CHAPTER- I

INTRODUCTION

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1.0.0   INTRODUCTION

The biggest problem of poverty, besides the lack of food, is the lack of power directly related to a lack of knowledge. Worldwide almost 1 billion people lack a basic skill to acquire knowledge: they are illiterate. They are illiterate because they have had no primary education or because the quality of their primary education was too low (The World Development Report, 2000/2001). The statement is equally applicable to Indian scenario as education is considered one's fundamental human right, which not only offers the knowledge of 3R'S, but also educates one ethically, communally, sacredly, racially as well as religiously. It is the only pathway to obtain success in one's life, to get a job with fatty packages, to earn money, to accomplish all your wishes, to alter your ambitions into reality, to live a reputable life, to have a generous and sounder way of life, and so on. Education is the means, which opens the doors of opportunities for human beings to attain what they hope. In this way, education is not just learning about books, but it is also learning about life. Education makes one know the disparity between right and wrong. It develops positive attitude towards life and gets rid of all worries in mind. It is a powerful tool in the hands of a person to make his/her life better and worth living. Education permits one to comprehend, to think, to question, judge separately, and to be a clever administrator. In addition, it raises one's skill and renews awareness needed to advance and to makes attentive for one's responsibilities. It develops one's awareness by discovering novel things. It offers bright career opportunities. Education aids an individual to draw the best out of his mind. Education of an individual starts with elementary or primary education and ends at any levels according to his/her will, interest and ability. Primary education prepares the foundation structure on which the total education depends. If this foundation structure is strong and solid, the person can take a career easily. The Government, both at centre and at state had taken the responsibility to provide a sound primary education to all the children of the required age. The help of many initiatives are sought in this process of providing primary education including traditional methods as well as highly technological methods considering the

psychological and pedagogical aspects of teaching and learning. Introduction of multimedia and the medium of cartoon and comics could be the vital elements in some aspects in this process of universalisation of primary/elementary education. The present study is an attempt in this direction to capture the magic influence of cartoon and comics in a dynamic multimedia form and to test its effectiveness while teaching Environment to primary school students.

The entire structure of the educational set up of a nation rests upon the primary education. Primary stage of education is one of the important phases of learning for human being. This is the stage, where children come from an informal setup to a formal setup of learning. This is the stage, where entire growth, development and enrichment of mental as well as physical potentialities of the children take place. Further study of the children also depends upon this stage of education. Considering the importance of this stage, it is assumed that a proper atmosphere should be provided to the children to make their teaching learning smooth, easy, joyful, and interesting and burden free. But unfortunately, the environment at this stage is not found proper for these children learners, for which there are many problems in the name of dropout, stagnation, low retention, low enrolment, low achievement etc. This can be also called as the cause for the failure in the achievement of universalisation of elementary education even after more than sixty five years of independence. Most of the commissions and committees related to primary education highlighted the similar problems and suggested for better teaching learning environment in the form of joyful learning, learning without burden, child-centered education and many more. In this regard, one of the major concerns is related to the teaching learning material available to these learners. Mostly, traditional teaching learning material occupies the place in most of the subjects, which are not so interested and not joyful to the learners. There is a need of suitable teaching learning materials according to the need of the learners to make them interested and motivated using different modes of presentation. Cartoons and comics are considered as one of such mode, which attract the readers of all age, particularly the young readers and viewers. In forties and fifties attempts had made to use this mode in teaching learning process. Now, with the invention of new technologies, the cartoon and comic mode can be used in the teaching learning. Attempt is made in the present study to prepare a multimedia package using cartoon and comics as a medium of presentation of the classroom content. The multimedia

package is tested and compared with traditional learning material in terms of student's achievement and delayed achievement. The study is an attempt in this direction. A detail of the study in terms of conceptual framework is presented in the present chapter.

1.1.0 PRIMARY EDUCATION IN INDIA

Primary education is a base of education. It is very important stage of the whole education system. In India, there are different stages for different age groups and each stage has its own purpose. One of the most important stage of education is primary education. The importance of primary education in India in immense and cannot be ignored by any section of the society. No matter which social class one belongs to, but getting this education becomes more important for everyone to have in order to make country's success more positively. Even the importance of the universal elementary education in India is always been focused upon in the country and making the best use of it to prepare the generation next to propel the country's growth as far as possible.

The Indian Government lays emphasis to primary education of the children up to the age of fourteen years. Primary education forms an important part of entire education system, as it forms the base for one's comprehensive development. It creates a sound base for secondary and higher secondary education too. Hence, it should be given the highest priority as it leads to the development of competence to average workers and increases national productivity. Thus, it can be said that a sound primary education is essential for all round development of individual as well as for country.

1.1.1   Constitutional Provision for Primary Education

15th August 1947 is a red letter day in Indian history when India got her freedom. The Constitution of the country was adopted on November 26, 1949 and came into force on January 26, 1950. The Preamble of the Constitution outlines the social philosophy which should govern all our institutions including educational institutions. Recently Right to Education is one of the fundamental rights enshrined in the Constitution of India. The Constitution of India gives a few directions and suggestions for the

development of the primary education in the countries. Following provisions have a great bearing on the functioning of the primary educational system in India.

Article 45: Provision for free and compulsory education for children. As per the article, (1) The State shall endeavour to provide, within a period of ten years from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years and (2) The State shall endeavour to provide early childhood care and education for all children until they complete the age of six years (Eighty Six Amendment Act, 2002).

Article 46: Promotion of educational and economic interests of Scheduled Castes, Scheduled Tribes and other weaker sections of the society. As per this article, The State shall promote with special care the educational and economic interests of the weaker sections of the people, and, in particular, of the Scheduled Castes and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation. (Eighty Six Amendment Act, 2002).

Article 350 (A): As per this article, it shall be endeavour of every state and local authorities with the state to provide adequate faculties for instruction in the mother tongue at the primary stage of education to children belonging to linguistic minority groups. (86th Amendment Act, 2002).

Cultural and Educational Rights

As India is a country of many languages, religions, and cultures, the Constitution provides special measures, in Articles 29 and 30, to protect the rights of the minorities. Any community which has a language and a script of its own has the right to conserve and develop it. No citizen can be discriminated against for admission in State or State aided institutions. All minorities, religious or linguistic, can set up their own educational institutions to preserve and develop their own culture. In granting aid to institutions, the State cannot discriminate against any institution on the basis of the fact that it is administered by a minority institution. But the right to administer does not mean that the State cannot interfere in case of maladministration. In a precedent-setting judgment in 1980, the Supreme Court held that the State can certainly take

regulatory measures to promote the efficiency and excellence of educational standards. (Eighty Six Amendment Act, 2002).

Right to Education: Education is a Fundamental Right

Previously, Article-45, under Directive Principal of State Policy, it was laid down that the state shall take endeavor to provide within a period of ten years from commencement of this constitution, free and compulsory education for all children until they complete the age of fourteen years. Now, it is considered as the fundamental right that every child has the right to get free and compulsory elementary education. According to Article 26 of the Universal Declaration of Human Rights, Everyone has the right to education. In the quest to achieve Education for All, states must priorities free and compulsory primary education. It is a fundamental right that cannot be forfeited. It is a litmus test for the individual to assess his or her government's commitments to fundamental rights, as well as those of the international community. The right to education is unique in that it empowers the individuals to exercise other civil, political, economic, social and cultural rights, attaining a life of dignity, while ensuring a brighter future for all, free from want and from fear. The Right of Children to Free and Compulsory Education Act, which was passed by the Indian parliament on 4th August 2009, describes the modalities of the provision of free and compulsory education for children between 6 and 14 in India under Article 21A of the Indian Constitution. India became one of 135 countries to make education a fundamental right of every child when the act came into force on 1st April 2010.

The 86th Constitutional Amendment Act, 2002 led to a new Article 21-A in Part III of the Constitution that made Free and Compulsory Education to all children of 6 to 14 years of age, a Fundamental Right. It is imperative to give good quality elementary education to all children in the age group of 6 to 14 years. The Centre and the States should jointly share the responsibility of providing necessary financial resources for implementing such a guaranteed right to elementary education. It is therefore necessary to pass relevant Central legislation to follow up on the Constitutional amendment. The Constitutional Right to Free and Compulsory Elementary Education to all children in the 6-14 age groups would be meaningful only if the education they receive is of good quality

1.1.2 Major Schemes to Supports Primary Education in India

Right from independence India has persevered with the goal of UEE; even though substantial progress has been achieved, the goal still remains elusive. The additional participation in elementary education has to come from social strata and regions which are more difficult to reach. Therefore, the path that lies ahead in the march to UEE is more arduous; the journey ahead is a marathon calling for a higher intensity of effort and more systematic planning and implementation. Many schemes either by the centre or by the state support in this endeavour, few of which are discussed herewith. In order to achieve UEE (Universalisation of Elementary Education) the Government of India has initiated a number of programmes and projects. The Government adopts an integrated approach in the implementation of the various centrally sponsored schemes, in keeping with principles of the National Policy on Education, to ensure that the education of equitable quality for all to fully harness the nation's human resource potential. The common objectives are to enhance access through the expansion of quality school education; to promote equity through the inclusion of disadvantaged groups and weaker sections, and to improve the quality of education. The following Centrally sponsored programmes are being implemented in the Education Sector under Ministry of Human Resource Development.

1. Operation Blackboard (OB 1986)

This scheme is implemented by the Director of Education, Maharashtra State at State level and by Education Officer (Primary), Zilla Parishad at district level in the rural areas. In the urban areas the funds are provided by Regional Deputy Director of Education to Municipal Councils and Municipal Corporations and they implement the scheme. The scheme was started in 1988-89 and in the first round 3,294 posts of primary teachers ware created and 8,100 schools were provided with the material. For this purpose, expenditure of Rs.23.23 crore and Rs. 4.90 crore was made respectively. The second and the third round of the scheme were started in 1992-93 and 12,231 posts of teachers were created. For this purpose, Rs. 18.57 crore was spent. Besides this, 27,469 primary schools were provided with teaching material and expenditure of Rs. 15.90 crore was made. By the end of March, 1993, construction of 9,071

classrooms has been completed and an expenditure of Rs. 14.73 crore was made on this.

2. Mahila Samakhya (1989)

The Mahila Samakhya Programme (Education for women Equality) started in 1989 is a concrete programme for the education and empowerment of women in rural areas, particularly those from socially and economically marginalized groups. It is being implemented in 11 states. The MS scheme recognizes the centrality of education in empowering women to achieve equality. The Mahila Sanghas or women's collectives at the village level provide the women a space to meet, reflect, ask questions and articulate their thoughts and needs and make informed choices.

3. District Education Revitalization Programme (DERP 1994)

The District Education Revitalization Programme (DERP) was launched in 1994 with an aim to universalize primary education in India by reforming and vitalizing the existing primary education system.85% of the DERP was funded by the central government and the remaining 15 percent was funded by the states. The DERP, which had opened 160000 new schools including 84000 alternative education schools delivering alternative education to approximately 3.5 million children, was also supported by UNICEF and other international programmes.

4. District Primary Education Programme (DPEP 1994)

District primary Education Programme (DPEP) was launched in 1994 as a major initiative to revitalize the primary education system and to achieve the objective of universalization of primary education. DPEP adopts a holistic approach to reduce disparities among social groups and an 'area- specific approach' with district as the unit of planning. The programme components include construction of classrooms and infrastructure, opening of Non- formal/ Alternative Schooling Centers, strengthening of State Councils of Education Research and Training (SCERTs)/ District Institute of Education Training (DIETs), teacher training, special interventions for promoting education of disadvantages groups, girls, SC/ ST etc. DPEP is an externally aided

project 85 per cent of the project cost is met by the Central Govt. and the remaining 15 per cent is shared by the concerned State Govt. The Central Govt. share is resourced through external assistance as grant from EC/ DFIP/ UNICEF/ Netherlands has been tied- up for DPEP. (**Source: Department of Education, MHRD, 1994**)

5. National Programme of Nutritional Support to Primary Education (1995)

National Programme of Nutritional Support to Primary Education (commonly known as Mid-Day meal Scheme) was launched as a Centrally sponsored scheme on 15th August, 1995 to attaint universalisation of primary education. Its objectives were to increase enrolment, improve attendance and retention simultaneously to have an impact on nutrition of students in primary schools. The programme originally covered students in primary stage (Class-I to V) in Government, Local Body and Government-aided schools and was extended in October, 2002 to cover students studying in Education Guarantee Scheme (EGS) and Alternative Innovative Education (AIE) Centers also. (**Source: National University of Educational Planning and Administration and Department of School Education and Literacy Ministry of Human Resource Development, Government of India, New Delhi 2013.**)

6. Mid-Day Meal Scheme (MDMS 1995)

In keeping with the Constitutional provisions to raise the level of nutrition of children and enable them to develop in a healthy manner, the National Programme of Nutritional Support to Primary Education (NP-NSPE) was launched as a centrally sponsored scheme in 1995. Commonly referred to as MDMS, this was expected to enhance enrolment, retention, attendance of children in schools apart from improving their nutritional levels. This was extended to upper primary (classes VI to VIII) children in 3,479 Economically Backwards blocks (EBBs) in 2007 and then universalised at the elementary level in the year 2008. The scheme is implemented through the States/UTs. MDMS is managed and implemented by School Management/Village Education Committees, Panchayati Raj Institutions, and Self-Help Groups. MDMS now includes madrasas and maktabs supported under the SSA as well as children under the National Child Labour Projects.

7. Sarva Shiksha Abhiyan (2001)

Launched in 2001 Sarva Shiksha Abhiyan(SSA) is one of India"s major flagship programmes for universalisation of elementary education. Its overall goals include universal access and retention, bridging of gender and social category gaps in elementary education, and achieving significant enhancement in learning levels of children. SSA is being implemented in partnership with the State Governments and reaches out to 192 million children in 1.1 million habitations across the country. SSA Goals are (a) Enrolment of all children in school, Education Guarantee Centres, Alternative school; (b) Retention of all children till the upper primary stage; (c) Bridging of gender and social category gaps in enrolment, retention and learning; and (d) Ensuring that there is significant enhancement in the learning achievement levels of children at the primary and upper primary stage. Provisions of Right to Education Act are being implemented through SSA. Accordingly, norms have been revised / modified to align them with the requirement of RTE Act, 2009.

8. National Programme for Education of Girls at Elementary Level (NPEGEL 2003)

The National Programme for Education of Girls at Elementary Level (NPEGEL) is a focused intervention of Government of India, to reach the "Hardest to Reach" girls, especially those not in school. Launched in July 2003, it is an important component of SSA, which provides additional support for enhancing girl's education over and above the investments for girl's education through normal SSA interventions. The programme provides for development of a "model school" in every cluster with more intense community mobilization and supervision of girls enrolment in schools. Gender sensitization of teachers, development of gender-sensitive learning materials, and provision of need-based incentives like escorts, stationery, workbooks and uniforms are some of the endeavours under the programme.

