which we shall discuss more deeply inter on), Romiszowski (1987) has used the three principal technical terms CAL, CAI and CML. One usage does not necessarily agree with that of all other authors. Indeed, every author seems to have his own definitions and classifications for the same technical terms. One marked difference is in the use of the terms 'instructions' and 'Learning' on either side of the Atlantic. In the USA particularly, the term 'Instruction' tends to be used in a more global sense, for any type of teacher/learner interchange, whereas in England term CAI has of late become restricted to 'programmed instruction' types of exercises, the preferred generic term being 'computer assisted learning' (CAL). It seems that Canada, caught between the two influences, cannot make up its mind, although recent publications, such as *The Elements of CAL* (Godfrey and Sterling, 1982) suggest that perhaps the British view – that *learning* may be assisted in many diverse ways but only some of them have the characteristics of true *instruction* – seems to be gaining ground. However, detailed differences exist between the usages of CAL/CML/CAI in the works of British authors, even though they do agree that CAI is a subset of CAL.

Computer Assisted Instruction (CAI) is a piece of software that contains lessons on particular subjects. CAI is used with a computer to help in learning these lessons. CAI refers to instruction or remediation presented on a computer. Computer Assisted Instruction is an individualized instructional programme having multimedia facilities i.e. a combination of text, graphics, sound, animation and video. A typical CAI programme, called courseware which is written by the teacher

in either with a special purpose, called author language (also called authoring system) or a general purpose with high level language.

CAI has programme called Computer Assisted Learning (CAL). It can be defined as the use of computers to impart learning i.e. changing student's state of knowledge or skill. CAI stresses on formative evaluation of students and places stress on highly structured courses while CAL places emphasis on learning and achievement of goals. Computer Aided Instruction (CAI) is defined as the use of a computer and other associated technology with the intention of improving academic performance. In addition to instruction, CAI offers additional benefits such as managing the learning environment by controlling a variety of media, and keeping a record of student responses.

The use of computer to coordinate instructional activities such as student testing, record keeping, diagnosing student's learning difficulties, giving assignments, and organize student's data and school staff and in reporting all facets of the management component of Education is referred as Computer Managed Instruction (CMI). It can be seen that most of the activities covered under CMI are also part of the CAI.

The role of computer in CAI is to teach subject through preferably a dialogue, to evaluate students' response and provide remedial teaching, to generate instructional material depending on the level of the student, to stimulate system of interest and to store student's record. The Computer Assisted Instruction provides special type of learning environment and teaches successfully the written and visual type of content. The teacher has a peculiar role in this process.

Use of CAI in Education

The different definition referred by the investigator are given as follows (McGraw-Hill Dictionary, 2003) The use of computers to present drills, practice exercises, and tutorial sequences to the student, and sometimes to engage the student in a dialog about the substance of the instruction. Abbreviated as CAI also known as computer-aided instruction; Computer Assisted Learning (CAL).

Hergenhann (1976) defined that when a computer is used to present programmed or other kind of instructional material, the process is called CAI.

Bucholtz (1998) defined that Computer-Assisted Instruction (CAI) is an interactive instructional method that uses a computer to present material, track learning, and direct the user to additional material, which meets the student's needs."

According to Kulik, Bangert, and Williams (1983) Computer-Assisted Instruction (CAI) is among the range of strategies being used to improve student achievement in school subjects. Programs for CAI have come a very long way since they were first developed over two decades ago. These programs tutor and drill diagnose student's problems; keep records of student progress, and present material in print and other manifestations. It is believed that they reflect what good teachers do in the classroom."

Locatis and Atkinson (1984) defined that Computer Assisted Instruction as a mode of instruction that involves student's interaction with the computer directly. Typically, students access program presented in segments, with each segment including information and questions or problems for student's response. The correctness of each response is indicated immediately and remedial or new information is presented. Sometimes students also have the option to requesting help or skipping ahead. Although this tutorial (information-practice-feedback) form of CAI is most typical, there are other forms such as drill and practice exercise, simulations and games.

Computer-Assisted Instruction is described and defined by Frenzel (1986) as the process by which written and visual information is presented in a logical sequence to a student by a computer. The computer serves as an audio-visual device. The students learn by reading the material presented or by observing the graphic information displayed. The primary advantage of the computer over other audio-visual devices is the automatic interaction and feedback that the computer can provide.

Steinberg (1991) defines CAI as computer presented instruction that is individualized, interactive and guided. He is of the view that CAI is not a method of instruction. Many methods are implemented in it, including direct and exploratory lessons, drill, games and simulations.

Poole (1995) defines Computer Assisted Instruction as a computer-based system designed to help students learn subject matter of all kind.

According to Munden (1996) Computer Assisted Instruction is an educational medium in which instructional content or activities are delivered by a computer. Students learn by interaction with the computer and appropriate feedback is provided.

Roblyer and Edwards (2000) defined CAI as software designed to help to teach information and skills related to a topic also known as courseware.

All the definitions of computer assisted instruction presented above agree that computer plays a role of tutor and imparts instructions either through tutorials or simulations or any other mode of presentation.

The term CAI refers to the system of providing offline/online direct interactive instruction, testing and prescription in the process of learning. Students can be presented with assignments, problems, exercise, reading materials and references by computer for learning. After completing the assignment by the students, they can be tested through the computer. If required, remedial exercise can be presented in the next set of assignments. To motivate the students, immediate feedback is an important ingredient of CAI. CAI is a set of programming instructions, which is used in instructional process to develop certain pre-decided skills for the student's mastery over the subject content. CAI is a type of instruction, which is used to achieve the objectives of the instructions. The computers are the means and have potentials to contribute to the instructional system. As the knowledge is exploding at a very fast rate, and individual teacher cannot handle the enormous amount of information in a limited time period. For this purpose, computerized instructions can very well be used in teaching-learning.

