

**Existing Teaching and Learning Style of School Science at Panchthar District**

**A Thesis Submitted to Department of Science and Environment Education in  
Partial Fulfillment for the Master's of Education in Chemistry**

**Submitted By**

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**Exam Roll No.: 7428412**

**T.U. Regd. No.: 9-2-0214-0188-2014**

**Department of Science and Environmental Education**

**Central Department of Education**

**University Campus**

**T.U., Kirtipur**

**September 2021**

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**September 2021**

**Viva date.....**

**Submission date.....**

**2021**

### **Declaration**

I hereby declare that the thesis entitled "**Existing Teaching and Learning Styles of School Science at Panchther District**" submitted to University Campus, Faculty of Education, Tribhuvan University is my original work which is done for the partial fulfilment for Master's degree in chemistry education under the supervision of the guide Mr. Rishi Ram Subedi. I hereby declare that this thesis is an original work and has been prepared exclusively for the academic purpose. I am responsible for any issue concerning ethical consideration and plagiarism.

Date:.....

.....

**Bhakti Prasad Regmi**

### **Recommendation for Acceptance**

This is to certify that **Mr. Bhakti Prasad Regmi** has completed his M.Ed. thesis entitled "**Existing Teaching and Learning Styles of School Science at Panchther District**" under my supervision during the period prescribed by the rules and regulation of Tribhuvan University, Kirtipur, Kathmandu, Nepal. I recommend and forward his thesis to Department of Science and Environment Education to organize final viva-voice.

Date: .....

.....

**Mr. Rishi Ram Subedi**

**(Supervisor)**

### Letter of Certificate

This is to certify that **Mr. Bhakti Prasad Regmi**, student of academic year 2073/074 with Exam Roll No. 7428412, T.U. Registration No. 9-2-0214-0188-2014 has completed this thesis under the period prescribed by the rules and regulation of Tribhuvan University, Nepal. The thesis entitled "**Existing Teaching and Learning Styles of School Science at Panchther District**" embodies the result of his investigation. It is record of independent research work carried out by the researcher which has not been previously submitted for the award of any degree and other similar purpose. I hereby recommend and forward that this thesis be submitted for the partial requirements to award the degree of Master of Chemistry Education.

Date: .....

.....

**Mr. Rishi Ram Subedi**

**(Supervisor)**

## Letter of Approval

This thesis entitled "**Existing Teaching and Learning Styles of School Science at Panchther District**" submitted by **Mr. Bhakti Prasad Regmi** in partial fulfillment of the requirements for the Master's Degree in Chemistry Education has been approved.

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**Date:** .....

## **Dedication**

This thesis is dedicated to myself and my respected parents Mrs. Bishnu Maya Regmi and Mr. Narad Regmi, siblings and my dearest friends who have been my support throughout this master's journey. I always appreciate their love, affection and inspiration.

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.....

**Bhakti Prasad Regmi**

### Abstract

This study entitled “**Existing Teaching and Learning style of school science at Panchther District**” has been carried out to exist the teaching and learning style of school science at Panchthar District. This research is based on Jean Piaget and his development theory, Vygotsky’s socio-cultural theory, Brain-based educational theory Benzie four basic teaching style, Grasha’s five teaching style.

This study was based on the concurrent mixed method design. Six secondary schools at Panchther district was purposively selected as sample school. Hundred students was randomly selected as sample for Oppinaire test for quantitative research to analyze the style of learning used in science classroom by statements of Likerts scale. Except the twelve’s student and six science teachers were selected by using random selection method for semi-structured interview for qualitative research. Similarly, two science classes of every teachers and students were observed by researcher with the help of prepared observation form. The collected quantitative data were analyzed by using mean, frequency and percentage. The qualitative data was transcribed, categorized, developed theme and thematic analysis in various categories. The descriptive and statistical findings obtained from qualitative and quantitative research was triangulated by using QUAL + QUAN research deign.

This research study has find out the teaching and learning style of science used in secondary level. From this study, researcher was found that interactive, instructional, ICT based, group discussion, problem solving, note taking and making and concept mapping teaching and learning style are dominantly used in science at secondary level. Individual teaching and learning style are rare used in science class. Similarly, lecture styles were not appropriate for science teaching. Most of the students were learn about the subject matter of science by interactionally, collaborately and using ICT based learning style. From the observation form, most of the science teacher was use motivational technique/style in science classroom while teaching learning activities occurs which are warm up activities, to establishing good rapport & behaving friendly with students, create appropriate environment, connecting course content to current events, to link the daily life activities & previous class. Such type of style was appropriate in science teaching and students were easy to learn science. Where the finding of this study contribute to the use of learner friendly

teaching and learning activities in the secondary level and also inform stakeholders as well as policymaker.

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**Abbreviation**

ICT	Information Communication Technology
TU	Tribhuvan University
M.ED	Master of Education
S.A	Strongly Agree
A	Agree
U	Undecided
D	Disagree
S.D	Strongly Disagree



## **Chapter I: Introduction**

Teaching is a type of knowledge delivery system or transmitting the information from the teacher to the learners. The teaching of science education in Nepal has its scenario and historical movement. The construction process of knowledge in the classroom system or teaching in Nepal began with what the teacher intends to deliver to their students rather than trying to understand the students' styles of learning, understanding, learning environment and ability to learn in science. So, we find out the style of science teaching and learning styles of Nepal.

This chapter tries to understand the meaning and nature of science, styles of teaching and learning situation with connection of historical development of science education and religious connectivity. It deals with the styles of teaching and learning in science education. Along with these, situations and practices of the constructivist approaches, methods and techniques of science teaching and learning in Nepal has also been incorporated as a background of the research study in the first part of this chapter. Similarly, statement of the problem, rationale of the study, limitation and delimitation of the study and definition of the key terminology also are included in this chapter.

### **Background of the Study**

Science is a body of knowledge, a way of thinking and a way of investigation, a way of experimentation in the pursuit of exploring nature. So, it is difficult to say the exact definition of science. Science is an interconnected series of concept and conceptual schemas that have been developed as a result of experimentation and observation (Mohan, 2007). Science is an accumulative and endless series of empirical observations which result in the information of concepts. In the same way, science is a way of investigation, science is a certain way of looking at the world (Weinberg & Shabal, 2003), and science is an approach rather than content (Biesant & Biesant, 2005). Similarly, Soti, (2005) said that learning of science is the process of construction of knowledge by the observation and empirical evidences .

The development of science and technology has made the life of every human very luxurious day by day. So, we can say that science is a scaffolding of life. Science is the foundation upon which the bulk of present day's technological breakthrough is built. The world is moving forward towards the advancement of science and

technology. Science is an integral part of human society. Its impact is felt in every sphere of human life, so much that it is intricately linked with a nation's development (Onasanya & Omosewo, 2011). Science as a field of study has done a lot for human civilization and welfare.

### **Present Status of Science Teaching**

In Nepal, science subject is taught at various form from school to university. Our country lies far behind in the development of science and technology and hence in the development of our nation. In present time, all of us agree that without development in science and technology, our nation cannot develop fast. Thus it is high time that all of us think, of producing able, efficient and skilful manpower in science and technology. Therefore, large number of qualified, energetic and motivated science graduates should be produced to cope with the demand of nation. School science education is the basis for children higher study in science and technology, so school students should be provided sound background in science education and their higher education in science and technology may be more rewarding. Science education prepares the young generation for the life that lies ahead.

Unfortunately, if we look at the school students' performance in science education is repressed. It means many students fail in school science and national average achievement score in science are not satisfied (Poudel, 2019). This kind of result is due to styles of teaching and learning related factors such as school science curriculum, evaluation system, do not availability of instructional materials and do not use student centred teaching methods as well as proper teaching and learning styles. Science education does not denote just cramming and memorizing of hypothesis, theories, laws and principles. Science education means understanding of science concepts, process, approach and attitudinal development. Science education inculcate the acquisition of scientific skills such as observation, collection of evidences, drawing of conclusions, generalization of findings and the application of the finding to the new situations (Karala, 2004).

In Nepal, the styles of teaching and learning is ruled by behaviorist theories, concerns the principles of stimulus-response or lecture methods (Khadka, 2019). This types of educational practice lack in making the students as inquisitive thinkers, who can question, reason, reflect, make association with prior learning, imagine, create and

think. The lack in these aspects are traced to the transmitted knowledge where students passively listen while their minds may be daydreaming. In such practices, the students are passive recipient of knowledge. The participation is restricted to only asking and answering on what teacher has taught.

Therefore, need to change such types of practices and follow students-centred teaching approach, the whole teaching learning process teacher free to choose any method with appropriate instructional materials according to students' need, interest and ability. In this approach, teachers are required to teach with appropriate teaching style to motivate learners and provide participatory environment in the teaching learning process. In my experience and opinion in order to become efficient and effective science teachers, it is necessary to understand the relationship among science content, scientific method and the various teaching technologies.

### **Teaching Styles**

It is a teaching methods, which are considered to be the general principles, educational & management strategies, presentation skills, evaluation process for classroom instruction adopting by the teachers.

The term teaching styles refer to the general classroom behaviour associated with and carried out by an instructor, and is not restricted to a teaching method or a technique. Teaching styles as an instructor's implementation of philosophy, beliefs, values, and attitudes towards the exchange of teaching and learning (Jarvis, 2004). Teaching styles are multidimensional and can affect teachers' presentation of information, interaction with students, classroom task management and supervision of coursework (Grasha, 1996). Therefore, teaching styles might be able to be identified by observing teachers' teaching behaviour, such as the ways of presenting information, organizing discussion, lesson planning, and ways of facilitating learning activities.

Learning is depend on the teaching, so teaching style refers to teach learners how to utilize methods and strategies that caters for diversity of learning styles (Seaman & Fellenz, 1990). In the classroom, teachers engage themselves in teaching-learning activities that is defined by a set of values, such as the personalities of learners and teacher, the contextual setting and the prevailing political climate (Brooks, 1986). The teaching learning activities affects a teacher's beliefs, their

perceived roles and proposes of the curriculum. According to Soti (2005), the function of teacher values, beliefs, knowledge, roles and their preferred pedagogies in the classroom by an individual is teaching styles. So, teaching style is connected with what each educator holds in high-esteem like as attitudes, values, belief, skills and personality which involves matching his/her behaviour with teaching philosophy.

### **Learning Style**

Learning styles refers to learners how to learn about the subject matter or preferred general approach to learning, which includes the process of gaining, processing, and retaining new information. Learning styles are internally based characteristics, often not perceived or consciously used by learners, for the intake and comprehension of new information (Reid, 1987). Learning style is a composite of environmental and perceptual preferences, which influence our physical and sensing needs; cognitive variables, which determine how we approach, conceptualize, and structure our world and social preferences, which arise from cognitive, personality, affective factors and which shape our behavioural tendencies in learning situations (Galloway & Labarca, 1990).