9. Kasturba Gandhi Balika Vidyalaya (2012)

KGBVs are residential upper primary schools for girls from SC, ST, OBC and Muslim communities. KGBVs are set up in areas of scattered habitations where schools are at great distances and are a challenge to the security of girls. This often compels girls to discontinue their education. KGBV addresses this through setting up residential schools, in the block itself. KGBVs reach out to :

☐ Adolescent girls who are unable to go to regular schools.

☐ Out of school girls in the 10+ age group who are unable to complete primary school.

☐ Younger girls of migratory populations in difficult areas of scattered habitations that do not qualify for primary/upper primary schools.

KGBVs provide for a minimum reservation of 75 per cent seats for girls from SC/ST/OBC and minorities communities and 25 per cent to girls from families that live below the poverty line. Till 2009-10 there were 2570 KGBVs in the country. After the RTE Act came into operation, an additional 1030 KGBVs were sanctioned, taking the total number of KGBVs in the country to 3600.

1.1.3 Major Schemes to Supports Primary Education in Gujarat

In order to achieve UEE (Universalisation of Elementary Education), the Government of India has initiated a number of programmes and projects. The Government adopts an integrated approach in the implementation of the various centrally sponsored schemes are also followed in Gujarat State. Apart from all central schemes the Government of Gujarat has implemented different schemes, projects and programmes which are as under.

1. Trang Ulhasmai Abhyas Programme (1995)

From June 1995 "Tarang Ulhasmay Abhiyas" based on the minimum level of learning approach was introduced in primary schools by the Government of Gujarat. Tarang is an activity oriented, play-based, child-centred, joyful, learning approach, which suggests methodology for transacting the MLLs in class one. The process consists of

adopting a play-based activity oriented approach for use in large classrooms with limited resources The "Trang Ulhasmai Abhyas" programme has been implemented throughout the state to provide joyful experience to primary school students, to increase the enrolment rate and to reduce the drop-out rate.

2. Minimum Levels of Learning (MLL, 1998)

Government has implemented the "Minimum Levels of Learning" approach to improve the quality education as well as to increase the retention rate. This new approach integrates various components of curriculum, classroom transaction, evaluation and teacher orientation programme. The Minimum Level of Learning (MLL) strategy for improving the quality of Elementary education is an attempt to combine quality with equity. It lays down learning outcomes in the form of competencies or levels for learning for each stage of elementary education. The need to lay down MLL emerges from the basic concern that irrespective of caste, creed, location or sex, all children must be given access to education of a comparable standard. MLLs in terms of learning competencies expected to be mastered by every child by the end of a particular class or stage of education. Each competency can be further delineated in terms of sub-competencies while specifying the content inputs or while measures of learning.

3. Learning without Burden (1998)

"Learning without Burden" based on the minimum level of learning approach was introduced in primary schools by the Government of Gujarat. The main objectives were to reduce the weight of school bag of primary school children and to introduce play way, activity and child-centered instructional material to reduce the drop-out rate and to increases the enrolment rate at primary education.

4. Vidhyadeep Yojna (2002)

Vidhya Deep Yojna, the Insurance scheme is adopted children where the premium is paid by the Government to ensure financial assistance to parents in case of untoward incident. Apart from these discussed schemes, following are few other schemes

implemented by the Government of Gujarat for the Universalisation of Elementary Education.

- Introduction of scheme to assist voluntary agencies, to establish "Residential Primary Schools". The basic feature of the scheme is financial assistance for residential primary school in rural areas for the poor, irrespective of caste and creed.

- Introduction of the "Balgurus" scheme for providing teachers in primary school.

- It has implemented the scheme of "Saghan Prathmic Programme" for constructing additional 35,000 classrooms to overcome the shortage of classrooms.

- Government has provided free textbooks to all students irrespective of their caste and creed.

- It has arranged massive programme for in-service training programmes for teachers through GCERT and DIETs throughout the State.

- Government used to award scholarships to SC,ST and Other Backward Class students.

- Child-centered and activity based learning is being adopted at primary stage to reduce the drop-out rate and to improve the quality of primary education.

5. Kanya Kelavani and Shala Praveshotsav (2003)

The Gujarat government launched this programme in the year 1998-1999 to make primary education dynamic and progressive, to improve quality, and to reach the 100% enrolment and 100% retention target. This programme has been implemented in all government primary schools of Gujarat having a low literacy rate, at the beginning of every academic year. This programme came out of the realization that social factors are responsible for rural population not sending their children to school. Praveshotsav is a massive annual awareness drive in which during the admission season in June every year. This programme was started in 2003. To improve school-enrolment rates and boost primary education in the state, the Government launched the Kanya Kelavani and Shala Praveshotsav programme. The Kanya Kelavani Yojana

is also an occasion to deliver benefits under other government programs. For example, during the 10th Kanya Kelavani, Vidya Lakshmi Bonds were allotted to 23,608 girls on admission to Standard-I, in less literate Talukas to encourage them to continue schooling.

6. National Bal Bhavan (2008)

National Bal Bhavan was opened with the aim of developing overall personalities of children of all strata of society irrespective of their caste, creed, religion and gender. It supplements school education by helping children to learn in play way and natural environment.

7. Nirogi Bal (2008)

Government ensures on Nirogi Bal scheme as health is a prime concern of the child while it attends the classroom. The scheme was started in 2008-09 with mass movement for Safe Health with impact to Social Development of Gujarat. It ensures universal reach and delivery of quality health services. It also make certain of quality nutrition and growth through effective implementation of Mamta Abhiyan. One of the many goals is to guarantee Elementary Education and Life Skills Education for all children.

8. Gunotsav (2009)

This programme was started by the state Education department during November 2009, with an aim to evaluate primary education scenario and grade school teachers accordingly. State Government has seen primary education as a grass-root sector and initiated with revolutionary experiments. The government of Gujarat has initiated a series of steps to improve the level of learning in its schools across the state and wishes to take these efforts forward, so as to achieve visible and measurable positive change. Government's efforts have succeeded in increasing school enrollments and bringing down school drop-out ratio, two major concerns in education field. The aim is to ensure that Gujarat should be among the top three states of the country in terms of student learning outcomes over the next 5 years.

9. Vidhya Laxmi Bonds (2010)

Gujarat Government focus on role of Education in Poverty Eradication and the campaign was aimed at ensuring maximum enrollment of boys and girls in primary schools all across the state. To encourage Girl Child Education, Vidhyalaxmi Bonds are entrusted among areas with low literacy rates, below 35 percent among women and this serve as an incentive to poor parents to send their daughters to schools.

1.2.0 STATUS OF PRIMARY EDUCATION IN INDIA

At the time of independence, India had only 40 percent of population literate and only one child out of three had enrolled in primary education. In post-independence period, literacy rate had increased to a considerable extent. The total enrolment at Primary education was found 19.2 millions in the year 1950-51 which was increased to 109.8 millions in 1995-96. **(Source: "Education for all- The Indian Scene", Department of Education, MHRD, New Delhi, Oct, 1998)**

In 1964-1966 the Indian Education Commission stressed for fulfillment of vigorous efforts for 100 percent primary education by 1980. The National Policy on Education 1968 also emphasized the free and compulsory education and the draft NPE (1979) set a target to have 100 percent primary education by the end of Sixth Five Year Plan. But it was not fulfilled and NPE (1986) had fixed the target to be achieved by the end of twentieth century. Yet, we are far away from this goal, as dropout rates still continues to be high in class I to VII. In other words India has achieved high gross enrolment rates, but low attendance and high dropout rates,, as result, fewer children complete primary education. Status of primary education can be seen by independently analyzing different factors like literacy rate, enrollment, growth of primary schools, and growth in the number of primary school teachers, drop-out rate, and achievement of primary school children etc. which are discussed as follow.

Literacy Rate in India

After more than 65 years of independence, India has not been reached cent percent literacy. The reasons for this could be lack of access, dropout, failure and many more. In Universalization of Elementary Education which in turn is a failure may be due to lack of quality of primary education. According to the Census of India (2011), "every person above the age of 7 years who can read and write in any language is said to be literate". According to this criterion, the 2011 census survey holds the National Literacy Rate to be around 74.07%. Government statistics of 2001 also hold that the rate of increase in literacy is more in rural areas than in urban areas. Female literacy was at a national average of 65% whereas the male literacy was 82%. Within the Indian states, Kerala has shown the highest literacy rates of 98.3% whereas Bihar averaged 63.8% literacy.

Enrollment in Primary Education

With the increased coverage of schools under DISE, enrolment both at the primary and upper primary level of education has increased significantly. The enrolment increased from 101.16 million in 2002-03 to 131.85 million in 2006-07 and further to 134.38 million in 2008-09. The GER at primary level, based on the DISE data is estimated to be 115.31 percent, corresponding to 98.59 percent NER. A few states are near achieving the goal of universal primary enrolment. Over a period of time, enrolment in upper primary classes has also shown consistent increase. From a low of 47.89 million in 2006-07, it has increased to 53.35 million in 2008-09 (GER 73.74 percent). At primary stage maximum enrolment (46.61%) is in government schools and minimum (9.03%) in private aided schools. Local body and private unaided schools have 29.40% and 14.96% of total enrolment respectively. In primary schools, total enrolment is 8,09,00,653 out of which 47.38% are girls and 52.62% are boys. The percentage of girls' enrolment in rural and urban areas is 47.27 and 47.88 respectively. Out of total enrolment in primary schools 53.55% are enrolled in government schools, 30.69% in local body schools, 5.75% in private aided schools and 10.01% in private unaided schools. Total enrolment in primary schools has increased by 24.59% in comparison to Sixth Survey. (**Source: 7th All India School Education Report, NCERT**) In India the enrolment in primary school in 2011-12 was

58.46% were as in 2012-13 it was 55.40%. **(Source: National University of Educational Planning and Administration and Department of School Education and Literacy Ministry of Human Resource Development, Government of India, New Delhi 2013)**

Growth in Primary Schools

With the improved coverage, the number of schools/sections imparting elementary education covered under DISE increased many-fold. From 8,53,601 schools in 2002-03, their number has increased to 11,96,663 schools in 2006-07 and further to 12,50,775 schools in 2007-08 and 12,85,576 schools in 2008-09. Of the total schools, about 87.30 percent schools are located in the rural areas. During the same period, the number of primary schools increased from 6,01,866 to 8,09,108. Category-wise distribution of schools reveals that majority of the schools (62.94 percent) are independent primary schools. In India the number of primary school available in 2010-11 there were 827244 schools were as in 2011-12 there were 842481 and in 2012-13 there were 853870 schools. **(Source: National University of Educational Planning and Administration and Department of School Education and Literacy Ministry of Human Resource Development, Government of India, New Delhi 2013)**

Growth in Number of Primary School Teachers

Availability of teachers in schools is an important variable for quality education. The total number of teachers in 2008-09 suggests that about 5.79 million teachers are engaged in teaching in schools imparting elementary education in the country. The data also shows appointment of a large number of teachers across the country consequent to the SSA interventions. All the schools in the country now have an average of 2 and more teachers. The all-India average reveals that, on an average, there were 4.5 teachers in a school in 2008-09 that imparts elementary education compared to an average of 3.0 teachers per primary school. In India total number of primary school teachers in the year of 2010-11 was 6403234 were as in 2011-12 was 6687983. The average teachers per schools (primary) in 2010-11 were 3.1%, in 2011-12 and 3.1% in 2012-13. **(Source: National University of Educational Planning and Administration and Department of School Education and Literacy Ministry of Human Resource Development, Government of India, New Delhi 2013)**

Dropout Rate in Primary Education

One of the essential requirements to achieve UEE is to retain students in the education system. The apparent survival rate (Ratio of Grade V to Grade I) improved to 76 percent in 2008-09. This is also reflected in retention rate at primary level which is estimated to be 74 percent. With improvement in the number of schools, facilities in schools and enrolment, the dropout rate for cohort 2007-08 indicates an average rate of 8.02 percent in primary grades. A few states have almost achieved the goal of universal retention at primary level. The cohort survival rate (to Grade V) is estimated to 76 percent indicate that a good number of children dropping out in primary classes. Nearly one third of the states and union territories have seen an increase in the dropout rate in primary education despite an overall increase in enrolment two years after the Right to Education (RTE) was implemented. This comes at a time when fund allocation has been doubled. More children have dropped out in 2010-2011 as compared to 2009-2010 in 10 of the 30 states where RTE has been notified. These include progressive states like Tamil Nadu and Gujarat that have seen an increase in drop out ratio from 0.1% to 1.2% and 3.9% to 4.3% respectively between 2009-2010 and 2010-2011. One of the other important indicators that are essential to achieve UEE is high transition from primary level to upper primary level of education. It has improved significantly from 64.48 percent in 2002-03 to 83.72 percent in 2005-06 but declined slightly to 82.68 percent in 2007-08. The drop-out rate for primary classes (I-V) was 27.0% during 2010-11. It was 40.6% for elementary classes (I-VIII) during the same year. The retention rate at primary level has gradually improved from 71.01% in 2005-06 to 75.94% in 2011-12. **(Source: National University of Educational Planning and Administration and Department of School Education and Literacy Ministry of Human Resource Development, Government of India, New Delhi 2013)**

Achievement of Children in Primary Education

Learner's achievement is considered as one of the important indicators of quality of education. Examination results at the terminal grades are a proxy indicator of learner's achievement. About 50.20 percent boys and 50.35 percent girls passed Grade IV/V with a score of 60 percent and above, compared to 42.55 percent boys and 43.56 percent girls scoring 60 percent and above marks in Grade VII/VIII; thus showing

impressive improvement over the previous years. The overall status of primary education during years can be seen from the table 1.1.

Table 1.1: Overview of Primary Education in India over years

Indicators	Results over Years
Access	99% of the rural population has a primary school within 1 km. 300895 new schools opened till December 2009.
Gross Enrolment Ratio	GER increased in 6-14 age group to 114.61 in 2007-08 from 96.3 in 2001-02 at the primary level and to 77.50 in 2007-08 from 60.2 in 2001-02 at the upper primary level. (SES)
Gender Parity Index (GPI)	Improved from 0.83 in 2001-02 to 0.98 in 2007-08 at primary level & from 0.77 to 0.92 at upper primary level. (SES)
Dropout Rate at the primary level	Reduced by 13.48% to 25.55% in 2007-08 from 39.03% (2001-02). Dropout rate for girls declined by 15.06% points. (SES)
Pupil-Teacher Ratio	In 2007-08 the PTR at the national level was 46:1 for primary and 35:1 for upper primary level. 10.22 lakh teachers were recruited by December 2009.
Enrolment of Children	29.57 lakh children identified and 24.77 lakh children (83.78% of those with Special Needs identified) enrolled in school by 2009-10.

