SUMMARY

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.

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” (Neo and Neo, 2009) where students solve a problem by self - explorations, collaboration and active participation”. “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.
**Multimedia Instructional Strategy**

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.

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.

**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.

**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.

**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).

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”.

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.

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).

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.

Now-a-days, multimedia surrounds us as an indispensable 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.

**COGNITIVE STYLE**

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.

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).

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.

**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.

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, 193). 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).

**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>
<thead>
<tr>
<th>Characteristics of Field Dependent-Independent Learners</th>
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<tr>
<td><strong>Field Dependent Learners</strong></td>
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<tr>
<td>1. Take organization of field as given</td>
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<tr>
<td>2. Less effective use of mediational processes</td>
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<td>3. A passive, spectator role in learning</td>
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<td>4. Learning curve is continuous in that gradual improvement is seen as relevant cues are sampled</td>
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<td>5. More dominated by salient cues in learning</td>
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<tr>
<td>6. Use existing organization materials in cognitive processing</td>
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<td>7. Externally defined goals and reinforcement</td>
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<tr>
<td>8. Prefer to learn specific information and acquire it more easily</td>
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<tr>
<td>9. Extrinsic forms of motivation</td>
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<tr>
<td>10. Learn better with socially relevant information</td>
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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).

ACHIEVEMENT MOTIVATION

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.

Components of Achievement Motivation

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).

**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, is believes that effort will have little or no effect on achievement outcomes” (nasponline.org).

**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).

**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).
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.
Factors Affecting Achievement Motivation

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

**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.

**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.

**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.

**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.
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.

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”

OPERATIONAL DEFINITIONS OF THE KEYWORDS

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).

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.

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).
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.

VARIABLES OF THE STUDY

(i) Independent Variables
   - Cognitive Styles
   - Achievement Motivation
   - Instructional Strategy

(ii) Dependent Variable
   - Academic Achievement

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 9th Grade students taught through Multimedia Instruction and Traditional method of Instruction 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.

**HYPOTHESES OF THE STUDY**

**Pre-Experimental Treatment**

H₀₁ There exists no significant difference in Academic Achievement of Field Independent and Field Dependent groups of 9th Grade students before experimental treatment.

H₀₂ There exists no significant difference in Academic Achievement of High and Low Achievement Motivation groups of 9th Grade students before experimental treatment.

H₀₃ There exists no significant difference in Academic Achievement of 9th Grade students taught through Multimedia Instruction and Traditional method of Instruction before experimental treatment.

**Post-Experimental Treatment**

H₀₄ There exists no significant effect of Cognitive styles on Academic Achievement of 9th Grade students after experimental treatment.

H₀₅ There exists no significant effect of Achievement Motivation on Academic Achievement of 9th Grade students after experimental treatment.

H₀₆ There exists no significant effect of Instructional Strategy on Academic Achievement of 9th Grade students after experimental treatment.
There exists no significant effect of Cognitive Styles and Achievement Motivation on Academic Achievement of 9th Grade students after experimental treatment.

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

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

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

**METHOD OF RESEARCH**

In an attempt to explore the effect of multimedia instruction on academic achievement in relation to cognitive styles and achievement motivation of 9th grade students in English, Experimental method was chosen to investigate cause and effect relationships by randomly assigning subjects to groups in which one or more independent variables are manipulated; besides deliberately setting up conditions in which different groups of subjects have different experiences. Hence, experimental research design was adopted to explain the level of effect of independent variables on dependent variable under current conditions.

**STUDY DESIGN**

The selected research design to study the effect of multimedia instruction on academic achievement in relation to cognitive styles and achievement motivation, involves factorial design ($2 \times 2 \times 2$ to measure main and interaction effect of independent variables (Cognitive Styles, Achievement Motivation and Instructional Strategy) on the dependent variable (Academic Achievement), at two levels for each independent variable, i.e., Cognitive Styles (Field Independent and Field Dependent) Achievement Motivation (High Achievement Motivation and Low Achievement Motivation) and Instructional Strategy (Multimedia Instruction and Traditional Instruction). Instructional Strategy remaining the treatment variable. Cognitive Styles and Achievement Motivation were used as classifying variables and Academic
Achievement in English acted as dependent variable. Eight Cells were framed for Collection of Data as the pre-requisite of 2×2×2 Factorial design.

