Effectiveness of Smart Class Strategy for Developing Basic Skills of English of IX Standard Students of C.B.S.E School of Indore

A Summary Submitted to Devi Ahilya Vishwavidhyalaya
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INTRODUCTION

1.0.0 INTRODUCTION :

The present study entitled, “Effectiveness of Smart Class Strategy for developing Basic Skills of English of IX Standard Students of C.B.S.E Schools of Indore” is related to learning & teaching environment. Language is very important and it is the primary source of communication. In this study the researcher has given details in respect of Importance of Teaching, Importance of Learning, Importance of English Language, Importance of Assessing listening and speaking (ASL) in IX Class, Traditional Education, Smart Classes, Advantages of Smart classes for developing Basic Skills of English (LSRW), Assessment of English in class IX in CBSE Board, Assessment of Listening and Speaking Skill in class IX, Achievement, Rationale, Statement of Problem, Objectives, Hypothesis and Delimitation.

1.1.0 IMPORTANCE OF TEACHING

'Martin himself is a former teacher. He likes the oyster and sausage analogy to teaching. Some teachers and professors treat students like sausages to be stuffed with information; great teachers treat students like oysters, they stimulate, explore and maybe even irritate and every so often they produce a pearl. No author was credited in the newsletter so this article will remain an anonymous appreciation of teachers.'

Teaching is one of those things that nearly everybody thinks he or she can do better than the experts. Everybody has taught something to somebody at one time or another, after all. We begin our amateur teaching careers as children by imposing our superior knowledge on our younger siblings or playmates. As students, we pass judgments among our peers on this or that teacher's capabilities. As adults, those of us who do not teach professionally stand ever ready to criticize those who do.

To be done exceptionally well, teaching requires a special talent and sense of vocation. Teaching is a creative act, never more so than in primary and secondary schools. Good teachers, like good artists, have their own individual styles of performing. They also respect the individuality of their students in the realization that everybody learns through his or her own perceptions.

It would be a wonderful world if every teacher deeply understood each and every child and put that understanding into effect, but that would be asking too much of human nature. The world would be equally wonderful if every youngster came to school to learn.

"Teaching is not a lost art, but the regard for it is a lost tradition," Jacques Barzun wrote. If this society knows what is good for it, that regard will be restored. Parents and other concerned citizens will do all they can to make a teacher's life less troublesome and give due credit to the profession.

1.1.1 THE IMPORTANCE OF LEARNING

Learning is defined as the social process of construing and appropriating a new or revised interpretation of the meaning of one's experience as a guide to action (Mezirow, 1994). The significance of medical education was embedded in the constitution of the General Medical Council (GMC) as early as in 1868 when an amended motion was passed that 'A Committee be appointed to consider and report in what order the various subjects of medical education which have been deemed requisite by the Council may be taught with most advantage, and how examinations on them ought to be arranged'. In what appears to have been a heated debate between Council members, one member remarked that medical students should be taught to see with their own eyes and judge with their own brains rather than being spoon fed.

To a large extent this still applies today, although there is more of an expectation that students need to learn by themselves throughout their undergraduate training. Previous generations of doctors learnt by cramming their subjects without having in-depth knowledge in what they were supposed to learn, whereas it is now common practice for undergraduates and postgraduates to be expected to adopt a problem-based learning approach, mixed with learning on the job.

In fact it is received wisdom that doctors never stop learning. It is in the nature of those who practice medicine that the desire to gain knowledge never ceases, influenced no doubt by clinical challenges, formal and informal tests of knowledge and in some, and an inherent quest for perfection. In modern day medicine, practice based learning and evidence based practice have become a norm.

In psychiatry, where patient contact is essential, the risk of not keeping up-to-date has direct consequences on the patient. But on the more constructive end, a patient well treated reinforces and encourages better practice in the future.

1.1.2 IMPORTANCE OF ASSESSING LISTENING AND SPEAKING

In the past English was considered to be a library language in India, so only reading and writing were given emphasis in English Language teaching. But with technological advancement and globalization, English has become a world language linking the different parts of the world. Hence, the skills of Listening and Speaking also have to be strengthened. Language learning is associated with particular area of the brain called the speech centre. Language is a skill and any skill development employs the sensory motor organs.
Four skill assessments will be beneficial to students of different intelligence level. In a classroom, there may be some students who are good at Listening; some may be good at Speaking, some at Reading and others at Writing. When the four skills are tested independently, the integrated purpose of language learning will be fulfilled. Each student will understand in which skill he/she excels and in which one he/she requires improvement.
In the language assessment system of CBSE syllabus only Reading and Writing are tested, whereas IGCSE curriculum of the University of Cambridge assesses Reading and Writing along with Listening and Speaking (LS). A child will be given a pass certificate in English only if he goes through all these assessments. But in other systems a student who can memorise some part of literature will be able to get through the examination. Hence, after 10

years of English language learning, in order to perform marvellously in an interview or a job by conversing in good English, students need to join some spoken English classes. They may be proficient in writing but the first impression of a man is formed through the words he utters rather than the words he writes.

1.1.3 ASSESSMENT OF LISTENING AND SPEAKING (ASL) in class IX

Central Board of Secondary Education has extended the assessment of speaking and listening skills (ASL) to class IX to improve the language competency of students. It was introduced for classes 9, 10 and 11. In listening-comprehension section, teachers are supposed to test the students' ability to listening for basic interpersonal and academic purposes. As for speech, the assessment will test a student's command over language. Official said that students' performance should to be recorded on MP3 players/recorders to validate it and make the test reliable and fair.
Assessment in Listening and Speaking Skills (ASL) will be of **05 marks** as a part of internal Assessment as per CBSE guideline.
It is recommended that listening and Speaking Skills should be regularly practiced in classes.

1.1.4 SMART CLASSES STRATEGY

Smart Classes Strategy is a learning theory found in psychology which explains how people might acquire knowledge and learn. It therefore has direct application to education. Smart Classes Strategy allows students to construct their own learning. Smart Classes Strategy teaching is about making good learner as opposed to simply giving students' information. In Smart classroom students explore concepts in an organic way. They are encouraged to elaborate their ideas and use evidence to bolster their opinions.

- **How is Smart Classes Strategy used in the classroom:**

  For using Smart Classes Strategy in the classroom we can encourage students to work as a team. More and more group activities such as promoting group discussion or debate can encourage team working and collaboration. Group discussion promotes peer learning. Encouraging students to participate in several activities will make them neither active learner nor just passive one.
  Thus teaching through smart classes involves all the Constructivist trends for quality education. Education doesn't mean just to feed in the students the bookish knowledge but to help them in understanding the true meaning of Education.

- **The Role of the teacher in a Smart Classroom:**

  The role of the teacher in the social Smart classroom is to help students to build their knowledge & to control the existence of students during the learning process in the classroom. Teachers using Smart Class Strategy do not take the role of the "Sage on the Stage", instead, teachers act as a "Guide on the Side" providing students with opportunities to test the adequacy of their current understanding. Finally, the teacher concentrates on students' learning rather than on teachers' performance.

- **Teaching through Smart classes for quality education:**

  Smart classrooms are electronically enhanced lecture theatres and classrooms. These rooms create new opportunities in teaching and learning by integrating computer,

multimedia and network technology. The smart classroom is highly technological concept where presentation of content is optimal, interactive, convenient access of learning resources. It is also helpful for contextual awareness, classroom layout and management. It may be summarized as Showing, Manageable, Accessible, Real-time Interactive and Testing, which nicknames "SMART". The five dimensions just embody the wisdom of a smart classroom feature, which can be referred to as "SMART" concept model,

Fig.1: SMART MODEL

Showing-This aspect represents the teaching material and its presentation basically capabilities of the classroom, which needs not only showing the contents but it can be clearly and attractively visible. It is also showing content suitable for learners. The existing research shows that multi- screen display can decrease the cognitive load and improve learners' achievement. Colvin (2007) noticed out that the multi-screen is far better than single-screen in the academic improvement and getting good achievements of learners.

Manageable – This dimension signifies diverse layouts and the convenience of management of the Smart classroom. The equipment and apparatus, systems and organization, various resources and aids of Smart classroom should be easily managed, including layout of the classroom, equipment, physical environment, electrical safety management and network management etc.

Accessible - dimension shows convenience of resources procurement and apparatus access in the well-arranged Smart classroom, which includes resource selection, content and text distribution and its access speed. Chen Shijian (2003) shows that the rich and vast network of learning resources is favourable and conducive to independent self-learning, interactive cooperative learning, modified learning, so the implementation of this approach is for betterment of educational socialization.

Real-time Interactive feature – represents the ability and calibre to support the teaching-learning interactions and human-computer interactions of the Smart classroom, which involves basic convenient operation, smooth interaction and interactive tracking among teachers and students in convenient operation. Generally, the Smart classroom should be able to support the specific and ordinary interactions between man and machine. Their interactive equipment and interface with a simple, fully-featured, vibrant navigation, consistent with the operative habits and their characteristics, touch, visual and voice interaction can easily improve the interaction between man and machine.

Testing –This aspect is explained the perception of the physical environment during the classroom interaction and also learning behaviour of students in the Smart classroom.

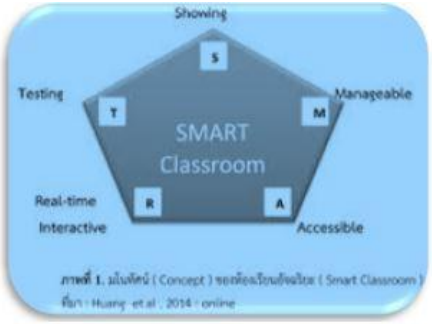

Fig. 2: SMART CLASSROOM

The physical environment of the class including air, temperature, light, sound, colour, odours, area etc, affect the physical and mental activities and actions of teachers and students in the smart class.