(Source: Annual Report of 2009-10, Government of India, MHRD)

However, due to shortage of resources and lack of political will, this system suffers from massive gaps including high pupil to teacher ratios, shortage of infrastructure and poor levels of teacher training. There have been several efforts to enhance quality made by the government. The scheme for universalization of Education for All is the Sarva Shiksha Abhiyan which is one of the largest education initiatives in the world. Enrollment has been enhanced, but the levels of quality remain low.

The World Bank has in a report on primary education in India (World Bank, 1997) examined a number of recent research reports. The conclusion from these reports was that the quality of education in Indian schools was poor. Students in grade 5 had often only learned half of what they were supposed to have learned in grade 4. The content of the curriculum was mainly transmitted through the textbooks and they were regarded to be too theoretical and of little relevance in the reality in which the students lived. Increase in the number of Primary schools during a specific period decreased the dropout rate during the same period. There is no such drastic change in the improvement of elementary education to achieve Universalization of Primary Education and it shows the failure of primary education which is not very promising. A lot needs to be done at the national level to achieve the goal of Universalization of Elementary Education.

1.3.0 STATUS OF PRIMARY EDUCATION IN GUJARAT

The status of Gujarat as a state came into existence on 1st May, 1960. Prior to this Gujarat formed a division of the Bombay State. Total 33 districts and 248 Talukas are having in Gujarat State. The Population of Gujarat according to the 2011 census stands at about 60 million, making it the 10th most populated state in India. The state is spread over an area of about 190000 sq. km. making it the 7th largest state in the country in terms of area. Total population of Gujarat as per 2011 census is 60,439,692 of which male and female are 31,491,260 and 28,948,432 respectively. Literacy rate in Gujarat has seen upward trend and is 78.03 percent as per 2011 population census in which male literacy stands at 85.75 percent while female literacy is at 63.31 percent

Figure 1.1: Political Map of Gujarat State

Since independence, Gujarat had made considerable progress in primary education. The major goal for primary education in Gujarat is "Achievement of Universal Primary Education (UPE) so that, every child completes at least 5 years of primary education by 2000 A.D." The specific goals for the achievement of universal primary education were:

1. To achieve the universal enrolment of children of 5 to 10 years of age (both boys and girls) in primary school.
2. To achieve the attendance rate of 100 percent for every child.
3. To retail 80 percent of these children who are enrolled (boys and girls) of 5 years of primary education by 2000 A.D.
4. To improve the level of learning by introducing the Minimum Level of Learning.
5. (MLL) in the entire State from Class I to V By 2000 A.D. with 80 percent of children achieving 80 percent of Minimum Level of Learning.

6. To achieve the teacher-pupil ratio of 1:40 by 1995, 1:39 by 1997 and 1:38 by 2000 A.D.
7. To improve the coverage and effectiveness of the Mid-Day Meal programme.
8. To improve the instructional material for the primary education.

The State Government has always accorded very high priority for primary education in the state. Following points will show the status of Gujarat in Primary education.

Literacy Rate in Gujarat

As per Census 1991, the literacy rate of Gujarat is 51.17 per cent. Excluding 0 to 6-age population, effective literacy rate in Gujarat State has increased from 49.90 per cent in 1981 to 61.29 per cent in 1991. Effective literacy rate among males increased from 62.07 per cent in 1981 to 73.13 per cent in 1991. Among females, it has increased from 36.94 per cent in 1981 to 48.64 per cent in 1991. The literacy rates for Scheduled Castes and Scheduled Tribes population were 61.07 per cent and 36.45 per cent respectively in 1991. In literacy, amongst the states in India, Gujarat ranks ninth. As per 1991 Census, the literacy rates for rural and urban areas were 53.09 per cent and 76.54 per cent respectively. Some of the tribal districts such as the Dangs showed unusual increase in their literacy rate. The female literacy in the Dangs increased from 48.51% in 2001 to 68.75% in 2011.

Enrollment in Primary Schools

Gross Enrolment Ratio (GER) has shown an increasing trend among all categories of students in the primary schools of Gujarat. During 1996-2000, GER for boys in general category has gone up by about 18 percentage points, followed by 15 percentage point increase in GER for SC and ST boys among children. Spurt in GER, gender-wise and category-wise, in the last two years compared to the corresponding figures for 1996 seems possibly due to such factors as school readiness program, special enrolment drive with emphasis on girl child enrolment and community participation in educational endeavours of the State. Gujarat State has achieved the goal of 100% enrolment of children having access to primary schooling within a

distance of 1 km. and upper primary schooling to 95% within a distance of 3kms. The State has mad special efforts to promote girls' enrolment to the maximum. Enrolment drives through door-to-door visits, organizing 'Shala Praveshotsav' and launching incentive schemes have been yielding encouraging results in the form of acceleration in enrolment, reduction of dropouts, increase in participation rates, and decline in the percentage of repeaters. The retention rates of Class I to V during 1093-94 in Gujarat was 54.56, 58.82 of boys and 49.33 of girls respectively. This means that out of 100 boys and 100 girls enrolled in Class I (1989-90), around 59 boys and 49 girls completed five-year cycle of primary schooling. The net enrolment of students in Standard 1 in primary schools increased to 100%. In the year of 2011-12 total enrolment in primary school was 86.54% and in 2012-13 it was 77.97%. **(Source: MHRD, Department of School Education and Literacy Government of India, New Delhi 2013.)**

Number of Primary Schools

In the then Bombay State inclusive of Gujarat, 91.58 per cent of the population were served by primary education (1957). According to the Second All India Educational Survey (1965), 97.70 per cent of the population was served by primary schools within the habitation or a walking distance of a little over one kilometer from the habitation. Since Gujarat State came into existence on May 1, 1960 acquiring the Status of a separate state, it is pertinent to know the growth of school education since 1961. Information of number of schools at primary and secondary levels, teachers at these levels of education, enrolments etc. prior to 1960 is available in the records of the then Bombay State. For Gujarat State the relevant information on school education during the period 1961–99, the percentage increase in elementary schools (class I – VII) was 94.33 (i.e. around two fold) of secondary schools, incremental growth is 281 per cent which was phenomenal. Growth in number of schools at different levels of school education shows a gradually increasing trend. Gujarat State implemented the 10 + 2 pattern of secondary education from June 1976, and vocationalization of education at plus 2 stages (classes XI –XII) was adopted in pursuance of National Policy of Education, 1986. It is pertinent to mention that in Gujarat, junior colleges or Classes XI - XII attached to degree colleges are nonexistent. The Government at national and state level is trying hard for universal enrolment, and maximized attendance and retention by launching various innovative programmes. After

independence there were nearly 18,512 primary schools in Gujarat in 1960-61, increased to around 32,952 in 1993-94. The total number of primary schools In Gujarat were available in 2010-11 were 10,823 were as in 2011-12 there were 11,105 schools and in 2012-13 there were 11,365. The average teachers per primary school in the year of 2010-11 were 2.9, in 2011-12, it was 2.9 and in the year 1012-13 it was 3.0 in Gujarat. **(Source: NUEPA and Department of School Education and Literacy, MHRD, Government of India, New Delhi 2013.)**

Dropout Rate

The dropout rate during the year 2003-04 to 2009-10 was classified in two part i.e. dropout rate in Standard 1 to 5 and dropout rate in Standard 1 to 7. The dropout rate of boys and girls were 17.79 per cent and 17.84 per cent in 2003-04 in Standard 1 to 5 where as in Standard 1 to 7, it was 36.59 per cent and 31.44 per cent respectively for boys and girls. Every year the dropout rate was decreased and in the year 2009-10 the dropout rate of boys and girls was 2.18 per cent and 2.23 per cent for Standard 1 to 5, whereas, for Standard 1 to 7, it was 8.33 per cent and 8.97 per cent respectively. Among 29 states and six union territories, Gujarat's dropout rate of students between class I and class X ranked 16, at 58.84 per cent which was higher than the national dropout rate of 55.88 per cent in 2008-09. Among progressive states, Gujarat fared the worst. However, Gujarat's dropout rate has shown improvement since 2005-06, when 60.27 per cent students had dropped out before high school. This was the year when the government launched the 'Kanya Kelavni' campaign to improve girls' enrolment in schools.

Academic Achievement

The outcome of systematic assessment of academic achievements of pupils in elementary schools provides an indicator of the progress of UEE in the State, besides enrolment and retention. Gujarat Council of Educational Research and Training (GCERT), Gandhinagar had undertaken a research project entitled 'Profiles of Academic Achievement of Primary Schoolchildren of Gujarat' in collaboration with PG Department of Education, Bhavnagar University. The objective of the research was to assess the academic achievement levels of pupils (of grades III – VI) studying in primary schools of all districts of the State.

Academic and research staff of all District Institutes of Education and Training cooperated in constructing, standardizing and administering 18 tests for 18 subjects to 32232 pupils of Grade III to grade VI during 2009-10.Contents of the tests were based on the curricular contents of the MLL-based text-books. In regard to learning attainment at the primary level of education in accordance with the Minimum Levels of Learning, 75% students are expected to achieve 80% level of attainment in each subject of study in a particular grade/class at the final examination. This is usually referred to as 75x80 per cent criteria. On the basis of this content, only 24% of the third Graders in Gujarati and Mathematics show 80% achievement level, whereas only 19% of students reach this level in Environmental Study. In Grade – IV, only 15% and 17% of students respectively in Gujarati and Mathematics reach 80% achievement level. Hardly around 50% of students attain 50% level of achievement in these subjects. **(Source: Gujarat Council of Educational Research and Training (GCERT), Gandhinagar, 2009-10).**

UEE: Access to Elementary Education

The data of the state was not available during the First All India Educational Survey (1957) as Gujarat was not an independent State during that time. According to the Second All India Educational Survey (1965), all urban areas had fairly adequate facilities for primary education (Class I to VII). 97.70 per cent of the rural population was served by a lower primary school section within a walking distance of one mile (1.6 km) and 86.57 per cent of the rural population could avail of upper primary schooling within a distance of 3 km. On analyzing the data on access to primary schools within the habitation, it is evident that the percentage of rural population availing primary education has gradually increased from 90.50 in 1973 to 97.12 in 1993, showing an increase of about 7%. In the case of availability of primary schools up to a distance of 1 km., percentage of rural population with this facility has gone up from 96.86 in 1973 to 98.78 in 1993, indicating a positive increase of 2 per cent over the period of two decades. **(Source: Educational Statistics, Directorate of Primary Education, Gandhinagar, 1998-99)**

1.4.0 PROBLEMS OF ACHIEVING UEE IN GUJARAT

Based on the analysis presented above on different components of UEE one gets the impression that the state progressed a lot but still it has certain areas of concern, which are primarily responsible for unfulfillment of the goals of universal literacy and enrolment. Across the country, educational facilities are now available to a large segment of population and areas but compared to primary, upper primary facilities are not yet available to all areas and population. Over a period of time, ratio of primary to upper primary schools improved significantly but the same is not as envisaged in the policy directives. The state also failed to adequately create, utilize and make available alternative facilities in all unsaved habitations and areas where out-of-school children concentrate. A few schools still do not have school buildings and other teaching-learning facilities. The number of teachers and pupil-teacher ratio over time has improved significantly but still there are schools that do not have adequate number of teachers and instructional rooms. Below the district level, Block Resource Centre, Cluster Resource Centre and Village Education Committees have been formed in the DPEP districts. VECs are yet to be fully entrusted powers and responsibilities as envisaged in the Panchayati Raj Institution Bill. The enrolment at the primary and upper primary levels of education over time improved significantly but still more girls are out-of-school than their boys counterpart. The enrolment ratio at the upper primary level is much lower than at the primary level. The efficiency of primary education system has direct implications on upper primary system to expand. Unlike primary enrolment, which is a function of 6-11 years population, upper primary enrolment is strictly a function of primary graduates. Therefore, unless the goal of UPE is achieved, the dream of UEE is not likely to be realized. Till then, imparting upper primary education to all primary graduates will be treated as achieving UEE.

A large number of children continue to dropout from the system before completion of an education cycle, which severely affects the efficiency of the education system. The children are taking more years to become primary graduates than ideally required. The unfinished task in terms of unenrolled and out-of-school children is a challenging one. Rigorous efforts are needed to bring and retain them under the umbrella of education system. Local people and functionaries are made involved in developing and implementing district plans that, if experimented elsewhere may bring a sea

change in quality of plans and their implementation. The districts will develop district-specific plans by involving local community in a big way within the broad parameters of decentralization

To increase the enrollment on the elementary schools, to retain the students, to reduce the dropout rate and for the overall quality improvement of the elementary education in the state there is a need to bring drastic change in the existing system of education starting from the development of infra structure to the improvement in the process of teaching learning to the evaluation of students. All these components are very significant in the progress of the development of elementary education. One of the very significant areas of this process is to develop the quality of teaching and learning with the help of technology. There is a drastic change in the world of instruction and technology but our schools are deprived of these technologies. A similar concern is expressed in the recent five year plan. According to 12th Five Year draft plan (2013), "A programme for Information and Communication Technology (ICT) in elementary schools will replace the erstwhile Computer-Aided Learning (CAL) under SSA. This would include provision of networked computers, accessories and an Internet connection in a phased manner. A variety of software tools and pedagogically appropriate e-content in local languages will be sourced or developed to serve the school curriculum. The focus will be to enable students and teachers to access wide variety of resources available in the digital format, and digital resources that are seamlessly integrated in classroom processes. Efforts will be made to adopt energy efficient, cost-effective ICT solutions, which increase the number of access points in each school enabling more and more children to use the facility more frequently. Appropriate mechanisms to maintain the infrastructure and protect it from breakdowns will be ensured. ICT should also be used to network teachers and schools in a specific geography—this would enhance collaborative teaching and learning." Considering the national need, similar mechanism is needed to be implemented in the state for the betterment of elementary education in the state. Multimedia and the use of cartoon and comics in multimedia are the elements of technology having the power to attract the interest and attention of the learners of elementary classes in any subjects. There is need to conduct more and more research studies on this technology of using cartoon and comics through multimedia and the present study is an attempt in this direction to test this medium to teach Environment to primary school students.