**Study Variables**

**(j) Independent Variables**

In tune with the main purpose of the study being the effect of multimedia instruction on academic achievement in relation to cognitive styles and achievement motivation, suggests Cognitive Styles, Achievement Motivation and Instructional Strategy as independent variables, framed at two levels for each independent variable i.e. Cognitive Styles (Field Independent and Field Dependent) Achievement Motivation (High Achievement Motivation and Low Achievement Motivation) and Instructional Strategy (Multimedia Instruction and Traditional Instruction).

**(ii) Dependent Variable**

Achievement in English was taken as dependent variable; measured twice during the course of the study – first before beginning the experimental treatment, i.e. at the pre-test stage; and then after completing the experimental treatment, i.e. at the post-test stage.

**(iii) Intervening Variables**

There are certain variables known as intervening variables which have their effect on the academic achievement, such as nature of school, grade level, subject to be taught etc., controlled experimentally. Hence, such intervening variables were controlled by employing suitable controls.

**POPULATION AND SAMPLE**

The population of this study comprised of all the students studying in C.B.S.E. affiliated Public Schools of Gohana (Dist. Sonepat). The sample of the study was selected through multi-stage sampling. At the first stage, all the students studying in 9th class of Om Public School, Gohana were selected. At the second stage, the tool of Cognitive Style was administrated to the students and two groups belonging to field independent and field dependent categories were formulated. (Students who scored above 8 were considered to be field independent and students who scored 8 or less than 8 were considered to be field dependent). At the third stage, the tool of Achievement Motivation was administrated and two groups (High
Achievement Motivation and Low Achievement Motivation) were formulated in accordance with Kelly’s (1939) consideration of taking up Top and Bottom 27% groups. Then on the basis of randomization two groups were formed i.e. experimental group and control group. Experimental group consisted of 32 students (Field Independent High Achievement Motivation (8), Field Independent Low Achievement Motivation (8), Field Dependent High Achievement Motivation (8), Field Dependent Low Achievement Motivation (8) and control group also consisted of 32 students (Field Independent High Achievement Motivation (8), Field Independent Low Achievement Motivation (8), Field Dependent High Achievement Motivation (8), Field Dependent Low Achievement Motivation (8). As a result, for application of Three way ANOVA (2×2×2) 64 students comprised the final sample.

**PROCEDURE FOLLOWED**

Procedure to conduct the experiment comprised of three phases as shown below:

<table>
<thead>
<tr>
<th>Phases</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group</td>
<td>Control Group</td>
</tr>
<tr>
<td>1. Pre-testing</td>
<td>Measurement of Student’s Cognitive Styles</td>
</tr>
<tr>
<td></td>
<td>- Achievement Motivation</td>
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<tr>
<td></td>
<td>- Achievement in English</td>
</tr>
<tr>
<td>2. Treatment</td>
<td>Teaching English through Multimedia Instruction</td>
</tr>
<tr>
<td></td>
<td>Teaching English through Traditional Instruction</td>
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<tr>
<td>3. Post-testing</td>
<td>Measurement of Student’s Achievement in English</td>
</tr>
</tbody>
</table>

**3.5 STATISTICAL TECHNIQUES**

Without statistical value data may not able to speak it self and become worthless, sometimes affected with human errors, too, and to take care of that SPSS version 20.0 was applied. Keeping in view the objectives, design and nature of data the following statistical techniques were employed to analyze the data:
Descriptive statistics like Mean, Standard Deviation and Standard Error of Mean were used to analyze and describe the characteristics and nature of sample or data.

‘t’ test was used to compare the groups and to arrive at findings and conclusions.

Balanced Three Way Analysis of Variance (ANOVA) with 2×2×2 Factorial Design was employed to study the main effect and interaction effect of independent variables on dependent variable. Wherever F-ratios were found to be significant, t-ratios were computed to find out the significance of difference. To test the assumption of homogeneity of variance before applying Three Way ANOVA, the Levene’s Test for Homogeneity of Variance was used.