- **ADVANTAGE OF SMART CLASS ROOMS**

Updating with online information

Teachers can utilize the various online information such as knowledge databases, online audio-video and worldwide news items to strengthen their lessons and classroom teaching. Students and Learners can quickly access the wide range of powerful and resourceful tools in their respective fields and resources to conduct their academics.

Wide connectivity in different fields and locations: Interactive technology tools and techniques allow for wide connectivity in various locations, making ideal linkages and collaboration and also provides distance learning environment.

Improved thoughtful skills: It shifts the classroom experience to a more collaborative environment so that learners start thinking in more logical and improved way.

Linking the urban/rural gap: The smart classroom generates another opening to fill the link /bridge for urban/rural divide by giving the exposure of technology to students in a classroom setting.

Different style of imparting knowledge: Incorporating technology tools to the classroom environment is positively change the way of teaching. It gives the excellent opportunity to teachers to impart knowledge to students and at the same time it also simplify the teaching - learning process for students and teachers.

Fig. 3: VIEW OF A SMART CLASSROOM

Student involvement is increased: Students who normally do not raise their hands in class or the back benchers who are usually sleeping, or somewhat if they are weak, now can take interest to learn something new as these modern age tools provide more understanding to them as all the senses begins to involve in the smart class rooms. By fostering discussions and developing new and out of the box ideas, technology also helps improve the student-teacher bond.

Interact and share: The interactive nature of technology tools provide learners an opportunity to share and participate in the teaching learning process. Smart class rooms provides a platform for students and teachers to demonstrate their hold of the subject through touching, drawing, and writing. Every student has an opportunity to participate or contribute to the presentation and discussion

.

Offers Flexibility: Interactive technology tools allow various forms of media – including photos, illustrations, snapshots, maps, graphs and charts, games, and video, to be displayed.. In addition to this technology tools makes learning to be more dynamic as the different methods of offering information are readily available.

Teachers can do more experiment in pedagogy: As an academic professional, teaches learn more about how to effectively design and execute a class guided with technology. Whether it's a dramatic change such as teaching with a flipped-classroom, or just adopting a single tool for a specific project or term, he will learn something new in modern academia. Being well-versed in technology can also help build his credibility with students, and even with fellow colleagues.

Activities through Smart Classes:

- Screen Sharing: Those students who are not having their course book, with the help of screen sharing course content can be shared. Content can be made interactive by sharing PPT, You Tube videos.
- My CBSE guide (CBSE & NCRT Learning app): My CBSE guide is the best learning app for CBSE students that is recommended by the experts and followed by the toppers.
- DIKSHA – National Teachers Platform for India: the DIKSHA platform offers teachers, students and parents engaging learning material relevant to the prescribed school curriculum. Teachers have access to aids like lesson plans, worksheets and activities, to create enjoyable classroom experiences. Students understand concepts, revise lessons and do practice exercises. Parents can follow classroom activities and clear doubts outside school.
- Khan Academy – Khan Academy is an American non-profit educational organization with the goal of creating a set of online tools that help to educate students.
- Play way method (Online Games) –One way to change the pace in our classroom is by doing small group activity conducting quiz through Python programming, Kahoot, ESL Games online, Google form etc. It depends on the size of our class, the length of time you have available, the physical features of the classroom, and the nature of the group task.
- Educomp Smart Classes
- Tata Edge Smart Classes

1.2.0 RATIONALE

The present research highlights the importance of Smart Class Strategy for developing basic Skills in English for CBSE IX Graders.

Educated mind means an open & healthy mind. “Education is the most powerful weapon which you can use to change the world”, Nelson Mandela. Beyond that, teachers serve many other roles in the classroom. Teachers set the tone of their classrooms, build a warm environment, mentor and nurture students, become role models and listen and look for signs of trouble.

Language is very important mode of communication. Speaking and Listening Skills plays a vital role in the improvement of English Language Seeing the importance of it many researchers have been conducted related to Language Skills, Qingxiang Liu & Zhongguo Yang (2021)Yakimchuk Daniel(2010), Moony Cheryl(2010), Ahuja G.C. and Ahuja Pramila (1998), Kapadia S.T, (1998), Aparaj A.M.1991). Study related to Listening Skill by Gaya, Tushar Kanta (1998) their findings were that listening ability is used to a greater extent than any other communication skill.

Study related to techniques of teaching English has been studied by Taleb and Hassanzadeh (2015) (Ram SK 1989),(Jatin, Brij. 1987,Sankarappan R.1992), (Mohire V.N. 1989) their findings were teachers used the traditional technique of teaching though they had been trained to use new techniques and method.

Few researchers have been studied by researchers in their studies related to Reading Skill(Grover, Santosh 1991) , (Gani S. 1990), (Ahuja G.C & Ahuja Ramila 1988) their findings were Phonological awareness did not determine beginning reading.

Most of the studies were experimental type. Variable studies were not large in number so there generalization cannot be made. It points out to the need of conducting more researches related to this important area so researcher has decided to conduct this research on "**Effectiveness of Smart Class Strategy for developing Basic Skills of English of IX Standard Students of C.B.S.E Schools of Indore"**

As a new educational paradigm, smart learning bases its foundations on smart devices and intelligent technologies (Lee et al. 2014; Kim et al. 2011). As identified and heavily studied over the last decennia, technology can be implemented and utilized in helping learners learn. This is described as technology-enhanced learning (TEL). TEL is used to provide flexibility in the mode of learning. Technologies can be as media or tools for accessing learning content (Daniel 2012), inquiry, communication and collaboration, construction (Bruce and Levin 1997), expression (Goodman 2003), and evaluation (Meyer and Latham 2008) in TEL.

With the development of mobile, connected and personal technologies, mobile learning has become a major TEL paradigm. Mobile learning emphasizes the utilizing of mobile devices and focuses on the mobility of the learner, in contrast to the static traditional educational types. In addition to that, the supporting of ubiquitous technology has caused further changes that moving learning style away from the mobile learning toward to the ubiquitous learning which emphasizes learning can take place anytime and anywhere without the limitations of time, locations, or environments (Hwang et al. 2008).

Recently, many researches begin to pay attention to the importance and necessity of authentic activities in which learners work with problems in the real world (Hwang et al. 2008). In order to situate students in authentic learning environments, it is important to design learning that combine both real and virtual learning environments. Seamless learning, which overlaps with some aspects of mobile learning and ubiquitous learning, is expounded as an one-to-one TEL model which learners can learn across time and locations, and they can convert the learning from one scenario to another conveniently encompassing formal and informal learning, individual and social learning through the smart personal device (Chan et al. 2006).

Also other intelligent technologies, such as cloud computing, learning analytics, big data, Internet of things (IoT), wearable technology and etc., promote the emergence of smart education. Cloud computing, learning analytics and big data, which focus on how learning data can be captured, analyzed and directed towards improving learning and teaching, support the development of the personalized and adaptive learning (Lias and Elias 2011; Mayer-Schönberger and Cukier 2013; Picciano 2012). With these adaptive learning technologies, learning platform reacts to individual learner data and adapts instructional resource accordingly based on cloud computing and learning analytics, and it can leverage aggregated data across mass learners for insights into the design and adaptation of curricula based on big data (NMC 2015).

In addition, the IoT and wearable technology support the development of contextual learning and seamless learning. The IoT can connect people, objects and devices. Learners carrying

smart devices can benefit from various related information that is pushed to them from their surroundings (NMC 2015). Wearable technology can integrate the location information, exercise log, social media interaction and visual reality tools into the learning.

The concept of smart learning

There is no clear and unified definition of smart learning so far. Multidisciplinary researchers and educational professionals are continuously discussing the concept of smart learning. Still, some crucial components have been discussed in literature. Hwang (2014) and Scott & Benlamri (2010) consider that smart learning is context-aware ubiquitous learning. Gwak (2010) proposed a concept of smart learning as follows: first, it is focused on learners and content more than on devices; second, it is effective, intelligent, tailored learning based on advanced IT infrastructure. The technology plays an important role supporting smart learning, but the focus should not just on the utilization of smart devices. Kim et al. (2013) considered that smart learning, which combines the advantages of social learning and ubiquitous leaning, is learner-centric and service-oriented educational paradigm, rather than one just focused on utilizing devices. Middleton (2015) also stipulates on the learner-centric aspects of smart learning and how it benefits from the use of smart technologies. The personal and smart technologies make learners engaging in their learning and increase their independence in more open, connected and augmented ways by personally richer contexts.

Also, others attempt to indicate the features of smart leaning. MEST (2011) presented the features of smart learning that is defined as self-directed, motivated, adaptive, resource-enriched, and technology-embedded. Lee et al. (2014) proposed that the features of smart learning include formal and informal learning, social and collaborative learning, personalized and situated learning, and application and content focus.

Smart Learning Environments

Related to the topic previous research were done, EkaKatsiashvili (2010), Mark Griffiths (2002), Stempleski&Tomalin, 1990), Cyphert (2007) points out that users of technology such as Smart Class can be achieved an “electronic eloquence” (p. 171) by considering applications that go beyond merely using Smart Class as a visual accompaniment to an oral presentation, suggesting a line of research that explores Smart Class as a medium for visual rhetoric.