Principles of CAI

Principle of CAI is same as PLM

- Principle of small steps
- Principle of active responding
- Principle of reinforcement
- Principle of self-pacing
- Principle of student –evaluation or student testing

Characteristics of CAI

CAI refers to any use of computers that interacts with students in any way in the educational process.

Practice: Practice: CAI enables the students to practice as many times as they like so this will enable them to achieve the required competencies. Students come from different background it is a heterogeneous group so their understanding level differs from student to student so a single teacher cannot cater such heterogeneous group so there is a need of right learning tool and a supporting environment. Practice makes a man perfect. Many psychologists like Thorndike support the usefulness of practice in learning.

Immediate feedback: CAI enables the students to see the correct answer immediately as soon as they answer a particular question so that they can correct themselves. If the answer is correct then they will get immense happiness and added confidence. If the answer is wrong they can correct themselves immediately. In traditional classroom teaching, teacher gives students homework for practice. The child comes to know of any mistake when the teacher checks the homework and corrects the mistake. Normally teachers do not provide the correct answer during checking, so child knows that his answer is wrong but does not know the correct answer. If the teacher does sometimes provide the correct answer, the child may not pay due attention to the corrected answer and may consider it as a part of his work is to complete the homework and would proceed with the next homework.

Self-Evaluation: CAI enables the students to find their strengths and weakness and student can overcome his weakness before proceeding further.

Reinforcement: CAI reward students immediately whenever they answer the question correctly immediate reinforcement gives immense pleasure as indicated by many psychologists.

Immediate Evaluation: As soon as each concept is completed students should answer questions related to that particular concept this enables immediate evaluation.

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Advantages of CAI in Learning English Grammar

The major advantages of CAI are described as under:

- **To achieve mastery learning**

  Mastery is a recent innovation introduced in the sphere of education. Mastery learning implies a systematic approach to the process of teaching or instruction. It is based on the idea that all students are potential learners, and that every child can learn equally well, provided the teacher presents the subject matter in a systematic manner. In mastery learning, instruction or teaching is matched to the learner. The major objective of mastery learning is to promote excellence in learning. This objective is achieved through systematic planning, proper motivation, better methods and materials for learning, self-guided instruction and objectives based evaluation.

  'Learning for mastery' is a technique of instruction developed by Bloom and his associates in 1968. He developed an instructional plan based on the guiding principle that the learner should achieve mastery of one unit of the subject matter before going to the next unit.

- **Provides wide range of experiences**

  CAI helps the teacher to provide a wide range of experiences by giving many examples and illustrations to make the concept clear.

- **Provides motivation**

  CAI sustains the motivation of the students. The topic can be presented systematically, interestingly and immediate feedback can be given by using CAI to motivate the students. Graphics and pictures covered under the CAI can attract and retain students' attention. Students also get reinforcement when they answer the questions correctly. Students also get reinforcement when they answer the questions correctly.

- **Individualized instruction**

  CAI is an individualized instruction as it caters to the individual differences. The Indian classroom is a heterogeneous group. Some students need more time to learn while others need less time, so learning speed differs from learner to learner. CAI also provides different learning experiences according to the understanding level of the students. It also provides facilities like selecting the topic of their own interest. It provides individual attention to each and every student and thus enhances the quality of teaching learning process.

- **Interactive learning**

  CAI provides immediate feedback to the students and thus constantly facilitates interactive learning. In CAI students actively take part in the learning process. As it includes examples, diagrams, visuals and interactions, it makes the learning process more interesting.

- **Continuity in learning**

  When a student remains absent on the any day s/he cannot understand the topic afterwards due to the lack of continuity. He feels difficult to comprehend. CAI helps him to understand the topic without any difficulty whenever s/he use it. Thus, maintains the continuity in learning.

- **Span of attention**

According to Dandapani (2001), “Attention may be described as the selective activity of the human organism whereby one’s consciousness is focused upon a specific, narrow field to the exclusion of everything else in the environment.” It shows that the time span for the students to be attentive in a class is a different for different student. Since the CAI used by the students themselves, their span of attention can easily be developed and increased.

Looking to all above the use of CAI for the students is proved to be a self-learning instructional material.

CAI and School Education

The increased use of computer technologies to deliver instruction is trend noted in research (Ely, 1991; Najjar, 1996). Computer use in the classrooms has boomed since the 1980’s, fueling a debate over whether or not Computer Assisted Instruction (CAI) is an effective means of improving student achievement. CAI generally consists of drill and practice, simulating tasks, instructional games, and tutorials; Instruction can contain new material, and can be used alone or as an enhancement to traditional instructional methods. Not many researchers dispute the idea that computer technology in the classroom enhances teaching and learning; however, there is a debate as to whether or not a direct link between motivation and academic achievement exists. Advocates of CAI claim that using CAI enhances learning through the overall positive motivational factors associated with technology integration into the curriculum.