Learners learn various way of learning according to their way of learning process and interact with instructional environments. Learners have certain learning styles because of their cultural beliefs and educational backgrounds. It generated various learning needs, which has become a base for learning styles theories and widely supported significance of the concept of learning styles (Kolb & Kolb, 2005). According to Stenberg and Grigorenko (2001), learning styles is emphasis to styles as personal performance involved in the learning process, the learning environment and the types of preferred instructional activities.

### **Statement of the Problem**

Much of existing school learning style is still individual based. The teacher is seen as transmitting 'knowledge' which is usually confused with information to children and organizing experiences in order to help children learn, which is with the influence of behavioural based strategies. Current educational style is still based on limited lesson plans, aimed to achieving measureable behaviours, according to this view the child is a creature that can be trained, or a computer that can be programmed. Hence there too much focus on outcomes and presenting knowledge

divided into bits of information to be memorized directly from the text. Instead, it is needed to view the child as constructing knowledge all the time. This is truer while learning styles of science as a cognitive subject focusing on science learners' performance. The present study addresses the issue of existing traditional pedagogical styles and applies the strength of learner centre based learning styles in learning science.

The main statements of the problem of this research were to:

- ) Identify the dominant science teaching styles employed by science teachers in Panchther district.
- ) Identify the dominant science learning styles exhibited by science learners.
- ) Provide teachers and learners with different views of learning and teaching style.

### **Rationale for the Present Study**

This study is mainly inter perspectives and constructivist, and aims at investigating Science learning and teaching style preferences in Panchther secondary classroom. This study were rational for the contribution to the research fields of learning style and teaching style preferences of science students and teachers, as well as for the development of learner friendly way for teaching and learning styles of education in Nepal.

- ) This study is designed to provide insights for science classrooms at government schools in Nepal. Most of the research investigates learning styles of science students who learn Science for general purposes, but not for academic purposes.
- ) This study provides baseline data for future research on science learning style preferences of science students. For instance, students studying in Nepal may have different science learning styles as the social and academic cultures may be different.
- ) This study also provides the strength and weak point of the teaching and learning styles and their practices in Nepal.
- ) This study helped to provide valuable information concerned policy maker to reform and improve teaching strategies in Secondary Science.

- ) This study was significant for those who want to provide to the secondary schools education regarding the improvement to the whole system in order to enhance students' achievement.
- ) The study was helpful for teachers at higher secondary level to bring positive change in their teaching styles so as to enable the students in attaining better academic performance. .
- ) The ultimate significance is thus to help designing constructivist atmosphere and adaptive learning environment for similar contexts within the broader Nepalese context.
- ) Textbook publishers and media developers may take advantage of the findings to incorporate teaching styles and activities in the content of science materials to facilitate teachers and students' use of learning styles.

This study, therefore, aims to fill a gap in the research literature in the area of academic Science learning and teaching styles at secondary schools and to provide valuable information for curriculum design and teacher training in order to offer Nepalese secondary schools student's adequate and effective academic science learning support. The findings were also help teachers to adopt suitable teaching strategies with reference to students' needs. In the light of literature available in the field, the gap existing is noticed at finding the styles teaching and learning.

### **Objective of the Study**

The objectives of this research were as follows:

- ) To identify the teaching style preferences of Panchthar secondary schools teachers.
- ) To identify the learning style preferences of Panchthar secondary schools students.
- ) To identify the best existing style of teaching and learning in science classrooms of Panchthar secondary schools.

### **Research Questions**

In present time the styles of teaching and learning in constructive perspective is not studied in context of Secondary Science teaching in Nepal. Therefore, this study is mainly concerns about the investigations the styles of teaching in science teacher and style of learning in their students Especially this study intended to answer the following researchable questions.

1. How learning styles exhibited in science classes in school education?
2. What are the teaching styles exhibited in science classes in school education?
3. What are the suitable recommended teaching styles that effectively address these learning styles?

### **Delimitation of the Study**

Present study covers the scope of the sample, schedule of teaching and the resources. The present study were delimited to the following aspects.

The delimitation of this study were as follows:

1. This study was delimited to only public secondary school, in, Panchthar District.
2. This study was delimited in six secondary school which are randomly selected in each selected districts.
3. This study was delimited to grade nine students in science alone.
4. This study was delimited only in instruction, auditory ICT based, problem solving, individual, group, note taking and making and interaction style of teaching and learning.

### **Operational Definitions of the Key Terms**

**Auditory:** It refers to the learner's preference for listening, understanding spoken directions, following logic that is explained verbally, and addressing background sounds-whether supportive or disruptive.

**Group:** It referred to the learner's preference for collaboration with one or more other students in planning, discussing, sharing responsibility, organizing, listening, cooperative, and supporting a point of view leading to a product.

**Individual:** It refers to the learner's preference for addressing acquisition of knowledge from an individual perspective, comparing new information with previous experience and reflecting understanding through their own opinions and modes of perception.

**Interaction:** It refers to the exchange among individuals with common (mutual) interests, in an environment in which parties influence one another. Also referred the communication with teachers and students about the related subject matter.

**Instruction:** It involves guiding students to appropriate learning activities, helping them to construct appropriate knowledge, encode, and process information, monitoring student performance, and practice.

**Learning styles:** Learning style refers to the preferential way in which the student absorb, processes, comprehends and retains information.

**Learning:** Learning refers to active and social construction of knowledge, skills and understandings, by the learner as a result of interactions with the environment.

**Note making:** Note making is the practice of keeping record from different sources. Note making involves selecting, analyzing and summarizing what you hear and read.

**Note taking:** Note taking is the act of writing down pieces of information in a systematic way it is the first stage of producing an effective note and is the process which involves writing or recording what you hear, see or read during lecture, tutorials, demonstrator in a descriptive way.

**Problem solving:** It refers to the coming out problem of science content, which were related with daily life activities.

**Teaching styles:** It is a teaching methods, teaching techniques, are considered to be the general principles, educational, and management strategies, evaluation process, motivational technique for classroom instruction adopting by the teachers.

**Visual or ICT based:** The learner's preference for visually gathering and comprehending information through reading, observing models, maps, graphic organizers, charts, and demonstrations, and to internalize their own perspective.



## **Chapter II: Literature Review**

The term 'literature' refers to the knowledge of a particular area of investigation of any discipline, which includes theoretical, practical and its research studies. A review of literature is a summary, analysis and interpretation of the theoretical, conceptual and research literature related to a topic or theme (Anderson & Arsenault, 1998, Best and Kahn ,2000) said that the literature review is an effective research based upon past knowledge that is related to the research topic. Similarly, literature review means reviewing research studies or theory relevant propositions into related area of the study so that all the past studies their conclusions and deficiencies may be known and further research can be conducted. In fact it provides supporting impact and critical overview about practical viability of the topic. It also places the emphasis on verification of the foundation work for the topic within which, researchers expect to review the support structure of knowledge to do an essential review of the literature.

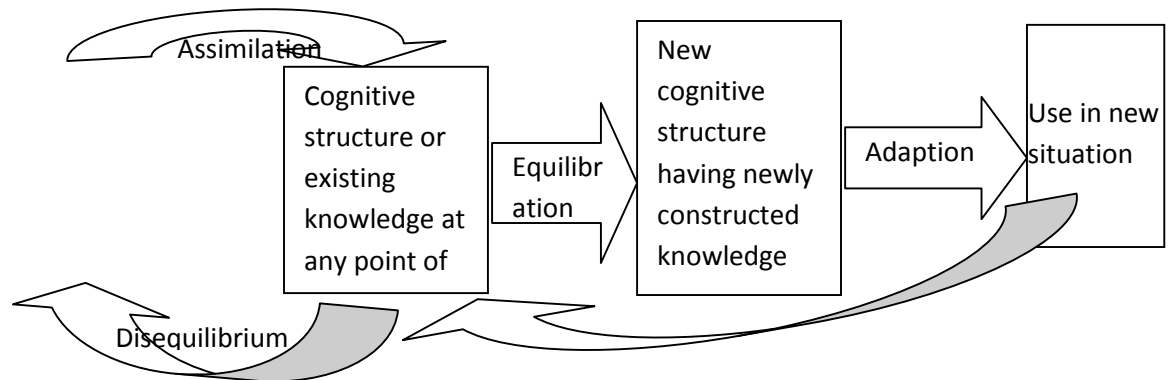
### **Theoretical Review**

This study mainly focused the view of learning sciences with teaching and learning styles. But, in the context of Nepal the environment of real classroom is still dominated by the traditional transmission view of knowledge, classroom are filled with many dynamics and complex factors that could be responsible for learning and outcomes. In my experience student learning is influenced by many variables and determine into the teaching learning process.

### **Jean Piaget and His Developmental Theory**

Piaget's constructivist theory is based on analogies with biological evolution and adaptation. Piaget believed that the child's own actions in the world were important to cognitive development. Researcher understood, he believed that the social context was important in this development process, but yet the individual was seen as developing in isolation, behaving like a little scientist, making his or her hypotheses and testing them to construct an understanding of his or her environment (Das, Gupta & Richardson, 2001). Piaget's theory postulates highly complex cognitive structures and functions being built up from simple initial processes in conjunction with personal action and experience. These structures are continually internalized by action on the world. The internalization and representation of mental

operations such as knowledge and cognition is argued to evolve through a series of stages.



*Figure 1: Piagetian construction of knowledge*

Piaget explain the intellectual development in the individual as a form of adaptation to the environment. According to Piaget the operations throughout the stages develop by processes of equilibrium, assimilation, and accommodation. Equilibrium was described as a dynamic process of self-regulated behavior that balances assimilation and accommodation. Assimilation is about organization of experience dependent on one's own logical structures of understanding meaning of the environment (Fosnot, 1996), and in order to have the learning occur, a state of disequilibrium needs to happen to accommodate new learning. Disequilibrium facilitates learning as such that errors are perceived as a result of learners' conceptions and should not be avoided or minimized.

### **Brain-based educational theory**

Theoretical foundations underlying the field of learning styles the brain-based educational theory have relevance to the study of student learning style preferences and instructional strategies. Further classification systems rely upon these basic theoretical differences as a basis for organizing the wide variety of specific models. For example, systems have been presented in which learning style models are classified as ability- or personality-based as related to learning styles, approaches to learning, or intellectual development and using a continuum from a focus on fixed traits to a greater emphasis on personal preferences and orientations (Hall & Moseley, 2005).

Brain-Based Educational Theory involves exploring the ways by which the brain works to facilitate learning. It takes into consideration the natural and physiological processes that occur during learning and uses this understanding to guide educational practice. Understanding the functions of the brain and incorporating this in designing learning experiences can significantly improve the effectiveness of student learning (Caine & Caine, 1991). Brain-Based Educational Theory is also exemplified by Howard Gardner's conceptualization of multiple Intelligences. According to Dunn et al. (2001), Gardner's theory which includes nine intelligences (linguistic, logical-mathematical, spatial, kinaesthetic, musical, interpersonal, intrapersonal, naturalistic, and existential) identifies intelligence as having much greater scope than what is measured in terms of test scores in language and mathematics; rather, 16 instead of demanding mastery of academic content, it encourages the development of each student's inherent potential.