Generally, smart learning environment is effective, efficient and engaging (Merrill 2013). The learner is always considered as the heart of smart learning environment. And the goal of smart learning environment is to provide self-learning, self-motivated and personalized services which learners can attend courses at their own pace and are able to access the personalized learning content according to their personal difference (Kim et al. 2013). Koper (2014) proposed that smart learning environments are defined as physical environments that are enriched with digital, context-aware and adaptive devices, to promote better and faster learning. Hwang (2014) specified that the potential criteria of a smart learning environment include context-aware, able to offer instant and adaptive support to learners, and able to adapt the learner interface and subject contents. Smart learning environment not only enables learners to access ubiquitous resources and interact with learning systems anytime and anywhere, but also provides the necessary learning guidance, suggestions or supportive tools to them in the right form, at the right time and in the right place.

Learning can take place anytime and anywhere via the utilization of smart devices. The context-aware aspect plays an important role in smart learning environments that can support to provide proper learning service to learners. Kim et al. (2011) designed a smart learning environment based on cloud computing. The smart learning service provides context-awareness supporting push smart learning content to learners through collecting and analyzing their behaviors. It aims to provide personalized and customized learning services to learners. Scott and Benlamri (2010) built a smart learning environment, which is learner-centric and service-based, based on semantic web and ubiquitous computing. The learning environment is composed by ubiquitous collaborative learning spaces, which transform traditional learning spaces into intelligent ambient learning environments through context awareness and real-time learning services. Huang et al. (2012) considered a smart learning environment is high-level digital environment that realizes learning context awareness, recognizes learner's characteristic, provides adaptive learning resources and convenient interactive tools, records learning process automatically and evaluates learning outcomes. Its goal is to support easy, engaged and effective learning for learners.

Based on interactive resources and services, smart learning environment is learner-initiated and collaborative (Noh et al. 2011). Spector (2014) considered that smart learning environment supports planning and innovative alternatives for learners and instructors, and should be effectiveness, efficiency, engagement, flexibility, adaptivity, and reflectiveness. And these features might include support for collaboration, struggling learners and motivation.

Through reviewing these literatures, we can find that smart learning environment emphasizes learner-centric, personalized and adaptive learning service, interactive and collaborative tools, context-aware and ubiquitous access. And smart learning environment aims to support to realize the effective, efficient and meaningful learning for learners.

The meaning of 'Smart' in Smart Education

Globally many countries have participated in projects focused on smart education. Malaysian smart schools aim to help their country to foster the workforce of 21stcentury by utilizing and enabling the leading-edge technologies into schools. And the smart schools not only focus on stimulating thinking, creativity, and caring for the students, but also considering the individual differences and learning styles among their learners. The smart education in Singapore also emphasizes the role of technology. Their goal is to foster engaging learning experience to meet the diverse needs of learners, through the innovative use of information and communications technology (Education and Learning Sub-Committee, (2007). In order to realize this, Singapore created an enriching and personalized learner-centric environment, and additionally created a nation-wide education and learning architecture for educational institutions and life-long learning. Korea carried out the smart education project to provide the customized and adaptive learning for students to foster self-directed learning ability and have fun to use various resources and technology. Individualized instruction and creativity-centered education is considered as the main keyword of smart education. Australia aims to build a smart, multi-disciplinary student-centric education system using the following strategies: adaptive learning programs and learning portfolios for students, collaborative technologies and digital learning resources for teachers and students, computerized administration, monitoring and reporting, and online learning resources. New York proposed

the keys for achieving Smart School as following: embracing and expanding online learning, utilizing transformative technologies, connecting every school using high-speed network, extending connectivity between inside and outside of the classroom, providing high-quality, continuous professional development, and focusing on foster 21st century skills (New York Smart Schools Commission Report 2014). Finnish smart education aims at using user-driven and motivational learning solutions to promote 21st century learning (Kankaanranta and Mäkelä 2014). They proposed a pedagogical network of educational institutions called "value network" that is the central of program. It has five categories as following: to understand user experience and usability, to receive expert feedback, to indicate learning outcomes, effects and quality of learning, to develop skills and expertise (Mäkelä et al. 2014). United Arab Emirates (UAE) aims to advance their education system to student-centric through the application of world-class teaching science and latest technology. They encourage learner to develop creativity, analytic thinking and innovation. Their approach encompasses learning both inside and outside the classroom. The students can control and active participant into their own learning process in interactive, engaging and enabling learning environments.

Through analyzing these smart education projects, we can find some generalities as follows. The goal of smart education is to foster workforce that masters 21stcentury knowledge and skills to meet the need and challenge of society. Intelligence technology plays an important role in the construction of smart educational environments. In smart educational environments, learning can happen anytime and anywhere. It encompasses various learning styles, such as formal and informal learning, personal and social learning, and aims to realize the continuity of learning experience for learner. In this learners are provided with personalized learning services as well as adaptive content, and according to their (learning) context and their personal abilities and needs. So generally, 'smart' in smart education refers to intelligent, personalized and adaptive. But for different entities and/or educational situations, the meaning of 'smart' has different definitions.

For learner, 'smart' refers to wisdom and intelligence. Wisdom is defined as the ability to use your knowledge and experience to make good decisions and judgments. According to Confucius who is the most famous educator of China, wisdom can be achieved by three methods: reflection (the noblest), imitation (the easiest) and experience (the bitterest). In addition, the intelligence is the ability to solve problems that are valuable in one or more cultural settings (Gardner 2011). According to the concepts of wisdom and intelligence, we comprehend that smart for learner means an ability enabling people to think quickly and cleverly in different situations.

For educational technology, 'smart' refers to accomplish its purpose effectively and efficiently (Spector 2014). The technology includes the hardware and software. For hardware, 'smart' refers to the smart device much smaller, more portable and affordable. It is effective to support learner take place the learning anytime and anywhere with smart devices. And some hardware (e.g., smartphones, laptop, Google glass, etc.) has functions to recognize and collect the learning data to engage the learner into contextual and seamless learning. For software, 'smart' refers to adaptive and flexible. It is efficient to carry out personalized learning for learner according to their personal difference, with adaptive learning technologies (e.g. cloud computing, big data, learning analytics, adaptive engine, and etc.).

For educational environment, ‘smart’ refers to engaging, intelligent and scalable. Smart educational environment can provide tailored and personalized learning service (e.g. context awareness, adaptive content, collaborative and interactive tool, rapid evaluation and real-time feedback, etc.) to engage the learner into effective, efficient and meaningful learning. And the open system architecture is required to better support the integration of increasing interfaces, smart devices and different learning data.

Research framework of Smart Education

Based on the generalities of different countries’ smart education and the meaning of smart, the concept of smart education is proposed. Zhu and He (2012) stated that “the essence of smart education is to create intelligent environments by using smart technologies, so that smart pedagogies can be facilitated as to provide personalized learning services and empower learners, and thus talents of wisdom who have better value orientation, higher thinking quality, and stronger conduct ability could be fostered “(p. 6).

And based on this definition of smart education, a research framework is proposed in Fig. 1. This framework describes three essential elements in smart education: smart environments, smart pedagogy, and smart learner. Smart education emphasizes the ideology for pursuing better education and thus had better to be renamed as smarter education, which address the needs for smart pedagogies as a methodological issue and smart learning environments as technological issue, and advances the educational goals to cultivate smart learners as results. Smart environments could be significant influenced by smart pedagogy. Smart pedagogies and smart environments support the development of smart learners.

Smart pedagogies

With the rapid development of technologies, increasingly flexible and efficient learning methods for students are developed. Research in cognitive science has indicated that knowledge and skills are closely intertwined (Scardamalia and Bereiter 2006). It needs mixing content knowledge and process skills to produce understanding which learners need. Then learners execute their understanding in practice to produce their performances. The critical thinking and learning skills are very important, but these skills cannot be taught independently and some appropriate factual knowledge need to be taught in particular domain and context (Ananiadou and Claro 2009). Using the deliberate instructional or learning strategies can be related to cultivate the knowledge and skills for learners. So in order to fostering different abilities of smart learners, we searched the literatures about related pedagogies or learning strategies using conventional subject searching method in some databases. Through analyzing the literatures, we summarized and adopted relevant practical methods.

Students usually accept basic knowledge and core skills in the classroom. Learning goal and process always are the same for each student in traditional classroom. But students with different backgrounds have different needs. Every student deserves a strict education matched with content and performance standards that promote the understanding (Tomlinson and McTighe 2006). The classroom should be differentiated and responsive to vary learners’ readiness levels, interests and learning profiles (Tomlinson and Kalbfleisch 1998). Differentiated instruction emphasizes the different needs of each individual student and cultivates the basic knowledge and core skills for students.

Whether learning happens in the classroom or online, students who have different performances often need to learn together in-group or team to fulfill common task or achieve common goal. In collaborative process, learners can be fostered comprehensive abilities including critical thinking and solve problem ability (Gokhale 1995; Stahl 2006). Students in cooperative teams can keep knowledge longer through sharing information and engage in discussion at higher levels of thought to take responsibility for their own learning (Totten et al. 1991).

Learning processes should be tailored according to the students' learning needs that include requirements, background, interests, preferences, etc (Sampson et al. 2002). In particular, personal interest is more important than external motivation because it is driven by students' own passion (Malone 1981). Interest-driven personalized learning emphasizes the interests of students and can fosters intrinsic motivations, and then promote the personalized expertise for students (Atkins et al. 2010).

Intelligence is an ability to get things done that matter. Sternberg (1999) describes the three basic aspects of successful intelligence that include analytical thinking, creative thinking and practical application. As mentioned before, we facilitate abilities including problem solving, decision making, creative thinking and interest-driven learning for learners. We need to integrate these abilities to generate intelligence. It is similar to the transfer of learning, or something in which we have been learned in specific situations that are intentionally applied in other different related conditions (Barnett and Ceci 2002). Learning is a generative process. In such a process, the learner is an active recipient of information who works to construct meaningful understanding of information found in the environment (Wittrock 1974). Generative learning can enable learners to flexible apply the intelligence what they have learned and generated to various relevant future situations (Engle 2006; Fiorella and Mayer 2015).