Teacher is playing a vital role during teaching - learning process. It is very difficult task for a teacher to take care of each and every student and impossible for a teacher to teach every individual according to their own pace of learning. With the use of CAI teacher can get benefit by many ways like:

- The teacher would thus have more time to interact with students in the capacity of an advisor or friend.
- Teacher is now easily found out necessary and current information through computer which increases quality of teaching-learning process.
- Teacher is gaining revolutionary change in their thoughts through information technology

- With use of internet teacher can make teaching-learning process live, effective, interactive and interesting.
- It reduces the burden of teacher.
- It makes teaching an enjoyable experience.

CAI not only helpful to manage heavily crowed heterogeneous classroom to the teacher but it enhances student attitudes toward several aspects of schooling. Students like CAI activities and favouring them over traditional learning. Some of the studies (Bialo and Sivin (1990), Braun (1990), Lawton and Gerschner (1982), Mokros and Tinker (1987), Robertson, et al. (1987), Rupe (1986), Schmidt, et al. (1985-86), Wepner (1990) Acharya (2005), Badiyani (2008), Das (1998), Patel (2009), Sakhiya (2006), Zyoud (1999)) found that students like to work with computers because computers:

- Allow students to work privately
- Are excellent for drill and practice
- Teach in small increments
- Make it possible to experiment with different options
- Give immediate feedback
- Help students improve their spelling
- Never forget to correct or praise
- Are fun and entertaining
- Individualize learning
- Are self-paced
- Build proficiency in computer use, which will be valuable later in life
- Work rapidly--closer to the rate of human thought.

Looking to the overall conceptual framework of CAI, it can be revealed that CAI is very much useful to facilitate the teaching learning processes in all the subjects. Also many research studies (Acharya (2005), Bhutak (2004), Badiyani (2008), Das (1998), Hirani (2007), Nalayini (1998), Patel (2009), Zyoud (1999), Karia (2001), Khirwadkar (1998), Prabhakar (1995), Sakhiya (2006) and Sharma (2003)) have proved the effectiveness of CAI for the teaching of different school subjects. Looking to this as an inspiring research based the investigator has

undertaken the present study related to development of CAI based on English grammar.

The purpose of present study is to examine the potential of the CAI in helping students in secondary schools to learn English as a second language. The study is intended using computer as a tool to integrate teaching materials through the use of CAI to motivate students to learn English grammar more effectively. Further it also focuses on how to learn English grammar more easily and to use it correctly.

English Language Teaching

Teaching-learning of any language is a matter of practice. A learner of English having first language does not require practice in classroom as enough scope is provided for conversation in the school. It is through day today communication, one acquires language skills and knowledge. Whereas, a learner of English as a second language requires a good amount of practice in classroom as there is little scope of conversation in the classroom. Hence, there is a noticeable difference in the learning of English Language in case of the students of English with first language and second language.

It is also observed that language teaching is dominated by theories and practice that put grammar in the cardinal position under language learning. This has given two different methods namely:

(a) The Grammar-Translation Method and

(b) The Audio-lingual Method

(a) The Grammar-Translation Method was first used in the teaching of English. The major characteristics of the method include explicit teaching of grammatical rules, memorization of vocabulary, and translation of passages from one language to another. The Grammar-Translation Method prepares students with extensive knowledge of grammatical rules but with little communicative ability.

(b) The Audio-lingual Method was developed as a reaction against the Grammar-Translation Method, with a focus on the development of spoken language. Nevertheless, spoken language was still presented in highly structured

sequences of forms. Classroom techniques usually include repetition of models and memorization of dialogues. The goal of these teaching techniques is to develop the target language accurately. Learners' errors were viewed as bad habits that would be hard to rectify if they observed as their learning experiences. Therefore, all errors were immediately corrected as they occurred.

Over the past few decades, the focal attention of classroom instruction has shifted from grammar forms as in the Grammar-Translation Method and Audio-Lingual Method to functional language within communicative context. It has been resulted into the emergence of Communicative Language Teaching. **Communicative Language Teaching (CLT)** as a language teaching approach arose in the 1970s as a reaction against the view of language as a set of structures. Proponents of CLT claim that the goal of second language acquisition should be communication rather than memorization of a system of rules. In CLT classrooms, students are encouraged to use the language in unrehearsed contexts where learners negotiate meaning through interaction with others. Innovative activities such as information gap, role plays, and games are used to engage learners and sustain learner motivation. The learner-centered and communication-centered approaches made CLT popular among language teachers.

Then, there is a rise of an approach called, Task-based Language Teaching, which was considered by many as a manifestation of CLT and was emerged as a major focal point of language teaching practice. Skehan (1998) defines a task as an activity in which meaning is primary, there is a problem to solve, there is a relationship to the real world, and where there is an objective that can be assessed in terms of an outcome. In task-based language teaching, the focus is on the completion of the task. A well-designed task with qualities mentioned above has the potential to fulfill the objectives of language teaching.

Present Status of English Language Teaching in India

The present status shows the importance of English as a language. At higher level of Education English as a medium of instruction, is more useful than any other language. English enjoys privilege of an 'Associate Official Language' in India. Not only education and business but every aspect of Indians' life is affected by

English. For example, television, films, advertisements, food, attire, fashion and so on. English has become a passport to study in foreign universities now.

Education Commission (1964-1966) and University Grants Commission (UGC) recommended English as the medium of instruction at the higher education level. National Policy on Education (1986) supported English as a scientific language. The UGC has recommended that at least the national level teaching and training institutes should use English as the medium of instruction. In India English is retained as a medium of instruction at university stage because in professional and technical courses like medicine, law, engineering, agriculture, computers, etc., the books are more readily available all over the world in English only.

