CHAPTER – VI

FINDINGS AND DISCUSSION

6.1 Introduction

This chapter presents the 'discussion' on the findings of the present study. This chapter is divided into two sections 6.2 and 6.3. The section 6.2 presents the Findings of the present study. The section 6.3 presents the Discussion on Findings of the present study.

6.2 Findings of the study

The findings of the study are expressed in the form of four assertions. The focus of these assertions is on the role of instructional programme in acquisition of process skills.

❖ **Assertion One**

Instructional programme in environmental studies facilitated the teacher in evolving teaching strategies for enhancing teacher-pupils' interactions during the acquisition of process skills.

During the acquisition of process skills discovery approach and group investigation model were used as teaching strategies to create context of scientific investigation. These teaching strategies were one of the components of the Instructional programme. (Appendix I.B.4). In the initial stages teacher's 'prior experience' was the basis to arrive at the choice of discovery approach as a teaching strategy. The implementation of discovery approach with pupils' made the teacher to realise certain limitations. It is during this stage, instructional programme helped the teacher to get aware of these limitations and to reflect on teacher's role during discovery approach. Thereby teacher made certain modification to teacher's role and evolved group investigation model as an alternative teaching strategy. It is from this perspective the present assertion has been elaborated.

During the instructional programme, teacher used discovery approach to create context of scientific investigation in soil. The teacher's continuous interaction with pupils' and instructional programme is presented in the form of two patterns. The first pattern describes the interactions between teacher and pupil. The second pattern describes the interaction between teacher and instructional programme.

- **Interactions between teacher and pupils' (Discovery approach)**

Pupils' of G5 were working on Grass soil

T- What is the nature of soil in the roots?

P1 - It consists of moist soil

T- Why stones are not clinging to the roots?

P1- (remained silent)

P2- Do we have to write in our book?

(Teacher did not respond to P1 or P2, turned his attention towards G4 who were working on earthworm).

T- Do observe earthworm properly--- (authoritative voice). Do observe like this---

(Took the hand lens from one of the pupils'--- pointed it towards earth worm and asked the pupils' to observe and to record.)

Teacher suddenly remembered that he had forgotten to give an instruction on hand lens to G5. Teacher rushed towards G5 who were working on grass soil.

T- Hold hand lens like this and observe like this. (Showed how to observe grass soil)

Pupils' of G3 were playing with soil which distracted teacher's attention.

T- Observe properly (shouted) Just dig ---soil properly---- come on start writing diagrams.

The pupils' of G3 who were demanding teacher's attention towards the activity on Garden soil distracted teacher.

T- what happened to the colour of garden soil?

Pupils' of G2 who were shouting and running behind to catch an ant distracted teacher.

Teacher rushed to prevent the pupils' running in the school compound

T- Hold ants like this. (gave a demonstration on holding ants*). Do observe ants properly.*

The pattern of teacher- pupils' interactions suggests that, teacher was handling a situation in which pupils' were working on five different activities. The teacher has to manage groups of pupils' and guide them towards process skills. Teacher was constantly guiding pupils' actions with usage of certain words like 'Do this', 'Observe Properly'. etc. Thus teacher role was to guide pupils' to view soil according to his expectation. Teacher did not provide any opportunities for pupils' to explore their

ideas in a creative way. In this situation teacher analysed his actions and interactions with the help of instructional programme. This has been described below.

- **Interactions between Teacher and Instructional Programme.**

  (Discovery approach)

Teacher used self-evaluation pro-forma (AppendixI.B.1.d.) to reflect on his actions associated with the usage of Discovery approach. The pro-forma indicated certain issues, which required immediate attention on the part of the teacher.

1. Teacher faced difficulties in guiding and observing pupils' actions. Further phases of discovery approach were overlapping, as a result teacher had difficulty in defining his role.
2. Teacher had difficulties in managing five groups and giving attention to all the groups.
3. Teacher did not provide enough opportunity for pupils' to explore or interact with their environment.

