A Case Study of Collective Promising Practices using ICT in EVS at Primary/ Elementary Teaching

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Abstract- *Environmental Studies (EVS) provides an insight into our culture, human behavior towards nature, science, Mathematics, English and ICTs. EVS hence needs to be taught in relation with other subjects like the aforesaid and not been seen as a singular lone subject. Despite its significance, teaching EVS has been found to be challenging because of employing traditional modes of teaching. The purpose of this paper is to compare achievement and investigate levels of perception among the students.*

Keywords: Learning Outcomes, ICT, EVS, achievement, perception**.**

Background

EVS has been incorporated as a streamline subject in Class I and II, without a separate book. From class III to V, a separate text book was developed with the outlines of the Learning Outcomes designed by the NCERT under MHRD in 2017.

The NCERT has developed draft Learning Outcomes for each class in Languages (Hindi, English and Urdu), Mathematics, Environmental Studies, Science and Social Science up to the Elementary stage. Care has been taken to develop the outcomes following consultations with States, UTs, SCERTs and education experts from organizations including civil society organizations. The Learning Outcomes developed by NCERT are the minimum levels of learning to facilitate the monitoring of students against expected benchmarks.

A radical shift came almost a decade ago when the child's capacity to construct knowledge as a natural learner was recognized as central to the transaction of the curriculum and the teacher's role was primarily as facilitator of the learning process. The knowledge, thus gained, is an outcome of their engagement with the world around when they explore, respond, invent, and make meaning out of that. It means that the focus shifted to the process of learning. It envisaged conceptual understanding as a continuous process i.e. the process of deepening and enriching connections acquiring more layers of dispositions, emotions as an integral component of cognitive development, making meaning and developing the capacity of abstract thinking and reflection. The overall development of a child through education, conceptualized as a fundamental right under the Right to Free and Compulsory Education Act 2009, had been a priority of almost all policy documents.

Environmental Studies (EVS) at the primary stage envisages exposing children to the real situations in their surroundings to help them connect, be aware of, appreciate and be sensitized towards the prevailing environmental issues (natural, physical, social and cultural). NCF-2005 recommends an integrated and thematic approach towards its teaching learning at the entire primary stage where, in classes III to V, it is introduced as a separate curricular area and in I and II, the related concerns are integrated with language and mathematics. Beginning with child's immediate surroundings (including natural, social, physical and cultural settings) related to self, home, school and family in the early grades and gradually moving on to the wider environment (neighbourhood and community at large), EVS not only helps children to get acquainted with their own environment but it also strengthens their bond with it. Creating learning situations in the context of children is very crucial to learning EVS. Efforts need to be made to avoid giving direct information, definitions and descriptions and instead create situations for children to construct their own knowledge by interacting first hand with their surroundings and with other children, elders and significant others. During this process, they would access various sources of knowledge besides the textbook and explore various learning sites besides the classroom. Real world exposure would lead to opportunities for them to encounter various social issues (such as those of gender bias, marginalization, challenges of the differently abled (including those of the elderly and the sick) and natural concerns (such as those of protection, preservation, conservation of natural resources). Care may be taken to ensure that besides resource material, the classroom environment and the pedagogical processes are inclusive i.e. they cater to the diversity of learners in terms of their abilities, cognitive development, pace, style, etc. It is important to acknowledge and give primacy to children's experiences to help them connect these with the school knowledge while ensuring their active participation. Hence, the learning situations need to include a variety in approaches, strategies and resources to ensure that each learner (including the differently abled and the disadvantaged learners) gets opportunity to observe, express, discuss, question, critically think, improvise and analyse, i.e. gets engaged in various processes of learning involving use of multiple senses in individual and group set-ups. In order to have a comprehensive view of a child's development and map his/her learning progress in EVS, as per its curricular expectations, a set of learning outcomes in EVS for each class have been spelt out. These require using pedagogical processes to create age appropriate and contextual learning situations and considering learning needs and learning styles of the learners to facilitate teachers/elders to explore their existing ideas and build further on them to enhance their knowledge, skills, values, interests and dispositions.

However teaching and learning EVS has been considered challenging due to the problem associated with the nature of the subject. Firstly learning EVS is considered monotonous because of lecture method of teaching generally used by teachers. Secondly, student seem to be least interested in the subject as EVS is just an exposure to their surroundings through some text and images.

The mediocare performance in EVS is mostly because of ineffective classroom learning and teaching strategy limited to traditional mode mainly lecturing. Therefore to

enhance learning achievement strategies such as field trip, project based, inquiry based and use of technology has been incorporated.