Crystal (1987) calls English "the world's first genuine global language". It enjoys a dominant position in international politics, banking, news agencies, science and technology, knowledge management and communication. No other language has achieved such a wide spread profile or is likely to in the near future. English has been growing in an Indian socio-cultural-linguistic setting for over two hundred years. It has been a powerful tool to expound Indian culture and philosophy.

The knowledge of English language becomes the need of the hour now. English is not only as a language of international communication but also for communication at the inter-state level. India is a country with a vast variety of regional languages. It is for these reasons, English occupies a significant place in our school and college curriculum and continues to be taught as a compulsory course up to the degree level and has also been remained as a medium of instruction.

Status of English Language Teaching in Gujarat

The teaching of English in the schools of Gujarat has remained a sensitive problem since Gujarat came in to existence. Before 1960, Gujarat was the part of the Bombay state and after its existence; Gujarat government formed a new policy on English language teaching with certain modifications and changes. At that time, English was taught from Std. V. After the formation of Gujarat state, the state government felt that the teaching of English in Gujarati medium schools from grade V was a great waste. To compound the problem, the state government laid down the policy of introducing English from grade VIII. But, this policy was not accepted unanimously. People demanded teaching of English from Std. V. The government

of Gujarat in 1975, owing to people's demand and their strong desire to teach English to their children, announced the policy of teaching English from Std. VI on compulsory basis. Again in 1996, the decision was taken to introduce English from Std. V and it was made compulsory at all the levels of college education. In case of Higher Secondary level, English language was taught as an optional subject while it has to be studied as a compulsory subject at college level. Though students have passed their H.S.C. with English are offered 'A' stream English at the college level and those who have passed their H.S.C. without English are offered 'B' stream English.

As a result of the latest development of English language teaching learning in Gujarat in the last decade of twentieth century, a large number of English medium schools have been started and English language has been taught as first language. Whereas in Gujarati medium schools' English language is being taught as second language. In some of the self-financed Gujarati medium primary schools, English language is being taught from the first standard whereas in grant-in-aid schools it is from Std. V. As per the latest development, the government of Gujarat has initiated the movement of introducing English from the first standard and English has been made compulsory from V to XII. English was first introduced from the Std. VIII and was made an optional in the Std. X state board examination. In later years, the students were given the test of English from the fifth standard onwards but it still retained as an optional subject in the Std. X. For the first-time English as a subject has been made compulsory in the Std. X from the academic year 2006-2007. Hence, under the three-language formula, English has been considered as one of the languages. Gujarat is one of the most developing states in India. So that, SCOPE (Society for Creation of Opportunity through Proficiency in English) has been accepted by the Government of Gujarat to build English language proficiency in the youth of Gujarat and thereby provided better employment opportunities to the youth.

The above all matter shows the status of English language teaching at state level. But it is a realized fact that one's proficiency in English is obviously based on his/her mastery level in the English language grammar.

Place and Importance of English Grammar

According to Penny (1988), “Grammar may be roughly defined as the way a language manipulates and combines words (or bits of words) in order to form longer units of meaning... there is a set of rules which govern how units of meaning may be constructed in any language.” If, one is to use the language to express his ideas or thoughts, he has to follow the rules of that language to bring specific meaning. If one commits mistakes in following the rules correctly, the entire meaning will be changed. Therefore, adequate competency in using the rules of grammar is necessarily required to an individual to convey desired meaning.

English grammar is divided into two main parts: a) Formal grammar and b) Functional grammar.

Formal grammar: It is the grammar which is taught in a formal way. In fact, it is theoretical grammar which deals with the definitions and rules of the language. By this the learner acquires the ability to describe the language. There are set rules in this kind of grammar which are never allowed to be departed from. The students first of all learn the rules for the formation of tenses, words, sentence construction, etc.

Functional grammar: It is also called incidental grammar. It is learnt by the students quite unconsciously while learning the language. Here language learning is the first concern of the learners and knowing the rules and regulations is the secondary concern. This type of grammar takes into account the fact that language is growing and changing from time to time. Here the rules of the language are set but more emphasized on communicative aspect and less on structure. It deals with the ability to use the language grammatically i.e. acceptable form of words, pattern of phrases, sentences, sounds, stress, rhythm, intonation etc.

From the above discussion, it can be inferred that first one is the ability to describe the language whereas the second is the ability to use the language. The second type can be called better because it helps the learners in the achievement of real aims of language learning. Hence, it has been recommended for teaching purpose in the schools.

Students learn functional grammar when they are learning to speak their mother tongue. As a result, they get a very high degree of control over functional grammar before they even go to school. Schools are only the place where one finds

that formal grammar is taught and used. The fact that students learn mother tongue without learning formal grammar is now being applied to the learning of second language too. It is therefore, Functional (Communicative) Approach has sought recommendation on very broad basis to teach English as a second language. It is on these views of second language learning Gujarat government has afforded to begin functional approach based syllabus in the textbooks of English subject to teach English as a second language at secondary level. But still the general performance of the students and overall achievement in English is not satisfactory at secondary level. It further reveals that English grammar should be an essential part to learn English language successfully. It also necessitates strengthening the grammatical knowledge of the students to enable them to speak and to write English correctly.

Objectives of Teaching of English at Secondary Level (NCF, 2005)

Linguistics never differentiates between lower level and higher level objectives. It perceives that all the four objectives i.e. listening, speaking, reading and writing (LSRW) are to be realized at both the levels. To these linguistics objectives, literature adds two more viz- creativity and appreciation. These two objectives are inter-linked with each other. They are not independent and inseparable from literature.