In order to address the issues of defining teacher role of a teacher, managing groups effectively, giving scope for pupils' to work independently, teacher converted these issues into questions. These questions (When to observe pupils' actions? And when to guide pupils' actions?) centered on teacher to clarify his role with respect to observing and guiding pupils' actions. It is in this regard the Group investigation model (Appendix I.B.4.b) was thought as an alternative. Where, teacher gets adequate opportunities to observer and guide pupils' action. The phases of Group investigation model was modified by the teacher to suit the contents of environmental studies. The Group investigation model was employed to create 'context' of scientific investigation in sound and water. The teachers' continuous interaction with pupils' and instructional programme is presented in the form of two patterns. The first pattern describes the interactions between teacher and pupil. The second pattern describes the interaction between teacher and instructional programme.

- **Interactions between teacher and pupils'**

  (Group Investigation Model)

Given below are the summary of interactions between teachers and pupils' of G3 in the activity on wall & air.

T- What is that you have done? Did you hear the sounds in wall and air ? How was it? (verifying pupils' action)

P1- 'Jum- Jum' sound came (pupil is describing the sound he has heard*)*

T- Really did you hear ? (questioning the pupils' observation*)*

*T - (*referring to tuning fork*) Why it made sound like that (jum-jum)?*

Teacher left the group with a question for the pupils' to think on their observation Teacher moved to G2 who were working on different sounds

T- What did you hear when your ears were closed?

P1- We hear some big sound and small sound are not heard.

T- Why is like that? (verifying the pupils' observation)

T- Why is like that? (repeated the question to focus pupils' attention towards their observation)

P1- (silent)

T- Why is that you did not hear any sound when your ears were closed? (teacher modified his question)

P- Sir if we close ears. We will not feel vibrations. (sound is not experienced when the ears are closed).

In this pattern of interaction, teacher was seen probing pupils' actions. The tendency of teacher to guide pupils' actions was minimizes. Instead teacher started verifying pupils' observation with questions like is it like this? Or why is like that? Thereby giving time for pupils' to use process skills.

- **Interactions between Teacher and Instructional Programme**

(Group Investigation Model)

Teacher used self-evaluation pro-forma (AppendixI.B.1.d.) to reflect on his actions associated with the usage of Group Investigation Model. The pro-forma indicated that Teacher was able to minimize his difficulties with regard to observing and guiding pupils' actions. This was made possible since the model defined the teacher's role very clearly. (During the phases one and two teacher guide, pupils' action whereas in phases three &four teacher observes pupils' action). This is evident when teacher pupils' interactions seem to suggest that teacher was able to ask questions to guide pupils' observation.

Thus the pattern of interactions of teacher and pupils' are compared between discovery approach and group investigation model, it seems to suggest an enhanced interaction pattern during the group investigation model The enhanced interaction between teacher and pupils' provided through the model has facilitated the pupils' in

expression of autonomy in learning, and proposing hypothesis. These changes have been described in the form of assertions.

❖ **Assertion Two**

During the context of scientific investigation pupils' expressed autonomy in learning through interactions with teachers and with fellow peers.

The expression of autonomy in pupils' learning happened during the context of scientific investigation of soil, sound and water. In the initial stages pupils' showed a tendency of seeking teacher approval for their choice of actions. But gradually pupils' showed an increasing tendency of being independent (autonomy) in their actions. This expression of pupils' autonomy is presented in the form of summary of interactions between teacher and pupils'.

During the activities on soil, teacher guided pupils' actions.

This can be seen in terms of interactions with teacher and pupils' of G4 in the activity on Grass soil.

T- Where exactly the soil present?

P1- On stems and roots.

T- Why this soil is present in roots?

P- It (soil) *is*(present) *less in roots. It (soil) has fallen on ground.*

In the pattern of interaction presented above, pupils' role was just answering the questions sought by the teacher. This pattern was seen in the activities of soil. Pupils' exhibited another pattern where they were seeking permission of teacher to confirm their choice of observation

This has been presented below where pupils' of G3 are seeking teacher's approval on observation on earthworm

P1- Sir, please see this, soil is present below earthworm, and skin is smooth and is in red colour It has leaves also

T- Leaves--- show me --- leaves

P1- Verified the earthworm specimen along with their fellow peers. Pupils' did not find the presence of leaves

T- Now write this observation --- Soil is present below the earthworm

This tendency of pupils' to passively respond to teacher questions and confirm their observation for teacher approval continued throughout the activities on soil and during activities (Activity cycle- part A) on sound. However, pupils' showed

tendency of becoming autonomous during the activities (activity cycle- part B) on sound. Pupils' of G4 have showed this change in the activity on telephone

A selected interaction between teacher and pupils' is given below.