Innovations of Smart Classes/project/initiative:

1. Using 2D & 3D graphic audio-visuals and digital interaction with the content the learners acquire the knowledge of concepts and theories live.

2. Teachers use formative assessment to know the understanding level of the learners and can accordingly adjust their teaching learning.

3. Conduction of Assessment of Listening and Speaking

4. For graphic presentation of chapters covering important aspects Mind Maps are organized.

5. "Virtual English Vocabulary testing" is offered to students by the Smartclass. Teachers are enabled to construct and simulate concepts on computers by virtual testing.

6. Smart class provides access to readymade presentations, real life applications and worksheets containing various types of questions for the teachers.

7. Smart class provides teaching ideas on how teachers could transact some part of the lessons.

8. Teachers summarize the chapters using Topic Synopsis (a short summary of chapters).

9. Videos related to the content can be operated and manipulated by the teachers with handy remote control when away from board.

10. It works in all kind of environments such as high ambient temperature and dusty conditions because of its special design.

1.3.0 STATEMENT OF THE PROBLEM

"Effectiveness of Smart Class Strategy for developing Basic Skills of English of IX Standard Students of C.B.S.E Schools of Indore"

1.4.0 OPERATIONAL DEFINITIONS OF THE KEY TERMS

A few terms have been frequently used that have got specific meaning for the present investigation. Given below are the operational definitions some of such key terms.

Smart class: Smart class is a new technology based digital trailblazer plan that makes available a large store house of 3D animated modules and videos mapped to school curriculum with the help of its exclusive collaboration with Eureka, Designate and Discovery.

Achievement: Achievement of the students in English after administering the English Achievement Test.

Basic Skills: Listening, Speaking, Reading and Writing in English (LSRW).

1.5.0 OBJECTIVES OF THE STUDY

(A) Objectives Related to Achievement in English

1. To develop an Achievement test in English for IX Graders.

2. To compare the effect of Smart classroom and conventional classroom teaching on achievement in English among IX graders.

3. To compare the effect of Smart classroom and conventional classroom teaching on the achievement in English among male IX graders.

4. To compare the effect of Smart classroom and conventional classroom teaching on the achievement in English among female IX graders.

5. To compare the mean Achievement scores of male and female IX graders in English to be taught through Smart Classroom teaching.

6. To compare the mean Achievement scores of male and female IX graders in English to be taught through Conventional Classroom teaching.

7. To compare the effect of Smart classroom and conventional classroom teaching on the academic achievement in English among urban IX graders.

8. To compare the effect of Smart classroom and conventional classroom teaching on the academic achievement in English among rural IX graders.

9. To compare the mean Achievement scores of urban and rural IX graders in English to be taught through Smart Classroom teaching.

10. To compare the mean Achievement scores of urban and rural IX graders in English to be taught through Conventional Classroom teaching.

(B) Objectives Related to Assessment of Listening and Speaking In English.

11. To compare the effect of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English among IX graders.

12. To compare the effect of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among male IX graders.

13. To compare the effect of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among female IX graders.

14. To compare the mean Assessment of Listening and Speaking in English scores of male and female IX graders in English to be taught through Smart Classroom teaching.

15. To compare the mean Assessment of Listening and Speaking in English scores of male and female IX graders in English to be taught through Conventional Classroom teaching.

16. To compare the effect of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among urban IX graders.

17. To compare the effect of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among rural IX graders.

18. To compare the mean scores the Assessment of Listening and Speaking of urban and rural IX graders in English to be taught through Smart Classroom teaching.

19. To compare the mean scores of the Assessment of Listening and Speaking urban and rural IX graders in English to be taught through Conventional Classroom teaching.

1.6.0 HYPOTHESES

(B) Hypotheses Related to Achievement in English

1. There will be no significant difference in the effects of Smart classroom and conventional classroom teaching on the achievement in English among IX graders.

2. There will be no significant difference in the effects of Smart classroom and conventional classroom teaching on the achievement in English among male IX graders.

3. There will be no significant difference in the effect of Smart classroom and conventional classroom teaching on the achievement in English among female IX graders.

4. There will be no significant difference in the mean achievement scores of male and female students in English to be taught through Smart Classroom teaching.

5. There will be no significant difference in the mean achievement scores of male and female students in English to be taught through conventional classroom teaching.

6. There will be no significant difference in the effects of Smart classroom and conventional classroom teaching on the academic achievement in English among urban IX graders.

7. There will be no significant difference in the effect of Smart classroom and conventional classroom teaching on the academic achievement in English among rural IX graders.

8. There will be no significant difference in the mean achievement scores of urban and rural IX graders in English to be taught through Smart Classroom teaching.

9. There will be no significant difference in the mean achievement scores of urban and rural IX graders in English to be taught through conventional classroom teaching.

(B) Hypotheses Related to Assessment of Listening and Speaking in English In English

10. There will be no significant difference in the effects of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among IX graders.

11. There will be no significant difference in the effects of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among male IX graders.

12. There will be no significant difference in the effect of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among female IX graders.

13. There will be no significant difference in the mean Assessment of Listening and Speaking in English scores of male and female students in English to be taught through Smart Classroom teaching.

14. There will be no significant difference in the mean Assessment of Listening and Speaking in English scores of male and female students in English to be taught through conventional classroom teaching.

15. There will be no significant difference in the effects of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among urban IX graders.

16. There will be no significant difference in the effect of Smart classroom and conventional classroom teaching on the Assessment of Listening and Speaking in English in English among rural IX graders.

17. There will be no significant difference in the mean Assessment of Listening and Speaking in English scores of urban and rural IX graders in English to be taught through Smart Classroom teaching.

18. There will be no significant difference in the mean Assessment of Listening and Speaking in English scores of urban and rural IX graders in English to be taught through conventional classroom teaching.

1.7.0 DELIMITATIONS OF THE STUDY

Keeping in view the time available and limited resources, the study will be delimited to:

1. The 9th graders, studying in the schools situated in urban areas of Indore District of Madhya Pradesh.
2. Content of English from class IX syllabus as prescribed by CBSE was chosen.

1.8.0 POPULATION AND SAMPLE

The term 'Population' is used in research to describe any group of individuals, events or observations in which the researcher is interested. In the present study, the term population refers to class IX students studying in English Medium Public Schools of Indore district of Madhya Pradesh.

"A sample is a finite part of a statistical population whose properties are studied to gain information about the whole" (Webster, 1985).

When dealing with people, it can be defined as the set of respondents (people) selected from a larger population for the purpose of a survey. In majority of the studies, it is just not feasible to collect data from each and every subject. In addition, to work on a sample saves time, labour and money.

Sampling makes it possible to draw valid generalisations by studying a relatively small proportion of the population selected for observation and analysis. In the present investigation, The Emerald Heights International School, Indore (M.P) was the field of study. The sample of the study comprised 40 pupils each studying in two sections of the IX class of The Emerald Heights International School, Indore situated in Madhya Pradesh. One section formed the control group and the other section formed the experimental group, as shown in Table3.6.

Table: Sample of the Study

Sr. No	Group	Total No. of Students
1	Experimental Group	40
2	Control Group	40
	Total	80

No doubt, the sample is small for the result of the study to be generalised; an experimental study is normally more suitable on a small sample, as is evident from earlier investigations conducted through experimental design, which used small samples only. Krulger (1999) and Angrist and Lavy (2004) provided evidence in favour of positive and significant effect of small classes in experimental studies.

Arias and Walker (2004) conducted an experimental research to test the relationship between class size and student performance. They controlled variation in instruction, lecture material, and topic coverage by using the same instructors. The results were statistically significant which concluded that small class size had a positive impact on student performance.

1.9.0 PROCEDURE OF DATA COLLECTION

Procedure of the experiment comprised of two main stages, that is, selection of the sample and conducting the experiment.

Stage1: Selection of the sample

The sample of the study comprised of 80 students of class IX (40 as control group and 40 as experimental group) studying in The Emerald Heights International School, Indore (M.P).

Selection of Experimental Group:

For the experimental group, a total of 40 learners studying in IX standard, section A was chosen from The Emerald Heights International School, Indore (M.P).

Selection of Control Group: The control group consisted of 40 learners studying in IX standard; section B of the same school. The group was exposed to traditional method of instruction. No novel treatment was given to the control group of students.

Stage2: Conducting the experiment

The experiment consisted of four phases:

Phase I: Administration of the Pre-test

Before the start of the experiment, the sample subjects were contacted and rapport was established with them. They were oriented about the tests to be used. Three pre-tests i.e., S.E.S., Intelligence, Achievement Test were administered to the students of two groups by the researcher herself. The class teacher co-operated the researcher for administering the tests properly. The instructions pertaining to the tests were explained verbally in clear terms to the students before administering the test. The administration of the tests was carried out as per norms and instructions contained in respective test manuals.

After this, the students of both the groups were provided orientation and instructions about the treatment to be allotted to them to get over the anxiety and curiosity of the students. The students of the experimental group were given a trial of their respective materials, which helped them in getting over the curiosity and anxiety around via the electronic system being applied in the classroom setting. The students of the control group were also made familiar about the objectives, etc, of the tests to elicit their cooperation in the conduct of the study.