1.5.0 CARTOON AND COMICS

From the earliest days of picture writing to today's cartoons and comics, picture reading has been popular with kids, young and old alike, among good readers and lazy readers. Cartoons and comics are the forms of picture reading where the reader gets information, involves own self in thinking, also gets pleasure or fun and feels refreshed. It is considered as one of the medium having huge potential for the young viewers. It had been tested effective in the field of entertainment and there is a need to see the scope and potential of this medium in the field of teaching and learning. According to Oxford dictionary cartoon means sequence of drawings, often with speech indicated, telling a story, a filmed sequence of drawings using the technique of animation. It is a pictorial form along with fun. It also provides information in dialogue form. In short, it is a pictorial form having information or message in a dialogue form with great pleasure or fun. Early pictures were limited with neat, beautiful and accurate prototypes related to society and its happenings, whereas, the recent comic and cartoons emphasize all types of self-spoken pictures which can provide pleasure, and help to communicate the massage of the cartoonist as well in a different manner.

1.5.1 Cartoons

Cartoon is a pictorial caricature representation of person, idea or situation that is designed to influence public opinion. It is a predigested source of information with a strong visual impact. It is the cartoon as an instrument of propaganda and a medium of instruction, has also the chief potentialities, which can be used in teaching learning processes. Cartoon may be a unit of pictures, which can provide a whole and complete meaning related to an idea or situation. It requires very less background and foreground for understanding. Because of its uniqueness and simplicity it can be effectively used in appraising, interpreting and emphasizing any event, person or matter. The power of the cartoon to influence public opinion lies in its compactness, its simplification of issues, and the considerable interest that can be aroused by sharply drawn illustration laced with humor. Most commonly, the cartoon is used in connection with such fields, as politics, geography, economics and sociology, but increasingly it is being utilized in commerce, science, literature and mathematics.

Cartoons have their own language, which do not need any dedicate language to make the learners understand the theme and meaning of the picture. Picture fun is the real language of cartoons. So, it can be considered as a language free medium for the learners of any language denomination. These are some examples of cartoons.

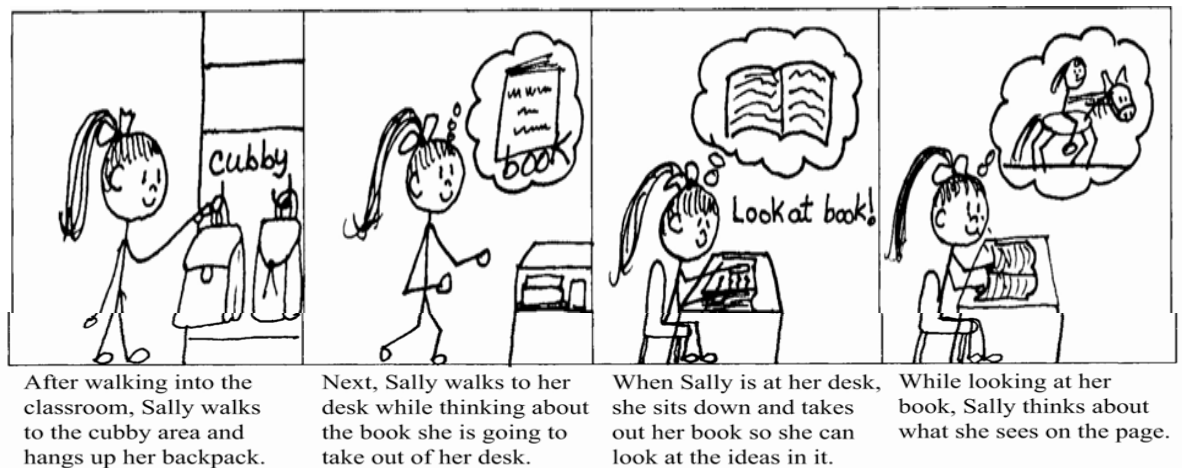**Figure 1.2: Illustrations of Cartoons**

(Sources: http://www.toonpool.com and http://www.webneel.com)
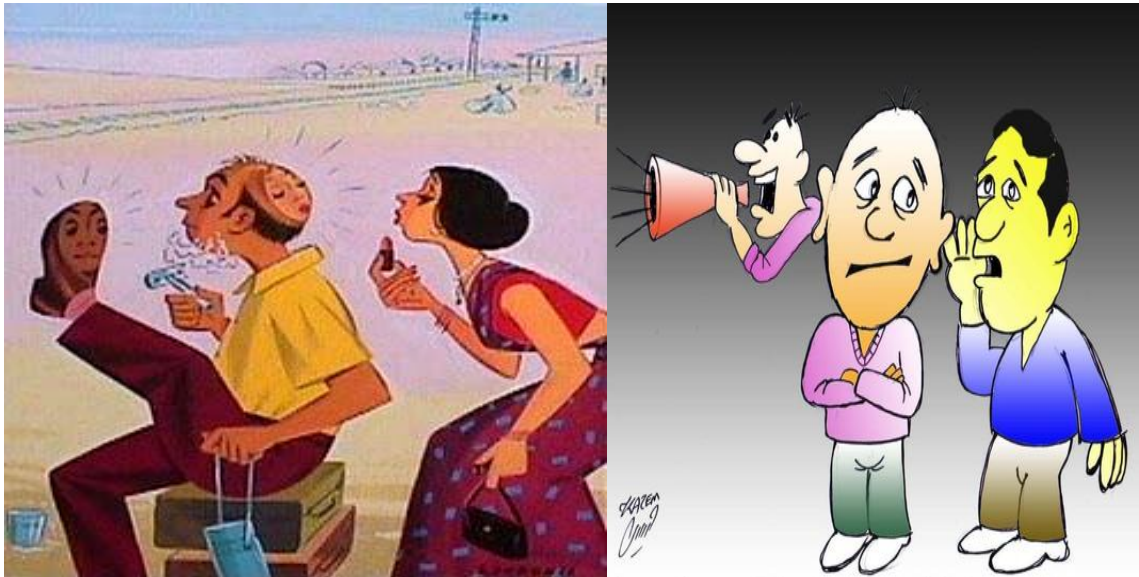
One cartooning strategy is known as Comic Strip Conversations, developed by Gray

(1994). By illustrating conversation through simple drawings, the strategy helps the

student to identify "what other people say and do" and emphasizes "what other people may be thinking." Drawing a short conversation with symbols to represent persons and speech while talking assists the student in learning how general conversations   occur.
Laminated marker boards, paper, or chalkboards are recommended as useful ma terials for cartooning. Examples of cartooning include:

- Drawing about a short and conventional conversation (e.g., greeting, birt hday

  celebration, saying "excuse me," or saying "I'm sorry.")

- Drawing about a situation (e.g., describing a situation that makes people mad, sad, or happy)
- Guessing what other people would do or say in a certain situations.

The following comic strip was drawn to help Sally understand how to enter the classroom and start her day.

Figure 1.3: Example of comic strip

After walking into the classroom, Sally walks to the cubby area and hangs up her backpack.

Next, Sally walks to her desk while thinking about the book she is going to take out of her desk.

When Sally is at her desk, she sits down and takes out her book so she can look at the ideas in it.

While looking at her book, Sally thinks about what she sees on the page.

It is a fact that children learn much from cartoon animations on television. Over years, there is an increased use of this powerful tool have been done in teaching/learning process in formal as well as informal education. According to Pearce (1999), animation is a great innovation in education to display some important concepts or principles that might not otherwise be able to shown in the classroom. For instance, speeding up naturally slow phenomena or slowing down naturally fast phenomena in animations can be effective on students' understanding. Pearce (1999) also reported the results of a survey about animation. According to the result of this survey, over 90 percent of 500 students found animations as effective or extremely effective in teaching/learning process.

1.5.2 Forms of Cartoon

Cartoons are used for different purpose and available in different forms in the books, magazines, newspapers and T.V. programmes. Following are different forms of cartoons.

1. Political Cartoons

These cartoons are used in the newspapers and magazines mainly for the political criticism. Generally political related cartoons provide double-barreled meaning making the cartoonist safe. Cartooning was started only with these political cartoons. Famous Indian cartoonist R.K. Laxman is quite famous for this type of political cartooning. Here are some glances of political cartoons.

Figure 1.4: Cartoons illustrating the political criticism

2. Society related Cartoons

These cartoons are quite similar to that of political cartoons. Here social undesired practices are criticized in place of political matters. It helps to make the people aware about social problems. Now-a-days many cartoons are found on environmental problems.

Figure 1.5: Cartoons illustrating Social Problems

3. Educational Cartoons

Educational cartoons are used in the educational books and magazines for educational purpose. It is used for all learners of all age and all levels. Cartoon based on social and political problems have also high educational value for the whole society. Similar cartoons can be suede for the environment problems, environment awareness in the form of educational cartoons. Cartoons and comics are also found in the self-study materials of IGNOU, language textbooks of lower standard of CBSE & GSEBE, books for neo-literates prepared by National Book Trust. There is a need to use this medium of cartoon and comics more and more in a systematic form for educational purposes

Figure 1.6: Educational Cartoons

1.5.3 Comics

Closely related to cartoon are the comics. According to Oxford dictionary, Comic means to cause laughter, funny which is meant for children's periodical, mainly in the form of characters enacts a story in a sequence of closely related drawings designed to entertain the reader. Whereas, the cartoons depend primarily upon a single visual impact, comics consist of continuing story situations in which reading play an important role. All will agree that this medium of communication has become firmly established in our society. Unlike cartoons, comics, require a medium like a language along with background and foreground for understanding. Comics can explain a whole situation, story or episode where as a cartoon can explain a single idea or situation. Comics have more potential in the field of education particularly the education for children in comparison to cartoons.

Figure 1.7: Miniature Comics with Different Effects

Putting both the medium like, cartoon & comics together for the purpose of teaching learning, significant impact can be created among learners. Cartoon & Comics based learning material may be in form of magazine booklets, books and digital forms. The multimedia approach can be used in the preparation of cartoons and comics based material. This medium of cartoons and comics are gaining so much popular in the society may be due to the following underlying specific characteristics.

1.5.4 Potential Characteristics of Cartoons and Comics

This is a medium of picture viewing that rely mainly on unreal and ugly images of the real world having quite a good popularity mainly among young learners. Though it is quite contrast to the real world, attracts viewers and readers may be due to the following characteristics.

1. Effective and Easy Medium of Communication

Cartoons and comics are potential medium for communicating ideas and concepts in all levels, effectively and easily. It has proved to communicate social, economic and political massages effectively, comprehensively with minimum language and space, even if the matter may be of controversial in nature. No communicating media is of exception of this medium of communication. Here pictures are used as the language and their shape, postures and gestures provide meaning, pleasure and fun to the readers. There is great satisfaction in this discovery to the child who has been made to feel incompetent in the school's approach to reading. Cartoons and comics, if

effectively designed and prepared by expert cartoonists can serve a lot for poor, disable and uninterested learners.

Figure 1.8: Cartoons illustrating the Scientific Concepts with pleasure and fun

(Source: http://filipspagnoli.wordpress.com, http://www.dailykos.com)
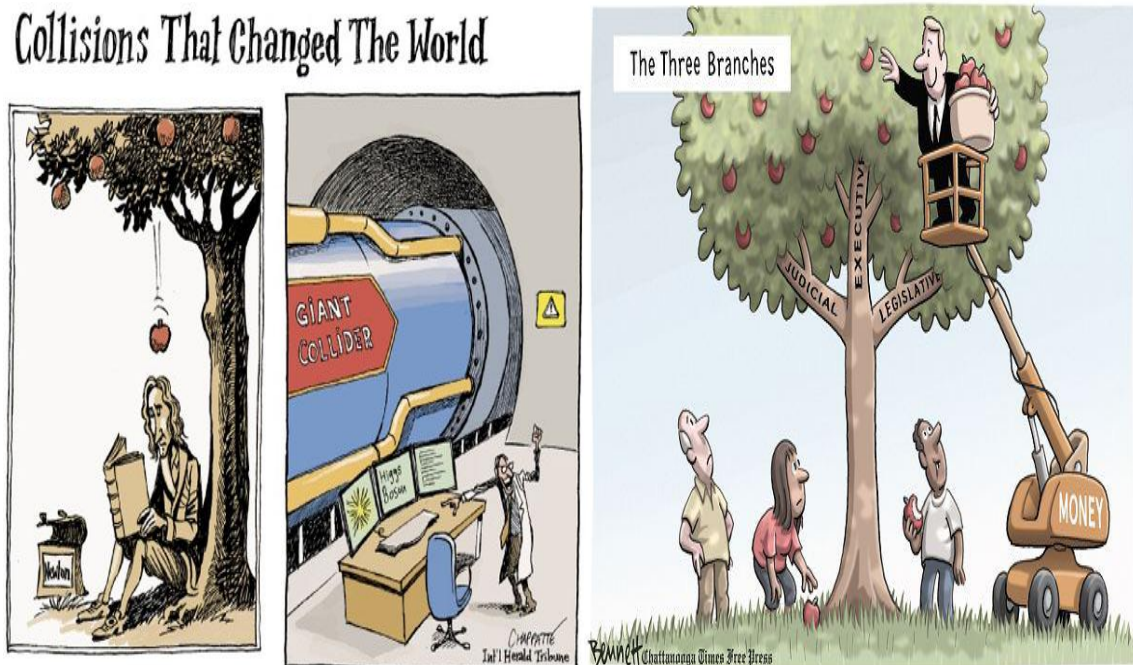
2. Greater Sources of Motivation

By nature, an effective cartoon readily attracts attention and arouses interest of the viewers. This suggests at once that appropriate cartoon materials can be useful motivation devices in the classroom. Cartoons on current topics, if suited to lesson objectives are effective discussion starters. Such questions as "What does this cartoon mean?" "Does it tell the whole story?" and "What other cartoons have you seen on this subject?" can start the ball rolling quickly in a social studied, science, language or mathematics classes.

**Figure 1.9: Cartoons with Motivational Inputs**

(Source: http://motivationalcartoons.wordpress.com)

3. Helpful in Illustrations

Illustration is the major ingredient of cartoon and comics. A major portion of the message of cartoons and comics are communicated to the viewers and readers only with the help of illustration. Language is not a barrier in the case of cartoons and comics.