P - *Sir, you have made a hole (in the box) and have put a knot,* (on thread) *so sound is heard.*

T - Can you hear sound if knot is put?

P1 -If you put knot, sound will go to knot.

P2-If knot is there you will not be able to listen to sound

Another pupil said

P3 -*If you put knot in the middle of the thread, you will not listen to sound.*

Teacher put the knot, allowed the pupils' to experiment. Pupils' were able to hear the sound with knot. Pupils' nodded head in utter disbelief.

P4 - *Sir, we will cut this thread and give a try then we will not be able to listen.*

In the above interaction pupils' did not agree with teachers' action. This can be seen with the response of P4 who showed the tendency of going beyond teacher's approval for further testing.

Another tendency of pupils' autonomy was observed in the activities of G1 on water evaporation with volume of water. Where one of the pupils did not agree with the way others in his group have done a particular activity. So this pupil conducted the activity all alone. This has been presented below.

In the initial stages, the pupils' started the activity together and during the middle part of the activity one of the pupil did not agree with way the numbers counted by his fellow peers. So all alone he conducted the activity. The readings of the other peers have been given below. The table prepared by the rest of the group is as follows:

Drops	**evaporation**
1	271
2	207
3	215
4	121

The table prepared by the pupil who got separated from the rest of the group is presented below:

Drops	evaporation
1	153
2	177
3	179
4	207
5	270

The work done by the pupil who got separated from the rest seems to be accurate as it agrees with the trend "increase in the volume of water is directly related to increase in water evaporation.

Pupils' tendency to be autonomous continued in the activity on water evaporation and air. In this activity teacher had asked the pupils' to design the activities on their own.

One such incident took place with pupils' of G4, where pupils' thought of using juices of flowers and leaves for water evaporation.

T – You have to perform the activity, but do not repeat the way I have done

P1- Sir, I will take a leaf on that will keep two flower and four leaves. I will see which one will stick.

T – But you have to do an activity, involving water evaporation and air (somehow teacher did not like the way pupils' were designing the activity)

P1 – (Pupil argued) --- Sir, I will smash that (flower and leaves) it were aspect of leaves and flower) will dry ---

T – 'No' (but reluctantly said yes) and permitted to pupils' to do.

In the above example pupils' argued with the teacher to conduct the activities of their choice. This tendency of the pupils' to argue represents an autonomous tendency where pupils' do not seek teacher's approval. Pupils' becoming autonomous needs to be seen with respect to teacher role of giving freedom to pupils'. In the initial stages teacher was controlling the interactions with pupils'. This could be seen in the activities of soil. As the teacher reflected with the instructional materials of the instructional programme teacher modified his role from controlling interactions to facilitating interactions with help of questions, giving freedom to express their ideas. This initiative on the part of teacher with help of the instructional programme can be seen in the teacher /pupils' interactions in sound and water.

❖ **Assertion three**

Pupils' proposed hypothesis based on certain concepts to explain the occurrence of events during the context of scientific investigation.

In order to provide explanation for occurrence of scientific events pupils' attempted to propose hypothesis using certain concepts. In the initial stages pupils' attempted to use hypothesis based on concepts of their day-to-day experiences (everyday concepts). But later stages pupils' attempted to use concepts learnt during the context of scientific investigation (scientific concepts) this progressive change is described below

In the activities on soils pupils' were asked to propose hypothesis on breathing of earthworm and on formation of soil layer in garden soil where pupils' used an everyday concept to propose hypothesis.

- **An Explanation on the Breathing of Earthworm**

Pupils' explained by stating that *"earthworms breathe by holding the roots of the plants when plant shakes roots also shake resulting in getting air to earthworm".*

In this hypothesis pupils' have extended their concept of air (everyday concept) and have related to earthworm breathing. Pupils' notion is that whenever air is blown it shakes the plants, which in turn shakes the roots, which results in creation of air, which moves through roots, reaches earthworm and helps it to breathe.