At the close of school career an average pupil should be able to:

1. To understand and follow talks in English on general topics within the prescribed vocabulary and sentence structures.
2. To talk freely within the range of language items and express suitably.
3. To read books and similar other material written in simplified English as per the structures and vocabulary, and to follow easy books with detailed notes.
4. To write correctly in English on familiar topics fit to be expressed within the range of the prescribed vocabulary and sentence structure.
5. To write creatively and independently on general topics.
6. To create wider reading interest.
7. To speak in given situation (production skill) (fluency and accuracy in speaking and writing).
8. To develop study skills and reference skills.

Objectives of English Language Teaching at Secondary Level

The objectives of English language teaching are broadly classified according to related skills and sub-skills. The language as a skill is to be developed in each segment of sub-skills. Further objectives are classified into two categories; they are general objectives and specific objectives. The general objectives are based on all these sub-skills. So, the general objectives of teaching English for standard – IX as mentioned by Gujarat State Textbook Research and Training Center (1998) are as under:

Skill of Listening

The learner:

- can listen carefully simple, compound and complex sentences having 10 to 15 words.
- can differentiate situations to the purpose of listening (for pleasure, for specific information, for general interest).
- can use some verbal and non-verbal features as clues to interpret the context (keywords, intonation, gestures and back sound noises)
- can listen to and derive information from T.V. telecast, ratio broadcast, sports news, railway inquiry etc.
- can listen to talk or conversation and state main points orally.
- can listen to and respond appropriately to directive language (instruction, advice, suggestions).
- can listen to the phrases in context and give the meaning in the mother tongue.
- can listen to and comprehend 700 prescribed words.

Skill of Speaking

The learner:

- can speak sentences having words with more syllables, phrases with fluency and clarity.
- can present comments, experiences, incidents, stories, listened from radio or watched on T.V. heard from other sources.
- can express own ideas in about 5 meaningful sentences.

- can use constructions for seeking permission or making proposals.
- can express and respond to personal feeling and opinions.
- can speak story on the basis of the given points.
- can make certain assignment clearly.
- can recite prescribed poems with proper rhythm.
- can pronounce 625 prescribed words correctly.

Skill of Reading

The learner:

- can read the textual material with ease.
- can read and find out the sequence of ideas, facts, details, information and figures.
- can read silently with speed and respond.
- can read and find out in major details from the language material.
- can read and identify the relationships between ideas, events and facts
- can read and organise the key points and thoughts.
- can read and predict details and events.
- can derive the meaning of unfamiliar words, phrases and idioms in a given context.
- can read the language material and refer to English – Gujarati and English – English Dictionaries to find out the meaning of unfamiliar words and phrases.
- can read the subheadings of different columns in the newspapers, important news headlines, descriptions, stories, magazines, and personal letters.
- can read time tables, catalogues, broachers and collect information.
- can read and recite poems silently as well as aloud with proper rhythm and intonation.
- can read and translate simple sentences, paragraphs, from English into mother tongue.
- can demonstrate the skill of dramatic reading.
- can read 650 prescribed words.

Skill of Writing

The learner:

- can put down ideas in writing using correct simple sentences with a proper speed.
- can prepare a report of daily activities and events like visits, accidents, birthday celebration, and festivals.
- can write a story in about 10 sentences with help of the given points.
- can answer the question in 3 to 4 sentences based on the text.
- can write a paragraph with help of the words, phrases, pictures and questions.
- can write leave notes, formal letters and informal letters (to parents and friends) seeking permission, congratulating, inviting.
- can note down the points, answer instructions (regarding announcement of holiday, examination time table, tour, etc.)
- can write short compositions in about 75 words with semi or partial guidance.
- can write short compositions and compose a paragraph of about 75 words based on a visual verbal stimulus like, picture – diagram, body, animals, graphs, maps, places, cartoons, photographs, newspaper cutting, tables showing timing and temperature of the day, notices, suggestions, slogans having simple meaningful sentences, report of the celebrations.
- can write the assignment correctly and systematically.
- can write 'thought of the day' on the bulletin board in good hand.
- can write quotation, slogans, details of events, news headlines in the diary.
- can write answers to the questions based on poems in one to two sentences.
- can use 600 prescribed words in writing.

The above-mentioned statements of the objectives are based on some of the grammatical aspects. Hence, the critical review of above stated objectives reveals that there is a strong need of having grammatical base or knowledge to achieve mastery level in English.

Importance of CAI in English Language Teaching

According to Kitao (1993), “CAI is good for motivating students to study English. Students are anxious to use computers. Many students are tired of traditional English classes and are interested in a new style of learning. When they use a computer, they feel that they can master English. They can study English with their own learning styles, and see the results of their learning. Students think materials are new and fresh if they are presented on computers, and they are often interested in even routine tasks such as learning to type. They seem to be willing to spend more hours and do more exercises on a computer.”

CAI has its own importance in the teaching learning process because of the following major reasons:

- CAI can overcome barriers of time and place.
- If a school has a satellite system of computer laboratories, students can study English at various places on campus at any time.
- If the school has a network of computer laboratories, students can use the same materials wherever they are working.
- Students can study at home if they have a computer that can connect to their school's computer. Computers can be connected among schools, and teachers can use them to share materials and information.
- Teachers can get materials from commercial companies, networks, or databases, even from foreign countries.
- Note-type computers are getting cheaper, and some schools are lending them to students, so that they can take them home and use them at any time.
- There are computer programs to check spelling and grammar. These allow students to avoid mechanical errors and pay more attention to more substantial matters.