Phase II: Conducting the Instructional Programme

The second phase of the experiment was the real execution of the experiment. In this phase, the experimental group students were taught by Smart class teaching and the control group students were taught by traditional method of teaching. The instructional treatment was given about 30 working days to the experimental group, where as the control group was taught by the traditional method for the same period of time. Same content was taught to both the groups.

Phase III: Administration of Post-test

Immediately after the instructional treatment was over, the researcher tested the subjects of experimental group and control group on the dependent variables (English Achievement Test).

Date Schedule of the Instructional Phase for both the groups:

Phase 1: Pre-test Stage

10 April 2019-Administration of Achievement Test in English

Phase2: Instructional Programme

The instructional programme started from 11 August 2019 and continued for next 30 working days. The instructions were completed on 19 September 2019. The achievement test was taken on 20 September 2019 after the completion of two units as per the syllabus prescribed by CBSE.

Table: Date Schedule of the Instructional Phase for both the groups

Sr. No	Chapters	Date Schedule
1	The Last Leaf	11-16 August 2019
2	The Reach For The Top	17-21 August 2019
3	Poem : Wind	22-25 August 2019
4	Listening Skill	26-30 August 2019
5	Speaking Skill	01-06 September 2019
6	Reading Skill	07-13 September 2019
7.	Writing Skill	14-19 September 2019

Phase IV: Assessment of Listening and Speaking

ASL was administered on 01 November 2019 after the Dussehra vacations.

Statistical Analysis

To achieve the objectives of the study, the data collected was statistically analysed using the following techniques:

1. Descriptive statistics such as mean and S.D worked out on the score of achievement in English.

2.‘t’ value was computed in order to adjudge pupil’s intelligence and socio-economic status.

3. ‘t’ test was employed for testing the significance of difference between the means of pupils’ achievement in mathematics on pre - test, post -test and gain scores.

4. t’ test was employed for testing the significance of difference between the means of pupils’ retention in answering the test questions in English on pre - test, post - test and gain scores. The value of ‘t’ was computed with the help of the following formula:

$$t = \frac{M1 - M2}{\sqrt{\frac{\sigma 1}{NI} + \frac{\sigma 2}{N2}}}$$

Where

M1=Mean of first group

M2 = Mean of second group

$\sigma 1$ = Variance of first group

$\sigma 2$ = Variance of first group

NI = Number of cases in first group

N2 = Number of cases in second group

Mean scores in respect of achievement in English and Assessment of Listening and Speaking were pictorially presented in the form of histograms. Histograms were drawn in respect of pre-test, post-test and gain scores of experimental group and control group.

- **Precautions Observed**

Following precautions were observed during the course of experiment (Pre-test – treatment-Post-test) for ensuring effectiveness and high precision in experimental condition which may have contributed to the results.

- No undue stress or control of any kind was imposed on the subjects at any time during the study and the experiment was conducted in a relaxed natural setting.
- Both the experimental and control groups were taught by the investigator herself to avoid any variation.
- The effectiveness of the experimental treatment was insured by establishing rapport with students and teachers, maintaining natural setting, harmonious atmosphere, providing sufficient time for various activities in the experimentation and the like.
- It was insured that the topics on contents of treatment had not been previously taught to the students in both the experimental and the control groups.
- Care was taken to keep importance of content matter during the course of treatment and it was not underplayed while fitting into the instructional treatment.
- Teaching periods of 40 minutes duration were utilized fully for treatment and time was not wasted during experimentation.

Constraints and Difficulties Faced During the Experiment:

Whenever a research project is in the process, necessarily some difficulties would come during the experiment. But because of the cooperative and supportive nature of the school authorities the problems sorted by the researcher herself were:

- Power failure
- Infrastructural lapses
- Time-table related difficulties

Efforts were needed to convince the teachers and the Principal about the experiment and to seek their co-operation in the conduct of the experiment with in the frame work of the school schedule. The researcher contacted the school authorities and convinced them about the programme and its usefulness to ensure that the treatment be fully provided to every student and that the sample groups regularly attended the school during that period. The experiment was accordingly adjusted as per the time table in vogue for pursuing a regular course of studies, making some minor changes in the regular time-table in consultation with the time-table in charge. The students' motivation and the helpful attitude of the school authorities encouraged the researcher to carry out the experiment with full enthusiasm and very smoothly to study the effectiveness of Smart class on students' achievement and enhancing basic skills in English.

1.10.0 RESEARCH DESIGN

A design is used to draw an outline of the research, to make it clear show how all the major parts of the research project the sample or groups, measures, treatments or programmes and method of assignments work together to try to address the main research question.

Winer (1971) compared the design of an experiment to an architect's plan for the structure of a building. The designer of experiments performs a role similar to that of an architect. The person who wants to construct a building gives his basic requirements to the architect, who then exercising his ingenuity prepares a plan or a blueprint outlining the final shape of the structure. Similarly, the designer of the experiment has to do the planning of the experiment so that the experiment on completion fulfils the objectives of research.

Research design is a mapping strategy which is based on sampling technique. It essentially includes objectives, sampling research strategy, tools and techniques for collecting the evidences, analysis of the data and reporting the findings. A researcher designs the work before getting the project underway.

An experimental design is a blue print of the procedure that enables the researcher to test the hypothesis by reaching valid conclusions about relationship between independent and dependent variables. It refers to conceptual framework within which the experiment is conducted. In the present study the investigator has employed Two Group, Randomized Matched Subjects, Post-test-only Design. In this design instead of using random assignment of subjects to experimental and control groups, a technique of matching is used. The variable selected for matching i.e. intelligence and socioeconomic-status, has a significant correlation with the dependent variable i.e. post-test achievement scores. The subject from desired population was paired so that their scores on matching variable became as close as possible. One subject of each pair was randomly assigned to one group and the other to the second group. A coin was tossed to designate the groups as experimental and control group.

In the present study, students of Smart classroom group are taught using Smart Class Strategy which is a digital initiative with interactive Digital board systems is a technology enabled classroom where the classroom teaching is enhanced through the use of technology. The teacher's computer in a smart class room is connected to a dedicated server engine which allows teacher to use the large repository of curriculum based digital content in order to create a multi sensory learning experience for the students. The teacher gains complete attention and interest of every child in the classroom. Every child gets a visual input on how it happens and the concepts are well understood and internalized. Towards the end of the class, teacher displays a set of questions on a large screen; every child in class gets ready to answer the questions with their personal answering device – SAS. Students click the answers, instantly; teacher is able to get a score sheet for every child in class.

In the present study, pre-test post-test control group quasi experimental, design was employed with a purposive sample in the form of intact sections of class IX of The Emerald Heights International School, Indore (M.P).

The study included a control group (40 students) and an experimental group (40 students). The experimental group was taught through Smart class and the control group through traditional method.

The selected sections were equated on intelligence and socio-economic status. A figurative representation of the design is given in Table 3.1.

Table: Design of the Study

Groups	Pre-Test	Independent variable	Post-test
Experimental	Y_1	Smart class Strategy	Y_2
Control	Y_1	Traditional teaching	Y_2

The study involved four operational stages as identification stage, treatment stage, post-testing stage and retention testing stage. The first stage involved pre-testing of all the students of both groups on intelligence, socio-economic status, and achievement in English. The second stage involved the experimental treatment, which consisted of two chapters and one Poem of IX grade English, taught through Smart class used teaching and through traditional teaching to control group. The third stage dealt with post testing of the control and experimental group using the achievement test in English. The fourth and the last stage were testing the retention in English of the students.

A schematic view of the phases of experiment is presented in Table 3.2.

Table: Phases of the study Stage

Stage	Control Group	Experimental Group
I. Pretesting	1.Measurement of intelligence of pupils 2.Measurement of socio-economic status of pupils 3. Measurement of Achievement in English	1.Measurement of intelligence of pupils 2.Measurement of socio-economic status of pupils 3. Measurement of Achievement in English
II. Treatment	Teaching English through conventional method	Teaching English through Smart class method
III. Post-testing	1. Measurement of achievement in English	1. Measurement of achievement in English
IV. Assessment of Listening and Speaking (ASL)	1.Measurement of Assessment of Listening and Speaking (ASL)(30 Days after the post test)	1.Measurement of Assessment of Listening and Speaking (ASL) (30 Days after the post test)

Variables under Study

In an experimental research, the relationship between two types of variables, namely independent and dependent variables is studied. Independent variables are the causes, while dependent ones are the effects. Another category of variables, which is equally important, is of the intervening variables. The three kinds of variables, identified for the study are:

Independent Variables

These variables are manipulated in order to see their effect on the learning outcome of students. In this study 'Treatments' acted as an independent variable. The treatments involved the two approaches of teaching viz., Smart class used teaching and traditional teaching. The experimental group was taught through Smartclass used teaching and the control group was taught through the traditional teaching. Thus, Smartclass used teaching and traditional teachings were the two independent variables for the study.

Dependent Variables

Achievement in English and Basic English Skills Testing in English were taken as dependent variables. Achievement in English was measured twice during the course of the study. First, before beginning the experimental treatment, i.e. at the pre-test stage and then, after completing the experimental treatment, i.e. at the post-test stage, where as retention was measured only after completing the experimental treatment, i.e. at the post test stage.

Intervening Variables

There are certain variables known as intervening variables which have their effect on the learning outcomes, and influence both independent and dependent variables. Intervening variables such as nature of school, grade level, subject to be taught, intelligence of pupils, socio-economic status of pupils, previous knowledge of pupils etc. were successfully controlled experimentally.

Control Employed

It is necessary to control all those variables that may significantly affect the dependent variables. Hence, such intervening variables were controlled by employing suitable controls.