According to Ilhan and Oruc (2016) technology is very effective in education as it is the fastest mode of learning whereby students can learn new information within short period of time.

Objectives

Since not many studies were carried out in the Indian context using technology at primary level teaching, this study was taken up to evaluate the effects of technology on learning achievement and achieving Learning outcomes of 4^{th} and 5^{th} class students towards EVS. The main objectives were:

To know the learning achievements in EVS of 4^{th} and 5^{th} class students who were taught using Technology

- To investigate 4^{th} and 5^{th} class students perception towards EVS by using ICT as medium of instruction for achieving Learning Outcomes.

Research Question

Based on the objectives the following questions were raised:

- Does the learning achievement of 4^{th} and 5^{th} class students who were taught using technology show higher level of understanding?
- What are the perceptions of 4^{th} and 5^{th} class students towards ICTs as a teaching media.

Literature Review

Educational institution should create and adopt technologies that address educational problems, of which there are many. Furthermore, a technology will not be adopted by educators where there is no perceived need or productivity gain. This is what Lankshear, Snyder and Green (2000) refer to as the "workability" principle. Therefore, when discussing applications of computer technology to education the question must always be asked, "what educational problem needs to be addressed? This question needs to be asked at all levels of decision making from the teacher planning a programme, to a school administrator purchasing hardware and software, to an educational system officer developing policy and strategic plans. At the teacher level the question becomes: am I satisfied with the educational opportunities I am able to offer children in school classrooms? While teachers should never be completely satisfied, and the will always strive to do better, the question really is whether what they provide adequately develops the potential of the students and adequately prepares them for a productive life in the society.

Many educators (for example National Centre for Vocational Education Research, 2002) and educational commentator (Muroch, 2001) believe that what is during the late 1970s and early 1980s, computers became more affordable to schools. As educational

systems move towards the mainstream use of ICT in teaching and learning there appear to be more critical steps and vital ingredients needed for the successful infusion of ICT into educational environments. Although stand alone computers have been in most schools for more than two decades now, networked ICT is relatively new for many schools as they continue to grapple with how to use ICT to enhance teaching and learning environments. Since the development of the first computers many have argued that computers should be used to support learning. These argument have amplified as computers have evolved into powerful relatively low cost technology available today. However, there is considerable debate over how computers should be used in schools (Riel, 1998).

Cradler (2002) gave seven requirements for effective use of ICT in education:

- Providing time for teachers to plan and learn how to integrate technology.
- Suiting technology to education goals and standards.
- Having a vision for the use of technology to support curriculum.
- Providing for both in-service and pre-service training.
- Ensure access to appropriate technology.
- Provide for administrative support for technology use.
- Providing for on-going technique support for technology use.

In general, these requirements fall into three areas of impact:

- Providing the infrastructure of hardware and software,
- Providing curriculum and technical support for teachers,
- School organization, design, policies and practices, schooling, and management support

The UNESCO IITE Analytical Survey Volume 3 subtitled Collective Case Study of Promising Practices illustrates how ICT can reshape the teaching and learning processes of children in primary education.

Since 2008, several interesting and innovative teaching pedagogical practices have been developed. The digital storytelling approach is the school's signature approach in the integration of ICT into the learning of languages.

"The Inverted Classroom" (Lage, Platt, and Treglia, 2000), where teaching and lessons take place outside of class, and class time is devoted to group and individual problem solving, discussion, and experiments. The rationale for such an approach, similar to the flipped classroom, is to allow students to spend time working through their sums or questions on their own, with teachers later assisting those who need more help (Lage and Platt, 2000).

Blogs seem to be the gateways to other online software applications. In terms of other applications, online games were used to reinforce skills and concepts learned.

The introduction of innovations and new technologies into any learning situation requires careful planning and a good deal of developmental testing. This process often requires multidisciplinary approaches involving teachers, researchers, technologists, developers, and students (Hartley, 2007). Amongst them, teachers are pivotal in creating ICT-mediated learning environments (Lim, 2007).

Research Methodology

Research methodology of this study is a mixed method study, where different strategies, techniques and technology integration were adopted to make the students participate actively in the teaching learning process.

Firstly the Learning outcome of class 4th and 5th were grouped according to the need of the hour and practicability. The learning outcomes proposed by SCERT Telangana for 4th and 5th Class EVS are as under.