- **Explanation on the Formation of Upper Layer in the Garden Soil**

In the explanation on the formation of upper layer, pupils' have used cold (everyday concept) to propose hypothesis.

T - *I asked you, why few objects are floating on the water?*

P1 - *They are feeling 'cold' sir.*

T - *What is cold?*

P1 - *Cold means you put a blanket when it rains.*

Teacher repeated the questions

T - *Why objects floats on the water?*

Another pupil intervened

P2 - *It is having less weight Sir.*

In this activity, pupil (P1) could not understand that less weight is the reason for floating of objects Instead P1 tried to explain that objects feel cold inside the

water so it comes out of it. This explanation shows the usage of everyday concepts in proposing hypothesis.

The tendency of pupils' to use everyday concepts continued in the activities on sound. In this activity pupils' were using the concept of water pipe to propose hypothesis on the working of telephone in the activity on sound.

- **Telephone**

During the activity pupils' were asked to explain how sound is carried through threads. However G5 seemed to give an explanation they said '*thread contains a water pipe inside it through which the conversation is heard'*. One of the pupils' used finger to symbolize a hole and said that '*water pipes in her area also are of the same size and sound is heard through water pipes'*. In the above explanation pupils' are relating threads in the telephone contains water pipes. Since sound passes through water pipes similarly sounds passes through telephone.

- **Clock**

In the activity on the clock, pupils' were asked to explain the reason for change in pitch of the sound in the box and outside the box. One of the groups attempted to explain the change in pitch of the sound is due to breathing of clock (everyday concept). The interaction is presented here.

T – *Does clock breaths?*

P – *Yes sir*

T – *How?*

P – *We rotate it make 'tu-tu' sound*

T – (focused the question) *You said that clock breathes. Does it have a life?*

P1 – *Yes, air comes through it*

P2- It has one hole in it

P3 – *It has keys and has cells in it.*

T – *Why did the sound become less?*

(-- -Silence ----)

P1 – *when clock does 'tu-tu', then there will be a small hole, then air comes slowly*

In this example pupils' are attempting to explain that clock breaths and is responsible for the variations in the pitch of sound

During the activities on water evaporation pupils' showed an tendency of using a concept learnt during the context of scientific investigation to propose hypothesis.

- **Water evaporation and surface area**

During the activity on water evaporation and surface area, pupils' observed that water in the plate was evaporating faster than the water in the cup. When teacher asked the pupils' to provide an explanation, the following conversation took place between teacher and pupils' of G5.

T *Why did water dry in the plate?*

P1 *Since the rays comes very fast and it falls straight so that is why, it (evaporation) happens. It evaporates and goes in to the clouds.*

T *Why did (evaporation) not happen in the cup?*

P1 *Since cup was long, so sunray does not fall inside the cup.*

T *Do sun rays fall inside the cup?*

P1 *Sunlight falls straight, since it is long; sunlight was falling on the other side of the cup.*

P2 *Sunlight was falling straight on the plate that is why it dried.*

T *Does the sunlight was not falling on the cup?*

P1 *No Sir, it was not falling clearly, it was at a height.*

In the above example a pupil hypothesised on the evaporation of water. The water in a plate got evaporated faster since sunlight was falling directly on the plate. However the water in a cup did not evaporate faster since sun light, as not falling on it. Since the cup was kept at a height (meaning the shape of the cup prevented the sunlight to fall directly on water).

In the above hypothesis pupils' did not take help of objects in the everyday environment to propose hypothesis. Instead they identified sunlight as responsible for water evaporation and used this as a basis to relate with plate and cup. Thus, during

the 'context' of scientific investigation pupils' tendency of proposing hypothesis has undergone a change. In the activities on soil and sound pupils' used everyday concepts to proposed hypothesis. However in the activities on water, pupils' used scientific concepts to propose hypothesis. Pupils' are familiar with the surrounding environment in which they live. This familiarity makes the pupils' to relate the classroom experiences with the day-to-day experiences. This can be seen where pupils' have used air, cold, water pipes etc to propose hypothesis. As the pupils', started interacting with teacher, with classroom experiences and fellow pupils'. They stared getting familiar with the concepts that are taught by the teacher. This increase in the familiarity on the part of the pupils' can be seen in the hypothesis on water. Where, pupils' have used the concept of evaporation to relate to classroom experiences.

