CHAPTER - I
INTRODUCTION

“English is the language on which the sun does not set, whose users never sleep.”

(QUIRK, 1985)

1.1 PREAMBLE
1.1.1 Language for Transnational Communication

English holds today the place of pride as the world’s most widely used language, known in almost every country; and one person out of every four on earth can be reached through it. “85% of the world's international organizations use English as their official language in transnational communication. About 85% of the world’s important film productions and markets use English as well; and 90% of the published academic articles in several academic fields, such as linguistics, are written in English” (Crystal, 2003). English has become a dominant language in all fields of activities - communication, science, business, aviation, tourism, media etc. playing an important part in cultural, political and economic life in countries where it is listed as the official or co-official language; and is spoken extensively in other countries where it has no official status. “English is the native language for most residents of Australia, Canada, the Commonwealth Caribbean, Ireland, New Zealand, United Kingdom and United States of America (also known as ‘Anglo-sphere’). It is a language used extensively as a second language or as an official language throughout the world, especially in Commonwealth countries such as India, Sri Lanka, Pakistan and South Africa, and many international organizations” (Eurostat survey, 2014). In that, “over 380 million people speak English as their mother tongue. English today is probably the third largest language by number of native speakers, after Mandarin Chinese and Spanish. In addition English is the secondary official language in 54 other countries, including the Bahamas, Barbados, Fiji, Kenya, Namibia and Sierra Leone” (ibid). As a means of communication, English brings people over the world together and helps them understand and interlink with each other. English is being learnt and used globally not out of any kind of imposition but realization that it has certain inherent advantages as a global language, occupying a prominent place in the comity of nations universally.
1.1.2 Symbol of Peoples Aspirations

English is learnt in India as a Second language; much less as a foreign language, it being an integral part of Indian elite ethos so much so that the country is still being governed with English as a premier mode of communication in our parliament; and as a socio cultural reality much as any other Indian language. “English is, in India today, a symbol of people’s aspiration for quality in education and a fuller participation in national and international life. Its colonial origins now forgotten or irrelevant, its initial role in independence India, tailored to high education now felt to be insufficiently inclusive socially and linguistically, the current state of English stems from its overwhelming presence on the world stage and the reflection of this in the national arena” (NCERT 2006:1). Being an integral part of the Indian multilingual repertoire, it is recognized “Officially as the associative National official Language, and as inter-regional link language; educationally, it is recognized as an essential component of Education and as the preferred medium of learning, with specialized education in Science and Technology available through the medium of English only; socially, it is recognized and upheld as a mark of education, culture and prestige” (Gupta & Kapoor, 1991). The role and status of English in India is crucial as evidenced by its being a key subject in the curriculum; its use as a medium of instruction in schools and colleges as well as in competitive examinations and in procuring well-paid jobs in the commercial sector.

1.1.3 Amenable to Multi-pronged pedagogy

Since the need to learn English in India has expanded multifold and for various purposes over a period of time, teaching methods have been gradually evolved and employed to teach it in a more meaningful way to make it tangible enough to fulfill different people’s aspirations and needed language skills to look smart and learned. Thus, with changing form and status of English, many methods, approaches and strategies have been adopted to teach languages, such as bilingual method; native language method; programmed instructional method; constructivist model of instruction; direct method, etc; and under the impact of modern technology, coupled with rapid strides in the development of modern instructional strategies, a strong urge to refine and improve the teaching – learning process have been witnessed
to realize the fullest potentialities of every individual learner, individual differences in their abilities and capacities. Notably, the conventional method of group-based teaching does not care of individual differences, consequently slow learners are subject to a lot of frustration; and to encounter such problems, technology based instructional strategies seem to have stood in good stead to invoke and involve innovative practices to refurbish the teaching-learning process in quite a big way causing a kind of revolution in pedagogy and pedagogical inputs to make it more tangible.

1.1.4 Role of Media and Evolving Learning Apps

According to Collins and Bielaczyc (2000), “Media resources, existing in various forms can be judiciously utilized in rendering lectures and instructional material within and outside of the classroom. They are very potent in engendering active interest and participation on the part of students. The media can also be employed in developing the material being taught and presenting facts and data in very exciting ways. This enables students to assimilate and to develop a flair for the knowledge of the material that is being taught. It is remarkable to note that this novel approach while already in place in very many settings, often replacing the more traditional approach of that has been criticized as being too teacher-centric, where information is pushed to the learner”. The introduction of various media sources in the tutoring process provides a means for the teacher to facilitate the transfer of seemingly complex detail, expert knowledge and information in a manner that can be easily understood and appreciated even by novice learners. Li, Helou & Gillet (2012) pointed out that “with the tremendous pace of technological advancements and the development of more sophisticated media devices, a vast array of options are now more readily available to teachers and students. The explosive proliferation of handy and very portable electronic devices has also contributed to the ease and growing popularity of the media as a veritable teaching tool in and outside of the classroom setting. Additionally, the development and widespread popularity of social media and evolving learning Apps has significantly altered the way students prefer to learn and to share information”. Networking sites provide an avenue for information exchange and where information can be accessed and by students at any time of the day, from
any location, and as often as the students desire. Generally, the role of telecommunications and the internet in promoting quick transfer and dissemination of information has altogether reshaped the landscape of the learning endeavor and appears to have significantly shrunk the importance of the print media.

1.1.5 Multimedia Intervention Explore New Highway

Van Merrienboer (1997), Mayer (1999), and Sweller (1999) reported that “Technology-based instructional strategies, incorporating computer-led learning materials; especially multimedia is widely recognized to hold great potentials for improving the way people learn.” “Multimedia is a melody sung in harmony with multi-channel and multi-modal bits of knowledge and creation that brings together text, graphics, animation, video, still images, audio and motion video. Its ultimate role is to inform, educate and/or entertain. It provides a technology - based constructivist learning environment where students solve a problem by self - explorations, collaboration and active participation” (Neo and Neo, 2009). “Simulations, models and media - rich study materials like still and animated graphics, video and audio integrated in a structured manner facilitate the learning of new knowledge much more effectively. The interactive nature of multimedia provides room to enhance traditional ‘chalk-and-talk’ method of teaching with more flexibility to learners to adapt to individual learning strategy” (Neo, 2007). Because multimedia software and hardware furnishes students with these experiences; it has the potential to be applied in a variety of educational settings (Hooper, 1986), along new highways to teach and learn more meaningfully.

1.2 MULTIMEDIA INSTRUCTIONAL STRATEGY

1.2.1 Components of Instructional Strategy

Instructional strategy means organization of suitable instructional components with functions specified in relation to specific goals to be achieved, in an integrated fashion, in four phases:
Instructional strategy is a method of teaching (in the classroom, online, or in some other medium) to help activate students' curiosity about a class topic, to engage students in learning, to probe critical thinking skills, to keep them on task, to engender sustained and useful classroom interaction, and, in general, to enable and enhance their learning of the course content. The goal of an instructional strategy is to enable learning; to motivate learners; to engage them in learning; and to help them become independent strategic learners. An instructional strategy can:

**Figure 1.1: For-fold phases of Instructional Strategy**

1.2.2 Multimedia Strategy integrates learning as an Educational Whole

Multimedia becoming popular in the ever changing world of computers over the years, seems to have become much sought after and talked about, not only in the world of information technology, but also in various functional fields like advertisement, corporate world, cinema, fashion designing and in education, in
particular. Multimedia includes a combination of text, audio, still images, animation, video or interactivity content forms. Unlike the conventional approach to learning with only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material, it merges multiple levels of learning into an educational whole that allows diversity in curricula presentation in multiple ways, depending upon one’s perspectives.

With multimedia instructional strategies rapidly growing due also perhaps to computing costs declining; multimedia learning environments are destined to make substantial inroads into schools at all levels. “Multimedia instructional material allows the learner to actually see, hear and use the content learned” (Roden, 1991). It offers a transparent and repeatable way to study specific aspects of the teaching and learning processes. Assumable, interactive nature of multimedia environments, along with video and audio presentations, engages students’ interest and intellect, particularly those grown up with television and video games environments.

1.2.3 Multimedia in Historical Perspective

The term "multimedia", coined by Bob Goldstein (later 'Bobb Goldsteinn') to promote the July 1966 opening of his "Light Works at L'Oursin" show at Southampton, Long Island, was borrowed on August 10, 1966 by Richard Albarino of Variety reporting: “Brainchild of song scribe-comic Bob (‘Washington Square’) Goldstein, the ‘Light works’ was the latest multi-media music-cum-visuals to debut as discothèque fare”. Two years later, in 1968, the term “multimedia” was re-appropriated to describe the work of a political consultant, David Sawyer, the husband of Iris Sawyer—one of Goldstein’s producers at L’Oursin. “None the less, one of the earliest and best-known examples of multimedia was the video game Pong, developed by Nolan Bushnell (the founder of the new company, Atari) in 1972 that consisted of two simple paddles batting a square "ball" back and forth across the screen, like tennis. It started as an arcade game, and eventually ended up in many homes” (Vaughan, 2001). Early research also developed a software system called ‘Hypertext’, that allowed sections of texts held on computer to be linked extremely to other text on an associated topic. Hypertext, developed into early form of Hypermedia
in the late 1980s by the Media lab at Massachusetts Institute of technology (MIT), partly funded by Apple Computers, led to the development of HyperCard and the beginning of Multimedia. This software system allowed users of early Macintosh computers to produce a set or stack of computer-based index cards containing text and black and white images that could be linked to each other. This led to innovative uses of Hyper Card in producing a wide range of teaching resources or ways of viewing the world. Instead of having separate texts, images and sound, these could now be combined into one presentation medium, known as Hypermedia.

In 1976, another revolution ventured forth with friends Steve Jobs and Steve Wozniak who founded a start-up company called Apple Computer. A year later they unveiled the Apple II, the first computer to use colour graphics (Coorrough, 2001). “The computer revolution moved quickly: 1981 saw IBM's first PC, and in 1984 Apple released the Macintosh, the first computer system to use a graphical user interface (GUI). The Macintosh also bore the first mouse, which would forever change the way people interact with computers” (Shuman, 2002). In 1985, Microsoft released the first version of its Windows operating system. That same year, Commodore released the Amiga, a machine which many experts consider to be the first multimedia computer due to its advanced graphics processing power and innovative user interface. The Amiga did not fare well over the years, though, and Windows has become the standard for desktop computing.

