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MATHEMATICS IN SOCIAL SCIENCE TEACHING

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INTRODUCTION

The curriculum is the plan for the implementation of educational aims. It is a set of planned activities which are designed to implement a particular educational aim - or set of such aims - in terms of what is to be taught and knowledge, skills and attitudes which are to be *deliberately* fostered. (Winch and Gingell, 2004). Curriculum is an evolving concept. It should be continuously in the making. And with the changing times it should be in conformity with the society to which it belongs. That is why the changes get reflected in every new framework for school curriculum. The curriculum of social studies or social science is no exception.

NCF AND SOCIAL STUDIES.

NPE (National Policy on Education) entrusted NCERT with the responsibility of developing a National Curriculum Framework and reviewing the framework at frequent intervals. NCERT had first drafted a National Curriculum Framework in the year 1988. After that we have had NCF 2000, and now NCF 2005.

The Social science is essentially subject that deals with man and society. According to NCF the social sciences encompass ‘diverse concerns of society and include a wide range of content, drawn from the disciplines of history, geography, political science, economics and sociology. The selection and organization of material into a meaningful social science curriculum, enabling students to develop a critical understanding of society, is therefore a challenging task.’

Some of the main concerns of social science have been developmental issues like population explosion, environmental degradation and so on. Although they are essential,

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they are utilitarian in nature. NCF says that social sciences have a deeper duty - 'the social sciences carry a normative responsibility to create and widen the base for peace oriented human values such as freedom, justice and respect for diversity in society.' Therefore 'there is need to achieve a shift in focus from utilitarianism to egalitarianism' so that students develop qualities required in a pluralistic and diverse society like ours.

LEARNING EXPERIENCES IN SOCIAL STUDIES

When the curriculum is drawn the focus should be on the suitable experiences provided and received by pupils and what the outcome would be. The selection and organization of the material in this subject should be such that that it enables student to develop a critical understanding of the society. Not only that, 'The teaching of social sciences must adopt methods that promote creativity, aesthetics, and critical perspectives' (NCF, 2005)

LEARNING ENVIRONMENT

In order to transact the subject matter we have to create an enabling learning environment. A simplified and a structured curriculum cannot provide the pupil with this experience or environment, but realistic situations can. And here the source of information is not books and teachers any more but real life. In an enabling environment the pupils have chance to seek solutions to real problems in lifelike situations in a variety of ways. The role of teacher is more challenging under such circumstances. Teachers need to be aware of how pupils learn as much as what he or she can teach. It is no more what is *provided* but what is *received* by the child. How can one know how pupils learn? This is what I mean when I say Mathetics in social science education.

MATHETICS VERSUS DIDACTICS

The science of learning can be termed as **Mathetics** as opposed to science of teaching, which is known by the term **Didactics**. The word was coined by John Amos Comenius in his work *Spicilegium Didacticum*. According to Papert, the origin of the word is not from mathematics but from Greek word *mathematikos*, which means disposed to learn. (en.wikipedia.org)

When will a disposition to learn occur in a student? It will occur when we use their day-to-day experiences. In the following paragraphs, I have outlined a strategy I employed for teaching a thematic area in geography.

A STRATEGY

The objective of the activity was

- To make the student develop their map reading skills
- To create awareness about the diversity in our country.
- To know about various means of transportation and travel.

THE TECHNIQUE FOR FORMING A GROUP

As pupils learn best when their experience are utilized and work in collaboration, I formed four different groups out of class of 20 pupils. I employed the technique of lottery system to form the groups.

TRAVEL BROCHURE

Each group had to work together to create a brochure that can be used by a traveler traveling to a particular part of India. The area of India was divided into four different zones. The zone to be taken up by a particular group was mentioned to them.

1. First group –north zone
2. Second group – south zone
3. Third group – west zone
4. Fourth group –east zone

In a similar fashion a social science teacher can make use some of different activities.

OTHER SUGGESTED ACTIVITIES

- Take photographs of the stellar sky
- Display the sifting of ware level on a river or creek
- Measure the daily alteration of air temperature
- Use your own pictures to make presentation about a country region or some sights you visited during a summer holiday.
- Make calendar using pictures of sights taken on a school trip
- Create a virtual tour in a zoo
- Study the Solar eclipse
- Gather information about the most devastating earth quakes in the last few years show the vertical alteration air temperature with help of calculation and graphical representation (www.jos.hu)

GUIDELINES

This was the guideline I gave my students.

1. Every group will choose any four important place of interest in their zone. (other than Delhi, Mumbai ,Chennai , Kolkata)
2. In the case of North zone, the distance between each of the four places from Delhi is to be calculated and given. Similarly for other zones. It will be Chennai for south zone , Mumbai for west zone and Kolkata for east zone.
3. Mention the means of transport available, the climatic conditions, history / details of that particular place, the people of that place, their staple diet, main occupation and other such details.
4. Make use of a standard chart paper of any colour, make partitions in it so that it appears in the form of a brochure.
5. The chosen content matter should be hand written.
6. It can be illustrated with pictures, photos, drawings, sketches etc .

CRITERIA

Criteria for evaluation

1. The various learning outcomes a student can achieve by reading the brochure
2. Neatness of the written work.
3. Correctness of the information.
4. Relevance of the information
5. Interesting information
6. Design and layout of the brochure

LEARNING OUTCOME

At the end the student came out with a brochure having many details about the place of interest. It was showcased before the other groups and students made more enquiries about the place described. A few who were native of the place elaborated on the food habits, flora and fauna, festivals celebrated and so on. In terms of attitudes they learnt to respect others' ideas, to show tolerance towards different opinions, to enjoy the experience of belonging to a group and thinking together, to manifest their ability to adjust, they also learnt the art of cooperation, argumentation and persuasion.

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