Implications for the Present Study

A sizable number of studies reviewed like Karia (2001), Khirwadkar (1998), Prabhakar (1995), Sakhiya (2006) and Sharma (2003) revealed that the CAI can be used as a supplement to traditional instruction, showed a significant improvement in students’ achievement. Also, the studies proved that the CAI was significantly more effective than conventional instruction. Acharya (2005), Bhutak (2004),

Badiyani (2008), Das (1998), Hirani (2007), Nalayini (1998), Patel (2009) and Zyoud (1999) revealed that students learning rate was found faster with CAI than that of conventional instruction. The students have also given favorable reactions towards the use of CAI. The use of CAI has been found effective in various subjects. Some of the studies have found that composite modes of instruction may not be always resulted into higher cognitive learning in languages. Interactive modes of instruction in languages through Computer Assisted Learning Material (CALM) have been found quite effective. Along with this it was also observed that using CAI in various subjects found useful for the learners of varied profiles.

The reviewed literatures have established the effectiveness of using computer as a tool under the instructional process. It has further motivated the learners to do the work even on their own at their ease. The reviewed literature further revealed that there is a dearth of studies conducted on development and effectiveness of CAI especially related to need based grammatical aspects in English. In fact, few studies are available focusing on development of CAI in English grammar but that were not developed keeping in mind the requirements of the learners that is in terms of the hard spots of learning for them.

Rationale of the Study

English is taught as a compulsory subject at all the stages, starting from V to XII standards of school education. The apprehension of National Curriculum Framework (NCF-2005) is very true in the context that, “If in the next five years we are not able to achieve considerable success in the teaching of English, we will face the political demand for all schools to become English medium…”.

NCERT (2006), also reports that the failure of a large number of children in class X examination on account of English is an issue of worry. Here, the failure of students is considered with respect to their poor achievement or performance in English subject. The existing syllabus of Std. IX has potential to build up a strong language proficiency in the students, which will help them a lot in pursuing their higher studies in future. But the poor performance of the learners at this level proves the significance of Std. IX English as a base for the upcoming standards in the ladder of education. Hence, the investigator has focused on developing CAI mainly in

English grammar for Std. IX which will be further helpful to the learners at large scale in developing language proficiency.

Grammar is the study of words and the ways words work together; an invisible force that guides us as we put words together into sentences. Any person who communicates using a particular language, consciously or unconsciously becomes aware of the grammar of that language. This can be understood with the help of the following example given by Kohli (1984), "A writer has given a beautiful analogy to illustrate the use of knowledge of Grammar. Imagine two car drivers. The first driver knows only driving and nothing about the working of the engine. He feels helpless whenever there is some trouble with the machinery. The second driver knows driving and also understands the working of the machinery. The person who knows grammar is like this second driver. In case he is doubtful about the correctness of a particular thing, his knowledge of grammar comes to his rescue." Therefore, to speak in a clearer and more effective manner one has to study grammar. If the person who wishes to communicate in the artistic manner with well-defined structures, he must go for the greater depth of understanding and proficiency what the study of grammar offers. Now a day, the situation of English Grammar teaching needs to be strengthened through innovative approaches. Computer has been proved a useful tool under such approaches through various research studies. Computer as a medium, because of its suitable attributes can help in realizing the objectives of English grammar. Though Std. IX students are at formal operational level but learning English through grammar becomes little bit abstract in the absence of sound effects, visualization and colors. Hence, the investigator has decided to develop a CAI for teaching and Learning of English grammar at Std. IX level.

Advancement of technology has influenced each and every aspect of human life. The system of education is not an exception. The objectives of education have also become multidimensional. CAI has unique features because it can store, retrieve and transform the information. Many researchers like, Acharya (2005), Badiyani (2008), Das (1998), Patel (2009), Sakhiya (2006), Zyoud (1999), attempted to develop multi-media packages i.e. Programmed Learning Material, Computer Assisted programs to enhance learning in English language. The studies further suggested that more packages and programs need to be developed so as to enhance

the learning of English language, especially focusing on grammar. It is observed that most of the studies were conducted at school levels in different subjects for studying effectiveness of Computer Assisted Instruction**.** *No study was found focusing on the English language subject covering the major hard spots of learning in English grammar based on prescribed syllabus of Std. IX.*

It seems that simply developing CAI for English grammar may not serve the purpose of quality improvement in English. It necessitates identification of the major hard spots of learning especially in English grammar basically to serve as the basis for the development of CAI. Hence, the investigator identified the major hard spots of English grammar on the basis of the opinion of some experienced English teachers.

A logical analysis of the reviewed studies revealed that most of the CAI developed in English language under the studies were in the form of Microsoft PowerPoint presentations. They were lacking the innovative approaches based on integration of applications like animation, visualization, colour, sound and imaginary effects, etc. So, the investigator has decided to integrate all such applications in the development of CAI under the present study.

Statement of the Problem

Development and Effectiveness of Computer Assisted Instruction in English Grammar for Standard IX Students

Objectives of the Study

i) To identify the difficulties in English grammar for the students of Std. IX.
ii) To develop Computer Assisted Instruction (CAI) in English grammar for Std. IX students.
iii) To study the effectiveness of the Computer Assisted Instruction (CAI) in terms of achievement of Std. IX students in English Grammar.
iv) To study the reactions of the students about the developed Computer Assisted Instruction (CAI) in English grammar.