### **Lev Vygotsky's Social Cultural Theory**

Russian physiologist Lev Semenovich Vygotsky (1934-1996) formulated this theory in 1962. He examined how our social environment influences our learning. It is focused on learning by interaction of individuals with their peers, teacher, parents, culture and language. According to Lev Vygotsky's social cognition theory the social cognition learning model asserts that culture is prime determinant of individual development. Therefore, a child's learning development is affected in ways by culture, including the culture of family environment, which he is brought up in. In a country like Nepal, with its cultural diversity, the cognition model will definitely have a bearing on the learning taking place in classroom (Mohan, 2013).

According to Vygotsky's theory teaching and learning style should be used to emphasize interaction between learners and learning style. Social and cultural background of the student has more effect in the perception or thoughts regarding anything rather than just the cognitive development. Perception of one student may not match with other as their difference in needs and interest due to their difference in socio-cultural factors.

Constructivism propose that the people create their own meaning by combining their existing knowledge with new experiences. Perception about one thing can be different from student to student if the students are from the different



student self- understanding. It correlates with the humanistic approach to learning and represents a shift to one of empowering the students to learn theory and skills.

### **Grasha Model of Teaching Styles**

Grasha's (1994) goals for developing a conceptual model of teaching style were to explore the stylistic qualities that college teachers possessed and to offer suggestions for when and how to employ them. Although he identifies five different teaching styles, he suggests that categorizing teachers' teaching styles into "one of five boxes" is "premature" (p. 142). He observes classroom teaching and identifies the following five teaching styles: expert, formal authority, personal model, facilitator, and delegator. This is presented in below table.

Table ii : *Grasha's Five Teaching Style Categories*

<b>Styles</b>	<b>Description</b>
Expert	Possess knowledge and expertise that students need. Concerns with offering detailed knowledge and information so as to ensure that students are well-prepared.
Formal authority	Concerns with providing students with positive and negative feedback, establishing learning goals, expectations and rules of conduct for students.
Personal model	Provides students with personal examples and guides students by showing them how to do things, and encourages students to observe and emulate the instructor's approach.
Facilitator	Emphasizes teacher-student interaction. Works with students on projects in a consultative way and provides support and encouragement.
Delegator	Concerns with developing independent learning and encourages students to work independently on projects or as part of teams. The teacher is available as a resource person.

In above table, shows that it is possible that teachers possess each of the teaching styles to varying degrees that could be blended together. He therefore developed four clusters of teaching styles: Cluster 1 (expert/formal authority style – i.e. traditional teacher-cantered classroom processes), Cluster 2 (personal model/expert/formal/authority style – i.e. provides personal modelling; guiding and coaching), Cluster 3 (facilitator/personal model/expert style – i.e. emphasizes collaborative and student-cantered learning processes), and Cluster 4 (delegator/facilitator/expert style – emphasizes independent group and individual learning activities). Each cluster reflects some blends of styles are dominant and others are secondary.

## **Empirical Literature**

Kafle( 2012), carried a research in the main finding of this study was concluded that science teacher possessed fairly positive perception towards the use of lesson secondary level but the teacher suffer from several difficulties and barriers making difficulties to prepare and implemented written lesson plan in classroom teaching

Mohatfyza & Mohamand (2013), carried out the main objective of this study was to find out the how learning style influence the students academics achievements based on cognitive mastery & vocational elements building. The main finding of this study was the cognitive learning style frameworks called act as a guideline for teachers to facilitate students to learn more effectively and to boost the academic achievements in building construction subject.

Koirala (2016), studied on the main objective this study was to compare the achievement of the student taught by traditional and social constructivist approach. The main finding of this study was concluded the social constructivist approach his better method of teaching mathematics.

Sanchee cho (2016), also found in his study, the main objective of this study was to explore the best teaching and learning style in science. The finding of study was the traditional lectures can often produced undergraduate without the skills needed for professional success.

Paudal (2019), did a research on the main objective of this study was to find out the effectiveness of concept mapping teaching method in science. The researcher concluded that concept mapping method was better effective than lecture method and concept mapping teaching method was higher appropriate than lecture.

Khadka (2019), carried out , the main objective of this study was to find out the teacher perception towards motivational technique in science classroom at secondary level .This study concluded that , there are numbers of motivational technique to motivate the students towards the learning i.e. create the basic motivational condition before starting the class, motivational technique to generate initial motivation and protecting motivation and motivational technique to encourage positive retrospective self-evaluation.

Parajuli (2019), carried out the main objective of this study was to find out the effectiveness of instructional module method of teaching over the traditional teaching method in secondary level. This study concluded that the use of instructional module method is more effective and relevant than traditional method.

### **Conceptual Framework of the Study**

A conceptual framework is develop to guide the whole dissertation process. It is just a like a roadmap for the research study steps. Conceptual frameworks helps to conduct the study in an organized manner to gain the objective set of research. A conceptual framework is an analytical tools with several variation and contexts of the research work. It is the researcher's "map" in pursuing the investigation ( Khanal, 2015).

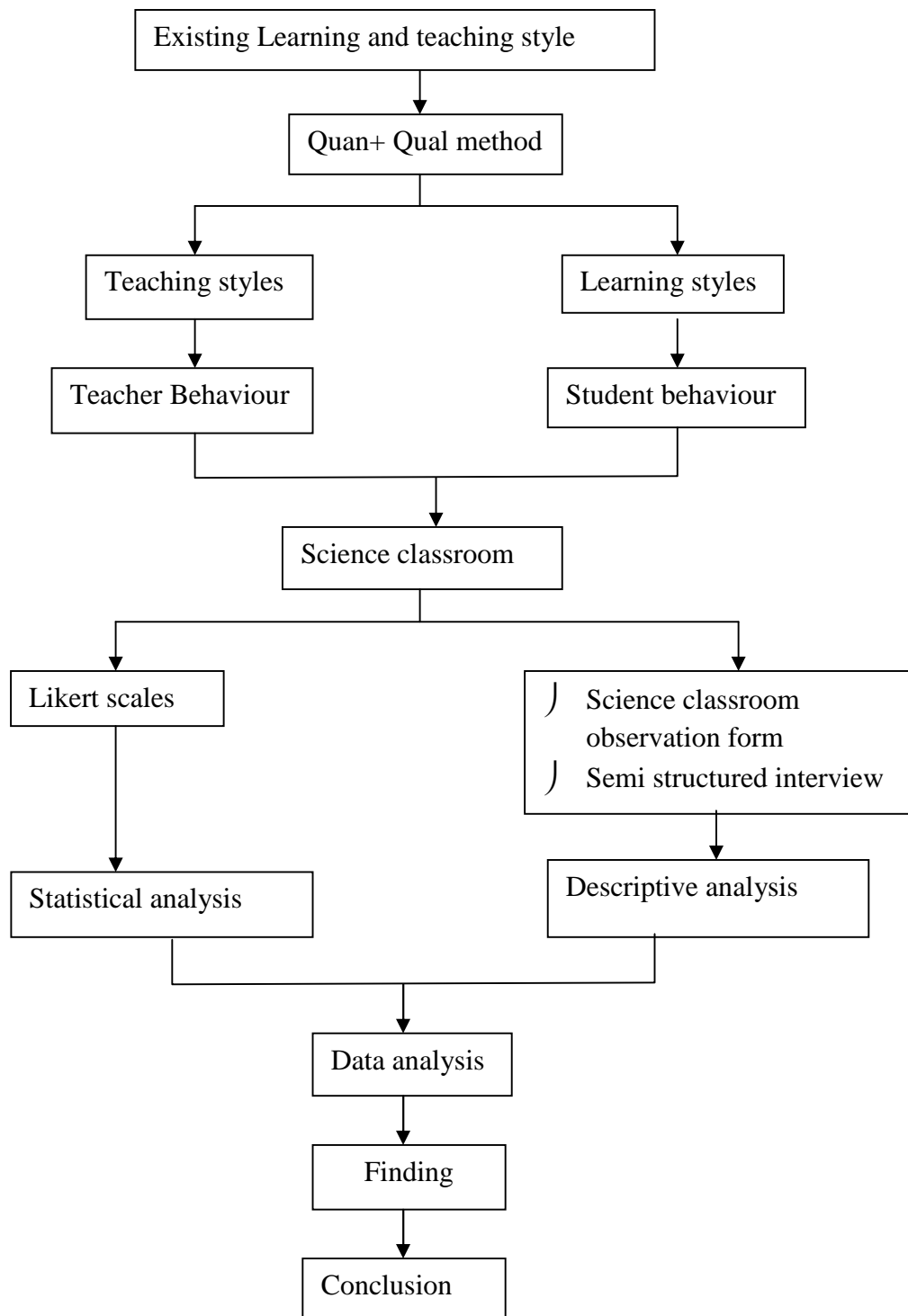


Figure 2: Conceptual Framework of the Study



### **Implication of the Review**

Researcher reviews different previous works related to researcher research work. Those research work have been carried out with different objectives, methodology and research design. Researchers had to use different types of research tools for collection of data in different situations. So after reviewing all those research works, updated research process and methodological tools which provide the very beneficial information to my research processes work. All these empirical studies were helpful to carry out my research study. They stand as a backbone of my research study to make it more informative and reliable. The entire sources of reviews have helped me bring the clarity and focus on research problem, select methodology and estimate the findings.

Researches has been done on topics related to the existing teaching and learning style which has been very helpful for teacher and students to understand the need and interest. As result it was found that student centred leaning and teaching style has been made to address student's needs and interest. We can find very few research papers on the topic of existing teaching and learning style towards the science.

The previous researches which are done on the method of teaching which appropriate school was level student. There is gap of not studying this area of style of teaching and learning. There are new burst of knowledge with the innovation of science and technology and with this there is change in this generation student's perception towards the teaching and learning process with their changing needs and interest. These reviews were helpful for further recommended research.