Both Windows and the Macintosh operating systems paved the way for lightning-fast developments in multimedia that were to come. Since both Windows and Mac OS handle graphics and sound – something that was previously handled by individual software applications – developers are able to create programs that use multimedia to a more powerful effect. One company that played a key role in multimedia from its very initiation is Macromedia (formerly called Macromind). “In 1988, Macromedia released its landmark Director program, which allowed everyday computer users to create stunning, interactive multimedia presentations. Today, Macromedia Flash drives most of the animation and multimedia you see on the Internet, while Director is still used to craft high-end interactive productions. Each new development of each passing year is absorbed into next year's technology,
making the multimedia experience, better, faster and more interesting” (Solomon, 2004).

The BBC TV programme produced by Douglas Adams in 1995, Hyper-land, dealt well with the history of Hypermedia and is still an essential viewing for everyone developing multimedia today. Over the last few years, colour, better quality images and videos, animation have combined to produce what is now known as Multimedia. The beginning of use of multimedia in British schools can be traced back to the seminal Horizon project suggested by Graham Bevis and run by Mortyn Wilson in early 1990s. The most common form of multimedia today is CD-ROM, though Internet is fast becoming the most common multimedia format. The initials CD-ROM stands for the Compact disk read only memory. It was introduced as an ‘edutainment’ medium in 1994 by Microsoft and also with it Internet became interactive; shopping, banking, live concerts, radio broadcasting, spamming started. In 1995, Private ISP became big business Netscape going public. A CD-ROM can store large amounts of information in the form of text, pictures, graphics, sound, animated and video images in high quality digital format; while new forms of media storage such as DVD promise more capacity.

1.2.4 Digital Revolution

Digital Revolution is the shift from mechanical and analogue electronic technology to digital electronics which began anywhere from the late 1950s to the late 1970s with the adoption and proliferation of digital computers and digital record keeping that continues to the present day. Implicitly, the term also refers to the sweeping changes brought about by digital computing and communication technology during (and after) the latter half of the 20th century.
Table 1.1  
A Brief History of the Digital Revolution

<table>
<thead>
<tr>
<th>Year</th>
<th>Description of Digital Revolution</th>
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<tbody>
<tr>
<td>1947</td>
<td>The transistor was invented: data transfer devices that underpin digital tech</td>
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<tr>
<td>1950</td>
<td>An early pager was launched for physicians in New York City</td>
</tr>
<tr>
<td>1951</td>
<td>First commercially available computer released, for simple arithmetic and data handling</td>
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<tr>
<td>1969</td>
<td>APRANET network established: an early precursor to the internet</td>
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<tr>
<td>1971</td>
<td>First email was sent, reading something along the lines of: QWERTYUIOP</td>
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<tr>
<td>1972</td>
<td>Games console released, along with precursor to the iconic game Pong</td>
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<tr>
<td>1981</td>
<td>The laptop computer was born, sporting a screen little bigger than a matchbox</td>
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<tr>
<td>1982</td>
<td>ABBA became the first artists to have an album produced on CD</td>
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<tr>
<td>1984</td>
<td>First mobile phone launched, costing ~$4,000. A 10-hour charge provides 30 minutes use</td>
</tr>
<tr>
<td>1988</td>
<td>A fully digital camera was released, offering storage for up to 10 photos</td>
</tr>
<tr>
<td>1989</td>
<td>Tim Berners Lee invented the World Wide Web whilst working at CERN</td>
</tr>
<tr>
<td>1990</td>
<td>0.05% of people were using the internet</td>
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<tr>
<td>1991</td>
<td>CERN’s web browser software was released for public use</td>
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<tr>
<td>1992</td>
<td>Commercial dial up internet became available, cue screeching noises</td>
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<tr>
<td>1994</td>
<td>Smartphone was released, supporting calls, email and fax</td>
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<tr>
<td>1997</td>
<td>Launch of first modern social media site – Six Degrees</td>
</tr>
<tr>
<td>1999</td>
<td>Bluetooth technology was introduced to the world</td>
</tr>
<tr>
<td>2000</td>
<td>Broadband was introduced to the UK, providing much faster internet access</td>
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<tr>
<td>2003</td>
<td>Skype launched instantly connecting people around the world via video</td>
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<tr>
<td>2004</td>
<td>Facebook was born, and a new age of social media began</td>
</tr>
<tr>
<td>2005</td>
<td>YouTube launched with a video of the site’s co-founder at the zoo: a clip that had garnered almost 40 million views</td>
</tr>
<tr>
<td>2007</td>
<td>The iPhone was launched and smartphones usage exploded</td>
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<tr>
<td>2009</td>
<td>Commercial introduction of 3D printers</td>
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<tr>
<td>2010</td>
<td>Apple’s launch of the iPad propelled tablet computers into the mainstream</td>
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<tr>
<td>2011</td>
<td>Bitcoin became the first widely accepted fully digital currency</td>
</tr>
<tr>
<td>2012</td>
<td>Google began testing driverless cars</td>
</tr>
<tr>
<td>2016</td>
<td>The virtual reality headset, Oculus Rift, became available to consumers</td>
</tr>
<tr>
<td>Present Day</td>
<td>We’re all living in the information age. From healthcare to education, technology has transformed our lives, and the digital revolution shows no sign of slowing down</td>
</tr>
</tbody>
</table>
1.3 FACETS OF MULTIMEDIA LEARNING ENVIRONS

Multimedia learning environment involves a number of elements to enable learning to take place. Hardware and software being only parts of the requirement, multimedia learning integrates five types of media to provide flexibility in exploring and expressing creativity of a student and to exchanging ideas.

1.3.1 TEXT:

Text being one of the basic elements of multimedia instruction, it is indeed the most efficient communication medium, essential for presentation of abstract ideas and theories. A well-crafted text makes communication powerfully engaging, pro-active and provocative. Being the keystone, its focus is on tying all other media elements together. With multimedia technology, sound and pictures complement textual information to enhance the user's understanding and retention of the presented information and any confusion, it being brief, to the point and magnetic to attract user’s attention.

1.3.2 SOUND:

Sound being the most sensuous element of multimedia in a learning environment, text, images, animation etc. presented via the use of sound prove to be expertly in tune with the process of learning. Sound synchronized to screen display, delivers information in an easily understood format and in a variety of ways (Wright, 1993). Sound enables teachers to present lot of information at once to help users receive and retain the multimedia message in a quicker and better way. Sound, used creatively, becomes a stimulus to imagination, breaking the monotony of the classroom while enhancing the learning outcomes.

1.3.3 VIDEO:

Philips (1997) defined video as “the display of recorded events on a television type screen. The embedding of video in multimedia applications is an immediate and powerful way to convey information. Video can stimulate interest if it is relevant to the rest of the information on the page. It motivates students in ways that are often superior to a teacher narrating them or a text describing them”. Gloughlin (1998) pointed out that “video can be used when introducing a new theme to motivate and contextualize learning; video can be used to give examples of phenomena or issues
referred to in the text. For example, while students are reading notes about a particular issue, a video showing a short clip emphasizing the key points, can be inserted. Videos can also be used after a topic has been addressed in a class to aid students in applying the knowledge they acquired”.

1.3.4 GRAPHICS:

Graphics, the most predominant component of multimedia represent the most creative possibilities for a learning session, in the form of photographs, drawings, graphs from a spreadsheet, pictures from CD-ROM, or something pulled from the Internet. The capacity of recognition memory for pictures is almost limitless because images make use of a massive range of cortical skills: color, form, line, dimension, texture, visual rhythm and especially, imagination. “Students who do not understand any fact, concept or information delivered by text often understand it if it is presented or augmented by various visuals” (Merrill, 1983). Jones (1995), Park & Hannafin (1993) stated that “learning tends to be the strongest when pictures supply redundant information, supplement information that is unclear or incomplete, or supply additional coding stimuli”.

1.3.5 ANIMATION:

Animation, another powerful element of multimedia application, makes a static presentation lively. “It consists of still images displayed one after the other to create a moving effect; to present information slowly to students so that they have time to assimilate it in smaller chunks; and to illustrate points, teach facts or concepts, motivate students, demonstrate procedures and emphasize particular details or aspects of complex phenomena” (Sponder & Hilgenfeld, 1994). “When the animation is congruent to the learning task, it can offer instructional benefits to the learners” (Rieber, 1990).

1.4 MULTIMEDIA GADGETS GALORE

We know that one learns best by doing. When we are absorbed in constructing knowledge from a combination of different gadgets like the Digital Camera, Camcorder, Scanner, Microphone, Interactive white board or the Multimedia Projector we more likely to gain a clearer understanding of concepts and how these
different tools are used to integrate various learning materials sequentially or non-sequentially. These gadgets can be used in the following way:

<table>
<thead>
<tr>
<th>GADGETS</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td><strong>Digital Camera</strong></td>
<td>A Digital Camera is an electronic device that converts images and videos digitally and stores them for later reproduction. Most cameras that are used today are digital and are incorporated into many devices like mobile phones, tablets, laptops, vehicles and many other. Unlike film cameras, digital cameras can display images on a screen immediately after being recorded, and store and delete images from memory. The stored images can be uploaded to a computer immediately for printing or also stored in an external disc. Many digital cameras can also record moving videos with sound. Some digital cameras can crop and edit pictures.</td>
</tr>
<tr>
<td><img src="image1.png" alt="Digital Camera" /></td>
<td></td>
</tr>
<tr>
<td><strong>Camcorder</strong></td>
<td>A camcorder or a video camera recorder is a transportable electronic recording device which is used in recording live-motion video and audio for later playback. Earlier the Camcorder used to be bulky and heavy using magnetic tape for the recording but now the digital video camcorders are smaller and lighter and have better picture quality and longer battery life. The important aspect of the recorded digital video is that it can be stored and transferred to a computer where you can edit with ease which allows to change the order of shots and undo edits. This means that we can easily modify, draft and re-draft the recorded films and use it creatively to prepare Multimedia Learning Material.</td>
</tr>
<tr>
<td><img src="image2.png" alt="Camcorder" /></td>
<td></td>
</tr>
<tr>
<td><strong>Scanner</strong></td>
<td>A scanner is an input device that converts an image such as a photograph, textual document into an electronic digital form by a process called scanning. Most of the Scanners are flatbed and have a cover that can be lifted so that magazine, photographs and bulky books can be scanned. They work in combination of computer software programs which help in the creation of an electronic version of the scanned document, allows you to view it and edit it on a computer. Thus we can use and publish the stored image as it is or by modifying it.</td>
</tr>
<tr>
<td><img src="image3.png" alt="Scanner" /></td>
<td></td>
</tr>
</tbody>
</table>
Large classrooms are portrayed by unending clamor, so educators can depend on these remote computerized microphones. The role of microphone is to transmit the voice to the loudspeakers so that every students can hear their teachers clearly. This is very helpful to teachers in explaining points to the students without strain. As these microphones are less expensive, school can manage to buy it for every classroom. Even students can use these microphones for asking questions in the class.