Hypotheses

i) There will be no significant difference in the mean achievement score of experimental and control groups in pre-test and post-test.

ii) There will be no significant difference in the scores obtained on favorable and unfavorable reactions of the students of experimental group regarding the implemented CAI.

Explanation of the Term

- **CAI in English:**

CAI in English grammar refers to the Computer Assisted Instructional Package developed by the investigator using various software to teach English grammar to the students of Std. IX. The CAI was based on selected grammar points, which were identified on the basis of opinion of some experienced English teachers. The CAI was included explanation of various topics with examples, exercise, self-practice and self-evaluation in different forms.

Operationalization of the Terms

- **Achievement:**

Achievement means the marks obtained by the students of Std. IX in the achievement test based on English grammar.

- **Effectiveness of CAI:**

Effectiveness of CAI was judged on the basis of the significance of difference in mean achievement scores of the experimental and control groups in pre-test and post-test.

Delimitation of The Study

The present study delimited to the students of Gujarati medium grant-in-aid secondary schools of Vadodara, following the prescribed syllabus of Gujarat Secondary and Higher Secondary Education Board (GSHSEB).

METHODOLOGY

Population

There are total four clusters of schools in Vadodara city known as ‘Shala Vikas Sankul’ (SVS) and under these four SVS there are total 106 Gujarati medium grant in aid secondary schools. So, total 9976 students of Std. IX grant-in-aid secondary schools of Vadodara city of Gujarat state under GSHSEB constituted the population

for the study.

Sample

EXPERIMENTAL GROUP	CONTROL GROUP
9th Std. Students	9th Std. Students
Jeevan Bharti School	Narayan School

The list of grant-in-aid Gujarati medium secondary schools Vadodara city was collected from the District Education Office (DEO) office, Vadodara. Then, two schools (Jeevan Bharti School and Narayan School) were selected purposively for the selection of the students. An intact class of Std. IX from each school considered as the sample for the present study. Then, students from Jeevan Bharti School was treated as the experimental group whereas the Narayan School's students were treated as the control group.

Design of the Study

Quasi-Experimental Design was used for the proposed study. The pretest – posttest Nonequivalent Group Design was followed under the study. Best and Kahn (2000) describes, "*this design is often used in classroom experiments when experimental and control groups are such naturally assembled groups as intact classes, which may be similar.*" The design of the study is presented as follow.

O_1	X	O_2
O_3	C	O_4

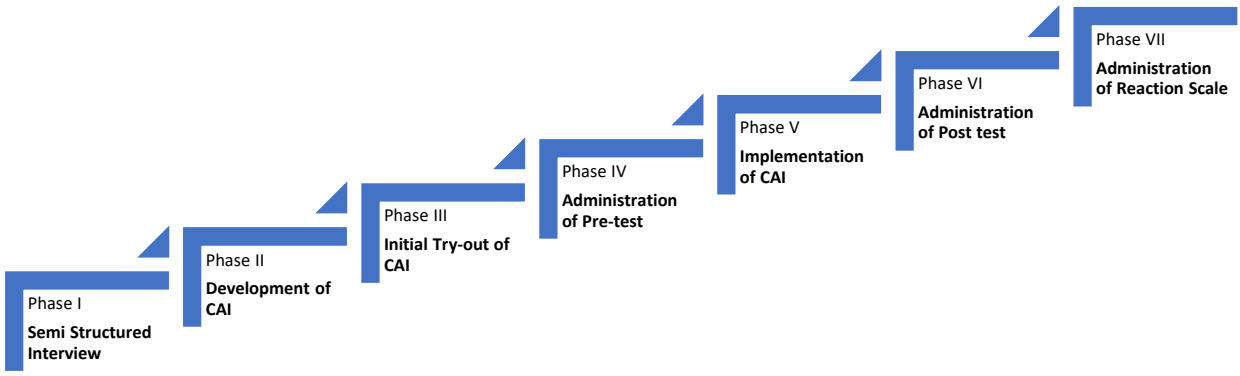
Where, O_1 and O_3 are pretest

O_2 and O_4 are posttest

X stands for Experimental Group and C stands for Control Group

Plan and Procedure

The study was conducted in seven different phases. The phase wise detail is described as under.



Phase I – Semi Structured Interview

Under this phase, investigator administered a self-constructed semi structured interview on 15 experienced English teachers to identify the difficulties of the students in English grammar. Thus, investigator identified major difficulties in English grammar and was considered as the base for the development of CAI.

Phase II – Development of CAI

Prior to develop the CAI, content of the English text book (Std. IX) was analysed and over all grammar points were identified. Then by conducting the interview of the selected experienced English teachers, difficult teaching points of English grammar was identified.

The CAI was developed by the investigator on the basis of the identified teaching points in of the students in English grammar. Further, the following criteria was kept in mind while developing the CAI.

a) The CAI was based on some of the English grammar points selected from the overall grammar of Std. IX. (For detail grammar points of Std. IX, see Appendix-I)
b) The CAI was included explanation of various topics with examples, exercise, self-practice and self-evaluation in different forms.
c) The audio based material, visuals in different forms and audio-visual based content (with animation, visual, sound and colour effects) were included in the CAI.
d) The CAI was developed by using a variety of software like Macro Media Flash, Adobe Photoshop, Adobe Premiere, Corel-Draw, Page Maker, etc.

The developed CAI was shown to a group of experts for its validation with respect

to mode of presentation, appropriateness of continuity and the relevance. Thus, the experts' suggestions were incorporated and final CAI was developed for the experimentation.