**Figure 1.10: Cartoons having more illustration abilities**
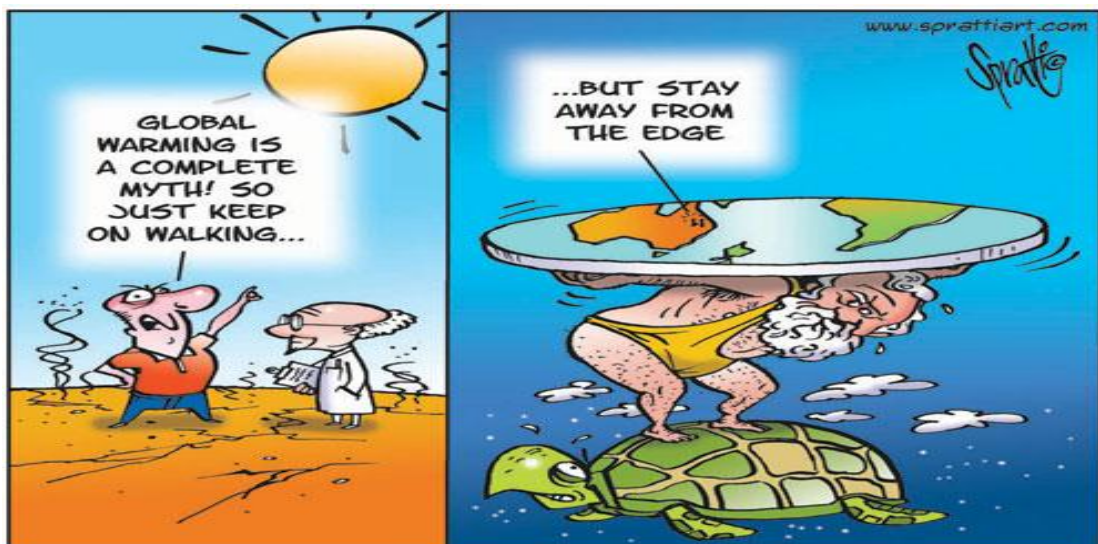
4. A Great Source of Interest

The comics often do for the children what the newspaper at breakfast does for some grown-ups. It postpones the movement of responding to a daily schedule or routine. The grown up shuts out for a few brief minuets all through of what the day may hold for him. The child, likewise, by this very quiet and absorption, postpones the adult's instance. The errand to the grocery, the time for going to be, or if he is in school, the movement of attending to a task set by others and unwelcome by him ceases to press him for the moment. It shows the interest of children toward comics and cartoons. The same principles can be used to make children interested toward school, teaching and learning with the help of appropriate use of cartoon and comics for this purpose.

Figure 1.11: Interesting Cartoons
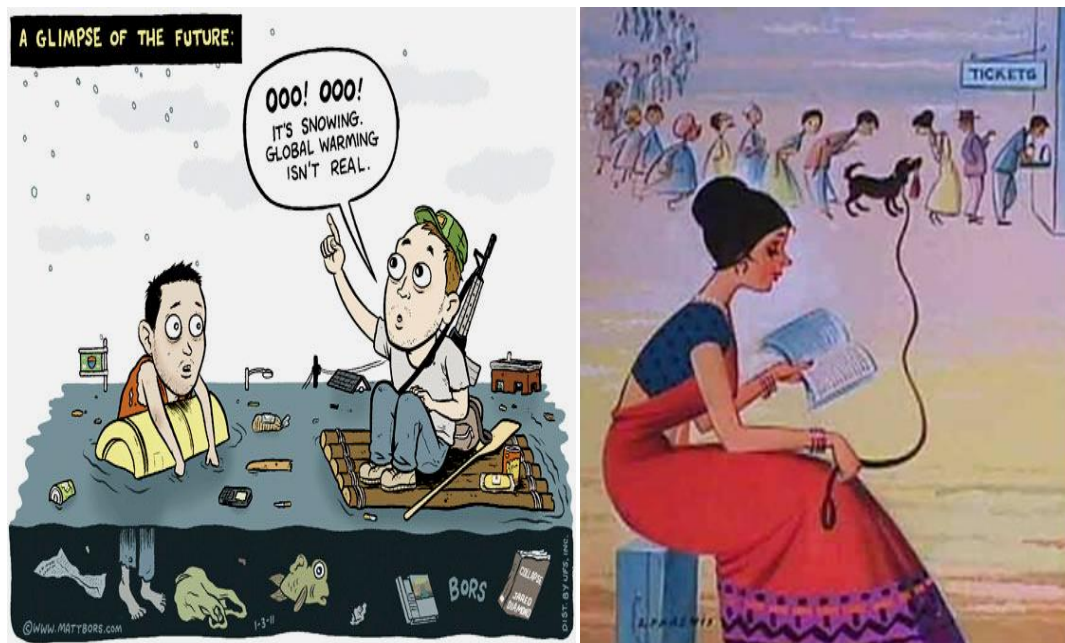
5. Provide Information along with Fun and Pleasure

It is very easy to pass information to the students with the help of cartoons and comics. Information of boring and dull nature can also transfer immediately with this

medium. The desire and interest for fun and pleasure can help learners to get abstract information and helps in making it concrete. See the example given in this cartoon.

Figure 1.12: Cartoons illustrating information with fun
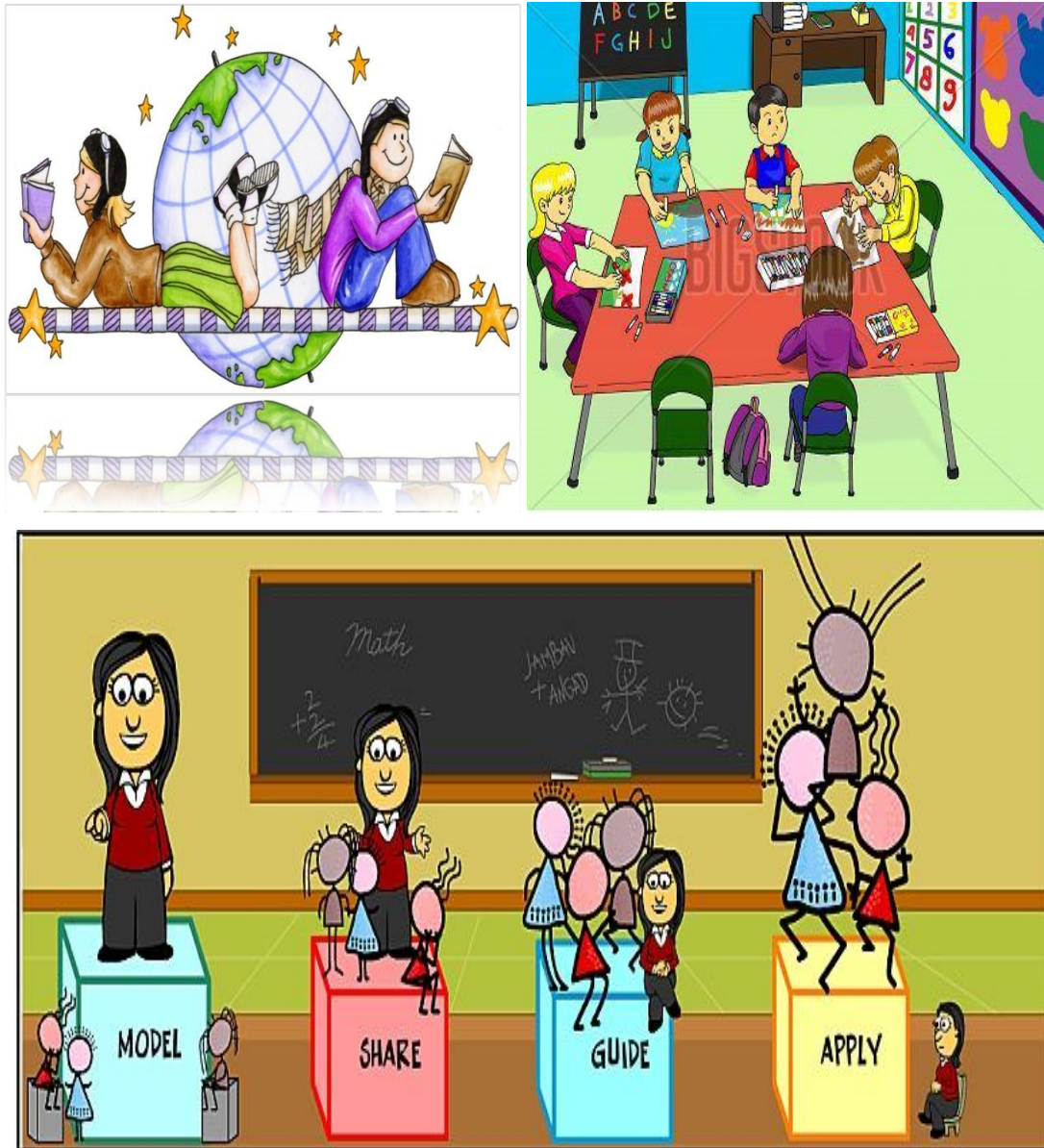
The psychological roots of caricature as an art forms, E.Kris and E.H.Gombrich (1938) postulated that in the comics aspect of caricaturing distortion, there is present a quality that goes to the root of essential nature of things, even though it has changed with the passage of time and cannot longer by fully understood in its symbolism.

6. A Language free, Culture free and religion free medium

The textbook of most of the classes are biased towards language, culture and religion. It creates problems for application of a tested material in different set up due to language, culture and religious variations. If cartoon can be prepared carefully it can be very useful in this type of situations and contexts. Now a days GSEB also used such cartoons in textbooks.

Figure 1.13: Illustrations showing the Language free, Culture free and religion free quality of comics
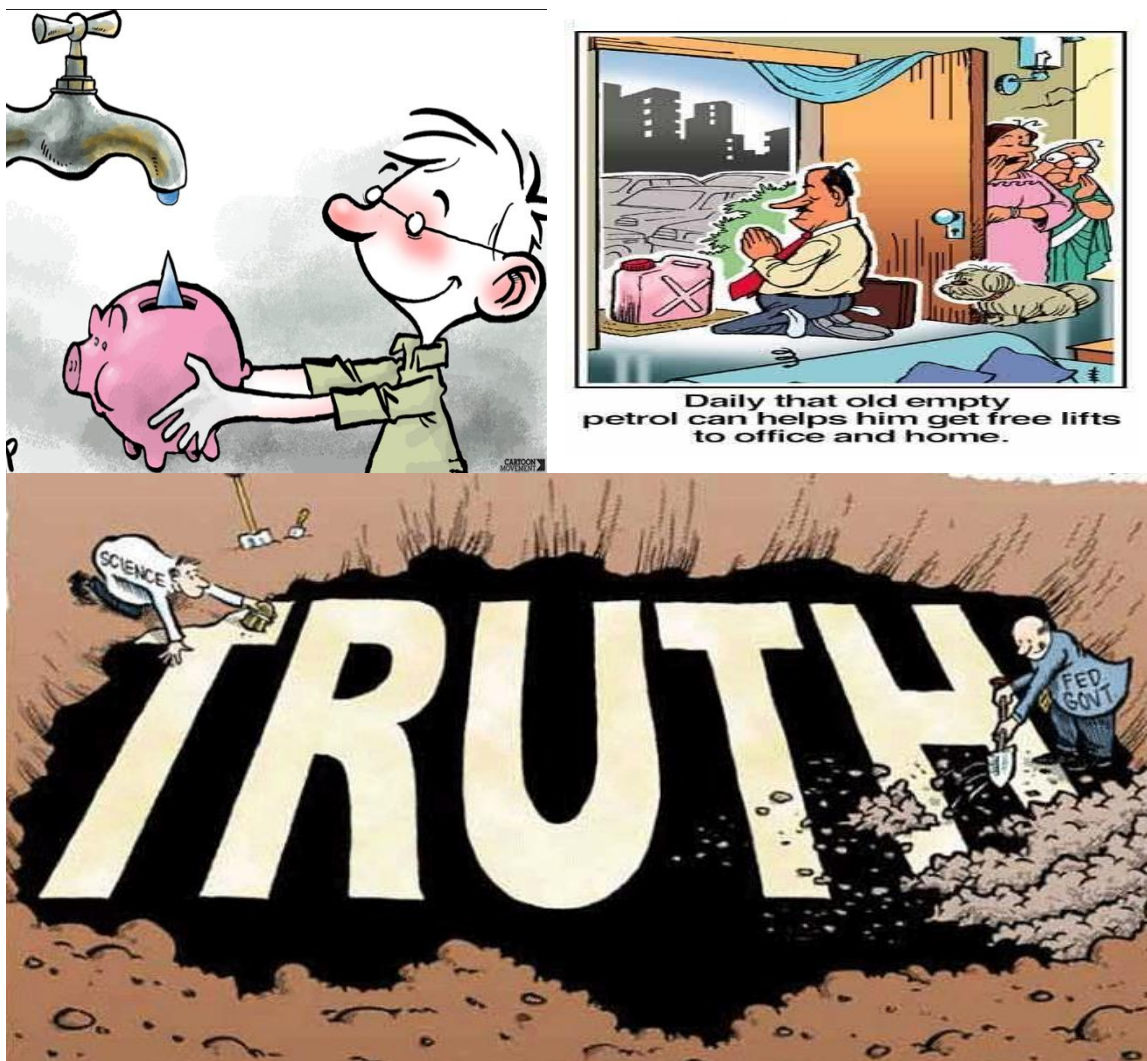

Sustainable Bio-Fuel?