1. **Nature of school**
   The sample was selected from a single English medium public school i.e. The Emerald Heights International School, Indore (M.P) affiliated to CBSE.
2. **Grade Level**
   Only IX class students were selected for the study and grade level was thus kept constant during the study.
3. **Teacher Behaviour**
   The investigator herself taught the content to both the experimental and the control group i.e., inter-teacher variation was eliminated. She herself outlined the entry level behaviour, prepared achievement test, lesson plans etc. Hence there was equal familiarity with all the treatments.
4. **Subject**
   The two groups were taught same two Chapters and one Poem of English of class IX NCERT prescribed text book i.e. The Last Leaf, Reach For the Top and Poem Wind.
5. **Socio-Economic Status**
   The experimental group and the control group were given S.E.S. Test. t-test was applied to find out the difference between S.E.S. test scores of the two groups. The results are given in the Table 3.3

Table : 't'-Value of S.E.S. test scores of Experimental group and Control Group

Group	N	Mean	S.D	t-value
Control Group	40	63.175	11.513	0.222
Experimental Group	40	63.725	10.614	

Not significant at 0.01 level

Table shows that the t-value between the groups is (0.222) which is not significant at 0.01 levels. It means that no significant differences existed between the S.E.S. of the two groups, indicating that they belonged almost to the same kind of a socio -economic milieu.

6. Intelligence of Pupils:

To eliminate the initial variability of the pupils statistically in the two groups, they were measured on general mental ability, through Group Test of Intelligence (GGTI) by Dr. G. C. Ahuja. Group Test of Intelligence (GGTI) is an index of intelligence which might have affected the independent variables, t-value was computed to analyse the difference between intelligence test scores of the two groups. The results are given in Table 3.4.

Table:'t'-VALUE OF INTELLIGENCE TEST SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP

Group	N	Mean	S.D	t-value
Control Group	40	71.10	8.532	0.161
Experimental Group	40	70.78	9.504	

Not significant at 0.01 level

Table 3.4 shows that the t-value between the Smart Class group and Control group is (0.161) which is not significant at 0.01 levels. It means that no significant difference existed between the intelligence of the two groups. Initially, general mental ability was thought to be controlled statistically through covariance but since the two groups selected did not differ on general mental ability at the pre-test stage, there was no need to control covariate. The independent variables, dependent variables, control variables and the kind of control employed in the study are summarized in Table 3.5.

Table : Control Employed to Variables

Independent Variables	Dependent Variables	Control Veriables	Control Emplyed
Method of Teaching	1.Achievement in English 2. Assessment of Listening and Speaking in English	1.Nature of School 2.Grade Level 3.Teacher	1.Administrative (Single School) 2.Administrative (Only IX class chosen as sample and taught) 3. Both the groups were taught by the same teacher (investigator hereby) 4.Adminstrative (Same content of English taught in both groups)

		4. Subject to be taught 5. Duration of treatment 6. Pupils' socio-economic status 7. Pupils' intelligence	5. The two groups taught for 30 days, 40 minutes each period daily. 6. Belonged to the same milieu. 7. No need

Specific events and factors like anxiety, home environment, adjustment, and social maturity could have only a marginal effect upon the experiment, so these factors were not taken into consideration.

1.11.0 TOOLS

In the present research, the following tools were accordingly chosen or self – developed as per the requirement of the research:

A. Standardized Test

1. Group Test of Intelligence (GGTI) by Dr. G.C. Ahuja (1990)

2. Socio-Economic Status Scale (SESS-UR), by Ashok K. Kalia and Sudhir Sahu (2011).

B. Self developed Tools

3. English Achievement Test and Assessment of Listening Speaking (To be developed by investigator and Assessment of Listening and Speaking as per CBSE guideline)

* **Group Test of Intelligence (GGTI) (13 to 17+ years)**

- **The Construction of the Test**

A psychological test is an objective, organized and statistically refined instrument or method to measure some specific skills, behavior or set of characteristics under standardized conditions. The construction and standardization of such a test is largely a creative undertaking which is constructed in accordance with definite principles. The present test was devised in order to meet the pressing demand for a group test of intelligence in English. The test is meant for assessing the general mental ability of pupils of age group 13 to 15 years studying in classes IX through English Medium Secondary Schools of Indore.

Total Items and Total Time Required for each Sub-Test

Sr.No	Sub – Test	Number of Items	Time Limit	Remarks (if Any)
1	Following Directions	9	04 Minutes	Additional Test
2	Classification	20	04 Minutes	
3	Analogies	06	04 Minutes	
4	English Skills	06	04 Minutes	
5	Vocabulary	40	04 Minutes	
6	Comprehension	08	04 Minutes	
7	Series	12	04 Minutes	
8	Best Answers	20	04 Minutes	
	Total	126	28 Minutes (Excluding Test 1)	

*** Socio-Economic-Status Scale (SESS-UR), by Ashok K. Kalia and Sudhir Sahu (2011)**

Social changes are determined with the help of social positions, with time, region, culture and paying capacity of people. Growing economy of India, implementation of New Pay Scales as recommended by the Sixth Pay commission (2008), technological explosion, impact of electronic media, print media and education has changed many parameters of social position in last few years. In these days, number of followers of person in social network in last few years. In these days, the ability of the person to influence mass and so is his/her level of social status. This is the era of globalization, liberalization and privatization. Today modernity is regarded as more important than money. Hence, Social status of a person cannot be measured only with financial and occupational status. The level of education, modern life styles, health status and kind of gadgets, facilities and services that a person is enjoying must be taken into consideration while determining his/her social position.

The available literature on SES indicates change in the concept of social position from time to time. Power (1981) focused only on occupation while measuring socio economic position. U.S. Department of Defence (1986) identified some traditional components of socio-economic-status viz.- education, occupation, income, employment status, possession of materials and presence of reading materials. Australian Bureau of Statistics (19994) identified education, health, contact with criminal justice system, employment, housing, access to services, water, sewerage, etc. as social position and income, ownership, assets level, holdings etc as economic position of a person. Williams and Moss (1997) in their study assessed socio-economic-status at three level i.e. (i) individual level, (ii) house hold level and (iii) community level. Social class, caste and race were also identified as indicators of socio-economic position (Piko and Fitzpatrick, 2001). Income, wealth, social standing/ prestige and social deprivation were used as common factors in measurement of social position (2002). Tello et all. (2005)

developed an ecological index of socio-economic-status through factor analysis of 1991 Census (Italy) data. Three significant factors reflected the domains of (i) educationalemployment sector, (ii) relational network and (iii) material conditions.

Singh, Shyam and Kumar (2006) developed a scale to measure socio-economicstatus. Caste, family, education (of self), occupation, income, possession (material and monetary), land (agricultural/residential), participation in social, political, religious and academic activities, house (own or rented), size of house, etc. were the areas they identified to measure socio-economic-position.

A number of socio-economic-status scales have been developed by various researchers in the past few years, but most of them are not able to meet the parameters of current changes in the society in term of economic and technological advancement. Review of some of SES Scales being used currently, throw light oon efforts of various experts in measuring socio-economic-status in the past viz. Kuppuswami (1960), Verma (1962), Pareek and Trivedi (1964), pandey (1966), Kulshrestha and De(1970), Singh and Sexena (1981), Shah (1986), Kapoor and Singh (1998), Singh, Shyam and Kumar (2006) 131 etc. Most of SES Scales are out dated and need a through modification and revision. Even during the developmental period of this scale (from 2007 to 2011), it has faced many modifications due to introduction of New Pay Scales by Sixth Pay Commission and emerging technical products in the market. While some years before Mobile Phone was a Luxurious item of aristocrat families now it has become a necessity of a layman. Now people are concerned about branded items irrespective of tag of high price level. Because of this, new way of thinking has emerged to define social position of an individual. Though Indian society is still struggling with some traditional social diversification of caste, class, race and power, yet in recent years emerging awareness through electronic and print media has developed a new social pattern in India. Now caste is not considered as important factor in determining status of an individual as once it was considered. Education, modern life styles, socio-cultural participation, ability to influence mass, future possibilities of person, health status, enjoyment of modern facilities including modern technology, various servicers and leisure/enjoyment has become more than unfolded wealth of a person.

Development of SES Scale

SES Scale is designed to measure social position of a person in Urban and Rural areas according to the lifestyle prevailing in both the regions. Socio-economic-status of a person in this scale refers to the "status of his/her family in relation to their level of socio cultural participation, ability to influence mass, level of education, kind of occupation, financial position, health-wellbeing, lifestyle, level of aspiration, kind of gadgets, services and leisure facilities that the family

enjoys". This scale is an endeavour to ascertain the SES of an individual based on current social structure with a new thinking.

This scale has been developed both in English and Hindi languages for Urban/Rural households. It is easy to be administered and acknowledges the social position of an individual in the society. Scoring process of the SES Scale is easy, and objective. To get the total SES scores, the researcher is required to count the SES scores of the answer/options mentioned in the square box, which has been ticked by the respondent. In this way it saves time, money and labour. It also minimize possibility of error of counting of total score by the researcher.

Achievement Test

Achievement tests are well suited to provide educators with objective feedback as to how much students are learning and understanding. Teachers teach and help the learners to learn. The learning that takes place is assessed or evaluated not only for the learners' benefit but also for the teacher to evaluate his/her own work. At the end of a lesson or a group of lessons, the teacher needs to get feedback on what the learner has achieved, as a result of the teachers' efforts and also indirectly to assess his /her own achievement as a teacher. This feedback comes with the help of a tool, known as **"Achievement Test".**

Since no specific achievement test in the selected topic was available to test the effectiveness of Smart class on IX grade English students, so, an achievement test in English for IX class on the topic selected by the researcher was prepared by the investigator herself to evaluate the pupils' Knowledge, Comprehension, and Application. Achievement tests were prepared, for all the content selected; consisting of 100 multiple choice questions in total and after try out the final draft had 60 questions. Achievement tests covered all the important aspects of the two chapters and one poem taught in the class by the teacher to both the control group and the experimental group. Four options were given for every question and only one option was correct. The students were asked to mark the correct option on the answer sheets provided separately. This was used for the pre-test, post-test and retention test. The test items were prepared based on a blueprint.