An interactive whiteboard (IWB) is a big interactive display connected with computer, projecting the computer’s desktop onto the board’s surface controlled by users using a pen, stylus, finger, or any other similar device. The board is mounted to a wall or floor stand, used in a variety of settings, including classrooms at all levels of education, work groups, in corporate board rooms also in training rooms for professional sports coaching, in broadcasting studios, and others.

A Multimedia Projector or LCD Projector is a kind of video projector that displays images, video or computer data on a screen or any other flat surface. It is equivalent of the overhead and slide projector. It is an effective way to present visual media through projection that educate, entertain and communicate people on large scale. The use of Multimedia Projector can give the essence of the presentation in bullet points, It can bring the audio and visual inputs to the classroom, It can be projected on the screen allowing everyone to watch the presentation, It can be made interesting by using movies and such clippings and inputs planned elsewhere in the world can be brought into our own classrooms.

1.5 THEORETICAL FOUNDATIONS OF MULTIMEDIA LEARNING
1.5.1 Media incidental to learning

Surveying the history of educational technology, it seems that different media are incidental to the learning process; and implementation of any new technology into education typically begins with incredible rhetoric and expectations. Technology developers focus on the ground-breaking abilities of new technology to promote
interest in its application to the educational domain. Thomas Edison’s appraisal of the
motion picture is an oft-cited example of the excitement that accompanies innovation.
Promoting his invention, he claimed “that the motion picture is destined to
revolutionize our educational system and that in a few years it will supplant largely, if
not entirely, the use of textbooks” (Edison 1922, as cited in Cuban 1986, p.9).
Researchers, adopting the perspective that “educational efficiency could be measured
and optimized, began to investigate the intrinsic advantages of one medium over
another (Russell, 1985); and the medium itself seemed the obvious variable for
investigation, rather than the experience of the learner, the medium is the message,
focusing attention on new and exciting inventions, fuelling the technology-centered
approach” (McLuhan, 1964).

1.5.2 Cognitive Theory of Multimedia Learning

Some areas of cognitive science, memory in particular, have significant
implications for multimedia learning. The study of memory bears directly on theories
of learning with a long and important history in psychological research. “Significant
developments in the 1960’s introduced the ideas of short-term and long-term
memory” (Baddeley, 1997).

Cognitive load theory (Sweller, 1988; Chandler & Sweller, 1991; Sweller,
Van Merrienboer & Paas, 1998), “formulated in a way to guide decisions about the
design of multimedia instruction, most frequently, implies that guidance is to reduce
the information presented, wherever possible, in the form of cutting out extra words,
pictures, or sounds; moving text closer to the picture to which it applies; presenting
verbal information as narration rather than on-screen text; or eliminating redundant
sources of information. New objectives of theorists are to accurately measure
cognitive load; to focus on motivational factors influencing learning; and to manage
intrinsic cognitive load in complex subject areas” (Van Merrienboer & Sweller,
2005). Paivio’s (1986, 1991) dual coding theory, pertinent to multimedia learning,
suggests that the human mind has two separate processing channels, one for verbal
information and the other for non-verbal information.

Mayer (2001), propounding the cognitive theory of multimedia learning
(CTML), combined cognitive load and dual coding theories keeping in view learners
as active participants in the learning process. Like cognitive load theory, cognitive theory assumes that processing in each channel is restricted by inherent biological constraints; and like dual coding theory, it asserts that formation of relational links between verbal and non-verbal systems are essential for deep understanding. CTML is based on the philosophy that "the design of e-learning courses should be based on a cognitive theory of how people learn and on scientifically valid research studies" (Mayer 2005). That is, e-learning courses should be constructed in the light of how mind learns supported by experimental evidence concerning e-learning features that promote best learning, as an outcome of extensive research involving testing learning theory while focusing on authentic learning situations, called “basic research on applied problems”. This theory contends that words and pictures presented to the learner via a multimedia presentation are processed along two separate, non-conflicting channels and presented in figure 1.3.

![Figure 1.3: Cognitive Theory of Multimedia Learning](image)

“Words and images enter the sensory memory through the ears and eyes. They are actively selected by the learner from the sensory memory and enter the working memory where they are organized into a verbal model and a pictorial model. Each channel can process only a few ‘chunks’ of information at a given time in working memory. The two models are then integrated with prior knowledge retrieved from long-term memory. This integration occurs within the working memory following each segmented portion of instruction offered to the learner in the multimedia presentation” (Mayer, 2005).
This theory acknowledges that humans are actively engaged in cognitive processing in order to make sense of the stimuli presented. The concept of active processing is reflected in selecting, organizing and integrating information.

1.5.3 Multimedia in Language Acquisition

1.5.3.1 Role of Multimedia in Language Learning

Language is the key which opens all doors to the process of human being. In every walk of life, man’s utmost need is language. No one can do without an adequate mastery over language oral as well as written, to study any subject academic, technical, professional or vocational. The entire progress of a nation indeed depends upon achievement in language, as an adequate and effective instrument of communication.

Underwood (1990) explained the effectiveness of multimedia in language acquisition, claiming that “since multimedia users are able to process combined media (text, sound and visual) simultaneously, proponents of instructional multimedia argue that increase of sensorial input available via technology, coupled with the potential for active engagement in, and interaction with this input, predicts that content (in this case the target language) will be more readily integrated into learner’s developmental system and, in turn, recalled more thoroughly”. Mayer (1997) indicated that “the presence of both pictorial and verbal cues can facilitate learning, claiming also that if information is cognitively processed through visual or verbal channels, a dual processing strategy assumes individuals’ developmental pictorial representations of graphic input and mental verbal representations of linguistic input”.

1.5.3.2 Teaching English, the Multimedia way

Now-a-days, multimedia surrounds us as an indispensible element, providing interesting, entertaining and joyful new approaches to language teaching, seemingly appropriate for teachers to adopt and integrate in their lesson and assessment planning. Implementation of multimedia allows teachers to take full advantage of technology to teach English as a second language to non-native speaking students. Multimedia teaching in comparison to the traditional teaching model has plenty of advantages (Pun, 2013).
Multimedia is the factor influencing areas such as: student's interest stimulation, efficiency improvement in the class, and satisfactory effects on achievement. As a result, English classes are more interesting, vivid, and lively (Dong & Li, 2011). “By the means of pictures, sound and animation, multimedia teaching provides a large number of implicit information. In traditional learning students received information by listening in a rather passive position, performing especially designed mechanical and repeated exercises, not conducive to cultivate student's learning interest. Multimedia, on the other hand, makes teaching, lively and realistic considerably improving the teaching effect as well as discovering and widening student's knowledge about the Culture of English, another advantage of multimedia in the classroom” (Pun, 2013). Implementation of the multimedia in teaching offers students more possibilities than in the case of traditional teaching where sources of receiving knowledge are limited; textbooks cannot compete with real-life language materials which attract student's attention. Multimedia provides abundant information; students gain the knowledge unconsciously about linguistic factors, such as the customs and cultural background of the target language. In this way students improve their listening skills and receive information-sharing opportunity where learners interact willingly, helping each other to acquire language more quickly and effectively (ibid).

In teaching English, and for that matter any language,, there are four fundamental skill areas which students need to master, namely: listening, speaking, reading, and writing. Teaching with multimedia creates harmonious environment among these four fields, which is another merit of multimedia teaching. It presents a good learning scenario; maximizes practice in four basic skills; and motivates students to take part in class activities.

Using multimedia activates students’ thinking patterns and motivates their emotions; the classes are no longer monotonous but enjoyable. Using PowerPoint stimulates thinking and comprehension of the target language. Implementation of technological interactivity creates perfect atmosphere, encouraging the students taking part in group discussions and debates; thus, providing much more opportunities to develop communication skills among students as well as among teachers. In that
multimedia technology raises positive attitude among the teaching-learning community, influencing their communication skills in learning the language in a much better way.

1.6 COGNITIVE STYLE

1.6.1 Three-dimensional Human Behaviour

Human behavior has generally been considered along three broad dimensions: cognition, affection and conation. The process of teaching and learning is primarily addressed to cognition, the way teachers and students perceive and treat the vast volumes of information as a means to benefit from it and better their lifestyle. Learners vary not only in what they learn but also in how they learn. Each child has one’s own way of processing information; and this unique way of processing information in the course of learning is broadly referred to as cognitive style, while the over-all perception to use information to human purpose is primarily known as cognition.

1.6.1.1 Cognition

The word “cognition” comes from the Latin word Cognocere which means “to apprehend”. According to Hilgard, E.R. and Bower, G.H. (1986) cognition is a generic term used to designate all process involved in knowing. “Cognition refers to all the processes by which the sensory input is transformed, reduced, elaborated, stored, recovered and used” (Neisser, U., 1967). Cognition is involved in everything a human being might possibly do in that every psychological phenomenon is a cognitive one. Cognition is considered “as an umbrella term for the processes of perception, discovery, recovery, recognition, imagining, judging, memorizing, learning and thinking through which the individual obtains knowledge and conceptual understanding or explanation” (Page and Thomas, International Dictionary of Education, 1978).

“Human cognition is an active process and cognitive psychology has evolved over the years to include perception, memory, attention, thinking, reasoning, imagery, language functions, problem solving, and all the mental processes that can be thought
of as essential forms of information processing and mind’s functioning” (Colman, 1994).

1.6.1.2 Styles: Definition and Nature

The term ‘style’ has been imbued with different meanings, but its core definition involves “habitual patterns or preferred ways of doing something (thinking, learning, teaching) that are consistent over long periods of time and across many areas of activity, they remain virtually the same” (Kazdin, 2000 in Encyclopedia of Psychology).

Styles have provided, and continue to provide, a much-needed interface for research on cognition and personality. Being easy to describe and quantify, they have lent themselves to operationalization and direct empirical tests; to predict performance over and above individual differences in abilities; and are more flexible and modifiable than abilities to provide information about the ways individuals interact with and adapt to their environment.