Phase III – Initial Try-out of CAI

The developed CAI was tried out under this phase, on a small group of students of Std. IX with a view to judge its efficacy. On the basis of an informal discussion with the group of students, necessary modification was done.

Phase IV – Administration of Pre-test

Under this phase, a pretest (an achievement test in English grammar) was administered to the students of experimental and control groups with a view to measure their achievement level in English grammar.

Phase V – Implementation of CAI

The developed CAI was implemented only in Experimental Group. For each grammar point under CAI, three periods (under the regular time table) was allotted during a week. The CAI was implemented under the three allotted periods within a week as per the following schematic presentation. The complete implementation was done by the investigator.

Schematic Presentation of CAI for each grammar teaching point

Teaching points of English Grammar	Day / Date	Period/Class	Implementation of CAI
Name of the teaching point		1	Explanation & Examples through CAI
		2	Exercises / Drill / Practice through CAI
		3	self-evaluation through CAI

The time duration of implementation of CAI was depend on identified learning difficulties. The implementation part also may vary in accordance with the strategy evolved under the development of CAI.

Phase VI- Administration of Post test

Under this phase, the post test was administered to both the experimental and control groups with a view to study the effectiveness of the implemented CAI.

Phase VII- Administration of Reaction Scale

A reaction scale was administered to the students of experimental group mainly to know the reactions of the students regarding the implemented CAI.

Tools for Data Collection

Achievement Test: The achievement test was constructed on the basis of the identified hard spots of learning. The similar achievement tests were used as pretest and posttest with a view to know the achievement level of the students in English grammar. Students' achievement in English grammar was judged on the basis of marks obtained in the test based on various types of grammar test items.

Data Collection

To study the effectiveness of CAI, investigator collected the data in terms of students' achievement in English grammar regarding the implemented CAI. The students' achievement was studied by collecting data in terms of their achievement scores with the help of pretest and posttest. Thus, quantitative data was collected to study the effectiveness of CAI.

Data Analysis

The collected data were analyzed by using Nonparametric statistics. Statistical findings of pre-test and post-test data in terms of achievement scores were calculated and compared the effectiveness of an intervention through Wilcoxon Test between experimental and control group and Chi-square technique respectively.

Findings of the Study

From the data analysis, it can be derived that teaching students of class IX English grammar by traditional method is not as effective as with the use of CAI. Teaching students by CAI with simultaneous discussion is more effective and

presence of teacher is essential so that students can clear their doubts arising while learning.

As data was collected using purposive sampling, non-parametric statistics was used for analysis of data. Wilcoxon test was used to measure whether there was a significant difference in the scores of pre-test and post-test of Students' Achievement.

Table – 1 Wilcoxon Test between Experimental and Control Group

	N	Mean	Std. Deviation	Z	Asymp. Sig. (2-tailed)
Control Group _Pre	58	29.03	8.50	-0.19	0.84
Control Group Post	58	28.83	8.03		
Experimental Group_Pre	66	26.67	6.40	-7.06	0.01
Experimental Group_ Post	66	37.23	8.44		

Table-1 explains Wilcoxon test of responses from Narayan School and Jeevan Bharti School. Wilcoxon test was conducted to evaluate whether there is a significant effect of Computer Assisted Instruction (CAI) intervention on students who belongs to experimental group. It can be derived that there was a significant difference in experimental group, $z = - 7.06$, $p < .01$ due to the implementation of CAI program and It can also be derived from the mean scores of pre-test of experimental group (M =26.67) and post-test of experimental group (M=37.23) that achievement of students increased, which can be interpreted that teaching through Computer Assisted Instruction(CAI) program makes significant effect on students.

The table also explain that there is not significant difference in control group, $z = 0.19$, $p > 0.01$. It can also be derived from the mean scores of pre-test of control group (M =29.03) and post-test of control group (M=28.83) that achievement of students decreased.

Table - 2 Rank Table

		N	Mean Rank	Sum of Ranks
Control Group	Negative Ranks	25[a]	33.24	831.00
	Positive Ranks	33[b]	26.67	880.00
	Ties	0[c]		
	Total	58		
Experimental Group	Negative Ranks	0[d]	0.00	0.00
	Positive Ranks	66[e]	33.50	2211.00
	Ties	0[f]		
	Total	66		

Table-2 describes the comparison of responses of pre-test and post-test among both experimental and control group. In control group, 33 participants have higher achievement scores before the intervention (Computer Assisted Instruction (CAI)), 25 students have higher achievement scores after the intervention and no students showed no change in their achievement scores. Experimental group, whom CAI program have been implemented, no students have high scores before the intervention, 66 students showed higher achievement scores after the intervention and no student showed no change in their achievement scores.

Conclusion

The results of this study indicate that class IX students learned English grammar equally well with the use of CAI. Computers have the potential to be useful tools to improve learning; however, it is the responsibility of the teachers to choose software that meets the needs of the students, to use it effectively, and to require its use. Educators can tap into this interest by using technology to deliver instruction and assess learning. Computer learning systems provide educators the opportunity to create lessons in a variety of alternative formats to the traditional lecture in order to address the different learning styles and preferences of students. And this supplement is also useful to the students whenever they are absent to the class during the content is taught. They can refer repeatedly until they understand

thoroughly this facility is absent in the traditional method. Ultimately quality is essential in any mode of instruction. There are also limitations in preparing CAI person should know not only the content but also methods to prepare CAI.

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