Learning Outcomes – EVS	
Class IV	Class IV
• Identifies simple features (shapes, colour, aroma, where they grow/ way other) of flowers, roots and fruits and of birds and animals (beaks/teeth, claws, ears, hair, nests/ shelters etc.) in the surroundings • Identifies relationship with and among family members in extended family • Explains the herd/group behaviour in animals (ants, bees, elephants), birds (building nests), explains changes in family (e.g. Due to birth, marriage, transfer, etc.) • Describe different skilled works (farming, construction, art/craft etc.)their heritance(from elders)and training role of institutions in daily life. • Differentiates between objects and activities of past and present (e.g.transport, houses, materials, tools, skills, etc.) • Identifies signs, location of objects/ places and guides for the directions w.r. to a landmark in school/neighborhood using maps etc. • Uses the information signboards, posters, railway ticket/timetable.	• Explains the use of technology and the process of accessing basic needs (food, water etc) in our daily life (eg. Farm produce to kitchen i.e., grains to roti, preservation techniques, storage, tracking of water source) • Describes the interdependence among animals, plants and humans (e.g, communities earning livelihood from animals, dispersal of seeds etc.) • Establishes linkages among terrain, climate resources (food, water, shelter, livelihood) and cultural life (e.g. Life in distant/ difficult areas like hot/cold, desert) • Traces the changes in practices, customs, techniques of past and present through paintings, monuments etc. and interacting with elders (e.g. cultivation, conservation, festivals, clothes, materials/tools, occupations, building/house, practices like cooking, eating, working) • Creates posters, designs, models, local dishes, sketches, maps using variety of local/waste materials and

• Creates collage, designs, models, rangolis, posters, albums, and simple maps (of school, neighborhood etc.)using local/water material. • Voices opinion on issues observed/experienced in family/school/neighborhood (e.g. on discrimination, child rights) • Suggests ways of hygiene, reduce, reuse, recycle and takes care of different living beings, resources (food, water and public property) • Observes rules in games, playing games, players, importance of games. • Explains history of the country, historical places, ask questions to know the history of the country. • Explain the role and functions of different institutions in daily life(Bank, Panchayat, Cooperatives, Police Station etc.)	writes poems/slogans. • Voices opinion issues observed/ experienced and relates practices/ happenings to larger issues of society (e.g. discrimination of access/ownership of resources, migration/disposition/ exclusion child rights) • Suggests ways for hygiene, health, managing waste, disaster/ emergency situations and protecting/ saving resources (land, fuels, forests etc.) and shows sensitivity for the disadvantages/ deprived. • Asks questions on preservation of animals and explains the use of animals and the lifestyle of the herdsmen. • Explains the steps involved in farming, use of tools, insecticides. Asks questions on crops, collects information and records it in the form of a table.

Different methodologies areused to dealt with variety of topics. For e.g.

PhET is a virtual lab with simulations for sciences and math. Simulations are categorized by physical science, biological science and earth science. Simulations are classified by grade level.

Freeplane is a free and open source software application that helps to create and edit concept maps. Concept map is nearly synonymous with mind mapping. Concept maps support thinking, brain storming, sharing information.

Kletters aim to help to learn the alphabet and then to read some syllables in different languages. Its meant to help learning the very first sounds of a new language for children.

KWordQuizis a computer program designed to teach new vocabulary K Word Quiz is a general purpose flash card program typically used for vocabulary training.

Marble: Atlas is an essential resource to teach Geography. Through which political and physical geography were taught. Marble is a digital atlas used to understand and analyse map information of the earth.

Stellarium is free and open source planetarium for the computer. It shows a realistic sky in 3D, just like what we see with our naked eye, binoculars or a telescope. Just select the coordinators and enjoy the 3D view

Tux Paint is useful for creating pictures, simple animations and adding text to images to create picture stories.

KGeographyis a geography learning tool, which allows to learn about the political divisions of some countries (divisions, capitals of those divisions and their associated flags etc). Main features like ….

- Browse the maps clicking in a map division to see its name, capital and flag
- The game tells you a map division name and you have to click on it
- The game tells you a capital and you have to guess the division it belongs to
- The game tells you a division and you have to guess its capital
- The game shows you a map division flag and you have to guess its name
- The game tells you a map division name and you have to guess its flag
- The game shows an empty map and you have to place divisions on it one by one

Conclusion

Each software is used for different concepts understanding and some are skill based through which the students were encouraged to learn the subject EVS without fatigue. All these were used as online sources of technology to ensure the attainment of learning outcomes proposed by MHRD, India.

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ICT in Primary Education Analytical survey Volume 3 Collective Case Study of Promising Practices by UNESCO Institute for Information Technologies in Education