Views that “Cognition is the process or set of activities of attending to a new stimulus or condition, organizing the same, analyzing, understanding, and integrating this into earlier store of knowledge or sense. Thus, sensing, attending, perceiving, comprehending, understanding and remembering are perhaps the various stages in the process of cognition” (Parameswaran, 2003). While “style concerns with the way people cognize. People perceive, cognize and acquire knowledge in different ways. Style is also involved in the process of interpretation, organization and conceptualization of knowledge gained through perceptual process. Since the approach encompasses both his perceptual and intellectual activities, it is called his ‘Cognitive Style’ ” (ibid).

Cognitive styles can be defined in general terms as consistent individual differences in the ways people experience, perceive, organize, recall and process information (Goldstein & Blackman, 1978). “Cognitive styles can be most directly defined as individual variation in modes of perceiving, remembering, and thinking, or as distinctive ways of apprehending, storing, transforming, and utilizing information” (Kogan, 1970). Styles are “self-consistent mode’ of functioning which individuals show in their perceptual and intellectual activities, and an expression of psychological
differentiation within characteristic modes of information processing” (Witkin & Goodenough, 1981). “An individual's habitual way of responding to and using stimuli in a learning environment” (Claxton and Ralston, 1978). “It is a person's characteristic style of acquiring and using information” (Guilford, 1980). It is the way individuals organize information and experiences (Laschinger and Boss, 1984). “Cognitive style is characterized by a consistent pattern of behavior within a range of individual variability” (McFadden, 1986 and Cornet, 1983). Cognitive styles involves a relatively fixed aspect of learning performance that influences individuals’ general achievement in learning situations (Riding and Rayner, 1988). In that cognitive style is an independent construct or psychological notion, not related to intelligence, personality and gender. Cognitive style, thus refers to stable patterns of individual responsiveness, pervading areas of human functioning such as perception and cognition.

Defined as modes of information processing, cognitive styles are not simply habits in the technical sense of learning theory, for they are not directly responsive to the principles of acquisition and extinction. They develop slowly and do not appear to be easily modified by specific training. Research reveals that Cognitive Styles exhibit stability and persuasiveness across diverse spheres of behaviour that, though entail generalized habits of information processing, they are intimately interwoven with affective, temperamental and motivational structures as a part of one’s total personality, a manifestation of one’s core personality structures in cognition that are generally known as Cognitive Style.

1.6.2 Characteristics of Cognitive Styles

The essential characteristics of cognitive styles, in general, as given by Witkin (1976), are concerned with the form rather than content of cognitive delivery, as evidenced below:

- These refer to individual differences on the way how to perceive, think, solve problems, learn and relate to others.

- They are pervasive and holistic dimensions which deal with not only cognition attributes, but non cognitive ones as well, such as personality, personal beliefs, and sentiments.
They are stable over time, it is not that they are unchangeable; some may be rather easily altered. Thus, stability makes stylistic dimensions particularly useful in long range of time.

With regard to value judgment, cognitive styles are bipolar and range from one extreme to the opposite extreme where each end of the dimension has different implications for cognitive functioning. Each pole thus has adaptive value under specified circumstances and may be judged positively in relation to the circumstances.

Unlike intelligence tests which report the extent to which a subject is deficient in ability, cognitive styles are reported in terms of the degree to which the learner possesses certain perceptual strengths.

1.6.3 Types of Cognitive Styles
1.6.3.1 Four-fold Cognitive Styles

Different theories of learning propound different types of cognitive styles. Riding and Cheema (1991) describe four distinct cognitive styles: “wholists; analytics; verbalizers; and imagers. Individuals may have a single cognitive style, or, more commonly, multiple styles. A comprehensive analysis of various labels, descriptors, classifications and methods of assessment by Riding and Cheema led to the formation of two principal cognitive style groups: the wholists-analytic (WA); and the verbal-imagery (VI). The WA continuum represents the manner in which an individual processes information, either in whole or in parts, whereas the VI represents individuals who are inclined to represent information during thinking verbally or in mental images.” The two dimensions are independent of each other in that the position of individuals on the WA dimension does not affect their position on the VI dimension. Individuals can have a single cognitive style or be bimodal, which is how the majority of people are. Bimodal grounds are: wholist/verbaliser (WV), wholist/imager (WI), analytic/verbalizer (AV) and analytic/imager (AI).

1.6.3.2 Field Dependent/Independent Cognitive Styles

A number of cognitive styles have been identified and studied over the years. Field independence versus field dependence is probably the most well known style. It
refers to a tendency to approach the environment in an analytical, as opposed to global, fashion. At a perceptual level, field independent personalities are able to distinguish figures as discrete from their backgrounds, compared to field dependent individuals who experience events in an undifferentiated way. In addition, “field dependent individuals have a greater social orientation relative to field independent personalities. Studies have identified a number connection between this cognitive style and learning” (Messick, 1978). For example, field independent individuals are likely to learn more effectively under conditions of intrinsic motivation (e.g., self-study) and are influenced less by social reinforcement.

Cognitive Styles are important to be considered as input variables that might moderate the operation and effectiveness of educational/training programmes or interact with programmes or components to produce differential results. Each of an individual cognitive dimension has been found to correlate with certain intellectual tasks and the ability to learn and perform in school. Of the many listed cognitive styles identified over the years, a few prominent ones used to prepare cognitive profiles of individuals are field dependence/independence (more recently termed as analytical-global), reflective versus impulsive, leveling versus sharpening, tolerance versus intolerance, focus non-focus, broad-narrow and fixity-mobility. “Of all cognitive styles, field-dependence/independence dimension is the most widely known, the most extensively researched, and the one for which the highest reliability and validity scores have been established” (Kogan, 1971; Witkin et al., 1977).

Field dependence-independence refers to the degree “to which the organization of the prevailing field dominates perception of any of its parts” (Witkin et al., 1971). It is an articulation of an individual’s cognitive psychological structure to isolate contextual information (Witkin & Goodenough, 1981). It is defined as “the degree to which a learner’s perception or comprehension of information is affected by the surrounding perceptual or contextual field” (Jonassen & Grabowski, 1993). It is: “… a consistent mode of approaching the environment in analytical, as opposed to global, terms. It denotes a tendency to articulate figures as discrete from their backgrounds and a facility in differentiating objects from embedding contexts, as
opposed to a countertendency to experience events globally in an undifferentiated fashion.” (Messick, 1976, p.14)

The extent of field dependence or field independence can also be represented as a continuum, with field independent, at one end, and field dependent, at the other. The centre of the continuum is termed as “field mixed” or “field neutral”, who do not have clear orientation (Liu & Reed, 1994). “Because at one extreme of the performance range perception is dictated by the prevailing field, the mode of perception is designated ‘field dependent’. At the other extreme, when the person experiences items as more or less independent from the surrounding field, the designation “field independent” is used (Witkin et al., 1977, p. 7).

The field dependence-independence construct has been continuously amended and extended since it was first defined (Witkin & Goodenough, 1981). The most prominent studies on the nature and origin of individual differences in field dependency were undertaken in the 1940s by (Witkin and his associates). Witkin’s analysis on the psychology of cognition was precisely influenced by Gestalt Psychology, which forced him to consider individual consistencies as the matter of perceiving and thinking a critical psychological phenomenon and also highlighted the role of needs as well as values in perception (Messick, 1986). Witkin believed that “the construct of field dependence-independence has a frequently changing structure, by assimilating findings of new data and insights from different areas of psychological study and pinpointing stylistic variations among people in perceptual and cognitive function. Witkin has repeatedly tried to define and broaden the conceptual framework” (Goodenough, 1986; Witkin & Goodenough, 1981).

1.6.3.3 Field Dependent-Independent Pyramid

Figure 1.4 indicates the pyramidal structure of the expansion of the field dependence-independence construct, with general differentiation construct on the top of the structure and the specific perception of upright located at the base.
1.6.3.3.1 Perception of Upright

Using a Rod-Frame Test (RFT), a Body Adjustment Test (BAT), and a Rotating Room Test (RRT), Witkin with his associates in 1940 undertook studies to measure subject’s deviations in perception of the upright as inclined by a surrounding field (Witkin & Goodenough, 1981), asking the question, “how important are visual cues in perceiving the vertical direction of space” (Goodenough, 1986). The path of the perceived upright mainly determined by a set of information: firstly, the field around us, which is generally perceived from the nearby visual environment, and secondly, the direction of gravity, identified through sensations from the body, Witkin and his associates (Witkin & Goodenough, 1981; Witkin et al., 1977) suggested that “visual referents and body sensations, both offered an accurate sense of the location of the upright, whether these two types of determinants were used particularly or combined with each other as the referents”.

(i) In Rod-Frame Test (RFT), the subjects were enforced to sit in a dark room. All subjects could see was a luminous square frame, within which there was a luminous rod, rotating in the centre of the frame, which could be shifted to the left or right. With the frame leaning, subjects were asked to adjust the rod to the upright in accordance with their perception. It was found that individuals were totally different in performing this task.

(ii) In Body Adjustment Test (BAT), another test developed to determine the role of visual and bodily standards in perception of the upright, subjects were
seated in a tilted room, which could be moved clockwise or counterclockwise. The chair used in this tilted room could also be tilted clockwise or counter-clockwise, but independently of the room. Then the subjects were asked to adjust the chair from an initially tilted position to the upright. With surrounding room in a tilted position, some subjects aligned themselves with the tilted room and proclaimed that they were in a perfect upright position. “Such subjects were using the external visual field as the primary referent for perception of the upright, essentially to the exclusion of sensations from the body” (Witkin and Goodenough, 1981, p. 9). The subjects who considered body as primary referent for perception of the upright were able to adjust their body to the exact gravitational upright (ibid). “There was a significant correlation between the Rod Frame Test (RFT) and Body Adjustment Test (BAT)” (Cross, 1976) and that “people who ignored the tilt of the room also ignored the slant of the frame; these people were described as field independents. Field dependents, on the other hand, relied consistently on the surroundings, the room or the frame, for their orientation”.

(iii) In Rotating Room Test (RRT), the external field offered accurate cues for subjects to recognize the upright. When the direction of force on the body was altered, the visual referents remained upright. The room and the subject were revolved in a circle. The subject was seated in a tilted chair within a small upright room driven about a circular track. The subject was enforced to adjust the body or the room in which he or she was seated to the upright position. If the subject assumed the postural sensations to be framed by the gravity on the body, the subject would tilt the body and the room to align with that force. But, if the subject depended more on the surrounding visual field, he or she would tend to recognize body and room as upright in his or her initial positions. “It was mentioned that the RFT and BAT depended on the internal cues of the body and lead to a more exact perception of upright. However, individuals who were confined to the external field were successful in the RRT. Individuals were consistent across all these three tests; success on the BAT and RFT was inversely related to the RRT and vice versa, which
indicated that neither a field-dependent nor field-independent mode of functioning is uniformly good or bad in their consequences for perception of the upright in space” (Witkin & Goodenough, 1981).