The test covered the content of the following Chapters from Beehive and Moments, Assessment of Listening, Speaking , Reading and Writing.

The Last Leaf
The Reach For The Top
Poem : Wind
Assessment of Listening Skill
Assessment of Speaking Skill

Reading Skill Test
Writing Skill Test

1.12.0 PROCEDURE OF DATA COLLECTION

Procedure Followed

Procedure of the experiment comprised of two main stages, that is, selection of the sample and conducting the experiment.

Stage1: Selection of the sample

The sample of the study comprised of 80 students of class IX (40 as control group and 40 as experimental group) studying in The Emerald Heights International School, Indore (M.P).

Selection of Experimental Group:

For the experimental group, a total of 40 learners studying in IX standard, section A was chosen from The Emerald Heights International School, Indore (M.P).

Selection of Control Group: The control group consisted of 40 learners studying in IX standard; section B of the same school. The group was exposed to traditional method of instruction. No novel treatment was given to the control group of students.

Stage2: Conducting the experiment

The experiment consisted of four phases:

Phase I: Administration of the Pre-test

Before the start of the experiment, the sample subjects were contacted and rapport was established with them. They were oriented about the tests to be used. Three pre-tests i.e., S.E.S., Intelligence, Achievement Test were administered to the students of two groups by the researcher herself. The class teacher co-operated the researcher for administering the tests properly. The instructions pertaining to the tests were explained verbally in clear terms to the students before administering the test. The administration of the tests was carried out as per norms and instructions contained in respective test manuals. After this, the students of both the groups were provided orientation and instructions about the treatment to be allotted to them to get over the anxiety and curiosity of the students. The students of the experimental group were given a trial of their respective materials, which helped them in getting over the curiosity and anxiety around via the electronic system being applied in the classroom setting. The students of the control group were also made familiar about the objectives, etc, of the tests to elicit their cooperation in the conduct of the study.

Phase II: Conducting the Instructional Programme

The second phase of the experiment was the real execution of the experiment. In this phase, the experimental group students were taught by Smart class teaching and the control group students were taught by traditional method of teaching. The instructional treatment was given about 30 working days to the experimental group, where as the control group was taught by the traditional method for the same period of time. Same content was taught to both the groups.

Phase III: Administration of Post-test

Immediately after the instructional treatment was over, the researcher tested the subjects of experimental group and control group on the dependent variables (English Achievement Test).

Date Schedule of the Instructional Phase for both the groups:

Phase 1: Pre-test Stage

10 April 2019-Administration of Achievement Test in English

Phase2: Instructional Programme

The instructional programme started from 11 August 2019 and continued for next 30 working days. The instructions were completed on 19 September 2019. The achievement test was taken on 20 September 2019 after the completion of two units as per the syllabus prescribed by CBSE.

Table: Date Schedule of the Instructional Phase for both the groups

Sr. No	Chapters	Date Schedule
1	The Last Leaf	11-16 August 2019
2	The Reach For The Top	17-21 August 2019
3	Poem : Wind	22-25 August 2019
4	Listening Skill	26-30 August 2019
5	Speaking Skill	01-06 September 2019
6	Reading Skill	07-13 September 2019
7.	Writing Skill	14-19 September 2019

Phase IV: Assessment of Listening and Speaking

ASL was administered on 01 November 2019 after the Dussehra vacations.

1.13.0 DATA ANALYSIS TECHNIQUES

To achieve the objectives of the study, the data collected was statistically analysed using the following techniques:

1. Descriptive statistics such as mean and S.D worked out on the score of achievement in English.
2. 't' value was computed in order to adjudge pupil's intelligence and socio-economic status.
3. 't' test was employed for testing the significance of difference between the means of pupils' achievement in mathematics on pre - test, post -test and gain scores.
4. t' test was employed for testing the significance of difference between the means of pupils' retention in answering the test questions in English on pre -

test, post - test and gain scores. The value of 't' was computed with the help of the following formula:

$$t = \frac{M1 - M2}{\sqrt{\frac{\sigma 1}{NI} + \frac{\sigma 2}{N2}}}$$

Where

M1=Mean of first group

M2 = Mean of second group

$\sigma 1$ = Variance of first group

$\sigma 2$ = Variance of first group

NI = Number of cases in first group

N2 = Number of cases in second group

Mean scores in respect of achievement in English and Assessment of Listening and Speaking were pictorially presented in the form of histograms. Histograms were drawn in respect of pre-test, post-test and gain scores of experimental group and control group.

Precautions Observed

Following precautions were observed during the course of experiment (Pre-test – treatment-Post-test) for ensuring effectiveness and high precision in experimental condition which may have contributed to the results.

- No undue stress or control of any kind was imposed on the subjects at any time during the study and the experiment was conducted in a relaxed natural setting.
- Both the experimental and control groups were taught by the investigator herself to avoid any variation.
- The effectiveness of the experimental treatment was insured by establishing rapport with students and teachers, maintaining natural setting, harmonious atmosphere, providing sufficient time for various activities in the experimentation and the like.
- It was insured that the topics on contents of treatment had not been previously taught to the students in both the experimental and the control groups.
- Care was taken to keep importance of content matter during the course of treatment and it was not underplayed while fitting into the instructional treatment.
- Teaching periods of 40 minutes duration were utilized fully for treatment and time was not wasted during experimentation.

Constraints and Difficulties Faced During the Experiment

Whenever a research project is in the process, necessarily some difficulties would come during the experiment. But because of the cooperative and supportive nature of the school authorities the problems sorted by the researcher herself were:

- Power failure
- Infrastructural lapses
- Time-table related difficulties

Efforts were needed to convince the teachers and the principal about the experiment and to seek their co-operation in the conduct of the experiment with in the frame work of the school schedule. The researcher contacted the school authorities and convinced them about the programme and its usefulness to ensure that the treatment be fully provided to every student and that the sample groups regularly attended the school during that period. The experiment was accordingly adjusted as per the time table in vogue for pursuing a regular course of studies, making some minor changes in the regular time-table in consultation with the time-table in charge. The students' motivation and the helpful attitude of the school authorities encouraged the researcher to carry out the experiment with full enthusiasm and very smoothly to study the effectiveness of Smart class on students' achievement and enhancing basic skills in English.

1.14.0 Findings

- The mean scores of achievement in English of Smart Strategy group are higher than Conventional Classroom teaching group. The Smart class Strategy helps in enhancing the achievement of students in English in comparison to the conventional classroom teaching.
- The mean scores of achievement in English of male students of Smart class Strategy group are higher than Conventional Classroom teaching group. The Smart class Strategy helps in enhancing the achievement of male students in English in comparison to the Conventional classroom teaching.
- The mean achievement score of Smart class Strategy group is significantly higher than the mean achievement score of Conventional Classroom teaching group. The Smart class Strategy helps in enhancing the achievement in English of female students in comparison to the conventional classroom teaching.
- The mean achievement score of Smart class teaching Strategy male and female students is comparable. Sex has nothing to do with the achievement in English among IX Graders using Smart class Strategy.
- The mean achievement score of male students is 44.95, which is slightly higher than the mean achievement score of female students i.e. 43.45. Sex has nothing to do with the achievement in English among IX Graders using Conventional Classroom teaching.
- The mean achievement score of experimental group is 52.00, which is significantly higher than the mean achievement score of control group i.e. 43.85. It may therefore be concluded that Smart classroom Strategy helps in enhancing the achievement of urban students in English in comparison to the conventional teaching.

- The mean achievement score of experimental group is 50.95, which is significantly higher than the mean achievement score of control group i.e. 44.55. It may therefore be concluded that Smart classroom Strategy helps in enhancing the achievement of rural students in English in comparison to the conventional teaching.
- The mean achievement score of urban students is 52.00, which is slightly higher than the mean achievement score of rural students i.e. 50.95. It may therefore be concluded that Smart classroom teaching helps in enhancing the achievement in English of rural and urban students equally.
- The mean achievement score of urban students is 43.85, which is slightly lower than the mean achievement score of rural students i.e. 44.55. It may therefore be concluded that Conventional classroom teaching helps in enhancing the achievement in English of rural and urban students equally.
- The mean achievement score of experimental group is 49.80, which is significantly higher than the mean achievement score of control group i.e. 40.075. It may therefore be concluded that Smart class teaching helps in enhancing the scores of Assessment of Listening and Speaking of students in English in comparison to the Conventional classroom teaching.
- The mean scores of Assessment of Listening and Speaking of experimental group is 50.10, which is significantly higher than the mean scores of Assessment of Listening and Speaking of control group i.e. 40.85. It may therefore be concluded that Smart class Strategy helps in enhancing the scores of Assessment of Listening and Speaking of male students in English in comparison to the conventional teaching.
- The mean scores of Assessment of Listening and Speaking of experimental group is 49.50, which is significantly higher than the mean scores of Assessment of Listening and Speaking of control group i.e. 39.30. It may therefore be concluded that Smart class Strategy helps in enhancing the retention in English of female students in comparison to the conventional classroom teaching.
- The mean scores of Assessment of Listening and Speaking of male students is 50.10, which is slightly higher than the mean achievement score of female students i.e. 49.50. It may therefore be concluded from the findings that sex has nothing to do with the Listening and Speaking Skill in English among IX Graders using Smart class Strategy teaching.
- The mean scores of Assessment of Listening and Speaking of male students is 40.85, which is slightly higher than the mean achievement score of female students i.e. 39.30. It may therefore be concluded from the findings that sex has nothing to do with the Listening and Speaking Skill in English among IX Graders using Conventional Classroom teaching.
- The mean scores of Assessment of Listening and Speaking of experimental group is 50.45, which is significantly higher than the mean scores of Assessment of Listening and Speaking of control group i.e. 39.80. It may therefore be concluded that Smart class Strategy helps in enhancing the Listening and Speaking skill in English of urban students in comparison to the conventional classroom teaching.