TOOLS USED FOR DATA COLLECTION

Quality output in social sciences research is determined by the quality of tools; their careful selection, as human behaviour being complicated, demands certain degree of reliability as well as validity to assess what is expected to be measured as nearly exact as possible. Review of related literature did hint at some good tools, already standardized and easily available, such as Group Embedded Figure Test (GEFT) (Witkin et al., 1971) to identify the cognitive styles; Achievement Motivation Scale (n-Ache) (Deo and Mohan, 2011) to test Achievement Motivation, which were found to be useful for the study in hand; over and above a set of self-developed tools (i) Multimedia Instructional Package; and (ii) Achievement test in English were also used to address specific objectives of the study.

FINDINGS AND THEIR IMPORTANCE

In the light of study objectives; and null hypotheses tested and rejected on valid and reliable tools, in most situations, it is by and large established that the intervention of multi-media inputs in the teaching of English to 9th class students has a positive advantage over the traditional pedagogy, besides its added merits in being pro-active across the board in its inter and intra-interaction and relationship with various variables like cognitive styles, achievement motivation as well as academic
achievement. Hypotheses were identified that could make academic achievement in the teaching of English, and for that matter any other school subject, more lasting and meaningful under the umbrella impact of multi-media intervention in the teaching-learning process as also in facilitating empowerment of the teaching-learning community in quite a big way.

Both experimental and the control group students, found comparatively matching, with no significant difference in academic achievement on pre-test, the experimental group gained the benefits of multimedia intervention to boost their academic achievement in English over their counterpart control group students taught in the traditional way; as also along other variables. The import of findings is manifold with the significant difference in academic achievement in the context of impact of multimedia in relation to aspects like:

**Positive Impact Narrations**

- Students having field independent cognitive style have better academic achievement in comparison to students having field dependent cognitive style.
- Students having high achievement motivation have better academic achievement in comparison to students having low achievement motivation.
- Students taught through multimedia instruction have better academic achievement in comparison to students taught through traditional method of instruction.
- Field independent students having high achievement motivation have significantly higher academic achievement than the field independent students having low achievement motivation.
- Field independent students having high achievement motivation have significantly higher academic achievement than the field dependent students having high achievement motivation.
- Field independent students having high achievement motivation have significantly higher academic achievement than the field dependent students having low achievement motivation.
• Field independent students taught through multimedia instruction have significantly higher academic achievement than the field independent students taught through traditional instruction.

• Field independent students taught through multimedia instruction have significantly higher academic achievement than the field dependent students taught through multimedia instruction.

• Field independent students taught through multimedia instruction have significantly higher academic achievement than the field dependent students taught through traditional instruction.

• Field dependent students taught through multimedia instruction have significantly higher academic achievement than the field independent students taught through traditional instruction.

• Field dependent students taught through traditional instruction have significantly higher academic achievement than the field independent students taught through traditional instruction.

• Field independent students taught through multimedia instruction have significantly higher academic achievement than the field dependent students taught through traditional instruction.

• Students with high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the students with high achievement motivation taught through traditional instruction.

• Students with high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the students with low achievement motivation taught through traditional instruction.

• Students with low achievement motivation taught through multimedia instruction have significantly higher academic achievement than the students with high achievement motivation taught through traditional instruction.

• Students with high achievement motivation taught through traditional instruction have significantly higher academic achievement than the students with low achievement motivation taught through traditional instruction.
• Students with high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the students with low achievement motivation taught through traditional instruction.

• Field independent students having high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field independent students having high achievement motivation taught through traditional instruction.

• Field independent students having high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field independent students having low achievement motivation taught through multimedia instruction.

• Field independent students having high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field dependent students having high achievement motivation taught through traditional instruction.

• Field independent students having high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field dependent students having low achievement motivation taught through traditional instruction.
• Field independent students having high achievement motivation taught through traditional instruction have significantly higher academic achievement than the field independent students having low achievement motivation taught through traditional instruction.

• Field independent students having high achievement motivation taught through traditional instruction have significantly higher academic achievement than the field dependent students having high achievement motivation taught through traditional instruction.

• Field dependent students having low achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field independent students having high achievement motivation taught through traditional instruction.

• Field independent students having high achievement motivation taught through traditional instruction have significantly higher academic achievement than the field dependent students having low achievement motivation taught through traditional instruction.