1.6.3.3.2 Perception of Disembedding

(i) Embedded-Figure Test (EFT), it was found that “field independence in the perception of upright was associated with the success in locating embedded figures” (Witkin, 1950; Witkin et al., 1954). It led to a new perception of the field dependence construct and extended the scope of the analysis of perception. “Field dependence-independence had been redefined as a disembedding or perceptual-analytical ability in perceptual functioning” (Witkin et al., 1962). Though, the EFT did not involve either orientation toward the upright or the body position, it was quite similar to the RFT and BAT in which subjects needed to disembed or separate an item from surrounding fields. In EFT the subject was shown a simple geometric figure and the subjects had to extract that figure from within a more complex pattern in which it had been hidden or embedded. In order to disembed and find out the simpler shape, it was necessary to break up and identify different components of the complex context.

(ii) Witkin’s team developed the Group Embedded Figures Test (GEFT), in 1971. Administered to a group of subjects at once and scored according to correct responses made during a certain time period. It is “a commonly used test of field dependence and independence” (Oltman, Raskin, & Witkin, 1971); comprised of a test booklet consisting of 25 complex test figures. Subjects are asked to locate a simple figure within each complex figure and outline it. This instrument appears to have desirable measurement characteristics, providing “reliable and valid data to support most of the research efforts and reported outcomes related to field dependent and field independent cognitive styles” (Pithers, 2002; Thompson & Melancon, 1987).

Witkin & Goodenough (1981) found that “subjects who had difficulty in disembedding a simple figure from a complex design were the same who had difficulty in separating the body or rod from the room or frame in orientation tests and they were referred as field dependents. On the other hand, subjects who found it easy to overcome the influence of a complex design and locate the simple figure within it and thus impose structure on unstructured perceptual information were referred to as
field independent. Several subsequent studies indicated that these tests assess subjects’ ability to perform cognitive restructuring; and studies involving the EFT and GEFT revealed that the field dependent-independent construct had a more general application in social and learning contexts as opposed to spatial orientation contexts.”

1.6.3.3.3 Articulated versus Global Field Approach – “Further investigations on individual differences in disembedding ability broadened this research area. An articulated versus global dimension was explored, which represents a person’s capability to overcome an embedding context, emphasising on the relationship between disembedding ability in perception, intellectual functioning, and structuring ability” (www.academypublisher.com).

Research evidence suggests that “disembedding ability is related with the perceptual and intellectual domains with the ability to impose structure on an unstructured field; in that field dependents have difficulty in disembedding, perceptually as well as, in solving problems that require critical element for solution out of context and using it in a different context” (Witkin & Goodenough, 1981). These findings indicate that “individuals perform the same level of disembedding or articulated ability in perceptual and intellectual activities, which confirmed the central hypothesis of field dependent and field independent cognitive styles that individual differences in expressions of articulated functioning in one area are related to expressions in other areas” (Goodenough, 1976).

Later studies, focussing on the relation between disembedding and structuring ability, led to an understanding that “disembedding ability is associated with cognitive restructuring with a perspective that there is a more ‘active’ or more ‘passive’ action between field independents and field dependents when handling the unstructured context. With relatively articulated cognitive style, the individual is likely to see the parts of the field, different from the ground, analyze or synthesize details and parts of the figure, and then examine and organize the whole structure of the field in a new way. In contrast, with relatively global cognitive style, an individual’s pattern of recognition is governed by the organization of the field, and the individual experiences difficulty in identifying figures from the background due to a lack of restructuring ability (www.academypublisher.com).”
1.6.3.3.4 Psychological Differentiation – Witkin’s group placing the description of field dependence and independence in a broad theoretical framework of psychological differentiation in 1962, tried to reveal “individual differences in terms of autonomy versus reliance on external referents” (Davis & Cochran, 1990). Making articulated versus global field approach manifestation of the degree of differentiation, an essential feature of the structure of any system, in terms of complexity of the structure of a psychological system.

1.6.3.3.5 Educational Implications of the Theory of Psychological Differentiation

“The most obvious application for instruction and learning resulting from the theory of psychological differentiation is self-non-self-segregation, which has two sub-dimensions: autonomy of interpersonal relations and cognitive restructuring” (Jonassen & Grabowski, 1993). “With the development of the field dependent-independent concept, the self-non-self-segregation aspect of differentiation becomes centrally important to psychological differentiation. There are more definite and firmer boundaries between an inner core of attitudes, feelings, and needs identified as the self, and the outer world, particularly other people” (Witkin, Goodenough, & Oltman, 1979). The degree of self-non-self-segregation was thought to influence the degree that people rely on internal or external frames of reference in processing information (Witkin, 1978). The tendency to rely primarily on internal or external referents is very important and is likely to influence the development of a more impersonal or interpersonal orientation; and also to affect a person’s cognitive restructuring ability, whether the person will restructure a field on one’s own or follow the dominant information as given. The internal referent refers to self, while the external referent refers to outer world sources.

Witkinians hypothesized that “field dependents are assumed to have a less self-non-self-segregation, with greater connectedness between self and other people or external referents; less autonomy; and more global functioning both socially and intellectually; proposing that this lesser autonomy and greater connectedness with others is believed to promote the development of greater interpersonal competencies and social skills in relatively field dependent people. On the other hand, field independent people are assumed to have more self-non-self-segregation with a more
articulated body concept and a greater sense of personal identity. They also have
greater cognitive restructuring skills and greater autonomy from external sources of
information—especially from other people when performing intellectual activities or
interacting in a social situation. Theoretically, this degree of self-non-self-segregation
leads to a more impersonal orientation among field independents since they are able
to function with greater autonomy; they appear to have greater polarity between self
and others that impedes the development of interpersonal competencies” (Witkin et
al., 1979).

Witkin & Goodenough (1981) stated that “although, the field dependent-
independent construct has been described as a cognitive style, it is important to be
keep in mind that cognitive restructuring is defined as an ability dimension, which
holds implications for its relationship with measures of intelligence”. However, since
field dependent people are likely to have greater interpersonal competency but also
greater difficulty in cognitive restructuring, and field independent people are likely to
have lesser interpersonal competency and greater cognitive restructuring skills, it is
hard to conclude that there is an overall preference for field independence over field
dependence. To improve students’ academic achievement, instructional designers
should place no value judgments on field dependence or field independence, but
instead, explore the interaction between cognitive style, instructional strategies, and
tasks or situations.

1.6.3.4 Characteristics of Field Dependence-Independence

As one of many constructs included in the category of cognitive styles, field
dependence-independence shares several features with other cognitive styles: they are
process variables, pervasive dimensions of individual functioning, stable and
consistent over time as well as across domains, and bipolar and value-neutral (Witkin,
1978; Witkin & Goodenough, 1981). There are also characteristics that differentiate
field dependent people from field independent people. Although most people
demonstrate some traits of both styles, the following characteristics are meant to
describe extreme behaviours (Saracho, 1989). To design an effective instructional
process, it is beneficial for instructional designers to possess knowledge of these
characteristics. Reviewing the characteristics of field dependent and independent
learners from an educational perspective (Thompson & Thompson, 1987; and Witkin et al., 1977) summarized field dependent-independent characteristics related to learning as in given below:

**Table 1.2**

**Characteristics of Field Dependent-Independent Learners**

<table>
<thead>
<tr>
<th>Field Dependent Learners</th>
<th>Field Independent Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Take organization of field as given</td>
<td>Impose organization on unstructured field</td>
</tr>
<tr>
<td>2. Less effective use of mediational processes</td>
<td>Greater use of mediational process such as analysing and structure</td>
</tr>
<tr>
<td>3. A passive, spectator role in learning</td>
<td>An active, hypothesis-testing role in learning</td>
</tr>
<tr>
<td>4. Learning curve is continuous in that gradual improvement is seen as relevant cues are sampled</td>
<td>Learning curve shows no significant improvement in learning of a new concept until an appropriate hypothesis is found; then sudden improvement</td>
</tr>
<tr>
<td>5. More dominated by salient cues in learning</td>
<td>Less dominated by the most salient cues in learning</td>
</tr>
<tr>
<td>6. Use existing organization materials in cognitive processing</td>
<td>Use structures and reorganise materials for more effective storage and retrieval of information</td>
</tr>
<tr>
<td>7. Externally defined goals and reinforcement</td>
<td>Internally defined goals and reinforcements</td>
</tr>
<tr>
<td>8. Prefer to learn specific information and acquire it more easily</td>
<td>Prefer to learn general principles and acquire them more easily</td>
</tr>
<tr>
<td>9. Extrinsic forms of motivation</td>
<td>Intrinsic or task-oriented form of motivation</td>
</tr>
<tr>
<td>10. Learn better with socially relevant information</td>
<td>Learn better on learner-centred learning tasks</td>
</tr>
</tbody>
</table>

This comparison provides a concise summary and insight into how field dependent and independent individuals differ in their respective approaches to learning. “Both field dependent and field independent learners have unique strengths in learning. Field dependent learners are superior in social skills, whereas field independent learners are superior in cognitive restructuring skills” (Davis, 1991). Moreover, “even though neither end of the continuum is clearly superior in concept attainment or intelligence, educators place more value on those characteristics associated with field independent learners. Psychologists and educators also view these characteristics as leading to better learning performance” (ibid).
1.7 ACHIEVEMENT MOTIVATION

“Motivation is the central factor in the effective management of the process of learning. Some type of motivation must be present in all learning.” —Kelly

1.7.1 Motivation activates Learning

Other than all the factors, Achievement Motivation has a great impact in the learning process of students. “Just in the steam engine there has to be fire and water to produce steam as an impelling force, so also in the individual, there are certain fundamental or our basic drives which determine the process of assimilation or learning” (McDougal). It is a common observation that, in the process of learning, problem-solving, achievement etc., very often one is seen doing very well if well motivated with clear objectives or goals to reach rather than waste energy and time in the absence of clear objectives or motivation.

‘Motivation’ means the forces which impel and activate the organism to action. It is the basic activity for creating interest. Various means such as praise, approval or reward are positive forms of motivation, whereas blame or punishment come under negative motivation. Aids, relationships, historical references, anecdotes, possible applications and games are adopted to provide motivation.