- The mean score of Assessment of Listening and Speaking in English of experimental group is 49.15, which is significantly higher than the mean scores of Assessment of Listening and Speaking of control group i.e. 40.35. It may therefore be concluded that Smart class Strategy helps in enhancing the Assessment of Listening and Speaking in English of rural students in comparison to the conventional classroom teaching.
- The mean scores of Assessment of Listening and Speaking of urban students is 50.45, which is slightly higher than the mean scores of Assessment of Listening and Speaking of rural students i.e. 49.15. It may therefore be concluded that Smart classroom Strategy helps in enhancing the scores of Assessment of Listening and Speaking in English of rural and urban students equally.
- The mean scores of Assessment of Listening and Speaking of urban students is 39.80, which is slightly lower than the mean achievement score of rural students i.e. 40.35. It may therefore be concluded that Conventional classroom teaching equally helps in enhancing the scores of Assessment of Listening and Speaking in English of rural and urban students.

Discussion of Results

Results Related with Achievement in English

- The mean scores of achievement in English of Smart classroom Strategy group are higher than Conventional Classroom teaching group.
- The Smart classroom Strategy helps in enhancing the achievement of students in English in comparison to the conventional classroom teaching.
- The Smart classroom Strategy helps in enhancing the achievement of male students in English in comparison to the Conventional classroom teaching.
- The Smart classroom Strategy helps in enhancing the achievement in English of female students in comparison to the conventional classroom teaching.
- The mean achievement score of Smart class Strategy group male and female students is comparable. Sex has nothing to do with the achievement in English among IX Graders using Smart class Strategy.
- The mean achievement score of male students is slightly higher than the mean achievement score of female students. Sex has nothing to do with the achievement in English among IX Graders using Conventional Classroom teaching.
- The mean achievement score of experimental group is significantly higher than the mean achievement score of control group. It may therefore be concluded that Smart class room Strategy helps in enhancing the achievement of urban students in English in comparison to the conventional teaching.
- The mean achievement score of experimental group is significantly higher than the mean achievement score of control group. It may therefore be concluded that Smart classroom Strategy helps in enhancing the achievement of rural students in English in comparison to the conventional teaching.

- The mean achievement score of urban students is slightly higher than the mean achievement score of rural students. It may therefore be concluded that Smart classroom Strategy helps in enhancing the achievement in English of rural and urban students equally.
- The mean achievement score of urban students is slightly lower than the mean achievement score of rural students. It may therefore be concluded that Conventional classroom teaching helps in enhancing the achievement in English of rural and urban students equally.

Srivastva (2015), Menon (2015), Chachara (2015), Ram Mehar & Anuradha (2014), Prakash Chandra Jena (2013), Bharatkumar (2013) Hui Ling Xu, Robyn Moloney (2011) Akbas and Pectas (2011) Xu and Moloney (2011) and Dun & Bradstreet (2010) also compared the effect of Smart Classroom teaching with traditional classroom teaching and also found that Smart Classroom teaching helped in enhancing the achievement of learners.

Results Related with Assessment of Listening and Speaking in English

- Smart class Strategy helps in enhancing the Assessment of Listening and Speaking in English of students in comparison to the Conventional classroom teaching.
- Smart class Strategy helps in enhancing the Assessment of Listening and Speaking in English of male students in comparison to the conventional teaching.
- Smart class Strategy helps in enhancing the Assessment of Listening and Speaking in English of female students in comparison to the conventional classroom teaching.
- The mean score of Assessment of Listening and Speaking in English of male students is comparable with the mean achievement score of female students. It may therefore be concluded from the findings that sex has nothing to do with the Assessment of Listening and Speaking in English among IX Graders using Smart class Strategy.
- The mean score Assessment of Listening and Speaking in English of male students is comparable with the mean achievement score of female students. It may therefore be concluded from the findings that sex has nothing to do with the Assessment of Listening and Speaking in English among IX Graders using Conventional Classroom teaching.
- The mean score of Assessment of Listening and Speaking in English of experimental group is significantly higher than the mean score of Assessment of Listening and Speaking in English of control group. It may therefore be concluded that Smart class Strategy helps in enhancing the Assessment of Listening and Speaking in English of urban students in comparison to the conventional classroom teaching.
- The mean score of Assessment of Listening and Speaking in English of experimental group is significantly higher than the mean score of Assessment of Listening and Speaking in English of control group. It may therefore be concluded that Smart class Strategy helps in enhancing the Assessment of Listening and Speaking in English of rural students in comparison to the conventional classroom teaching.

- The mean score of Assessment of Listening and Speaking in English of urban students is comparable with the mean score of Assessment of Listening and Speaking in English of rural students. It may therefore be concluded that Smart classroom Strategy helps in enhancing the Assessment of Listening and Speaking in English of rural and urban students equally.
- The mean score of Assessment of Listening and Speaking in English of urban students is comparable with the mean achievement score of rural students. It may therefore be concluded that Conventional classroom teaching equally helps in enhancing the Assessment of Listening and Speaking in English of rural and urban students.

Ram Mehar & Anuradha (2014) in their research investigated the effect of smart class instructions on retention in Chemistry in relation to academic anxiety on IX class students selected from two different schools of Chandigarh (UT) and found similar results.

1.15.0 CONCLUSIONS

The study provides very important recommendations for teacher training institutions. Considering the present widespread use of Smart classroom Strategy at all graders and for all subjects, it is very important that during pre-service teacher training, future teachers should master the smart technology. NCTE and SCERTS should include Smart classroom as a mandatory facility in teacher training institutions so that future teachers could be skilled for smart classroom teaching. The future teachers will acquire the skill of smart technology during pre-service teacher training; in-service training may also be given to the existing teachers to teach them the skills for smart classroom teaching that is teaching efficiently, interestingly, technically and meaningfully.

1.16.0 EDUCATIONAL IMPLICATIONS

The present investigation shows that this shift from a traditional 'chalk and talk' method to Smart class Strategy not only enriches teaching learning of the class room, it also improves their achievement and Assessment of Listening and Speaking in English scores in a significant way. It shows that Smart class Strategy proves to be more successful in its effectiveness on achievement and Assessment of Listening and Speaking in English scores in comparison to the traditional classroom method. It proves more practical and is widely acceptable to learners. It also minimizes individual differences and enables all types of learners to perform better. It has many other advantages.

- Smart class can be substituted for almost anything in the classroom: blackboard, charts, book, TV, encyclopedias, models, map, library and many more.

- Smart class can be used as a supplement in a large group classroom teaching. It is easier to control learners in Smart class than in the traditional classroom.
- Smart class can be used individually, in small or large groups by the teachers.
- Smart class suggests a new role for the teacher. Earlier the teacher who used to be the only source of information for the passive learners in the classroom, has now changed to a facilitator in the teaching-learning process and brings a whole world of knowledge in the classroom:
  - Smart class helps students in active learning.
  - Smart class draws diagrams easily and accurately.
  - Smart class takes the learners in real life situations.

- The teacher can easily monitor the involvement of learners of all levels; high achievers, average and low level achievers and learners can be motivated for better performance.
- Smart class can be used to enhance teaching by presenting information in different ways and in different forms. Pupils can manipulate and make changes to information so that they can develop understanding of the relationship between different types of information or through the process of changing that information dynamically.
- Smart class used learning sessions in class may act as a source of edutainment (education plus entertainment) as well. The sessions may include games, recreational activities like solving puzzles and riddles, holding group discussions on some general topics related to current affairs to create more interest among students. So, teacher becomes more resourceful.
- Important skills such as critical thinking, creative problem solving and synthesis of knowledge can easily be accomplished through Smart class used learning in the class.
- Findings of research show that Smart class can be considered as a big agent for change in education, and there is a possibility for research in this area of research.
- Smart class used teaching can replace the traditional teaching methods and make it more effective. The findings show that Smart class plays a very important role in English teaching-learning and developing basic skills of English i.e LSRW, so, educationists should develop clear understanding of the conditions, circumstances, means and mechanisms through which Smart class can be closely connected to the young students and particularly for English teaching.

1.17.0 SUGGESTIONS FOR FURTHER STUDY

- This study could be reproduced to find out how Smart class teaching affects the various abilities of the students as cognitive, emotional, social, personal and motivational aspects.

- There is a need to investigate Smart class used teaching method with other methods of teaching at different grade levels.
- The study could be reinvestigated on a larger sample for validation and for a longer duration of time to study the effects on non-cognitive variable like social skills or some personality variables which take more time to bring about a change.
- There is a need to study the combined effects of Smart class used teaching with other institutional treatments.
- Research is needed to study the effect of Smart class on special groups of learners e.g. gifted, the learning disabled and other special groups' students.
- Research need to be conducted with school subjects other than English and to find out the extent of effect of Smart class on different school subjects.