❖ ***Assertion four***

Pupils' showed willingness to change ideas in the light of evidence.

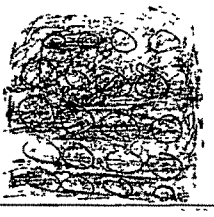
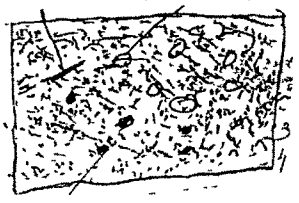
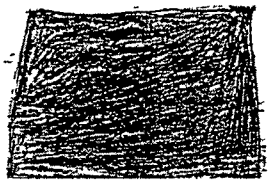
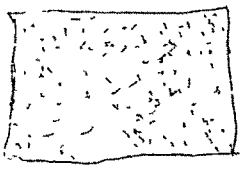
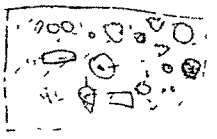
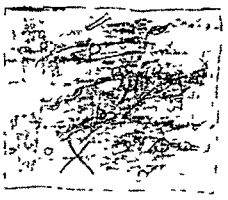
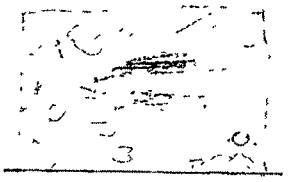
During the instructional programme pupils' worked on activities related to soil, sound and water. In these activities, teacher provided opportunities for pupils' to use process skills. As the pupils' usage of process skills increased pupils' showed a tendency to change their pre-existing ideas by constantly reflecting on evidence. This can be seen in terms of two patterns. In the first pattern, (seen in the activities of soil and sound.) only few groups of pupils' showed willingness to change ideas. In the second pattern, (seen in the activities of water) all the groups of pupils' showed willingness to change their ideas.

These patterns have been presented in the form pre and post instructional ideas. The pre instructional ideas represent pupils' ideas before instruction and post instructional ideas represents pupils' ideas after instruction.

- **First pattern**

The pre and post instructional ideas of soil is presented below

Table 6.1 Pre and Post Instructional Ideas – Soil

Groups	Pre- Instructional ideas	Post-Instructional ideas
G1		
G2		
G3		
G4		
G5		

When pre and post instructional ideas were compared with each other, it was clear that except G2 all the groups had changed their ideas in the light of experiences gained through instruction. The same pattern was observed in the activities related to sound this has been presented below in table 6.2.

Table 6.2 Pre and Post Instructional Ideas –Sound

Groups	Pre-instructional ideas	Post instructional ideas
G1	Shouting Noise Shabdavedi*	Car sound Bus sound Cycle sound
G2	Shouting Cry of a calf Shabdavedi*	Vibrations Shouting ------
G3	Sound of cracker Shabdavedi*	Sound of vehicles Vibrations
G4	Sound of an arrow Cracker sound Noise of pupils'	Noise Vibrations Bus and car
G5	Sounds of bus and lorry Talking Shouting loudly	Vibrations Sounds of bus and lorry

Shabdavedi – A word used in IV std. Kannada textbook. The word means one who can shoot arrow in the direction of the sound.