Motivation, being the most effective form in learning, may activate, speed up and sustain learning. Every performance is the outcome of motivation and ability, the later derives power from the former. Motivation is involved in every aspect of learning and without motivation there can hardly be any learning. Motivation is indeed an essential condition of learning.

Motivation, in its psychological sense, is concerned with inculcation and stimulation of learner’s interest in learning activities. Psychology of motivation and a number of new theories evolved over time to explain human behaviour. Historically, the word ‘motivation’ comes from its Latin root ‘movers’, meaning ‘to move’. In its literal meaning, motivation involves the process of arousing movement in an organism.

Activating forces for motivation are usually termed as needs, drives or motives, categorized in two ways - intrinsic motivation and extrinsic motivation.
1.7.1.1 Intrinsic Motivation

Intrinsic motivation is defined as doing an activity for its inherent satisfactions. An intrinsically motivated person is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards. “Intrinsic motivation is not the only form of motivation, or even of volitional activity, but it is a pervasive and important one. From birth onward, humans, in their healthiest states, are active, inquisitive, curious, and playful creatures, displaying an ubiquitous readiness to learn and explore; they do not require extraneous incentives to do so. This natural motivational tendency is a critical element in cognitive, social and physical development because it is through acting on one’s inherent interests that one grows in knowledge and skills. Inclination to take interest in novelty, to actively assimilate and to creatively apply our skills is a significant feature of human nature that affects performance, persistence and well-being across life’s epochs. In one sense, intrinsic motivation exists within individuals, in another, sense it exists in the relation between individuals and activities.” People are intrinsically motivated for some activities and not others; and not everyone is intrinsically motivated for any particular task” (Ryan and Deci, 2000).

1.7.1.2 Extrinsic Motivation

It is also true that most of the activities people do, are not, strictly speaking, intrinsically motivated, as the freedom to be intrinsically motivated becomes increasingly curtailed by social demands and roles that require individuals to assume responsibility for their non-intrinsica interesting tasks. Extrinsic motivation is a construct that pertains whenever an activity is done in order to attain some ‘separable outcome’. Extrinsic motivation thus contrasts with intrinsic motivation, which refers to doing an activity simply for enjoyment sake of the activity itself, rather than for its instrumental value.

However, unlike some perspectives that view extrinsically motivated behaviour as invariantly non-autonomous, it is proposed that extrinsic motivation can vary greatly in the degree to which it is autonomous. For example, a student, who does his homework only because he fears parental sanctions for not doing it, is extrinsically motivated; he is doing it in order to attain the ‘separable outcome’ of
avoiding sanctions. Similarly, a student who does the work for personally believing it to be valuable for the chosen career, is also extrinsically motivated, doing it for its instrumental value rather than it is interesting. Both examples involve instrumentalities, yet the latter case entails personal endorsement and a feeling of choice, whereas the former involves mere compliance with an external control. Both represent ‘intentional’ behavior; two types of extrinsic motivation varying in their relative autonomy.

1.7.2 Achievement Motivation: Concept and Purpose

The concept of achievement motivation, applied frequently in psychological literature to account for people’s behaviour in different cultural and socio economic backgrounds, is based on major theoretical perspective that a particular individual/group/culture possesses achievement motivation, to a greater or lesser degree, in the form of competitive effort and individualistic striving, resulting in economic growth or success. This culturally specific notion of achievement, which has, for a long time, been viewed as the universal model of achievement, is now being put to test in terms of: ‘measure, compare and enhance achievement efforts’. Achievement motivation is the expectancy of finding satisfaction in mastering challenging and difficult performances. Discussed in relation to school achievement, achievement motivation is the motivation to perform specific tasks on the touchstone of a standard of excellence against which results can be judged; classroom teachers deciding what learning tasks students are to perform and also to evaluate the quality of their achievement.

Achievement motivation, as a need for achievement, a wish to do well, refers to individual behavior striving to accomplish something, to do best, to excel others in performance. This involves competition along a particular standard of excellence of performance. Achievement motivation is a learned motive to compete and strive for success; coupled with a pattern of planning of actions and feeling connected with hard efforts to achieve some internalized standard of excellence; involving a fundamental assumption that the desire to achieve something of excellence is inherent in all beings.
1.7.3 Origin and Development of Achievement Motivation

1.7.3.1 Motivational Characteristics of a child’s Development

Only recently researchers have begun to look for a pervasive achievement related motivational characteristic in the development of children's accomplishments as they have been recorded in great numbers by classical developmental psychology. White (1959-1960) has impressively explicated how a child's development is furthered by "effective motivation by the drive to deal with the environment to influence it actively, and, thus, to experience, to expand, and to maximize his own effectiveness and competence”.

1.7.3.2 Automation of Behaviour among infants: First Appearance - Phenomenon which appears to be "achievement motivated" in early childhood includes various behaviour repetitions which Buhler (1919) interpreted as "function pleasure" and Piaget (1936) as “circular reactions”. Particularly, "wanting to do it alone", Klamma (1957) can be observed at the start of the second year during familiar routines in the home, such as during eating or dressing. The most impressive type of "achievement behaviour" during the first 3 years of life is the persistence in sensor motor activities involving objects. It is improbable that there is continuity in the development of achievement motivation before the age of 3, although one has to be prepared in principle to find complex relationship with happenings in earliest childhood. It is noteworthy that the preverbal stage of sitting-up has an "imprinting" effect only if it coincides with the rise and fall in the mother's general activity level at different times of the year.

Achievement motivation presupposes the structuring of the situation within an achievement related person-environment frame of reference, of which children first become capable between the age of 3 and 3½; in other words, at a time when the success or failure of one's activity directs the pleasure or disappointment, no longer only at the outcome of the activity as such, but also at the self, so that with success the child experiences pleasure at his competence, and with failure shame about his incompetence. Obviously, success, pleasure and competence for the basic traits in child’s development in a positive way while failure, shame and incompetence adorn the contrary share of one’s personality.
1.7.3.3 Course of Development in childhood

1.7.3.3.1 Stability Component - Concentration and persistence in the pursuit of achievement goals increase with age; clearly from 4½ years on; while failures are tolerated better with more frequent attempts to overcome them. Various aspects of a child’s achievement-related behavior, judged by observation, from statements of an adult in an interview, is said to have found a remarkable stability existing from the age of 3 through adulthood for individual levels of achievement behaviour and for disposition towards completion. Striving for achievement-related recognition and fear of failure were noted from the age of 6. Also, achievement motivation measured by the TAT method (n Achievement) showed moderate but significant stability between the age of 8 and 11 and of 14 and 25.

1.7.4 Individual Differences

1.7.4.1 Parental Influences - It is a universal “fact of life” just as the maturational steps in cognitive development are through the influence of depth psychology and learning theory, one has its inclination to trace stage-specific behaviours back to a particular cause. As a rule, extreme groups with high and low motivation as determined by the TAT measure or other criteria (under and over achievement in school) have been compared with respect to differences in parental child-rearing practices.

We can distinguish between two directions in which the mother's child rearing may turn. She may either insist on early self reliance in all matters or more specifically just on early readiness to achieve. The result of several investigations have shown that high achievement motivation is not so meaningfully related to early self reliance training as it is to lesser concern for conformity. However it is noteworthy that early self-reliance training and achievement motivation both related to conformity in the same way.

1.7.4.2 Family Structure influences – Family, as a small group structure does influence which to further or to hinder the development of strong achievement motivation in a child’s life. Birth order of siblings, size of family, and intactness of home have been shown to be important. American first-born children are more highly motivated, especially girls. The reason may be that western culture gives them more
responsibility for younger siblings, or gives them more responsibility at the earlier period. In other cultures, such as India and Japan, it is rather the younger, and the youngest, children who are highly motivated. The influence of family size on the achievement motivation of boys varies with social class. In the upper classes, medium-size families produce boys with the highest scores, whereas in the middle class, the smaller the family the larger the score. Broken home or weak ties between the parents, hinder the development of high achievement motivation.

1.7.4.3 Socio-cultural Milieu influences - Social class, educational level and religion also affect achievement motivation and determine achievement-related "climate" of every day life, as it unfolds in its over-all context. Generally, upwardly mobile middle class favours development of a strong future-oriented achievement motivation. Achievement motivated behavior in children is positively correlated with the level of parent’s education, especially of the father. The relationship is particularly marked when children become adults. Father's level of education is a better predictor of a child's future intelligence than the mother's IQ.

1.7.4.4 Adulthood Changes – Achievement motivation increases with the age of children. We can improve school grades of underachieving high school boys by giving them a training program designed to teach characteristics of the person with high achievement motivation. Achievement motivation can be improved in adults through different courses and subsequent follow-up contacts.

1.7.5 Components of Achievement Motivation

1.7.5.1 Motivational Orientation

“Positive motivational orientation represents the beliefs that personal growth and mastery are more important than comparing one’s performance with others. For example, doing well would mean improving on one’s best attempt to learn new material. Negative motivational orientation stresses on beliefs that one’s performance is meaningless unless compared to the performance of others. Hence a student’s preference for comparing one’s own grades to classmates and judge one’s learning on the basis of others’ performance, as a benchmark for one’s success in an environment dominated by the cult of competition, a healthy practice to promote achievement motivation” (nasponline.org).
1.7.5.2 Ability and Effort

“Concepts of ability and effort, being interrelated, some adolescents tend to believe that ability can be improved by applying more effort; while others might believe that ability is a fixed quantity and no amount of effort will change it. Positive motivational orientation believes that one’s effort does affect one’s outcomes; but negative motivational orientation believes that effort will have little or no effect on achievement outcomes” (nasponline.org).

1.7.5.3 Reward Salience

“Reward salience is the component of achievement orientation that reflects students’ beliefs about classroom and school rewards. Students with positive motivational orientation interpret receiving a reward as information about performance on a specific task. Negative motivational orientation, characterized by a more global interpretation of the meaning of rewards stresses on conclusions about worth, status and general ability. For example, students who do not receive a reward in the classroom, may assume they were not as smart as the students who did; and also generalize that they are not as valuable as other members of the class because of their supposed inferior ability” (nasponline.org).

1.7.5.4 Task Preference

“Task preference too forms a very important component of achievement motivation. Positive orientation is reflected by task choices that are moderately challenging and offer the greatest potential for new learning. Negative motivational orientation, on the other hand, is represented by more defensive choices of task difficulty. Extremely easy tasks present a safety zone where little effort is required and little is revealed about the underlying ability. So, students with negative motivational orientation do not expect to be successful on extremely difficult tasks, reducing the negative implications of failure, if their expectations prove to be true” (nasponline.org).