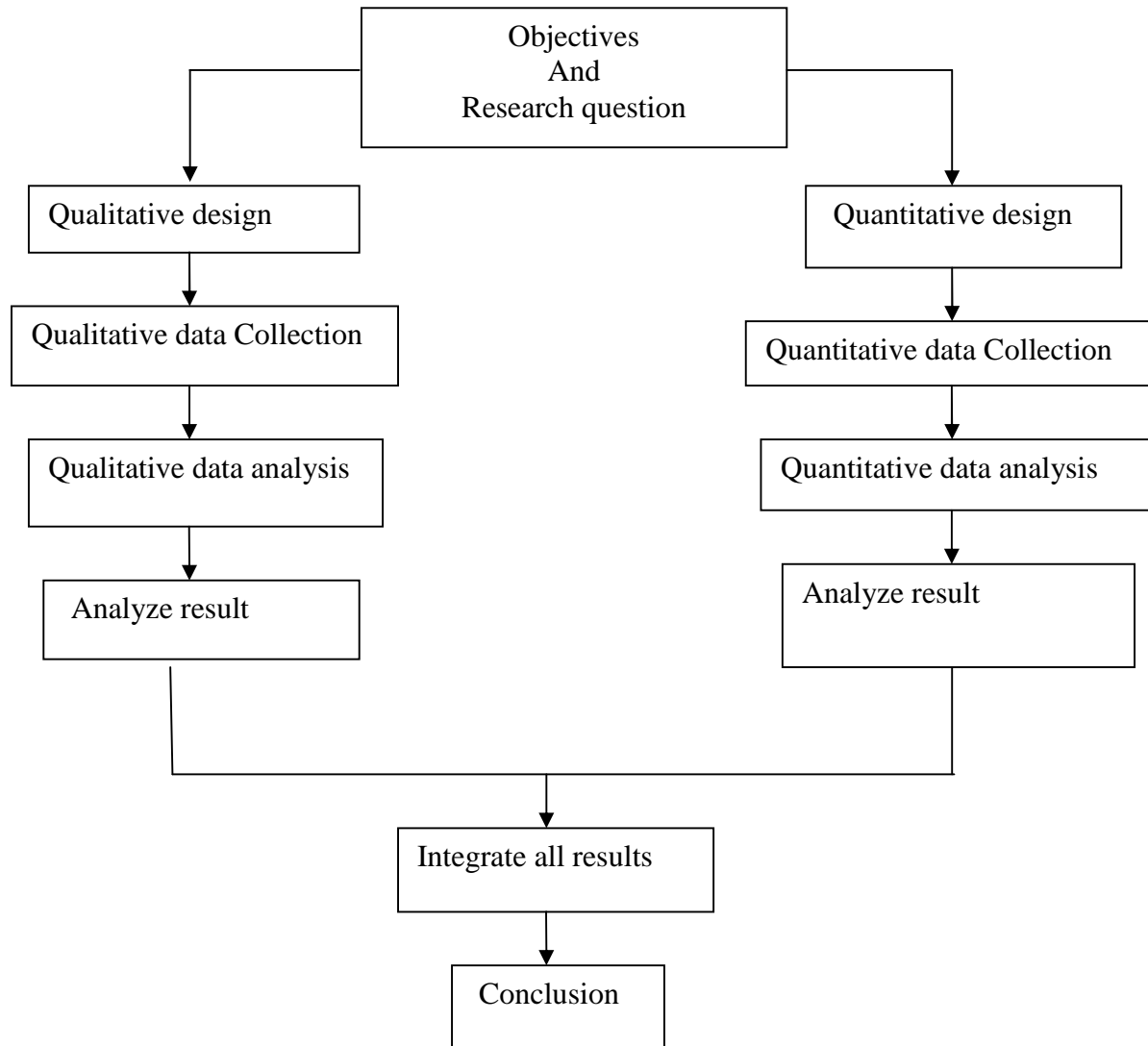
### **Chapter III: Research Methodology**

Research methodology refers to the various steps to be adopted by a researcher in studying a problem with certain objects in view. To find out, a true result an appropriate research methodology is necessary for an investigation ( Khanal 2015). This study was to find out the styles of teaching and learning science education. This study was also focus to exist the best style of teaching and learning in science classrooms.

#### **Research Design**

The research design refers to the conceptual structure with in which the research in conducted. Generally, research design helps to layout the plan for study and explains the procedures for analysing and interpreting the findings. Research design is the plan and structure of a study. It also provides the procedures to address the research questions and interpret the results.

In this study the researcher triangulated both qualitative and quantitative data and follows the concurrent type of design. In concurrent design the researchers used to look at separate concepts or sub-concepts where one is better examined quantitatively and the other better examined qualitatively by using two different methodologies. The paradigm of concurrent design of this study were as follows;



*Figure 3: Concurrent Research Design*

### **Sampling Procedure**

All secondary schools in Panchther district and all secondary schools students are population of my research. The population of this study were students of grade nine of six schools at Panchthar District. Researcher selected Hilihng rural municipality in Panchther district because of researcher easily enter this place and came real and natural data, create a natural environment and clearly introduce about the sample schooled. Sample refers to a representative portion of theoretical population of the study.

.On these population, randomly selection of the six public schools were taken through purposive sampling. In fact, only hundred students were included in this study as the sample size for questionnaire by selecting randomly and for qualitative

data twelve students were selected by same process. Likewise six teacher were selected one for each schools for the, interview, who taught science for academic purposes at secondary levels, participated in this research.

Finally hundred students are selected for oppenier test, six teacher and twevle students are selected for interviews purpose.

### **Tools for Data Collection**

For this study data were collected from primary and secondary sources. The primary data were collected from sample schools, students and teachers through the semi-structured interview and oppinnaire test. The secondary sources of the data were collected from related thesis, journals, articles, books, internet related with the topic.

In the qualitative stage the semi-structured interview form were used for data collection. Oppinnaire test were used for quantitative data collection tools. These mentioned tools were explained below.

### **Semi-structured Interview**

Interview is very important tool for the collection of valid and reliable data for any type of research. Semi-structured interview is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation. Semi-structured interviews are conducted with a fairly open framework which allow for focused, conversational, two-way communication ( Khanal, 2009). They can be used both to give and receive information. The questions can be created during the interview, allowing both the interviewer and the person being interviewed the flexibility to probe for details or discuss issues.

Interview of selected students were taken in the convenient place of schools itself. Interview schedule was given to them and interview was carried out according to the schedule. Individual interview was done i.e. one student at a time. Prepared questions were asked to them to which they were free to tell their perspectives.

## **Oppionnaire**

Oppinnaire is list of statements on which researcher seeks opinion of the targeted group by using certain tools like psychometric scale. The five point's Likert scale of Oppinnaire was developed to study student's perception.

Likert stressed that it is very important to define the attitude object precisely and to ensure that scales are defined in narrow terms to avoid other dimensions appearing. He did not include neutral items. Likert's primary concern was with one-dimensional - making sure that all the items would measure the same thing. He also wanted to eliminate the need for judges by getting subjects in a trial sample to place themselves on an attitude continuum for each statement - running from "strongly agree" to "agree," "undecided," "disagree", and "strongly disagree." These five positions were given simple weights of 5, 4, 3, 2, and 1 for scoring purposes (or sometimes 4-0) after more complex scoring methods had been shown to possess no advantage (Oppenheim, 1992).

## **Observation Form**

The observation was taken in a science class in secondary level of Panchther district. Classroom observation was done physically before the Covid 19 lockdown. The form was created under different headings to look at the teaching style and learning style used by the teachers and students in the teaching-learning activities and the way the students learn. I collected the data from observation form for randomly selection six science teachers and hundred students.

## **Data Collection Procedure**

First, the researcher visited selected informants and put forward a humble request to the respective principles and school administration for the interview of teacher and students. Researcher introduce to the student about questions and how to answer them.

The data collection procedure are, at first, I visited the selected school and concern with authority person. I explained the purpose of the study and ask the permission to carry out research. After getting permission from the authorized person, I consulted with the teachers and student to get data. Then, I conducted the interview and observation of teacher and students

## **Data Analysis Procedure**

### **Qualitative Data Analysis**

The interviews were recorded using an audio recorder. Afterwards, the voice recordings were transcribed. The accuracy of the transcriptions and their consent were checked before the analysis. Later on, interview transcriptions was read thoroughly to understand the issue with a holistic point of view, the importance of context, process-related reasons, and their mutual effects were taken into consideration during coding.

Moreover, the codes developed by free coding in content analysis was combined under a common category and transformed into a tree code. In other words, an inductive logical process was followed. The codes obtained were categorized according to similarities and differences, and categories were compared. Meaningful and holistic categories were combined to form themes. The themes were signed under different subheadings in the findings and interpretations.

### **Quantitative Data Analysis**

In the quantitative stage, participant's answers obtained from the Likert's scale was processed by using the MS Excell program. Both descriptive and inferential analyses were performed on the data like mean, frequency and percentsge.

Finally, the descriptive findings obtained from quantitative and qualitative research was triangulated by using QUAL + QUAN research deign.

### **Ethical Consideration**

This research was conducted for academic purpose to fulfil the provision required in fulfilment of master's education. This research made affect to the research participants and respects the dignity of research participants. The research was done under full consent of research participants prior to study. The privacy of the participants protected and the research data was kept confidentially. The research was contained any type of misleading information as well as representation of primary data findings were presented in biased way.

## **Chapter IV: Analysis and Interpretation**

This chapter includes the analysis and interpretation of the qualitative and quantitative data collected from the primary sources. The primary sources of data was collected from the six sample schools, six science teachers and twelve students while 100 students were sample of Likert scale. The purpose of this chapter is to provide results and analysis of data resulting from individual interview classroom observation and opinionnaire test that was carried out on sampled students and teachers.

Researcher has prepared different semi-structure questioners for science teacher and grade nine students who studied in secondary level at Panchthar district. The entire questionnaire was related to teaching and learning style. The respond to each semi structure questions had been collected listed and analyzed separately. The researcher has analyzed the response to questioners separately one after another under the different theme. The analysis of the study was carried out under the following major heading which corresponds to the objective of the study.

### **Quantitative Data Analysis**

#### **Analysis of Likert Scale**

Researcher provide the various Likert scale statement were given to tick ( ) the best opinion. For this purpose the scale was one to five Likert types. The purpose of likert scale was to only find out the perspective of science students towards the learning style used in science. Collected data were tabulated and analyzed to achieve the objectives. Collected data from Oppinionnaire test was coded by using Likert scale and statistically analyzed by calculating mean, frequency and percentage using MS Excel programme.

The Oppinionnaire data obtained was analyzed by using the number of the students, percentage of number of students and mean score. The researcher has estimated standard average mean value i.e. 3.0 ( Khanal, 2009). Which was used as the base to decide whether the statement response to the respective statement was positive or unsatisfied i.e. mean score of student responses on a statement is less than estimated standard average mean score than it is negative or unsatisfied, above it is positive and equal to it means the opinion is moderate. The collected data were analyzed and interpreted under following heading.

Table 1. *Analysis of Curious for Learn Science*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	70	70%		
Agree	24	24%		
Undecided	6	6%	4.64	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 1 shows the student's responses towards the subject gives the positive response. It reveals that majority of students (70%) strongly agree, (24% ) agree and (6%) undecided, while there are no one who disagree and strongly disagree responses on this statement. The mean score i.e. 4.64 obtained from the student responses was greater than the average mean score 3. It was acceptable by Likert scale. It means the majority of the students had positive perception. It means science subject is most curious to learn.