marcrobertscartoons.com
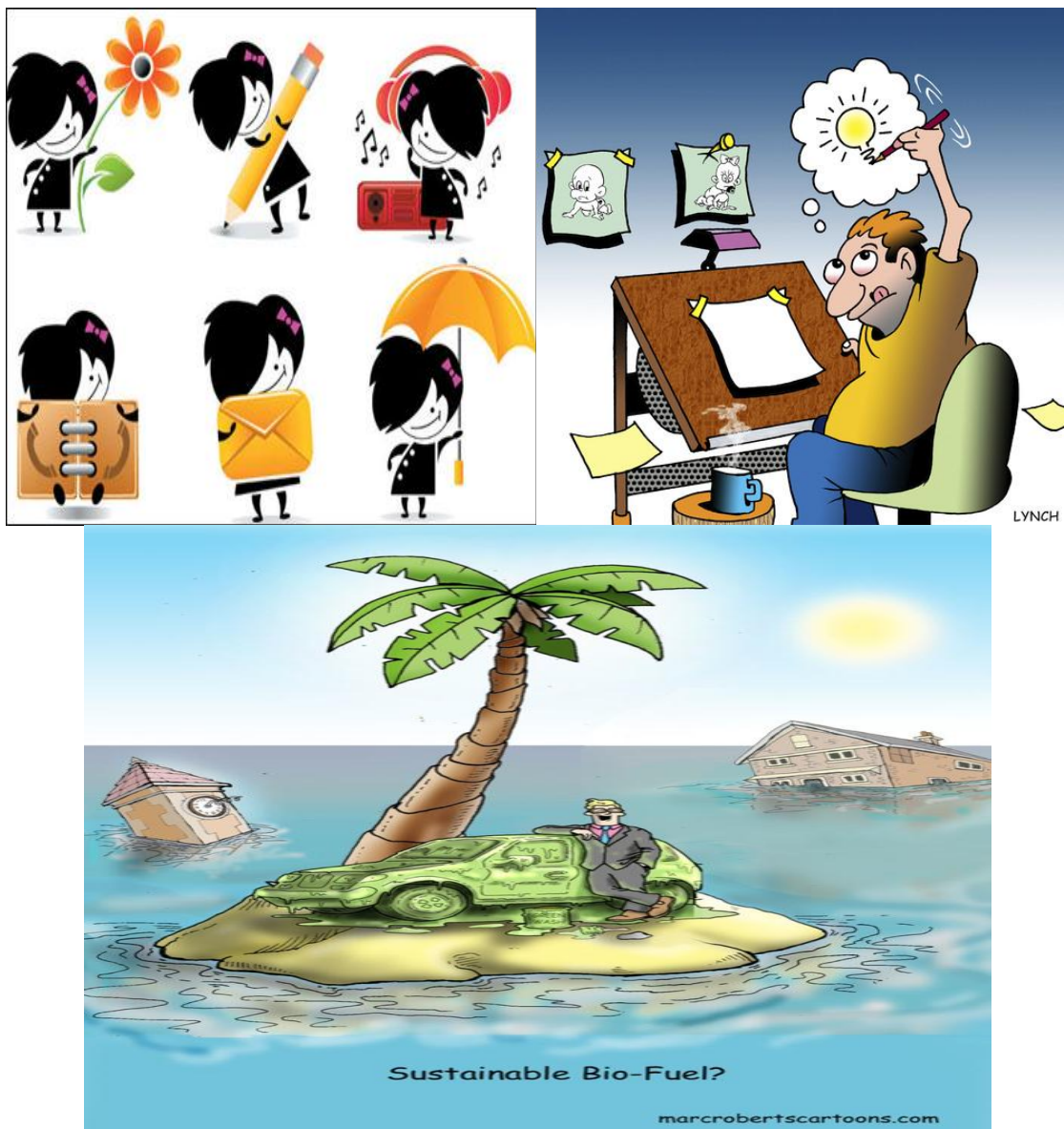
7. Specific Idea or Theme is the Skeleton of Cartoon and Comics

A good cartoon is built around a single idea. Typically it may employ caricature, satire, exaggeration, symbolism and humor of a sort. Similarly, comics are also prepared with a central idea where the characters tries to highlight that central idea with the help of their written vice and actions with the help of a series of sets. Cartoonist has to keep the specific idea or theme of the cartoon in mind while preparing it for educational purposes. So it should be avoided from double-barreled meaning or having double barreled meaning with good intention to develop the creative insight of the learner.

**Figure 1.14: Cartoons Illustrating Specific Ideas**

Daily that old empty petrol can helps him get free lifts to office and home.

(Source:http://www.cartoonmovement.com,http://www.scienceprogress.org,http://www.indiatimes.com

8. Simplicity is the Beauty of the Cartoons and Comics

Generally speaking, better cartoons contain only essentials. They depend more on key characteristics for recognition than on extensive details. A few simple sharp lines, some shading and the necessary background sketches are the principle mechanical ingredients of good cartoons. The creative artistry and imagination of the cartoonist are evidenced by the overall effect she/he can attain with these physical elements and an idea. So simplicity is the beauty of cartoons and comics.

Figure 1.15: Some Simple Comics

(Source: http://www.markewbie.hubpages.com)
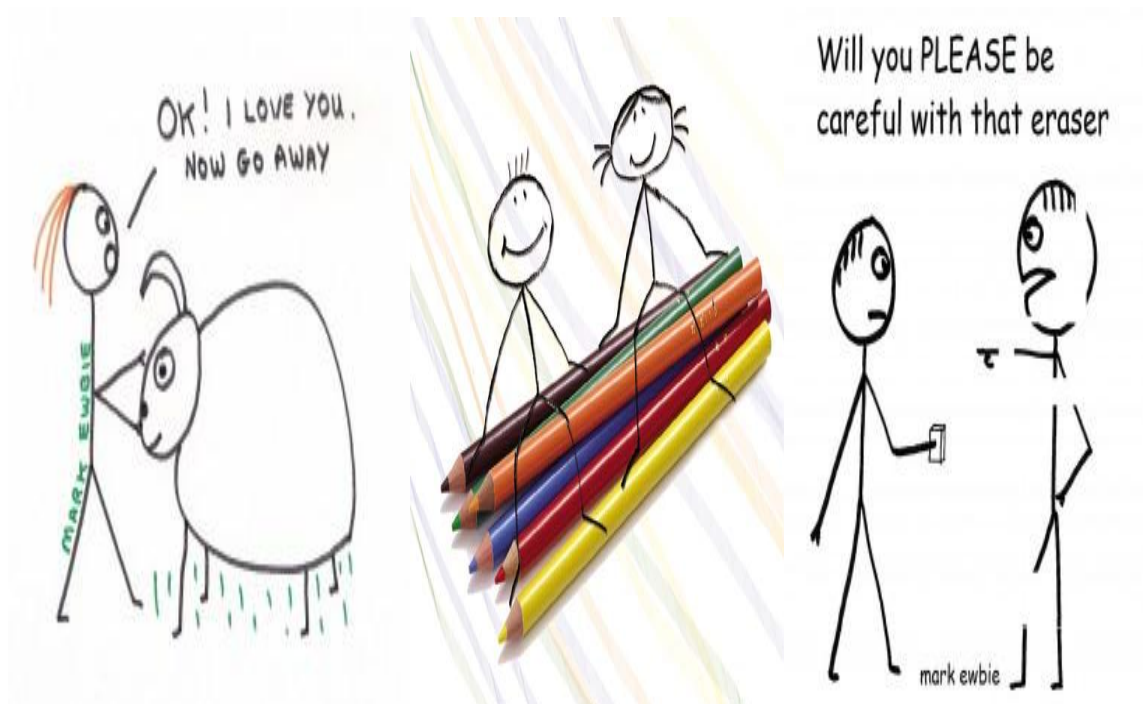
9. Clear Symbols are the Essence of Cartoons and Comics

Another quality of effective cartooning is clarity of its symbolic meanings. Symbols representing more abstract concepts such as states, rights, humanity, the common man, one world, peace, unity, freedom etc. that is quite difficult to devise. With reference to symbols and figures cartoon should not be biased to any particular group.

Accordingly teachers must be careful to select cartoons whose symbols are not too abstruse for their pupils.

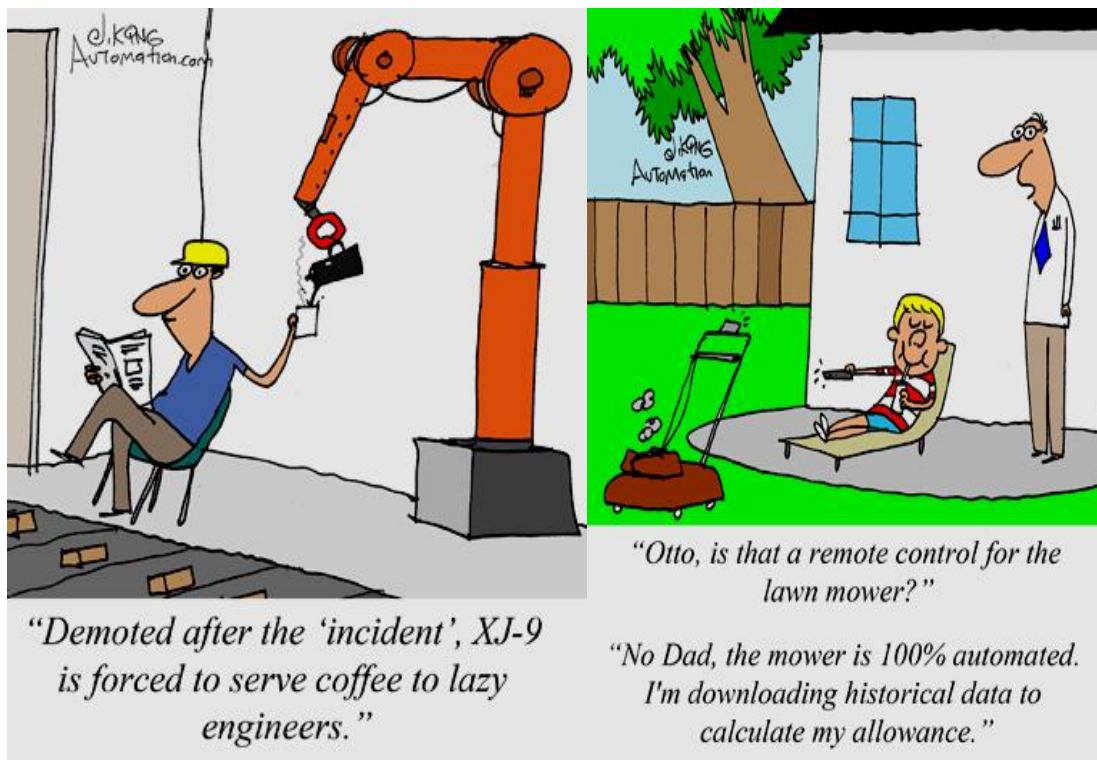**Figure 1.16: Cartoons Powered by Appropriate Symbols**

(Source: http://thinkprogress.org, http://webneel.com, http://cartoonsymbols.com)

10. Captions are the Ornaments of Cartoons and Comics

Another physical characteristic is brevity of caption. Some cartons need no caption, the pictures itself conveying the idea without verbal assistance. The captions should be there in the form of more written sentences and less spoken sentences, which can help readers to improve his/her, language ability. Similarly captions can change the meaning of cartoons e.g. a similar cartoon can provide different opposite meaning due to adding caption. Given cartoon explains the importance of caption.

Figure 1.17: Cartoons with Captions

"Demoted after the 'incident', XJ-9 is forced to serve coffee to lazy engineers."

"Otto, is that a remote control for the lawn mower?"

"No Dad, the mower is 100% automated. I'm downloading historical data to calculate my allowance."

11. Appropriateness of Experience Level is the personality of Cartoons and Comics

The meaning of the cartoon may be understandable by the class in which it is to be used. Schaffer's study of children's interpretations of social and political cartoons found that on the average, children began to interpret cartoons abstractly at about age 6. The range of greatest increase in percentage of abstract response to symbolic drawing occurs between 4 and 8 (Schaffer, 1930). For the beginners and neo-literates cartoons should be full of colour and funs with fewer captions. For adults it could have dual meaning with fewer captions. For educational cartoons, it school be according to the level of the learners.

Figure 1.18: Cartoons for Different Levels of Learners
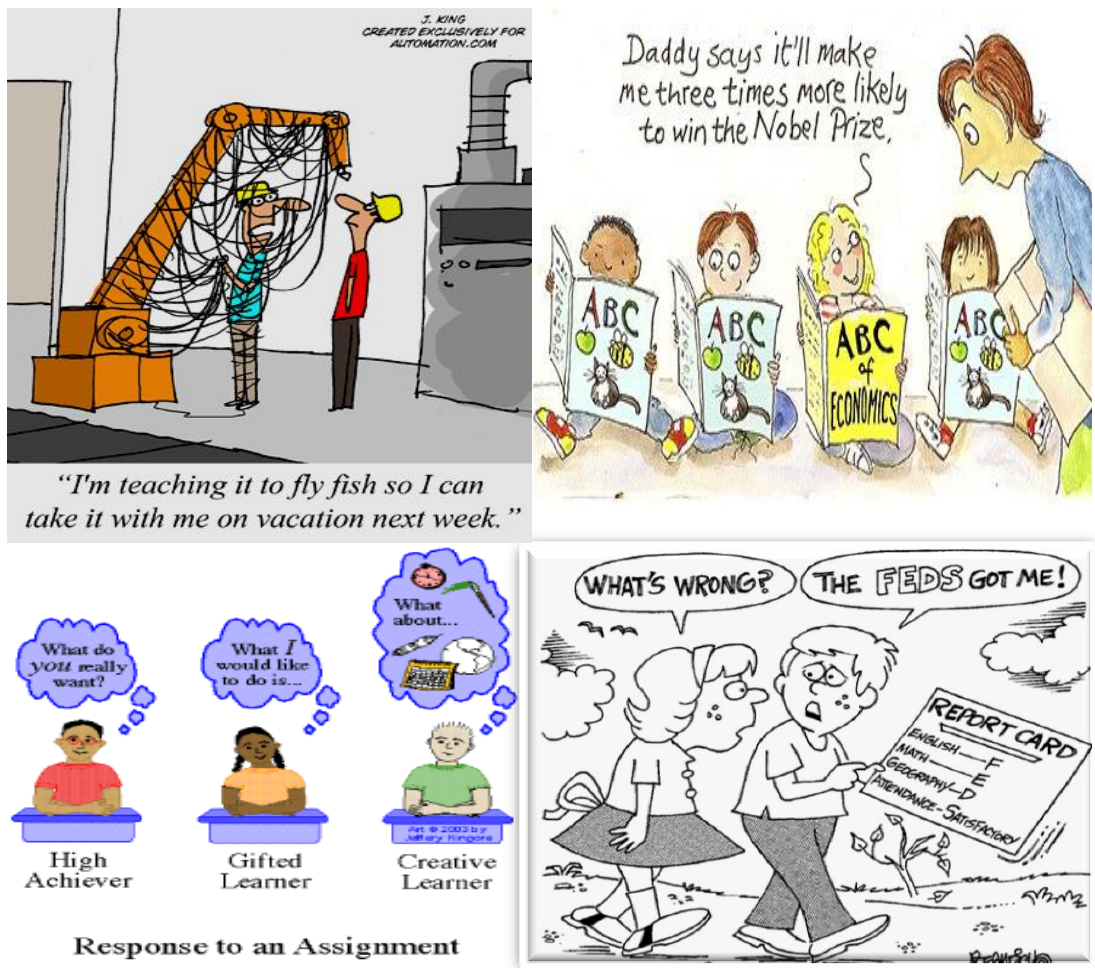
Cartoon & Comics based learning material may be in the form of magazine, booklets, books and digital forms. Educational comics are forms of cartoons in which a cast of characters present an educational story in a sequence of closely related drawings designed to entertain and educate the readers. They can also take the form of pictorial presentation and the use of stair caricature or exaggeration to tell a story of person, group, situation or scenery. They convey subtle message of persuasion, expresses power that captures attention and influences attitudes and behavior. An educational cartoon on the other hand is a pictorial representation or a caricature of a person, an idea or a situation designed to influence pupils. While preparing multimedia package based on cartoon and comics, the cartoonist and the educationist need to understand the specific characteristics of this medium which has been discussed so for.