1.7.6 Characteristics of High Achievement Motivation Persons

i. Eagerness: Achievement oriented individuals are found to be eager and restless. They seek and use new information, advice from experts and feedback about their previous performance.
ii. **Moderate risk conditions**: People who score high on achievement motivation prefer and work hardest under conditions of moderate and realistic risk, especially when they have some control over results.

iii. **All sorts of tasks**: Individuals with higher achievement motivation do better on all sorts of tasks, particularly tasks which permit learning, demand concentration or contain levels of difficulty, by mastering which one’s competence can be demonstrated.

iv. **Postpone gratification**: Achievement oriented individuals are better able to postpone gratification, preferring to keep eye on a big goal; preferring tasks that extend over longer period of time, need to be planned and require decisions. When a choice is given between an immediate small reward and a future larger one, they frequently decide in favour of the larger one.

v. **Higher aspiration level**: Highly motivated persons throughout have a higher level of aspiration; their demands for one’s best performance are more decisive than mere prestige of an occupation.

vi. ** Desire to work with competent persons**: Achievement-oriented persons tend to choose a person as a work partner who is good at performing the task to be done rather than the persons they like.

vii. **Decline help**: Highly achievement motivated individuals work for a much longer time and decline help or rest periods offered than individuals with low achievement motivation do on a complex task in which feedback about the accuracy of the proposed solutions is absent; they also perform better regardless of the time taken for the task.

viii. **Unable to quit**: Highly achievement motivated individuals are unable to quit the tasks even after experiencing serious failure.

### 1.7.7 Theories of Achievement Motivation

Four theories, evolved over the years, explain what motivates people to act. These are:
1.7.7.1 Need Achievement Theory - Need Achievement theory (Atkinson, 1974; McCand, 1961) is an interactional view that takes into consideration both personal and situational factors as important predictors of behaviour. “Five components make up this theory: personality factors or motives, situational factors, resultant tendencies, emotional reactions, and achievement related behaviour” (Roberts and Weinberg 1999). Core components of Need Achievement Theory are presented in figure 1.5:

![Core Components of Need Achievement Theory](image)

**Fig. 1.5: Core Components of Need Achievement Theory**

1.7.7.1.1 Personality Factors: According to the need achievement view, each of us has two underlining achievement motives – to achieve success and to avoid failure.

1.7.7.1.1.1 Motive to achieve success - People with a high motive to achieve success show the following characteristics: (a) they look for challenges and they are not afraid of failure; (b) they tend to be concerned about standard of excellence and show high level of performance; (c) feedback from others is of great importance to them; and (d) they attribute their performance to internal factors, for example, success is due to effort, failure is due to poor concentration.

1.7.7.1.1.2 Motive to avoid failure - People showing a strong motive to avoid failure show the following characteristics: “(a) they tend to be preoccupied by failure; (b) they avoid challenging tasks; for example they prefer to play against very easy opposition which usually guarantees them success or on the other hand they may choose very difficult opposition which usually guarantees failure which is not their
fault; and (c) they attribute their performance to external factors, for example success is due to luck and failure is due to tough opposition” (www.slideshare.net).

1.7.7.1.1.3 Achievement Motivation vs. bi-polar motives – Achievement motivation is the personality factor caused by difference between bi-polar motives. Since all people have these two motives to some extent, Atkins proposes that it is the difference between the two motives which provides the personality factor called achievement motivation.

1.7.7.1.2 Situational Factors: Take into account these two important situational factors, that is, probability of success and incentive value of success; probability of success depends on who to compete against and the complexity of the task. It would be more satisfying to beat a novice as opposed to a skilled opponent. However, the value placed on success would be greater, and more satisfying to beat a skilled opponent to beat a beginner.

1.7.7.1.3 Resultant Tendencies: This theory was derived by taking into consideration an individual’s achievement motive levels in relation to situational factors vis-à-vis resultant tendencies.

1.7.7.1.4 Emotional Reactions: This theory also takes into account how an individual reacts emotionally, with an emphasis on how much pride on experiences. High and low achievers naturally want to experience pride and minimize shame: in that high achievers focus more on pride, whereas low achievers focus on shame and worry; perhaps due to the fact that their personality characteristics interrelate differently with the situation causing them to focus more on pride or shame, as if befitting their personality suit, repectively.

1.7.7.1.5 Achievement Related Behaviour: The final need achievement theory component, namely Achievement related Behaviour indicates how the four theories interrelate to influence behaviour. High achievers tend to choose more taxing tasks with an intermediate level of risk and have an enhanced performance during evaluative situations; while low achievers steer clear of tasks with intermediate levels of risk and tend to not perform to the best of their ability during evaluative situation, and almost definitely, avoid challenging tasks, by selecting tasks that are unattainable, leading to failure; or tasks which are so easy that they guarantee success.
1.7.7.2 Attribution Theory - Originated by Heider (1958), extended and popularized by Weiner (1985, 1986), Attribution theory focuses on how people explain their successes and failures; proposing that every individual tries to explain success or failure of self and others by offering certain “attributions”, the most basic attribution categories, being (i) stability (a factor, to which one attributes success or failure, is either fairly permanent or unstable); (ii) locus of causality (a factor, is either external or internal to the individual); and (iii) locus of control (a factor is or is not under our control).

1.7.7.3 Achievement Goal Theory - Achievement goal theory maintains that three factors interact to determine a person’s motivation: achievement goals; perceived ability; and achievement behavior- indicating:

- Achievement goals in terms of outcome-oriented goals and task-oriented goals;
- Perceived ability as high perceived ability or competence, low perceived ability or competence; and
- Achievement behaviour as performance, effort, persistence, task choice, realistic task or opponents and unrealistic task or opponents.

To understand someone’s motivation, it is important to understand what success and failure mean to that person; and the best way to do that is to examine a person’s achievement goals; and how they interact with that individual’s perception of competence, self-worth, or perceived ability.

1.7.7.4 Competence Motivation Theory - Competence motivation theory (Weiss & Chaumeton, 1992), used to explain difference in achievement behaviour, especially in children, based on the work of developmental psychologist (Susan Harter, 1988), holds: that feeling of being worthy or competent are the primary determinant of motivation; and a person’s perceptions of control (feeling control over whether one can learn and perform) work along with self-motivation, even though these feelings do not influence motivation directly; they only influence affective or emotional states (such as enjoyments, anxiety, pride, and shame) that, in turn, influence motivation.
1.7.8 Factors Affecting Achievement Motivation

Of the so many factors that affect achievement motivation, a few could be given as below:

1.7.8.1 Self-Concept: Self-concept, one of the major factors that affect achievement motivation, is an Individual's perception of one’s abilities, status and role in the day-to-day affairs with the outer world; and an important condition for learning. It is a common belief that a learner who has an appropriate self-concept will learn more easily in school situations than the one who has an inappropriate self-concept; and that there is a casual relation between self-concept and the rate of learning and achievement. Self-concept also refers to the ‘ideal self’, that is, the kind of person an individual dreams to be. More so, the ideal self-concept exercises its impact on a pupil's achievement; so much so that pupils with greater discrepancy between their ideal-self and self-concept shall have a high degree of achievement motivation. Thus, to evince achievement motivation, the teacher must know pupils' ambitions and aspirations; how they perceive themselves; and what they hope to become in life; as all young people wish to feel adequate, to be admired, and praised, to be considered capable and competent, to have a status in their group and to win self-esteem.

1.7.8.2 Level of Aspiration: Level of aspiration, another factor that affects achievement motivation, is defined as the level of performance in a familiar task which an individual expects to reach; the level of expectation that an individual claims to attain on performing the task. Success means surpassing the level one expects to reach, and failure is its reverse. Since success and failure are relative to the level of aspiration and expectation, they are great reinforcing forces in learning and achievement. The more one expects, the higher the level of aspiration, the more the effect put into achieving the task. The levels of aspiration and self-image change with the degree and extent of achievement and are susceptible to change by success. Failure seems to have less effect even though it spurs some people to try harder rather than lower the level of aspiration. In some cases, on the other hand, failure does lower the level of aspiration. Pupils who fail to achieve their goals often show a tendency to lower their level of aspiration in subsequent situations. Failure generates a state of anxiety while success fills one with hope; both having their strong influence on
achievement; differing however, from individual to individual: some placing their expectations too high, some low and quite a few very realistic in their expectations; that make the concept of achievement motivation, in a way, quiet complex.

1.7.8.3 Classroom Climate: The third and very important factor affecting achievement motivation is the classroom climate; peer group reactions and evaluations, in particular, which determine one’s level of self-esteem. Young children being more sensitive to peer opinions and demands than those of teachers and parents. Very often the teacher-centered class room climate; the norms and codes prevailing in the class; determine the pupil’s responses that may work both ways – either help or obstruct learning as well as the pattern of achievement motivation. Classroom climate embodies many other components - general atmosphere of the school, its motto, reputation, distinctions in public examinations, values and ideas cherished, congenial environs, coupled with a wholesome school ethos, etc. do evince a very strong bearing on student’s achievement motivation, their morale in every respect, besides their academic achievement.

1.8 ACADEMIC ACHIEVEMENT

With the world becoming more and more competitive, the desire to attain high level of academic achievement puts a lot of pressure on teachers and schools, the educational system, in general, and on students in particular, besides parents’ desire for their children to climb the ladder of performance to as high a level of achievement as possible; thus making the whole system revolve around students’ academic achievement. The need to measure academic achievement is based on two fundamental assumptions of psychology. First, there are differences within the individual from time to time known as behaviour oscillation, i.e. academic achievement of the same individual differs from time to time, from one class to another and from one educational level to another, Secondly, there are individual differences. Individuals of the same age group, of the same grade usually differ in their abilities and academic proficiency whether they are measured by standardized procedures or by teacher’s grading or by marks obtained in class tests and examinations. A test of achievement is supposed to tell how much the students have learnt. To indicate, in turn, what more could possibly be done to enhance their
achievements; thus, helping both students as well as teachers to know where they stand.