Table 2. *Analysis of Instructional learning Style Supports Science Learning*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	93	93%		
Agree	7	7%		
Undecided	0		4.93	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 2.shows the student's responses towards the instructional teaching style are supported for effective learning. It reveals that majority of students (93%) strongly agree, (7%) are agree, while there are no one who undecided, disagree and strongly disagree responses on this statement. The mean score i.e. 4.93 obtained from the student responses was greater than the average mean score 3. It was acceptable by Likert scale. From the participant response instructional style play important role in learning science at secondary level.



Table 3. *Analysis of ICT based Learning Style is More Applicable*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	73	73%		
Agree	27	27%		
Undecided	0		4.73	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 3.shows the student's responses towards the ICT based teaching style are supported for effective learning. It reveals that majority of students (73%) strongly agree, (27%) are agree, while there are no one who undecided, disagree and strongly disagree responses on this statement. The mean score i.e. 4.73 obtained from the student responses was greater than the average mean score 3. It was acceptable by Likert scale. From the participant response ICT based learning style helps to learn easy and fast way of learning science subject.

Table 4. *Analysis of Connecting Life Event, Science Learn Easily and Fastly*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	94	94%		
Agree	6	6%		
Undecided	0		4.94	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 4.shows the student's responses towards the when subject matter of science are particularly thought on real life ,it support easier learn and behaviorally effective for science learning in classroom. It reveals that majority of students (94%) strongly agree, (6%) are agree, while there are no one who undecided, disagree and strongly disagree responses on this statement. The mean score i.e. 4.94 obtained from the student responses was greater than the average mean score 3. It was acceptable by Likert scale. From the participant response, learn science subject is connecting with real life events.

Table 5. *Analysis of Ability to Learn Science on Own, Confident is High*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	65	65%		
Agree	24	24%		
Undecided	11	11%	4.54	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 5. Shows the student's responses towards the statement while learned science feels more confident for construct knowledge. Which are effective for science learning in classroom. It reveals that majority of students (65%) strongly agree, (24%) are agree, (11%) are undecided while there are no one who, disagree and strongly disagree responses on this statement. The mean score i.e. 4.54 obtained from the student responses was greater than the average mean score 3. It was acceptable by Likert scale. From the participant response, It can be calculate that moat of the students that learn science for making knowledge by relating dally life events.

Table 6. *Analysis of Feel Confusion and Difficulties when Learn Science Subject Being Alone*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	69	69%		
Agree	11	11%		
Undecided	10	10	1.43	Negative
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 6 shows the student's responses towards the confusion and difficulties when learn science subject being alone. It reveals that majority of students (69%) strongly agree, (11%) are agree, (10%) are undecided while there are no one who, disagree and strongly disagree responses on this statement. The mean score i.e. 1.43 obtained from the student responses was less than the average mean score 3. It was reject able by Likert scale. From the participant response, It can be calculate that most

of the students are never learn science subject lonely or individually. So that individual style is not applicable for science learning.

Table 7. *Analysis of Group Learning Style is Applicable for Science Learns*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	63	63%		
Agree	28	28%		
Undecided	0		4.45	Positive
Disagree	9	9%		
Strongly Disagree	0			
Total	100	100%		

Table 7 shows the student's responses when science learn easier and sustainably about subject matter of science learn easier and sustainably about subject matter of science with group discussion.. It reveals that majority of students (63%) strongly agree, (28%) are agree,(9%) are disagree while there are no one who, undecided and strongly disagree responses on this statement. The mean score i.e. 4.45 obtained from the student responses was greater than average mean score 3. It was acceptable by Likert scale. From the participant response, It can be calculate that most of the students are learn science by using group learning style.

Table 8. *Analysis of Collaboratly Learning Style Motivate to Students Learn*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	91	91%		
Agree	9	9%		
Undecided	0		4.91	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 8 shows the student's responses towards the collaboratly learning style in small group with same objectives. It reveals that majority of students (91%) strongly agree, (9%) are agree ,,while there are no one who, undecided, disagree and strongly disagree responses on this statement. The mean score i.e. 4.91 obtained from the student responses was greater than average mean score 3. It was acceptable by

Likert scale. From the participant response, it can be calculate that most of the students are learn science by collaboratly learning style.

Table 9. *Analysis of Note Taking Supports to Remembering and Understanding about Science Learning*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	50	50%		
Agree	24	24%		
Undecided	20	20%	4.94	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 9 shows the student's responses towards the note taking is necessary for science subject for effective learning. It reveals that majority of students (50%) strongly agree, (24%) are agree, (20%) are undecided, while there are no one who disagree and strongly disagree responses on this statement. The mean score i.e. 4.06 obtained from the student responses was greater than average mean score 3. It was acceptable by Likert scale. From the participant response, it can be calculate that most of the students are necessary to take note for effective, sustainably learning for science subject.

Table 10. *Analysis of Note Making Supports to Remembering and Understanding about Science Learning*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	88	88%		
Agree	12	12%		
Undecided	0		4.88	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 10 shows the student's responses towards the note making is necessary for science subject for effective learning. It reveals that majority of students (88%) strongly agree, (12%) are agree, while there are no one who undecided, disagree and strongly disagree responses on this statement. The mean score i.e. 4.88 obtained from

the student responses was greater than average mean score 3. It was acceptable by Likert scale. From the participant response, it can be calculate that most of the students are necessary to make note for effective, sustainably learning for science subject.

Table 11. *Logical Resonance Helps to Better Understand for Science Learning*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	95	95%		
Agree	5	5%		
Undecided	0		4.95	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 11 shows the student's responses towards the logical resonance helps to better understanding for science teaching and learning. It reveals that majority of students (95%) strongly agree, (5%) are agree , while there are no one who undecided, disagree and strongly disagree responses on this statement. The mean score i.e. 4.95 obtained from the student responses was greater than average mean score 3. It was acceptable by Likert scale. From the participant response, it can be calculate that most of the students have satisfied to learn logically. It helps to better understanding for learn science .so that this type of learning style is necessary for science leaning.

Table 12. *Analysis of Learn All Kind of Subject Matter of Science Linking with Everyday Activities*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	93	93%		
Agree	7	7%		
Undecided	0		4.93	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 12 shows the student's responses towards learn all kind of subject matter of science linking with everyday activities. It reveals that majority of students (93%) strongly agree, (7%) are agree , while there are no one who undecided,

disagree and strongly disagree responses on this statement. The mean score i.e. 4.93 obtained from the student responses was greater than average mean score 3. It was acceptable by Likert scale. From the participant response, it can be calculated that most of the students have learn science by making knowledge on own meaning linking with daily activities. It helps to better understanding for learn science .so that this type of learning style is necessary for science leaning.

Table 13. *Science Laboratory Learning Style is Not Good to Students Learn*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	0			
Agree	0			
Undecided	0		1.72	Negative
Disagree	24	24%		
Strongly Disagree	76	76		
Total	100	100%		

Table 13 shows the student's responses towards learn laboratory learning style is not good. It reveals that majority of students (24%) disagree, (76%) are strongly disagree, while there are no one who undecided, agree and strongly agree responses on this statement. The mean score i.e. 1.72 obtained from the student responses was less than average mean score 3. It was reject table by Likert scale. From the participant response, it can be calculated that most of the students have learn science by laboratory learning style. It helps to better understanding for learn science .the science lab. It useful for teaching and learning activities in an experimental way. So it is necessary and everyone should use it.

Table 14. *Analysis of Science Subject is Teach by Lecture Style*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	67	67%		
Agree	27	27%		
Undecided	7	7%	1.24	Negative
Disagree	0	0		
Strongly Disagree	0	0		
Total	100	100%		

Table 14 shows the student's responses towards lecture style for teaching and learning. It reveals that majority of students (67%) strongly agree, (27%) are agree (7%) are undecided, while there are no one who, disagree and strongly disagree responses on this statement. The mean score i.e. 1.24 obtained from the student responses was less than average mean score 3. It was reject able by Likert scale. From the participant response, it can be calculated that most of the students have negative response towards lecture style. so that this type of learning style is not applicable for science leaning.

Table 15. *Analysis of Teacher Motivation on Learning it Helps to Learn Fastly*

	F	% of Total N	Weighted Mean	Remarks
Strongly Agree	86	86%		
Agree	14	14%		
Undecided	0		4.86	Positive
Disagree	0			
Strongly Disagree	0			
Total	100	100%		

Table 15 shows the student's responses towards of teacher motivation on learning it helps to learn fastly. It reveals that majority of students (86%) strongly agree, (14%) are agree , while there are no one who undecided, disagree and strongly disagree responses on this statement. The mean score i.e. 4.86 obtained from the student responses was greater than average mean score 3. It was acceptable by Likert scale. From the participant response, it can be calculated that most of the students have learn science by motivating. So that motivation learning style is necessary for science leaning.

### **Qualitative Data Analysis**

#### **Analysis of Classroom Observation Form**

The observation was taken in a science class in secondary level of Panchther diatrick. Classroom observation was done physically before the Covid 19 lockdown second phase. The form was created under different headings to look at the teaching style used by the teacher in the teaching-learning activities and the way the students learn. The corresponding findings are categorized according to the activities of the teacher and the student from the time of entering the classroom to the end of the

learning activities. Observations made for teachers and students are segregated as follows.

### **Analysis of Teacher Observation Form**

In this section includes the three titles separated to find out the teaching style of science teacher in science classroom while teaching learning process occurs. The main purpose of that title is to investigate the dominance or mostly used teaching strategies of science. The researcher himself observed the every two classes of six schools in grade nine class students and the observed data collected by the researcher in the classroom observation form, discussed briefly in this section, and analyzed descriptive way in the following tools.

### **Teaching Style Used in the Initiation of Class**

In this title, the following style should be incorporates the teaching style used by science teacher while classroom teaching. They are representing below on points:

- Learning environment
- Revised the previous knowledge
- Asked related question for previous content
- Create supportive, silence & curious environment in classroom activities
- Create a good relationship with students

On the basis of about points in order to find out the style of teaching in initiation of class room teaching. The researcher keep the such kinds of style/technique related with the starting the content. These activities was relate to individual, interactive and instructive teaching style in teaching learning process in sciences classroom. According to Piaget development theory, the operations throughout the stage developed by processes of assimilation equilibrium and accommodation when the student learn by linking previous schema and change its schema and construct new knowledge . From the above observation form data, the most of the teacher revised the previous content in initiation of class and some of the teacher asked the related question of previous class for creating the effective initiation of science teaching in his/her classroom. Similarly all of four science teachers show the supportive, related and silence environment for good learning the teaching process making sure to develop a good relationship with students. According to Benzie, (1998) teaching models suggested that teacher used four basic teaching style which



are assertive, suggestive, collaborative and facilitative. In this theory teachers as a guider and sider in teaching learning process, teacher give direction encourage students. These theory is supported on my research. In conclusion for presenting of effective teaching learning process, these are good initiation of classroom that affects the learning process. "When science teacher should focus on the using, various type of teaching style in their teaching ways. It helps to encourage students to develop critical thinking curiosity and helps to better understand the way in which they are interested".( Khadka, 2019). Such kinds of teaching style used by science teacher it supports to enhance the quality of teaching and increase the student's ability. So, from the above observation form data the majority of teacher have good initiation of classroom teaching with applying such kinds of teaching styles.