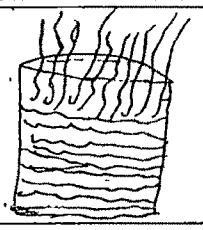
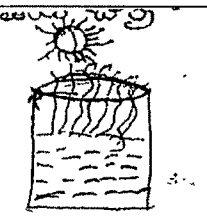
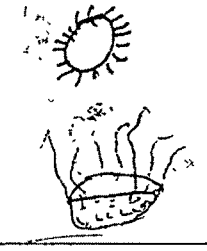
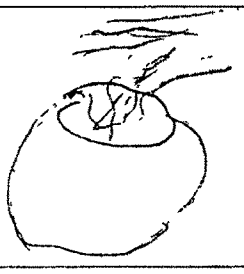
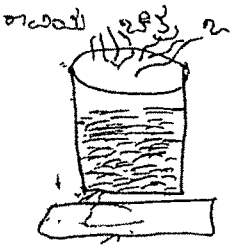
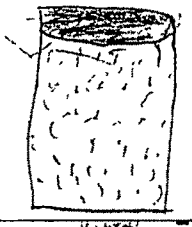
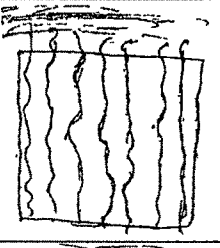
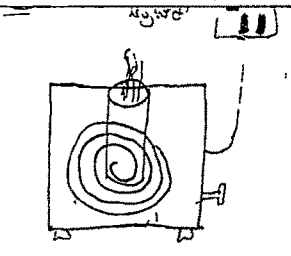
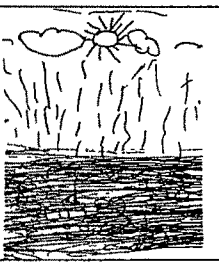
Pupils' way of defining sound was compared with Pre and post instructional ideas on definitions of sound. It was found that pupils' of various groups have changed or retained the ideas. The change of ideas with respect to defining sound can be seen in all the groups. Most prominent is the G1 where ideas have been changed during Pre instruction as compared to post instruction. In the remaining groups i.e. G2 to G5 the change of ideas is seen to be defining sound as vibrations. However the pupils' have retained the ideas even after completion of all the activity cycle this is evident in G2 where sound (idea) has been defined as shouting, and as G5 have retained ideas on bus and lorry.

Another aspect of the group is that they did not retain the ideas and seem to have rejected the ideas on sound. The idea *'Shabadvedi'* as seen in G1, G2, and G3 has not been seen in the Post instruction of sound.

- **Second pattern**

In the activities on water, the pattern has changed where all the groups have changed their ideas this has been presented in the Table 6.3.

Table 6.3 Pre and Post Instructional Ideas – Water

Groups	Pre Instructional Ideas	Post Instructional Ideas
G1		
G2		
G3		
G4		
G5		

Pupils' ideas on water evaporation were compared with pre and post instructional diagrams. The change is seen with respect to viewing evaporation as an event as a result of heating water through stoves or through direct sunlight. This is quite evident in the G1 and G2 diagrams. The same idea has been highlighted by G4. The G4 describes evaporation as heat given from but under the direct sunlight heat

falls on the water directly to cause evaporation. Pupils' ideas extended beyond the direct sunlight, but also included other water sources like river. This was evident in the way G4 has described as heat falling on a river. The post instructional diagrams of G5 showed that water is getting evaporated from a pond there by indicating that pupils' have extended their ideas beyond the 'context' of scientific investigation.

When pupils' diagrams on pre and post instructional ideas on soil, sound and water are compared it is evident that pupils' tend to change ideas during the 'context' of scientific investigation. The change in pupils' ideas shows the pupils' ability to reflect on their ideas in the light of evidences and their willingness to modify them.

6.3 Discussion on the Findings of the Study

The intent of this thesis is to understand the Acquisition of process skills by IV standard pupils' in the 'context' of scientific investigation created through an instructional programme in environmental studies. The Acquisition of process skills is viewed in-terms of change in pupils' ideas through modification or expansion of existing ideas (Harlen, 1993). The finding of the study suggests that, change in pupils' ideas does not happen in isolation but in relation to instruction. Where a teacher deliberately makes an intentional attempt, to change pupils' ideas. In this regard teaching is not a static but *'an inquiry in action'– reflection into on going process of current practice"* (Macniff,1993).