1.5.5 Why Cartoons and Comics for Primary Education?

In modern times, stories are still being used in various formats, such as, storybooks, cartoon animations, movies etc. Comics are one type of the modern stories. Traditionally, comics usually have some messages to children, such as, solidarity, friendship, honesty and so on. On the other hand, some comics have been discussed with respect to their dangers on children's behaviors. It is obvious that children learn much from commercial comics published on numerous kids' magazines and newspapers. As a result, for years, comics have played the role of funny learning environment with either positive or negative contents.

As mentioned above, comics have played an important role in non-formal education. However, one may wonder if comics can be effective instructional tools in formal education. When the literature is reviewed, it is observed that there are three main uses of comics and caricatures in instructional process; as a warm up activity, as an instructional activity, and as an assessment tool. Comics were found as good warm ups in the literature. Cheesman (2006) explained how to use comic strips found in newspapers and magazines in science classrooms as attention getters and starter for critical thinking. According to this study, comics helped students to focus on lessons and to learn to think in critical way. Secondly, comics can be created and directly used to teach a specific concept. Keogh and Naylor (1999) successfully used concept cartoons which are special type of single frame caricature to create cognitive conflict in students' minds in order to make ready them for accommodation of new concepts and to emphasize correct explanations of concepts among wrong alternatives. Concept cartoons are quite unique form of instructional comics. Rota and Izquierdo (2003) created and used comics directly to teach biotechnology concepts in primary school level. According to them comics are very effective instructional tools, because they combine two very rich forms of cultural expression: the literature and the art. In addition, the authors also stated that reading comics is not a passive activity. Because, while reading a comic story, the reader fill out the gaps between panels which needs an active thinking. Similarly, Olson (2008) created and used comic strips in science classroom as a teaching method to promote science literacy. In this study, these comic strips were implemented in science classes as instructional activities to read, think and discuss. The results showed that comic strips increase students' performance only in

some specific concepts. In addition, students were perceived comic strips funny and effective in learning. Thirdly, Comics can also be used as assessment tools. Song, Heo, Krumenaker, and Tippins (2008) investigated in what ways comics can be used as assessment tool in the classroom. The researchers stated that comics can successfully used as assessment tool in three way, (i) Comics can be used to assess students' ideas they brought to classroom. In other words, comics can be implemented to assess myths and misconceptions in the mind of the students, (ii) Students' learning difficulties can be assessed by comics, and (iii) in addition, comics can be used to assess applications of students' learning to daily life. Similarly, Beard and Rhodes (2002) used comics as reflective tool in adult learning. In this study, the researchers used comics with empty balloons for capturing subjects' reflections. According to the results, comics are good ways of expressing feelings, anxieties, and other emotions which may not surface through traditional techniques.

Cartoons and comics have traditionally been seen as "enemies" of the schools; students caught reading comics in schools were likely to be disciplined (Cleaver, 2008). However, today, some teachers are beginning to view comics as potential educational tools, as a way to arouse students' interest in academic subjects (Cleaver, 2008), and also an avenue to improve their students' academic literacy (Tilley, 2008). While reading comics can never approach the complexity of reading 'real' texts, "compared to reading 'real' books, reading comics appears to be a simple task and compared to reading no books, reading comics might be preferable" (Tilley, 2008). Biswas (2005), studying the Educational Television (ETV) programmes (Trang) at Primary School Level stated that activity based or Tarng based special programme has great impact in learning when associated with different type of pictures. The impact of this type of educational television porgrammes established the considerable success for making an avoidance of the dry and drab teaching learning process. By collecting information from various schools, he revealed that content areas, languages, voice, audio-visuals, teaching methods needs to be great change to improve quality in primary education. Sinha (1999) conduct a research on "Writing Textbooks for the Primary level" at NCERT in which researcher found some major aspects that need to be taken into account in textbooks for smaller children. Two of the organization of the content, were 1. to promote activity based teaching learning in the organization of the content, and 2. to motivate and interest the child to read it and learn form it.

Considering these aspects of the textbook of the primary children, it could be argued that textbooks based on the concept of cartoon and comics can help a lot in making the students interested and motivated.

Today primary education system demand joyful learning, play way teaching methods, learning without burden, activity based learning etc., which can be achieved to some extent by using cartoons and comics based learning material as it is an effective and easy medium of communication, language free, culture free and religion free medium for more coverage of geographical areas, a greater source of motivation and interest towards learning and easy way of providing information along with funs and pleasure. In this digital age, the potentials of cartoons and comics can be enhanced with the application of multimedia concepts making cartoons and comics in two dimensional and three dimensional forms. Cartoons and comics in multimedia forms can be seen with the very interesting TV aids and comic serials.

1.6.0 CARTOONS AND COMICS IN THE FORM OF MULTIMEDIA PACKAGES

In the last years, thanks to the Internet and to the rapid development of technologies, multimedia applications and hypermedia based software became every day more important joining traditional media in the information diffusion framework. Multimedia contents and interaction with the user are the main strong point of educational software and the features that mainly differentiate them from traditional media such as books and television. Multimedia contents give the software the capability of attracting the user and children specially: cartoons, characters, dialogues, sounds and movies are able to stimulate the curiosity of younger users and push them to the height of exploration for new knowledge.

Use of technology for school purpose is becoming more popular. As said by Roschelle and Pea (1999) and Owsten (1997) "Technology makes learning more accessible, by providing students efficient access to appropriate learning resources, while it encourages improved learning among students." The NCERT included media time television and radio in a well-knit package for training of primary teachers in teaching science and extended it to a large number of teachers in the early years of

1975-76. Education has always acknowledged versatility and efficiency of multimedia communications. Video communication was useful in explaining and demonstrating the process part of teaching. One may say that the movement of Educational Technology is today multimedia based. Now has come the time to make uses of Multimedia Packages in the field of education to make teaching-learning process more effective and interesting. Multimedia is a rapidly evolving technology that is bridging the gap between reality and magic. It involves the integration of different media such as text, sound, video, two dimensional (2D), and three dimensional (3D) graphics and animation, with a capacity for user interaction with Multimedia product. Learning is a cross-sensory experience that requires a lot more imagination than just provided by the static 2D prints media. There is thus an absolute need for 3D graphics and animation to help the learners understand 'difficult' subject that rely heavily on imagination. For education the 3D animation is making it possible for more individuals then even to access knowledge and learn in new and different ways. In this 21st century, the education landscape is changing. Universities, Colleges and Schools are experiencing growing enrollments responding to demands for higher standards. Animation is enabling us to address these educational challenges, ringing learning to the students instead of bringing students to learning. It is allowing for the creation to teach creativity that defies the constraints of the time and distance as it provides access to knowledge that was once difficult to obtain.

User friendly, interactive with ready-reference, and learner-centered multimedia tool in the form of multimedia packages with wide variety of animation, graphics and video clippings, etc. can be furnished to cater to all levels of education. The kind of multimedia packages developed can bring in life animation to simulate the learner's imaginations and make learning an easy process. The CD-ROMs can be prepared by subject experts and multimedia professional, to fill this vital need. The textbook can be accompanied with the CD-Rom that can be written in crisp, elegant and simple language to facilitate the learning process. So, hardly one can deny the fact that a computer animation programme offering flexibility, international quality inputs and cost effectiveness has become imperative to cater the needs of the society.

It is a fact that children learn much from cartoon animations on television. For years, various types of this powerful tool have been used in teaching/learning process in formal education. According to Pearce (2004), animation is a great innovation in education to display some important concepts or principles that might not otherwise be able to shown in the classroom. For instance, speeding up naturally slow phenomena or slowing down naturally fast phenomena in animations can be effective on students' understanding. Pearce (2005) also reported the results of a survey about animation. According to the result of this survey, over 90 percent of 500 students found animations as effective or extremely effective in teaching/learning process. One of the most popular uses of animation in education is as supplementary material of computer-based instruction.

The researcher is trying to use this medium in the teaching of environment which is quite important for primary stage and the subject can be more cartoon and comic based without changing the objectives of teaching Environment. In this context, it is important to know the subject of environment, its importance at the primary stage and how it can be more suitable to the new medium.

1.7.0 ENVIRONMENT/ ENVIRONMENT EDUCATION

Environment is a school subject of learning, sometimes also called as Environment Science or Environment Studies. The term 'Environment' derived from the word 'environ' means everything that surround the world. It represents the sum total of all living beings and non-living beings and their interactions. Literary, environment means the surrounding external conditions influencing development or growth of people, animal or plants, living or working conditions etc. Hence, environment refers to the sum total of condition, which surrounds a point in space and time. The scope of the term Environment has been changing and widening by the passage of time. In the primitive age, the environment consisted of only physical aspects of the planet Earth, land, air and water an biological communities. As the time passed on, man extended his environment through his social, economic and political functions. According to Boring (2006), "A person's environment consists of the sum total of stimulation which he receives from his conception until his death." And according to Dougls and Holland (1947), "The term environment is used to describe, in the aggregate, all the

external forces, influences and condition, which affect the life, nature, behavior and growth, development and maturity of living organisms." Hence, Environment can be defined as the set of conditions that surround and organism or the complex of socio cultural condition that affect an individual and environmental science or study or environment is the systematic and scientific study of the environment in combination with living organisms. By analyzing the definitions it can be said that environmental education is an interdisciplinary process, which involves components of knowledge, attitude and behavior to enhance the skills of critical thinking, problem-solving and decision making to take responsible action about environment.

The International Union for Conservation of Nature and Natural Resources (IUCN) in the International working meeting on Environmental Education in the school curriculum held under the auspices of UNESCO in Paris in 1970 gave a definition of Environmental Education. It said: "Environment Education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his biophysical surroundings. Environmental Education also entails practice in decision making and self formulation of code of behavior about issues concerning environmental quality." The definition given by the Finnish National Commission for UNESCO in the report of the seminar on environmental education held at Finland in 1974 is given as "Environmental Education is a way of implementing the goals of environmental protection. Environmental education is not a separate branch of science or subject of study. It should carried out according to the principle of life long integral education."

The Stockholm conference (UN) on Human Environment (1972) initiated efforts to establish programmes of environmental education at all levels- Primary, Secondary and university levels of our educational system and also to motivate the public in rural and urban areas about environmental awareness. This was followed by Belgarde (1975) and Tibilsi (1977) conferences on environmental education. These laid stress on developing basic concepts of quality of life plus environmental knowledge awareness, attitudes, skills and participation. In India the first International conference on environmental educational was held at New Delhi in 1981 and the second conference also held at New Delhi in 1985. These showed keen interest taken by India

in environmental education. The Bhopal Disaster of 1984 sounded the wake-up call for India to take note of the crisis situation and realize the need of environmental awareness and education at all levels of the society. The Supreme Court of India issued in 1991 directive to the Central Government for introduction of common course on Environment at under graduate level for various streams of Art, Commerce and Science in all colleges of all the University. The Supreme Court of India again came into the picture after 12 years, displeased with the non compliance of their earlier order, the supreme court issued fresh directive in 2003 to all states and educational institutions to introduce the course on Environmental studies at under-graduate and higher secondary level from 2004-2005 academic session.

Now-a-days, most of the parts of the world population are facing different problems related with the nature and there are attempts to find the solutions to save the nature from global problems. On the other hand, even to-day we are not trying to understand our local problems related to the nature. Considering the importance for the awareness of the problems of nature and pollution, the Education Commission (1964-66) had suggested to add Environment as a special subject at all levels of Education. It was only after the Education Commission that efforts were made to gear the environment based approach for curriculum organization. It suggested that:

- In the lower primary classes the focus will be on the child's environment – social, physical and biological.
- At the higher primary stage environmental activities will lead to the study natural and physical sciences, history, geography and civics and practice of healthy living will serve as the foundation for physical education.
- At the secondary stage each science should be introduced, geology and geography should be taught as a integrated subject. There are many areas in chemistry, biology and physics to which certain topics in the study of earth science can be naturally related.

Considering the necessity of Environment Education at primary stage, National Curriculum Framework for school Education (2000) stressed on the introduction of the subject stating, "in class III to V, the natural and social elements of Environment may be introduced under a separate area of study called Environment studies. Starting

from the surrounding of the children home, social and neighborhood, they may be familiarized with their state the country in a gradual manner. Stories and narratives concerning their everyday life-food, clothes, houses, fairs and festivals, and the changes taking place in their surroundings will make the curriculum relevant and enjoyable for the young learners." National Curriculum Framework for school Education (2005) also stressed the importance of Environment studies for primary classes in the similar lines. Teaching and learning about environment could be more enjoyable by a medium like cartoon and comics.

1.7.1 GUIDING PRINCIPLES OF ENVIRONMENTAL EDUCATION

The objectives of environmental education is to increase public awareness about environmental issues, as explore possible solutions, and to lay the foundations for a fully informed and active participation of individual in the protection of environment and the prudent and rational use of natural resources. Following are the guiding principles of Environment Education at school level as per the gist of the documents of environmental education.

- The environment is a common heritage of mankind.
- The common duty of maintaining, protecting and improving the quality of environment, as a contribution to the protection of human health and safeguarding the ecological balance.
- Each individual by his own behavior and action can contribute to the protection of environment.
- The long-term aims of environmental education are to improve management of environment and provide satisfactory solutions to environmental issues.
- There is a need to provide opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment.
- Encourage pupils to examine and interpret the environment from variety of perspectives-physical, geographical, biological, sociological, economic, political, technological, historical, esthetic and ethical.
- Arouse pupil's awareness and curiosity about the environment and encourage active participation in resolving environmental problems.

- Environmental education is closely linked to the other cross circular themes of other subject areas.

For effective transaction of environmental education following objectives related to Knowledge, skill, and attitudes are essential. As a basis for making informed judgments about the environment people should develop knowledge and understanding of the following.

- The natural processes which take place in the environment.
- The impact of human activities on the environment.
- The comparison between different environments both in the past and present.
- Environmental issues such as: (i) The greenhouse effect. (ii) Acid rain and (iii) Air pollution.
- Local, national and international legislative controls to protect and manage the environment.
- The conflicts, which can arise about environmental issues like river water sharing.
- The importance of planning and design and an esthetic consideration.
- The importance of effective action to protect and manage the environment.

In terms of skill development, six cross curricular skills have been identified which are necessary for environmental education. They are communication skills, numeric skills, study skills, problem solving skills, personal skills and social & Information technology skills.

Promoting positive attitudes towards the environment is essential if pupils are to value it and understand their role in safeguarding it for the future. To encouraging the development of attitudes among pupils, following personal qualities are needed.

- Appreciations of care and concern for environment.
- Concern for other living things on earth.
- Independent thought on environmental issues.
- Respect for others opinion.
- Respect for rational argument and evidence.
- Tolerance to face others views.