### **Teaching Style Used by Science Teacher while Classroom Teaching**

In this title the following style should be incorporate the teaching style used by science teacher while classroom teaching. These are presenting below:

- ) Using instructional materials
- ) Using cooperative/ group learning activities
- ) Using improvised materials
- ) Provide proper time for completion of task
- ) Connecting course content to current events
- ) Playing attention towards demonstration activities
- ) Focused on students centered activities
- ) Encourage students participation
- ) Provide positive emotion to enhance learning
- ) Presentation skills
- ) Focused on students interest and level
- ) Teach by constructive way
- ) interact with students
- ) Explain course content
- ) Content knowledge

From the above points to find out the style of teaching in science subject teaching. The researcher keeps the above kinds of style related to enhance of teachers style over teaching learning activities.

From the observation, form data, the majority of teachers was used the instructional materials, which is available in schools and our surrounding. Most of the science teachers use the low cost and real materials related to example for simulate the creative thinking and curiosity for students. The entire sample teacher frequently used the cooperative or group discussion and interaction style while teaching learning activities with engage of students in learning process. Few teachers provide the complete time for finished task and most of the science teachers shows the demonstration activities, which are related to content or subject matter with students it support of learning by doing activities.

Researcher observed that most of the science teachers used peer group / small group teaching style in their classroom teaching. According to Vigotsky social construction theory, students learn by collaboratly and communicating with other peears and construct own knowledge. Teachers focused students discussion activities for the increases of student centre teaching style in teaching process for sustain knowledge of students in every task. Most of the sample teachers did not use the real life activity, example connecting with daily situation and symbolic models. However, they provide the positive response to enhance the creation of good learning environment in classroom teaching. They also encourage the student's participation in demonstration, discussion, presentation and other related sorts of activities of science teaching. Most of the teachers frequently ask the related questions to the students for recall their teaching styles.

Most of the sample teachers provide the motivation, feedback verbal reward and reinforcement to the all students in science classroom teaching. Most of the sample teachers using constructive teaching style. They explain the previous knowledge. According to Grasha model of teaching style teachers as a facilitator it emphases teacher students interaction. Works with students on projects in a consultative way and provides support and encouragement. It means most of teachers used students frankly behaviour. Some of the teachers ask the some question for knowing students previous schema about that topic. Most of the sample teacher engaged with students and present a role of monitor, facilator and instructor but few teachers didn't such used the constructive teaching style. The content knowledge of sample teachers is good but not sufficient and presentation skills are well. Most of the teachers use interactive teaching style.

In conclusion, the teachers have interaction, instruction, ICT based , note taking & making group discussion style or strategies used in teaching process to enhance the effective teaching. Teaching style play the important role for meaning full learning. When the students learn about the subject matter then they are used in daily life activities at the time, learning is meaning full. In the teaching process teachers use /applying various teaching style to the school classroom teaching the increase the students learning abilities and performance also bas like physical appearance , class monitoring skills, interpretational communication and experiencing school knowledge, written skills as well as other skills which are directly related with teaching learning activities ( khadka, 2019).

In researcher views using interactive, individuals & demonstration teaching styles are essential in teaching process to create the curiosity of students in studies. When the teacher presents the different teaching styles it helps to encourage students to know the basic concept of science. When the teacher shows the student centred teaching styles, which stimulate the motivating to students for conduction of effective teaching practice in classroom. There is direct relationship between teaching style and student's motivation. Teaching styles helps to regulate the students behaviours in teaching learning process ( khadka, 2019).

### **Teaching Style Used at the End of Classroom**

In this section, the following teaching style should incorporate the teaching style used at the ending of classroom teaching process. Which are representing below:

- ) Summarizing the whole content at the end of class
- ) Students happiness at the end of classroom
- ) Evaluation of students
- ) Solving the students curiosity / problems
- ) Provide feedback, reward and reinforcement at the end of classroom
- ) Provide some assignment for students

In order to find out the teacher teaching styles at the end of classroom teaching. The researcher observes the science classroom teaching and collects the valuable data in the classroom observation form. From the data, few teachers summarize the whole class by bullet and few teachers did not summaries the whole content but they provide the related assignment to students. At the end of science

class most of students are satisfactory for science class. Student felt more energetic and happiness over the science class. Almost teacher give the time for evaluation of students by asking some related questions. The best part of style of teaching science researcher felt that teachers shows that the efficient way to carry the students problems related with science concept and finally give the positive responsibility and provide feedback, reinforcement to the students for enhancement of learning process.

### **Analysis of Student Observation Form**

The researcher himself observed the every two classes of six schools in grade nine class students and the observed data collected by the researcher in the classroom observation form, discussed briefly in this section, and analyzed descriptive way in the following tools.

#### **Students listen to teacher carefully**

While observing the classroom, what I found that students in the classroom were in full attention towards the teacher and the content that is going to be delivered by the teacher. Teacher also created such an environment that grasps the attention of the students. Almost all students did as per the instructions. One or two of them seems to have attention not fully on the topic and the teacher. This clarifies that if teacher create attractive or interesting environment, students surely give their full concentration towards the activities of the class. And, this situation leads towards better understanding.

#### **Students actively participate in discussion**

In the process of classroom observations, I was fully aware on searching the participation of the students in classroom discussion. I found that were actively participated on the discussion of given topic. They argued and shared their views on the topic, such discussion made classroom more active and vivid. It means that, students are always motivated to learn their content with discussion among friends and with their teacher. Thus, teacher must create such a environment in the classroom that makes classroom buzz and interactive so that students could get chance to learn more effectively.

**Students learn collaboratively**

In the classroom, while observing, I found that students were happy to find that students were happy to learn with help. The students were sharing their answers and ideas in the class work given by the teacher. Some of them were working in pairs. That is to say, they were solving their work with two minds. Poor students were consulting with good ones to learn on the topic. They were suggesting and correcting each other. However, this activity was not much focused by the teacher. Teachers need to motivate students to learn in collaboration. Class works need to be given designing on the concept of collaborative learning while being collaborative, they seem to be happy and active. That is to say, collaborative learning creates active and student-oriented methods of learning science.

**Students make quick notes during teaching process**

It is well known that science is full with different facts and data. It has many logics and reasons on every topic. Observing students, I got that some of them were very careful on this fact of science. What I mean to say is students were making quick notes while their teacher was teaching in front of them. They were catching the important information about the content and writing them on their notes. This incidence concludes that some students have their own strategy on focusing on the important facts about the content. This learning style is very effective on making students active and aware on the important contents. But this strategy was not followed by all the students. So, teachers should ask all of them to follow that.

**Students use problem solving method.**

Students, in the science classes, were trying to connect their real life problems to the subject matter presented in the classroom. They were asking some practical questions to the teacher while learning the content. It indicates that students are trying to understand the subject matter connecting to the real life situation. From the observation of the classroom, what concludes is teachers have to use problem solving method while teaching sciences. Connecting the subject matter to the practical problem of the students so that teaching science could be more behavioral.

### **Students' curiosity towards subject matter**

The students curious on the content, It was found that they were asking question like why this happened? How? What is the reason behind it? Such questions of students show that they have much curiosity on the subject matter. Teacher need to be conscious on such questions of students, as science is the subject of reason and logics, every teacher must consider the questions of students which include the curiosity of student. By this process, students could construct the knowledge by themselves. This fact of learning is connected with constructivism which emphases on the process of creating knowledge by the pupil themselves.

### **Students actively interact with teacher**

It is crystal clear that science has many confusion and doubts. These confusions and questions can be quenched by asking clarification. The same thing is happening in the classroom too. Students in any confusion ask questions and share their opinion clearly without hesitation. Asking question and giving own logics makes science classroom interactive. Interaction oriented class is student centered method which makes students more active while learning students also get chance to clarify their doubts and confusion so that they could make clear concept on the given topic.

### **Students give attentions**

Without attention one cannot learn what is being taught. While taking classroom observation, researcher found that almost all students were listening to their teacher very carefully. They were learning with their teacher happily as they give full attention to the content and the teacher. However, it was found that, few students were not give much concentration and not doing actually what is asked by the teacher. In this case, it would be better if teacher focus such passive students too. It was the problem of very few of them. But, many of them were attentive to the subject matter. As teacher was teaching creating alive environment, students were mostly focusing towards the taught contains.

### **Equal involvement of first bencher and last benches students**

The learning styles and their active participation was not same between the students of first bencher and last bench. The way the students sitting front in the class learn is quite different from that of last benches students. My observation depicts that front students are more active and interactive whereas students having seats at the last

part are less active and do have less concentration on their study. This is all because of seating management. The position of students in the classroom differ the style and their pace of learning. It was also found that the teachers also give less attention to the last benches students a bit passive. Considering this, what we can conclude is the environment for the front students and back students is not same. So, they have different motion and styles of learning.

### **Effect of students sitting management in learning styles**

The students sitting at the front part of classroom are more interactive and curious. On the other hand, students from the back part of the class are less active and have very rare question to the content. Along with this, last parts student do not show their interest on making quick notes, they learn only with monotonous listening to their teacher. Front students ask questions to the teacher frequently. They point out on difficulties to have clear understanding the first part of the classroom is always buzzing. Whereas, last part is silent and is less active. This means sitting management is responsible in creating different learning strategies among the students.

In conclusion it is identified that students are learning using different methods like interaction discussion, demonstration, and so on. Such method of learning is constructed or designed by the teacher and sitting management. Not only this, the curiosity and motivation of students themselves create different style and strategies in learning. Considering this, the teacher always should focus on students. Uniqueness to suggest and active their learning style, teacher are always responsible for creating quality of environment for the students to generate new ideas or styles in learning. If good and suitable environment is given to the students considering their personality and capacity in learning, all students will surely get clear and vivid experience in learning science.

### **Analysis of Semi Structure Interviews of Teachers**

In order to conduct this study, semi-structure was handed with teacher were teaching a secondary level in secondary level at Panchthar. Some questions ask by researcher for knowing the teaching strategies. In order to achieve the objectives of the research, due to covid 19, the interview, could not be done physically. The data obtained from the research questionnaire was analyzed using the online messenger,

viber and zoom app. and interpreted in a sequential order under all question reacted to the teaching style used in science subject. In this section covers the question related to the teachers perception towards the teaching strategies in science subject. The main aim of this section is to find out the dominant teaching strategies used in science classroom. The answers given by the teacher are matched through coding decoding and the similar ideas are kept in one place. The semi-interviews taken from the sample four students .Also the data are interpreted and analyzed in the following heading.