Wikipedia: The Free Encyclopedia (2011) defines academic achievement as a specified level of attainment proficiency in academic work as evaluated by the teacher, by standardized tests or by combination of both. “Academic Achievement means the knowledge attained or skills developed in school subjects, usually determined by test score or by marks assigned by teacher or both” (Dictionary of Education, 2003). “In common terminology, academic achievement refers to the level of attainment in various subjects as indicated by marks or grade points. It may be the attained ability to perform school subjects. Academic achievement also means the attained level of students’ functioning, in school task such as Language, Mathematics, Science etc” (www.tarj.in). Achievement in the educational situation has frequently been referred to as scholastic achievement or academic achievement or academic attainment, the term scholastic achievement signifies various aspect of learning such as “ability to learn” (Tilton, 1949), “scholastic aptitude”, (Traverse, 1949), “creative capacity” (Torrence, 1964) etc.

Achievement of an individual depends on intellectual abilities like intelligence, aptitude, imagination, memory, study habits, perceptual power and attention, emotional tendency, physical fitness; environmental factors like home, racial nature and religious background of family etc. Major determinants of quality of academic achievement could also be the socio-economic and educational status of parents; moral qualities; books, magazines, movies, television watching etc.; physical facilities like qualified and competent teachers, curriculum and equipment, effective evaluation and management; teaching learning strategies; and to crown all, print and electronic media inputs in the teaching learning process in today’s digital world moving fast, with 24×7 enrichment of the corpus of knowledge, information and technology in quite a big way. Improving the quality of each one of these elements, could bring about significant improvement in overall quality of achievement and achievement motivation in the teaching and learning community, locally as well as globally.
1.9 NEED AND RATIONALE FOR THE STUDY

Today’s world, empowered by the whole lot of internet resources and satellite communication in every field of human endeavour, and especially in education, is bound to cause a kind of total transformation in the teaching-learning process, to make it ‘smart’ in every way. There is, thus nothing that remains untouched with the multiple use of ultramodern multimedia technology, in schooling, in particular. Its vital role in education, being not an exception, ICT can serve as an implacable tool to empower students in very many ways, with paradigm shift in task-orientation from teacher-centred to student-centred; to self-directed learning in a big way, with optimum use of multi-technology to boost: self motivated gains not only from their prior knowledge but also construct their own understanding of the content that is “more apt to enhance student motivation and increase student self-confidence in the cognitive abilities” (Miller & Meece, 1999). With ICT, doing a commendable job in almost all subjects, and especially, in languages, it provides access to every kind of necessary information on various platforms, in various forms of text, pictures, videos, etc.; supposed to be used as a useful tool, a potent tool in the teaching-learning process of English as a global language in the 21st Century. English, being a common international language, the most frequently used to communicate when people around the world as a global village, teaching and learning of English gains top priority in the comity of nations, each developing new and new instructional methodologies to keep pace with the changing realities; even though it is still being taught in underdeveloped as well as developing countries as a traditional classroom subject.

However, in the fast developing nations like India, “Multimedia has been widely and creatively used in language learning in various ways, such as design-featured multimedia computer-assisted language learning that seeks to offer ideal conditions for language learning. With dimensions of multiple media, learner control and interactivity” (Pusack & Otto, 1997). Multimedia environments provide a more communicative, powerful, supportive, non-threatening and low-anxiety language learning experience because “the control and manipulation of meaningful information is passed into the hands of the learner” (Brett 1998). “The need and rationale to provide learners with multimedia learning environments; that are learner-centred,
supportive and motivating with clear task orientation; are potential to reduce language anxiety; and, in turn, to increase the possibility of improving achievement. Multimedia environments are promising to serve as a remedy due to the consistency of features of multimedia environments” (research.ncl.ac.uk).

Apparently, the features of multimedia environments allow language learners to explore, discover, ponder, search, question, answer and receive feedback (Brett, 1998). Earlier researches done in the field of multimedia instructional strategy have revealed multimedia as a main factor having significant effect on achievement. Studies by Gill et al. (2008), McNeill et al. (2009), Gregorius et al. (2010), Stanwick (2010), Rolfe and Gray (2011), Samur (2012), Maree (2013) and Rusanganwa (2013) showed significant effect of multimedia instruction on achievement. However, researchers conducted by Thillaka & Pramilla (2000), Lewis et al. (2005) and Koeber (2005) could not find significant effect of multimedia instructional strategy on achievement. Researches in the field of Cognitive Styles have shown Cognitive Styles as a main factor affecting academic achievement. It is evidenced by the research conclusions of the studies conducted by Tinajero & Paramo (2010), Linder (2011), Nicolaou & Xistouri (2011) and Wei & Sazilah (2012), Kumar (2013) and Tinajero et al. (2013) which showed significant effect of Cognitive Styles on Achievement. Another variable considered significant for the present study pertains to Achievement Motivation (High and Low) of students. Research studies of Elias & Noordin (2009), Awan et al. (2011), Rais Hasan et al. (2012), Chow & Yong (2013) and Azar (2013) showed significant effect of Achievement Motivation on Student’s Achievement.

Survey of related literature, on the studies conducted in this field, does not lead to a clear cut trend. The results of these studies present various types of relationships of these variables with achievement. These studies showed the effect of variables of Instructional Strategies, Cognitive Styles and Achievement Motivation taken up singly on achievement, but the conjoint effect of all the variables on achievement may present a different picture. The variable wise rationale of the problem leaves wide scope for investigating the combined impact of independent variables on dependent variable in different combinations in a factorial frame of reference. It may be concluded that that the variables of Instructional Strategy,
Cognitive Styles and Achievement Motivation are interrelated factors and if investigated together in the light of academic achievement of students, the study may throw better light on the individual and combined impact of these variables which may be used effectively for the educational significance by its users.

1.10 STATEMENT OF THE PROBLEM

“EFFECT OF MULTIMEDIA INSTRUCTION ON ACADEMIC ACHIEVEMENT IN RELATION TO COGNITIVE STYLES AND ACHIEVEMENT MOTIVATION OF 9th GRADE STUDENTS IN ENGLISH”

1.11 OPERATIONAL DEFINITIONS OF THE KEYWORDS

(i) Multimedia Instruction

“Multimedia instruction (or a multimedia learning environment) involves presenting words and pictures that are intended to promote learning. In short, multimedia instruction refers to designing multimedia presentations in ways that help people build mental representations” (Mayer, 2009).

(ii) Cognitive Styles

“Cognitive styles are the characteristic, self-consistent modes of functioning which individuals show in their perceptual and intellectual activities” (Witkin et al., 1971). The present study addresses both field independent and field dependent cognitive styles.

(iii) Achievement Motivation

Achievement motivation refers to an organismic state that mobilizes activity, which, in some sense, is selective or directive (Deo-Mohan, 2011). “Achievement motivation in the context of this study, refers to a sum total of fifteen dimensions–academic motivation, need for achievement, academic challenge, achievement anxiety, grades/marks, meaningfulness of tasks, relevance of school/college to future goals, attitude towards education, work methods, attitude towards teachers, interpersonal relations, individual concern, general interests, dramatics and sports” (Deo-Mohan, 2011).
(iv) **Academic Achievement**

“Academic Achievement means knowledge attained or skills developed in school subjects, usually determined by test score or by marks assigned by teacher or both (Dictionary of Education 2003)”. The present study refers to the scores obtained by students on an achievement test in English.

1.12 **VARIABLES OF THE STUDY**

(i) **Independent Variables**

- Cognitive Styles
- Achievement Motivation
- Instructional Strategy

(ii) **Dependent Variable**

- Academic Achievement

1.13 **OBJECTIVES OF THE STUDY**

**General Objectives**

1. To develop a Multimedia Instructional module in English for 9th Grade students.
2. To develop and standardize an Achievement Test in English for 9th Grade students.

**Pre-Experimental Treatment**

3. To compare the Academic Achievement of Field Independent and Field Dependent groups of 9th Grade students before experimental treatment.
4. To compare the Academic Achievement of High and Low Achievement Motivation groups of 9th Grade students before experimental treatment.
5. To compare the Academic Achievement of Experimental and Control groups of 9th Grade students before experimental treatment.

**Post-Experimental Treatment**

6. To study the effect of Cognitive Styles on Academic Achievement of 9th Grade students after experimental treatment.
7. To study the effect of Achievement Motivation on Academic Achievement of 9th Grade students after experimental treatment.
8. To study the effect of Instructional Strategy on Academic Achievement of 9th Grade students after experimental treatment.
9. To study the interaction effect of Cognitive Styles and Achievement Motivation on Academic Achievement of 9th Grade students after experimental treatment.
10. To study the interaction effect of Cognitive Styles and Instructional Strategy on Academic Achievement of 9th Grade students after experimental treatment.
11. To study the interaction effect of Achievement Motivation and Instructional Strategy on Academic Achievement of 9th Grade students after experimental treatment.
12. To study the interaction effect of Cognitive Styles, Achievement Motivation and Instructional Strategy on Academic Achievement of 9th grade students after experimental treatment.

1.14 HYPOTHESES OF THE STUDY

Pre-Experimental Treatment

H_{01} There exists no significant difference in Academic Achievement of Field Independent and Field Dependent groups of 9th Grade students before experimental treatment.

H_{02} There exists no significant difference in Academic Achievement of High and Low Achievement Motivation groups of 9th Grade students before experimental treatment.

H_{03} There exists no significant difference in Academic Achievement of Experimental and Control groups of 9th Grade students before experimental treatment.

Post-Experimental Treatment

H_{04} There exists no significant effect of Cognitive styles on Academic Achievement of 9th Grade students after experimental treatment.

H_{05} There exists no significant effect of Achievement Motivation on Academic Achievement of 9th Grade students after experimental treatment.

H_{06} There exists no significant effect of Instructional Strategy on Academic Achievement of 9th Grade students after experimental treatment.
H₀₇ There exists no significant effect of Cognitive Styles and Achievement Motivation on Academic Achievement of 9th Grade students after experimental treatment.

H₀₈ There exists no significant effect of Cognitive Styles and Instructional Strategy on Academic Achievement of 9th Grade students after experimental treatment.

H₀₉ There exists no significant effect of Achievement Motivation and Instructional Strategy on Academic Achievement of 9th Grade students after experimental treatment.

H₁₀ There exists no significant effect of Cognitive Styles, Achievement Motivation and Instructional Strategy on Academic Achievement of 9th Grade students after experimental treatment.

1.15 DELIMITATIONS OF THE STUDY

The present study is delimited to:

- 9th grade students only.
- C.B.S.E. affiliated Om Public School Gohana (Dist. Sonepat) only.
- Six topics of English Grammar only (Determiners, Tenses, Subject-Verb Concord, Auxiliaries, Voice, Reported Speech).