• Field independent students having low achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field independent students having low achievement motivation taught through traditional instruction.

• Field dependent students having low achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field independent students having high achievement motivation taught through traditional instruction.

• Field independent students having low achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field independent students having low achievement motivation taught through multimedia instruction.

• Field independent students having low achievement motivation taught through multimedia instruction have significantly higher academic achievement than
the field dependent students having low achievement motivation taught through traditional instruction.

- Field dependent students having high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field independent students having low achievement motivation taught through traditional instruction.

- Field dependent students having low achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field independent students having low achievement motivation taught through traditional instruction.

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- Field dependent students having high achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field dependent students having high achievement motivation taught through traditional instruction.

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- Field dependent students having high achievement motivation taught through traditional instruction have significantly higher academic achievement than the field dependent students having low achievement motivation taught through traditional instruction.

- Field dependent students having low achievement motivation taught through multimedia instruction have significantly higher academic achievement than the field dependent students having low achievement motivation taught through traditional instruction.

**No Impact Narrations**

- No significant difference exists in academic achievement of students with field independent cognitive style having low achievement motivation and students with field dependent cognitive style having high achievement motivation.

- No significant difference exists in academic achievement of students with field independent cognitive style having low achievement motivation and students with field dependent cognitive style having low achievement motivation.

- No significant difference exists in academic achievement of students with field dependent cognitive style having high achievement motivation and students with field dependent cognitive style having low achievement motivation.

- No significant difference exists in academic achievement of students with high achievement motivation taught through multimedia instruction and students with low achievement motivation taught through multimedia instruction.

- No significant difference exists in academic achievement of field independent students having high achievement motivation taught through traditional instruction and field independent students having low achievement motivation taught through multimedia instruction.

- No significant difference exists in academic achievement of field independent students having high achievement motivation taught through traditional instruction and field dependent students having high achievement motivation taught through multimedia instruction.

- No significant difference exists in academic achievement of field independent students having low achievement motivation taught through multimedia
instruction and field dependent students having high achievement motivation taught through multimedia instruction.

- No significant difference in academic achievement of field independent students having low achievement motivation taught through traditional instruction and field dependent students having high achievement motivation taught through traditional instruction.

IMMINENT IMPLICATIONS OF THE FINDINGS

Multimedia coupled with ICT in particular, is found to play a key role in the modern education system. Students find it easier to refer to the internet than searching for information in literature and reference books. Modern technologies including e-Portals and e-depositories opening up within the country and abroad as well as satellite communication inputs in the teaching-learning process have an immense import to cause excellence in schooling. Their impact is now being increasingly felt in the whole domain of education and educational endeavors. Education, being a lifelong process, needs a vast variety of multimedia resource to provoke radical changes woven around the curricula besides the combination of text, graphic, art, sound, animation, video elements etc. representing a new wave in educational technology. Identifying the benefits of technology integration in enhancing the quality of education and promote access of resources, positively impacts students’ learning and their meta-cognitive skills, especially in the interface of the field of Cognitive Styles and Achievement Motivation as the main factors affecting academic achievement.

The purpose of the present study was to ascertain the effect of multimedia instruction on academic achievement in relation to cognitive styles and achievement motivation. Findings of the study clearly indicate that Multimedia can be perceived as a big change for education, and there is lot of scope for research in this field. What has been the conventional teacher centered approach is now seeing a shift into one which emphasizes on student - centered learning. Multimedia instruction can revamp the traditional teaching learning process and make it more effective as it provides greater opportunities for the students to learn. It brings an enhancement in achievement and provides new multisensory learning experiences. However,
cognitive styles and achievement motivation of the student does interfere with their performance. Where field independent students can learn independently through multimedia instruction, field dependent students need help of the teacher/mentor to perform better. Students with high achievement motivation taught through multimedia instruction are likely to adopt deep understanding than that of students with low achievement motivation. With the advent of this pervasive information technology, many educational institutions are currently gearing their teaching and learning towards one which uses multimedia instruction to enhance the student’s learning process. The findings suggest that multimedia can play a vital role in teaching of English, so educationists need to develop more sophisticated understandings of the conditions, circumstances, means and mechanisms through which multimedia can be closely connected to the young learners and their English language classrooms.