### **Students friendly classroom environment is required for at the effective classroom teaching**

Teaching and learning activities need to create a healthy classroom environment. Healthy classroom environment means to create a student friendly environment keeping in view the interest needs of the students as per the objective of the curriculum. In the context of our country Nepal, since students come from different castes, religions, different cultures, a learning environment should be created with equal importance for all. Students should be taught actively during learning. The teacher should be in the role of facilitator in various problems. By categorizing the meritorious and weak students, the achievement of the objective should be achieved through group discussion or individual teaching as per the need.

In my personal experience learning is only effective if it creates a healthy learning environment for students by providing continuous feedback and evaluation. It is necessary for the teacher to motivate the students in learning by solving the problems encountered during the teaching-learning process. Students should be continuously evaluated in the classroom by giving them class work, observation as well as interaction between students and homework. Also, providing support with appropriate guidance is part of healthy classroom teaching. Similar answers give by teachers are coded and presented bellows;

*Teachers1,3&6 “I teach science to all students without any discrimination. I teach according to their interests and needs to create a student friendly environment. I motivate students to learn by solving problems through individual as well as group discussions as needed. In addition, I am going to provide support by continuously evaluating the students.”* Researcher concluded that the teacher has created a student



friendly environment to create a healthy classroom environment. It was found that students with different abilities were taught through individual and group discussions as per the need.

Teacher 2,4&5 *“In order to achieve the expected achievement as per the objective, I first motivate the students for learning. Based on the curriculum content, I carry out teaching activities using student-centered methods and teaching materials. By teaching students to use technology as well, I have been able to build my own knowledge through exploratory methods and help myself as a facilitator if needed. In order to evaluate the students, I have been continuously evaluating the classroom observations.”*

Based on the above information, it was found that the teacher has created a student friendly environment to create a healthy classroom environment. It can be concluded that students with different abilities were taught through individual and group discussions as per the need. It was found that the use of educational materials as well as technology was used and support was provided by emphasizing continuous assessment. Students should be imparted objective oriented practical education without any discrimination on the basis of caste, gender, religion, culture. In fact, to create a non-discriminatory environment for students, to motivate them to do exploratory learning by using technology, to emphasize student behavioral learning, to provide continuous assessment and support, to create a healthy classroom environment.

### **Interaction and group discussion methods are dominantly use for effective teaching**

A "group" is a collection of individuals who are in regular contact and constantly interacting and who work together to achieve a common set of goals. "Discussion" is the process by which two or more people exchange information for a goal in a face-to-face situation. Students will not get enough practice just by talking to the instructor, and very little by just listening to the instructor. Students develop competency and become critical thinkers in classroom that provides opportunities for intensive, structured interaction among students. The interaction between the teacher and the students is an essential part of teaching and learning process.

Group discussion is a student centered strategy, in which students are divided into groups and they are encouraged to discuss on the subject matter given. Group discussion is dominated by the teacher. Classroom climate is autocratic and most of the time, teacher is active and student accept his ideas and views. After giving lectures teachers encourages the student to participate in group-discussion. Teacher supervises them and provides guidance to make the discussion fruitful. Researcher asked the question to sample teachers about interaction & group-teaching style i.e. Which method do you prefer to teach students individually or in group? Regarding this question teachers 1,3&4 says that *“Mostly the science teaching follow the practical teaching including the theory. In the case of mine, I prefer to use descriptive method relating with experiments while teaching to the students. If the individual teaching is needed to the students mostly I used descriptive method with facts and while in group teaching I used the lecture method i.e. demonstration method to cover all the queries by the students.”* It can concluded that group discussion and interactive learning were given more priority than individual learning. Emphasis was placed on the interactive method as students who learn in a personal way are more active and weaker students are more inactive and are afraid to talk to the teacher.

Teachers 2,5say *“I teach science as a group in the classroom. I make questions to the students as small as possible based on the subject matter. And based on the answer from them, I will give necessary suggestions. Since there are arguments in the group, I solve most of the science problems myself, so I teach through group discussion and interaction.”* It can be concluded that group discussion methods in science teaching and learning help to achieve effective and cognitive objectives. It also helps to build students' confidence. It helps to provide freedom of expression to learn from the pros and cons of comparative discussion.

Teacher 6 *“When I teach science, I teach students to solve problems as a group. Although it is necessary to teach individually, I do not pay much attention to individual learning as it is easy and sustainable to learn from group discussions as there is a feeling of cooperation among friends as a group due to physical, financial, time, etc. But I personally facilitate the subject that needs to be taught. However, I have been using group and interaction teaching method more.”*

Similarly, researcher asked some question on the basis of interaction teaching style. i.e. Do you take students for interaction style of teaching? If you take in it. How

do you conduct it? Regarding to this question; *“In science teaching interaction is compulsory in my point of view. I use this style in teaching. Because different ideas can be generated through it. Basically I used to give certain topic to the students they will interact it in group and they presents their view in front of the whole class. With help of teacher they will conclude the facts. At last teacher will summarize the concept taking their views and ideas.”*

From the above information participation information was found that group discussion and interactive learning were given more priority than individual learning. Emphasis was placed on the interactive method as students who learn in a personal way are more active and weaker students are more inactive and are afraid to talk to the teacher. But in group teaching, it is necessary to pay attention to how many people to form a group, what kind of students to form a group, how to bring together the meritorious and weak students. Group discussion methods in science teaching and learning help to achieve effective and cognitive objectives. It also helps to build students' confidence. It helps to provide freedom of expression to learn from the pros and cons of comparative discussion. The group discussion method helps to develop the habit of collaboration. This method is suitable for students to reach a conclusion with the help of team spirit and cooperation.

### **ICT related teaching style is accept among teachers**

ICT is an important topic in the 21st century. In the secondary level, various teaching style and techniques are used to make science teaching effectively. Learning is effective when taught using educational materials. The use of ICT based teaching style in teaching shows that the level of learning of students is enhanced as well as the use of different media can help bring abstract concepts to life. Helps to understand It attracts students interest in learning , it increases their motivation and performance, it encourages lifelong learning, and its use in teaching and learning is indispensable as it facilitates positive interaction and facilitation.

ICT equipment has been useful in science teaching. ICT tools help make science easier to learn and understand in the concept and principle. The use of ICT in the classroom increases the motivation of students to show more interest and become more involved in science class room. ICT tools make students more creative in learning science. Projectors, email, internet, audio-visual materials, etc. are tools of

ICT teaching style. Effective use of ICT tools motivates and makes students interested in learning science. That is why it is so important. The teachers were asked the question about on ICT based teaching style i.e. Do you use audiovisual teaching style to make easy and successful teaching? If yes, it is effective in science teaching?

Regarding this question the sample of teachers teachers 1,4&6 responded that; *‘Yes, mostly I use multimedia based teaching approach in science teaching. Even some very small facts can be given to the students by using visual. While teaching with audio visual approach students can remember the matter for long term. On saying is there I see I remember. So even very small concept can be taught with the help of this approach.’* According to the expressions given by the above mentioned teachers, it is clear that in most of the subjects of science, teaching using ICT has been found to be effective, simple and clear understanding

In this line another participant teachers s2,3&5 share his view *“I have been teaching most of the subjects in the curriculum using videos, annimations ,email internet etc. I feel that it has been learned in a simple and easy way.”*

Based on above-mentioned information teachers are using ICT based teaching style in their classroom for effective teaching. Most of the sample teacher used different tools, which is related to information communication technology like as multimedia, email, internet, power points etc. But according to the nature of school status equipments are not sufficiently. According to the expressions given by the above mentioned teachers, it is clear that in most of the subjects of science, teaching using ICT has been found to be effective, simple and clear understanding. Therefore, the use of ICT-based teaching methods in teaching and learning proved to be effective.

### **Teacher properly used instruction teaching style in classroom**

Instruction involves guiding students to appropriate learning activities, helping them to construct appropriate knowledge, encode and process information monitoring student performance and practice. The clear instruction given by the teachers to the students in science teaching affects the success of the students in the classroom. When given guidance, it helps students to engage more effectively with the content and ultimately experience better achievement. Teachers' instruction to students makes it easier to understand and learn about things. The teacher should give clear instructions

on how to learn from the method and help the student to achieve the expected achievement. It is appropriate for the teacher to instruct the student on how to be active. At the same time, they should be encouraged to learn by using technology. Students can be instructed accordingly as learning through group discussions can make learning sustainable and reliable through group discussions among different methods of learning. Motivating the student to learn from the exploratory method will make the student active, so it is appropriate to give clear instructions accordingly. In this theme the teacher were asked questions i.e. Do you give instructions to your students at the time teaching or not?

Teacher 3,4&5 says *“Instruction in teaching is like a heart pump of body. Every teacher should give instruction on the basis of curriculum to the students in teaching learning process. I also used to give my own instruction to the students for achievement of goal about the educational matter. I always instruct the students to learn science based on the objective curriculum. I instruct the students that you need to be active in the classroom to be aware of learning. The solution to the problems should first be found by oneself, by practicing, by being active. If there is any complex problem, it should be solved by using internet and even if it is not possible, it should be solved by group discussion with friends.”* It can be concluded that the teachers motivate the students to learn. There is a belief that students should be instructed and that science problems should be built on their own knowledge as much as possible and that they should cooperate with the teacher for help.

Teacher 1,2&6 says that *“I instruct the students to use the guided method for effective teaching and learning as it is appropriate. I tell the students that you should read the notes written by the teacher along with the textbook based on the syllabus. science problems need more practice and can be solved easily. To achieve the expected achievement in science, you have to solve all the problems related to contents.”*

From the above information, it was found that the teachers motivate the students to learn. There is a belief that students should be instructed and that science problems should be built on their own knowledge as much as possible and that they should cooperate with the teacher for help. It was found that the students were instructed to read the notes written by the teacher and practice a lot of related problems. It is necessary to give instructions to achieve objective educational

achievement. When the teacher provides the right guidance, it is easier for the student to learn.

### **Teacher prefer to let the students for note making and taking**

Note-takers are assumed to re-read their notes as many times as necessary for them to learn their content. Several papers have been written describing the modalities of this activity, comparing different ways of using notes (reading, highlighting, summarizing) and the impact of the different sources of information that are used during this learning process. Writing notes helps students learn, and read. Techniques for writing text are widespread. But in the classroom Students feel the need to read and take notes, so students are taught to write notes and make notes. On the basis of theme researcher asked the some question to teachers i.e. Do you let your students to note important point at the time of teaching or not? Or you just teach orally based on fact concept and principles? Regarding to this question ,sample teachers 2&5 responded that; *“In teaching learning process it should be compulsory. I donot use orally only. I used to tell them to write the important points in their copy. It also increase the writing skills and comprehensive skills to them. While writing the point they can listen and memorize it for long time period.”* It can concluded that notes were written to the students during the teaching. According to the participants, it was found that the students feel comfortable only when writing notes and also write notes as it is easy to learn and read.