In this regard, instructional programme facilitated the teacher to modify teaching strategies. The very attitude of teacher to change the existing teaching strategies created a change in pupils' ideas during the 'context' of scientific investigation. This can be seen in terms of pupils' tendency to be autonomous, attempting to propose hypothesis and willingness to change their ideas during the 'context' of scientific investigation. In the present study these change in ideas constitutes the progressive development of process skills Hurlock (1997) views *"Development as qualitative and quantitative change. ---- A progressive series of orderly –coherent changes. Progressive signifies that changes are directional that they lead forward, rather than backward. Orderly- Coherent suggests that there is a definite relationship between changes taking place and those that preceded or will follow them "* It is from this perspective changes in pupils' ideas have been discussed.

Pupils' tendency of becoming autonomous (independent) in their group work needs to be viewed in relation to interactions between pupils' and teacher In the initial stages pupils' were seeking teacher approval for their choice of observation. As the teacher changed the teaching strategy, pupils' in various groups started showing tendency of being independent in their learning situations. Pupils' were seemed to argue with teacher. In one particular case a pupil showed courage to conduct an activity all-alone, as he did not agree with the way the other peers had done the work. This can be seen in terms of teacher's very attitude of changing or modifying teaching strategies. In the initial stages teacher was guiding the pupils' observation but later on teacher allowed the pupils' to interact freely with materials and with fellow peers. Thereby accepting pupils' ideas and encouraging them to work on ideas in a co-operative learning situations. As Johnson and Johnson (1999) say, " *The purpose of co-operative learning groups is to make each member a stronger individual. So that, they can subsequently perform higher as individuals".* This autonomy is essential for pupils' to work in groups along with teacher to bring conceptual change. This conceptual change was visualized when pupils' showed a tendency of proposing hypothesis based on their day-to-day experiences and gradually shifted to hypothesis based on concepts taught in school.

This progressive change in pupils' ideas is an indicative of pupils' attempt to relate experience gained from everyday experiences to experiences gained in the school. As Vygotsky (cited in Howe, 1996) refers as conceptual change. *"Which is a on going process in which the child in collaboration with a teacher or other student integrates every day concepts* (learnt in day to day experiences) *into a system of related concepts which are taught in the school."* The very tendency of conceptual change was evident when pupils' showed a progressive change and willingness to modify or change their ideas in the light of experiences (Harlen,1993) provided through instructional programme. This Instructional programme provided opportunities for pupils' to interact with activities related to soil, sound and water.

The pupils' ideas in the activity soil, sound and water have undergone change. The change of pupils' ideas can be seen in terms of ideas getting modified or rejected in the process of conceptual learning. The teacher initiatives in providing the learning experiences *focus on social interactions between teacher and pupils', where intervention by more expert adult (Teacher) positively helpful in moving child to think*

---- *through ideas a starting point with a view of helping them to expand their knowledge and learn to use* ---- *(Howe, 1993)* in variety of situations

The change in ideas strengthens the case of conceptual learning. (Harlen,1993). Where process skills employed by the pupils' change over a period of time. This change can be seen in terms of pupils' ability to express autonomy, propose hypothesis and willingness to change their ideas in the light of evidence. These findings of the study seem to strengthen the relationship between *school instruction and conceptual development* (Vygotsky cited in Howe, 1993). *When concepts tend to develop, process skills also tend to develop. Since concept development and process skills development are interrelated* (Harelen,1993). From this perspective the instructional programme prepared and implemented during the study was helpful to teacher *make pupils' ideas explicit and provided opportunities for clarifications and exchange of ideas* (Driver, 1989).

The finding of the study has indicated that process skill develop as a whole but not in isolation thereby, reinforcing Vygotskian perspective on relationship between instruction and change in pupils' ideas. During the Instructional Programme the teacher made a conscious attempt to reflect on teaching strategies and thereby modifying teaching strategies to bring a change in pupils' ideas. In this regard instructional programmes based on constructivist approaches seems to be relevant in helping the teacher to change, thereby creating change in pupils' ideas. In this regard, both teacher and pupils' undergo a change in the process of instruction. The finding of the study, may be seen in terms of need of Preparing Instructional programmes for teachers based on constructivist approaches to curriculum development. Such programmes are essential for teachers to create a change in classroom instruction by assessing pupils' ideas and reflecting on their teaching experience. Thus, teacher evolves better teaching strategies and in the process brings a change in pupils' concepts or process skills.