EDUCATIONAL IMPLICATIONS

The present research shows that in changing from a traditional ‘chalk and talk’ method to multimedia instruction not simply enriches classroom teaching, it also significantly improves the academic achievement of students. It also implies that multimedia instruction prove to be more tangible in its effectiveness on achievement than the traditional method of instruction. It seems more practical and is widely acceptable to students. It also keeps in mind the individual differences and enables all types of students to perform better. It has many other advantages:

- The findings of the present study are not only useful to researchers in terms of further research but they also have applications to the classroom practices and organizational management of schools. The conclusions of this study may also help the teachers, parents, guidance workers to identify the low achievers, diagnose their problems and provide guidance to improve their performance.

- The findings of this study have wide implications of applying multimedia instructional strategy in quick and better achievement of the concepts of English Grammar and other school subjects. With the rapid advancement in the field of both educational and instructional technology in recent years, multimedia instructional strategy based teaching along with the usual classroom instruction has opened new possibilities for meeting the new
educational needs of the contemporary society. Multimedia instructional strategy has an enormous prospective to be used as alternative instructional strategy for Indian classrooms.

- Multimedia instruction changes the role of a teacher in a way that teacher is no longer only the dispenser of education, rather plays the role of a facilitator. Teacher actively encourages students to participate in classroom dialogue and other activities. Students feel being essential part of teaching learning process.

- Thoughtfully designed instructional strategy has immense potential of motivating learners by gaining their attention, increasing their perception, enhancing their comprehension skills and eventually resulting into greater achievement as compared to that of traditional method of instruction not only in English Grammar but also in other school subjects’ viz. Social Studies, Mathematics, Science and Information Technology.

- Multimedia instructional strategy has an edge over traditional method of instruction in view of the fact that it has equipped the teachers with the tools, the integration of which can help them gain and hold attention of students, make points clearer, inspire discussion and in general, enhance the learning process.

- This instructional strategy allow the educators to present more information, more examples, illustrations and problems for students to solve than through traditional method of instruction, thus facilitating their conceptual understanding of the school subjects.

- When technology is integrated effectively into the subject matter, teacher grows into the role of advisor, content expert and coach. Teachers can prepare amazing lesson plans with the help of multimedia.

- The result of the present study can benefit educators, administrators and instructional designers who can incorporate Multimedia Instructional Strategy in school curriculum that can prove to be effective teaching and learning strategy in diverse subject areas.
• Along with general academic achievement, multimedia instructional package can help students develop other important skills like creative thinking, comprehension, critical analysis and synthesis of knowledge.

• It is also suggested that while developing multimedia instructional strategy in English Grammar or other school subjects, levels of Cognitive Style and Achievement Motivation of students should be kept in mind so that the needs of both Field Independent and Field Dependent and High and Low Achievement Motivation of students must be fulfilled.

• The teachers will be benefited by the results of the study since there is a positive and significant relationship among the variables of Cognitive Styles, Achievement Motivation and Academic Achievement.

• The implications of these results will encourage the teachers to turn the Achievement of the students in the context of their Cognitive Styles and Achievement Motivation in various school subjects.

SUGGESTION FOR FURTHER RESEARCH

Having completed the present study, the investigator has put up the following suggestions for further study:

• The present study is limited to preparation of multimedia instruction for secondary school students. A study may be conducted with some other types of teaching strategies like digital and smart classroom learning, content and mobile learning etc.

• Studies may be conducted on the technological competencies of teachers who handle different gadgets and how the teachers teach with the amount and specification of technologies available in different schools.

• The present study could be reproduced to find out how multimedia instruction affect the various abilities of the students as cognitive, emotional, social, personal and motivational aspects.

• The present study may be replicated by involving different school subjects at the secondary level.
• The present study may be replicated on a large sample even from other states of India to ensure wider application in order to get better understanding of the relationships of these variables.

• The study may be replicated on the learners of different streams from the schools, colleges and the universities.

• The present study was confined only to two levels of each of the independent variables of Cognitive Styles and Achievement Motivation and Instructional Strategy. It may be conducted with other independent variables like, Creative Thinking, Self Concept, Problem Solving Ability and Locus of Control etc.

• The study may be replicated in the field of special education to enrich the learning of special students.

**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).