Environmental education is a process that aims at the development of environmentally literate citizens who can compete in global economy, who have the skills, knowledge

and inclinations to make well informed choices concerning the Environment, and who exercise the rights and responsibilities of the members of a community. Environmental knowledge contributes to an understanding and appreciation of the society, technology and productivity and conservation of natural and cultural resources of their own environment. Environmental education has an ability to solve the societal needs the needs of a community problem and their solutions and to prepare workforce for tackling cooperative mind. We need the school children to share and develop the motivation from school about various environmental issues, which are the challenges of today and prepare them for the future.

Primary children are too small to consider all the said environmental issues and problems. At this stage environment education aims to engage young minds in the excitement of first hand observation of the nature and understanding the patterns and processes in the natural and social worlds in order to take care of the habitat and its surroundings. The text books for environmental studies which are prepared by NCERT has taken cross curricular approach for teaching environmental concepts through language, mathematics about the environment. The textbooks prescribed by Gujarat State Educational Board (GSEB) for primary students are competency based and lay emphasis on raising awareness levels and sensitizing children about environmental concerns. Emphasis has also been laid on the need to organize learning in local specific contexts, which will provide more meaningful experiences to children. Aspects of indigenous knowledge have also been introduced. Considering the syllabus of GSEB, an attempt is made in the present study to prepare multimedia package using cartoons and comics to teach environment education to primary students and to measure its effectiveness.

1.8.0 RATIONALE OF THE STUDY

In 1964-66 the Indian Education Commission stressed for vigorous efforts for cent percent primary education by the year 1980. The National Policy on Education (1968) also emphasized the free and compulsory education and the draft The National Policy on Education (1979) sets a target to have the cent percent primary education by the end of Sixth Five Years Plan period. But unfortunately, it was not fulfilled. The National Policy on Education (1986) had fixed the target to be achieved by the end of

twentieth century. Elementary education is the foundation of the pyramid of education system, stemming from provisions enshrined in the Directive Principles of State Policy and the 86th Amendment in the Constitution of India. DPEP though in selected districts showed the right path to the states and the union for achieving Universalization of Elementary Education. The Sarva Shiksha Abhiyan (SSA), in the brain child emerged from the success of DPEP and a high profiled programme implemented in the country for Universalization of Elementary Education. It has, has created a tremendous awareness among the masses regarding the importance of elementary education. It has created enthusiasm and vigor among the masses to management school education by themselves. The Panchayati Raj Act added stimuli in this process by empowering the common people to take care of their quality education. SSA has achieved provisioning of basic minimum conditions including physical infrastructure and the requirements of teachers. However, it has yet not been able to achieve the said target and not able to provide good quality education at elementary level to a wide cross-section of children in the country. This is because SSA has not yet addressed systemic reforms with a broad based objective of equalizing opportunities and life chances for all children. Besides, it was lacking in rights approach of techno-pedagogy provided in the process of teaching and learning. At the heart of the issue of quality are the weak teaching processes and transactions between teachers and learners that are neither child-friendly nor adopt child-centered approach to curriculum. The capacity, motivation and accountability of teachers to deliver quality education with significant and measurable improvements in learning outcomes of students need to be critically and urgently addressed. A major achievement in recent years has been the establishment of Constitutional and legal underpinnings for achieving universal elementary education. The Right of Children to Free and Compulsory Education (RTE) Act, 2009, became operative on 1 April 2010. After this act, there is a strong need to provide quality elementary education by the state and the centre without giving any excuses. Yet, we are far away from this goal, may be due to more dropout rate, and less interested teaching learning methods used in the system. One of the major causes of dropout, low retention, and poor achievement is associated with the process of teaching learning at this stage. There is need to systematize the process of elementary education. Most reliable and valid approaches need to be adopted to get the maximum public support in this process. Teachers and the school administrators need to take their responsibilities and to be

accountable for their doing. Quality in elementary education and its achievement is inherently dependent on the following aspects like, (i) curriculum and learning objectives, (ii) learning materials, (iii) techno- pedagogic processes, (iv) classroom assessment frameworks, (v) teacher support in the classrooms, and (vi) school leadership and management development. A new framework for curriculum is needed at regular intervals in order to take cognizance of the developing issues in society and how to address them. There is a need to consider and use the research base available in our research institutions in the teaching learning process. A variety of research based learning packages should be developed at State and district levels, with adequate provision for cluster- and school-level modifications to aid the teacher and provide increased choice. There is a need to introduce teaching learning materials at each and every stage of education which could be attractive and interesting to the learners. So there is a need to research on effective teaching materials using different modes, which may be helpful to make the learners more interested reducing dropout rate and increasing achievement at different stages.

A similar scenario can be seen in the state of Gujarat in terms of achieving Universalization of Elementary Education in spite of being a forward state in terms of industrial development and per capita income. A proper management of the elementary education system is needed at the state level. There is a need of drastic change in the input and process of primary education to make it more effective and quality oriented. There is also a need to reduce dropout and retention and to increase enrolment and achievement. It can be done with help of a tested child centered, play way and joyful learning method using innovative practices and products taking the help of technology. In the present study, the researcher had made an attempt to improve achievement of students in environment using cartoon and comic based multimedia package.

The subject environment or environment education is one of the very important components of the school education where the child needs a different type of exposure to understand his/her environment around it. Environment is the study of nature and its aim is to help pupils to understand the nearby area in which they have to live and how it came to be, so that they may become responsible citizens. It aims to promote critical thinking and a readiness for social change. The subject of the

Environment which deals directly with man and the society in which he lives, carries special responsibility of preparing young children to become well informed, constructive participants in society and capable of developing healthy social relationships. The National Focus Group in National Curriculum Framework (2005) pointed that the Environment carry a normative responsibility to create and widen the popular base for human values, namely freedom, trust, mutual respect, and respect for diversity. Through the discussion of concerns such as, threats to the Environment, caste/class inequality, state repression through an interdisciplinary approach, the textbook should stimulate the child's thought process and creativity. As Primary Education is the base of Education, there is a felt base for having Environment as a subject at this Primary level. Considering the nature of the subject there is strong need to teach this subject with the help of a medium that can be enjoyable to the students and for which their learning would be more fruitful. Therefore, the researcher conducted this present study to test a medium like cartoon and comics in the teaching learning process of Environment subject with the help of multimedia.

Children like a medium, which can provide them with pleasure and fun. Generally, education seldom contains this type of medium. So, there is less interest or disliking and negative attraction of children towards teaching learning process. It is a common phenomenon in the primary classes, which leads to less interest among children. An interesting medium can be created using cartoons and comics, which can motivate and make students interested towards learning. In India comic books are getting popularity among children readers. Comic books are available in the market in many forms based on mythological and other stories like, Ramayana, Mahabharata, imaginary stories like Spiderman, Phantom, Chacha Chaudhari etc. Some publishers are trying to impart values and morals to the children with the help of comics. Now-a-days, many private educational institutes are using CDs to teach English language in primary classes which are based on cartoon and comic. Indian film industry becomes active to make such movies like, Hanuman, Krishna, Ganesha which inspire small children to know mythological stories. Apart from these, the entry of cartoons and comics to the television media is a significant event in the recent days. Realizing the potentials of this medium, multi-national companies started special programmes and channels for selling entertainment and education to each and every types of viewers. It is available in the channels like, cartoon TNT Network, POGO, Good Morning

Disney and Disney Hour of Zee TV, Star Plus, Sony TV and many more. These programmes are so powerful in the form of their picture, action, vision, imagination and contents that language is not considered as a barrier. For the kids, it can be called as language free medium. It can attract many other viewers of different age groups. Hence, it can be said that the use of cartoons and comics are quite popular in our country particularly among children, but only there is a need to provide an educational touch to these cartoons and comics to use it in the field of education. It may help a lot to reduce the rate of dropout, to increase enrollment and in overall to increase the quality of education. Cartoons and comics have their own unique factures. A content can be presented either in the form of cartoon or comics. But, whenever it is needed to present the content only in one form either cartoons or comics; there is a need to high-level professionalism on the part of the presenter or the content writer to present the material effectively. But, in the lower standard the children can take more pleasure and can be more interested if both the modes of presentation i.e. cartoon and comics are used to present the material. In the present study the help of both the modes i.e. cartoons and comics were used to develop the materials in a multimedia form. .

Education has always acknowledged versatility and efficiency of multi-media communications. Multimedia is a rapidly evolving technology that is bridging the gap between reality and magic. Multimedia has revolutionized every aspect of life around us and is fast gaining acceptance in the field of education. It is a natural extension of a creative mind. Multimedia package can be presented as an interactive medium to cater all levels of education. These user-friendly packages can be developed that will include a wide variety of animation, graphics and video clippings, etc. The multimedia package has been developed in the present study using cartoons and comics as the medium to teach environment.

Some related studies have confirmed the need for child centered and activity based learning materials is the form of joyful learning those supports the need for the present study. Researchers conducted by Tomar (1988), Patel (1998), Das (1998), Solanki (1999), Kharadi (2000), Vyas (2000), Pandya (2002), Patel (2004), emphasized on the child centered joyful learning and found the effectiveness of such materials to motivate students for more achievement and a self paced learning environment. Study conducted by Kaptan (2001) found the Cartoon and Comics

material effective in comparison to traditional method of teaching Environment to primary school students. Researcher has come across the studies conducted abroad that deal directly with cartoon and comic based instructional material in subjects like Mathematics, English, and Science. Parsons and Smith (1993), Wolschke and Groning (1994), Fisch et al. (1997), Witkowski (1997), Rollnick (1997), Keogh and Naylor (1999), Kaptan (2001), Beard and Rhodes (2002), Rota and Izquierdo (2003), Jones (2004), Liu (2004), Kabapinar (2005), Perales et al. (2005), Gonzalez and Palacios (2006), Cheesman (2006), Dalacosta at al. (2008), Muniran and Yusof (2008), Olson (2008), Song (2008), Micheal and Van (2011), Mohammad (2011) and Jee et al. (2012). But researcher did not come across more related literature that dealt directly on the effectiveness of any materials based on the multimedia package on cartoons and comics in India. Few cartoon and comic based material are available in market and these are used by teachers in classrooms. But there is no scientific research conducted to check the effectiveness of these materials in teaching learning process. Hence, the present study is an attempt to use cartoons and comics as a medium in the form of multimedia to teach environment education to primary school students. With this rationale the present study is taken with the following research questions in mind.

1.9.0 RESEARCH QUESTIONS

In the process of formulating the research and studying the related literature the following research questions came in the mind of the researcher. The researcher had try to get the answers of these research question in this research work.

- Whether cartoon and comics can be used as a medium for teaching learning in primary stage?
- Whether teaching through cartoons and comics can enhance the academic achievement of primary school students in environment education?
- Whether the academic achievement of primary school students in environment education due to teaching through cartoon and comics will last longer in comparison to traditional method?

1.10.0 STATEMENT OF THE PROBLEM

EFFECTIVENESS OF CARTOON AND COMIC BASED MULTIMEDIA PACKAGE FOR TEACHING ENVIRONMENT TO PRIMARY SCHOOL STUDENTS

1.11.0 OBJECTIVES OF THE STUDY

The present study was designed with the following objectives.

1. To design and develop cartoon and comics based multimedia package for teaching environment to primary students.

2. To study the effectiveness of the developed cartoon and comics based multimedia package in terms of the achievement of primary students in environment.

3. To study the delayed effect of developed cartoon and comics based multimedia package in terms of the achievement of the primary students in environment.

4. To study the effectiveness of developed cartoon and comics based multimedia package in terms of the reaction of primary students.

1.12.0 HYPOTHESES

The following null hypotheses were formulated to achieve the said objectives of the proposed study and to be tested at 0.01 level of significance.

1. There will be no significance difference between the mean post-test achievement scores of primary students in Environment studied Environment through cartoon and comics based multimedia package and traditional method.

2. There will be no significance difference between the mean post-test achievement score and mean delayed post-test achievement score of primary students in Environment studied Environment using cartoon and comics based multimedia package.

3. There will be no significance difference between the mean post-test achievement score and mean delayed post-test achievement score of primary students in Environment studied Environment through traditional method.

4. There will be no significance difference between the mean delayed post-test achievement scores in Environment of primary students studied Environment using Cartoon and Comics Based multimedia package and Traditional method.

1.13.0 OPERATIONAL DEFINITION OF THE TERM

Achievement in Environment: Scores secured in achievement test in environment prepared by the investigator is considered as the achievement of student in environment.

1.14.0 DEFINITION OF THE TERMS

Effectiveness: In the present study effectiveness is defined as the effectiveness of the developed multimedia package in terms of achievement of primary students in Environment and in terms of the reaction of students towards the package. Effectiveness in terms of achievement will be the significant difference between the mean posttest scores of experiment and control group students. Effectiveness in terms of reaction of students will be the overall favourable reaction towards the package.

Cartoon & Comics Based Multimedia Package: It is the multimedia package developed by the researcher with the technical help of eSense Learning Private Limited (Navneet Publication), Ahmedabad for standard III Environment subject using both cartoons and comics in digital medium.

Traditional Approach of Teaching: Teaching by the teacher may be through the combination of lecture method, demonstration method or story telling method using text books used in the as usual day-to-day process of teaching learning.

Primary School Students: In the present study the students studying in the standards from I to VIII will be known as primary school students.

1.15.0 DELIMITATION OF THE STUDY

The present study is delimited to the following aspects.

- The study is delimited to standard III Gujarati medium students of primary sections only.
- The study is delimited to 10 chapters viz. પ્રકરણ–૧ શિસ્ત અને સલામતી, પ્રકરણ–૨ આપણી સંસ્થાઓ, પ્રકરણ–૩ ખાદ્યઉત્પાદક, પ્રકરણ–૪ નાનું કુટુંબ–સુખી કુટુંબ, પ્રકરણ–૫ પદાર્થના ગુણધર્મો, પ્રકરણ–૬ સજીવ સૃષ્ટિ, પ્રકરણ–૭ વનસ્પતિ જગત, પ્રકરણ–૮ પ્રાણી જગત, પ્રકરણ–૯ આપણું શરીર, પ્રકરણ–૧૦ હવા ૬ Environment subject of Standard III following GSEB syllabus only.

1.16.0 CHAPTERIZATION

The present study is reported in five chapters. The detailed organization of the chapters is given as follow.

Chapter I is concerned with introduction. It contains the major captions like, status of primary education and Concept of cartoon and comic based multimedia package, which leads to rational, objectives and hypothesis of the study.

Chapter II deals with the review of related literature.

Chapter III deals with plan and procedure of the present study, which includes the type of study, population, sample, tools and the process of data collection and analysis.

Chapter IV deals with the data analysis and interpretation in the context of the objective, findings, discussion and conclusion.

Chapter-V deals with summary, suggestions and conclusion.

It is followed by bibliography and appendices.