Similarly sample of teacher 1&3 says *“I encourage students to write notes while teaching science. I often write notes to make simple formula, principle, statement by simple and easy to read science easy. Because I have written the notes, the students have felt that they have been helped to read even in the exams. That's why I write notes.”* It can be concluded that, When writing notes, the teacher should write down important things, formulas, principles, possible, and complex problems. Notes are also needed to keep students active in science teaching and learning and to learn in a comfortable way.

Sample of teacher 4&6says *“When I teach science, I write notes keeping in mind the interests and needs of the students. Students become active in the class when they are asked to write notes from time to time. I like to take notes in the teaching process as the students prefer to be active in solving the problem by themselves rather*

*than just lecturing and lecturing method and if the teacher writes notes, it will be easier for the students to learn and read.”*

From the above information, it was found that notes were written to the students during the teaching. According to the participants, it was found that the students feel comfortable only when writing notes and also write notes as it is easy to learn and read. When writing notes, the teacher should write down important things, formulas, principles, possible, and complex problems. Notes are also needed to keep students active in science teaching and learning and to learn in a comfortable way. Reading the notes makes it easy for the students to get the desired marks even in the exams.

### **Classroom Appropriate Teaching Styles**

Only being able to apply the learned material in practical life is called meaningful learning. So, how students learn is more important than how to teach. Therefore, the materials that can be used in the daily life of the students are taught using time relevant and local resource materials and the learning process of the students becomes simple, fast and effective. The researcher asked the following questions based on the mentioned points; Which teaching styles/ strategies do you think effective for science teaching?

Regarding to this question most of the sample teachers said that *“Normally the more effective approach is students centred approach for teaching learning, as all we know that about it. Inside students centred approach I used to concept mapping teaching style, interaction teaching style, group discussion teaching style, demonstration teaching style, inquiry teaching style in class. Students can synthesize the new knowledge and can link the knowledge. So I would like to request to all the teacher who teach science to mostly use concept mapping teaching strategies.”* Based on the feedback given by the teachers, it can be said that the teacher taught by engaging themselves in the teaching for which they have been taught using interactive teaching styles, group discussion teaching styles, instructional teaching styles and problem solving teaching styles concept mapping teaching style. Therefore, it seems to be effective to teach students through interactions, group discussions, instructional and problem-solving learning style.

### **Analysis of Semi Structure Interview of Students**

In order to conduct this study, semi-structure was handed with students were studying a secondary level at Panchthar district. Some questions ask by researcher for knowing the styles of learning. The data obtained from the questionnaire for the research were analyzed and interpreted in a sequential order under all question reacted to the learning style used in science subject at secondary level of Panchthar district.

This section covers the questions related to the student's perception towards the learning style in science subject. The main aim of this section is to find out the dominant learning style used in science learning at secondary level. Before mentioned tools are used to collect the data and after collecting the data from different six respondents coding and decoding have been used and aggregate quote from theme is presented below;

#### **Warm up activities differ according to lesson**

A warm up activities is a short, fun game which a teacher can use with student. The purpose of a warm up is to encourage the students. At the beginning of classroom entry of teacher is important for efficiency class. At the strategy lesson the way of encourage and motivate to student for learning make the classroom attractive and dynamic in teaching learning process is called warm up ( Piaget ,1970). The students were asking the questions that is "what activities do your science teacher at the beginning of class as warm up?" regarding this question the varieties of response obtain by the students.

*"The activities that have been done by my science teacher varies according to the topic and lesson. Sometime he asks some questions related with previous day's lesson, tell the jokes sometime, demonstrate the pictures, sometime he directly ask us to go science lab for experiments. Sometimes, he shows the video of related chapter and asks some questions from such video. Like: what do you understand by this video? Can you guess the today's chapter etc. However, our science teacher asks the question about previous day's lesson dominantly."*

Based on above mention quotation concluded that warm up activities have vary according to the nature of lesson and it also plays crucial role for students learning and achievement. Depending on the nature of the subject matter, the teacher used different learning stimulus strategies based on the student's response. Therefore,



using strategies that motivate according to the nature of the subject matter, it is considered effective to use students' learning methods and motivating stimuli towards learning.

### **Group study is suitable for effective learning**

The learner's preference for collaboration with one or more other students in planning, discussing, sharing responsibilities, organizing, listening and supporting a point of view leading to a product called group discussion. In group discussion learning style, students learn collaboratively with in a certain time period and same objective of the content. The learner performance for addressing acquisition of knowledge from an individual perspective, comparing new information with previous experience and reflecting understanding through their own opinion and moderns of perception called individual learning style ( Kolb, 2012). The students were asked the question about the group/individual learning style that is "Do you like to study individually or in group or for easy and fast understanding?" regarding these question the verities of response obtain by the students which are

*"I prefer group to study and explore something new because if we learn and study in group there would be wonderful chances for idea sharing. When we interact each other and gain some knowledge that would be wonderful and stays in our mind for the long time however the group interaction might not be gone out of track. Thus, I love group study and interaction on the supervisions of the teachers."*

Another questions were ask to students about the individual or group discussion learning style i.e. "What do you think group discussion learning style is effective? Do your teachers teach in group with discussions?" regarding to this questions sample students gave the following response.

*"I think group discussion style is effective because students can get opportunity clear their doubt by asking their mates and also can learn something new from friend and it cannot be easily forgotten. When I was in class 9 me and my friends did combine study about the 'Light' and I can remember the content of that chapter still. Yes, our teacher assigns us to learn and explore in group and filed work in group too."*

According to above information it can be conclude that study in group is preferred by the students which help them on the concept building, memorization,

time saving and so on. However, sometime while discussing in the group students might go out of track and it might make the group discussion worthless. If the teacher monitors the group discussion and facilitate them if they feel confusion, that make the learning effective and help for their learning. So that when the student learn by group learning style is mostly use.

### **Note taking and making to avoid confusion**

Note taking is the act of writing down pieces of information in a systematic way it is the first stage of producing an effective note and is the process which involves writing or recording what you hear, see or read during lecture, tutorials, demonstrator in a descriptive way. Notes are an essential record of information which can help one in preparing assignment and examination. Note taking involves,

- Note being copied from the original source and rewritten in a singular format
- Writing down most of what do you hear or read without actually processing the information
- Note taken while trying to cover most or all information without highlighting the main points.(bscholarly.com )

Mahamd, (2009) “Note making is the practice of keeping record from different sources. Note making involves selecting, analyzing and summarizing what you hear and read.” It means, taking separate notes from your lecture, videos, books and creating own documents that combines the information you have obtained into briefing, that you will be use future reference. When the researcher asked the question to know about the note taking/making to students i.e. your science teacher provides you not for confusion? Do you like to take note given by your science teacher? Regarding to this question the sample of students said that “Yes, my science teacher provides notes and summary at the last day of chapter and I love to take notes because it is really helpful to secure good marks and eradicate the confusions.”

Researcher concluded that note taking helps to students for

- Promotes active learning
- Easy memorization for facts
- Improves focus and attestation to details
- Improve organization skills

Similarly, researcher asked some question which is related to note making i.e Do you note yourself at the time of teacher teaching class? Regarding to this question, students give the quick response which are

*” Usually, I don’t take note while teacher is teaching in the classroom because I think that if I begin to take note I will leave behind from the chapter because you know our writings are not as fast as our speaking. However, sometime I had attempted to take note in class if teacher says it is important form the examination point of view.”* Based on above information it can be concluded that note making is necessary for the students to secure good score in examination and long lasting learning. It also helps them to clear their doubts and remember the content easily which has been taught in the classroom. Students make the note instantly in the classroom by themselves if they assumed that is important for examination. So that, note making and note taking learning style is best way for learning effectively.

### **Implementation of ICT based teaching style on the basis of nature and availability**

ICT Basic Teaching Method means that students learn from any ICT related tools like email, internet, multimedia, power point, and slides in any subject is called ICT based learning. In today's 21st century, learning is essential for students who can compete in the global market and use the tools produced by the global market. The following questions were asked to the students on how to teach in an ICT based way.

“Does your science teacher use ICT-based teaching methods? Is it easy to learn using ICT based materials?” Therefore, when the students asked the purposefully selected students how they learn using ICT, they gave the following answers.

Most of the sample of students says that:

*“It seems to be effective when a teacher teaches using ICT. When all the subjects of science cannot be directly observed and experienced, the teacher teaches using ICT related tools. By teaching in such a way, it also help the students to acquire knowledge of various subjects in an easy way.”* It can be concluded that most of the subjects of science, teaching using ICT has been found to be effective, simple and clear understanding.

*Other sample of students about the same question says that*

*“Our science teacher uses the ICT according to the nature of chapter and availability in the classroom. For example, if he is going to teach the chapter magnet and light he uses ICT to show us the YouTube videos to see the process of making magnet, some inner part of the earth such as crust, mantle and core. He uses ICT on such chapter where the content cannot be easily experimented and illustrated.”*

According to the expressions given by the above mentioned students, it is clear that in most of the subjects of science, teaching using ICT has been found to be effective, simple and clear understanding. Therefore, the use of ICT-based learning methods in teaching and learning proved to be effective.

### **Interaction is keeping positive impact among students for learning**

During the teaching-learning process, the interaction between the teacher-student, student-student is the interaction in the obscure subject matter. The interactive learning method serves as the basis for motivating students to learn and to clarify their concerns about the subject matter. This determines the good relationship between the teacher and the student and the learning process in a frugal way. This method of learning is considered important in science. The following questions were asked to the students selected by the researcher based on the following questions regarding interactive learning methods. “How often do you take part in interactions about any science subject matter? What do you think about interaction teaching for science subject? Is it effective? Why?”

Actually, the duration and time of interaction depends upon its subject matter and complexity. I enter in the interactions when I am in doubt and contents are making me fuss. In my opinion interaction plays significant roles to understand the topic and content and it is very effective because it results the long lasting memory and short cut way to understand the topic and we can divide the topic among different friends and discuss later and share idea and content later which also saves the time of reading.

Best on above mentioned information it can say that students love to interact with their friend and teachers, when they feel conclusion on the contain. Its duration varies on the basis of the content and nature. If the content is title bit a complex the duration is long and if it is the duration becomes shorter. It always facilitates the students to grasp the idea easily build the confident to talk and interact with friends

and teachers. So that interaction based teaching style is effective for classroom learning.

### **Classroom Appropriate Learning Style**

Only being able to apply the learned material in practical life is called meaningful learning. So how students learn is more important than what they learn. Therefore, the materials that can be used in the daily life of the students are taught using time relevant and local resource materials and the learning process of the students becomes simple, fast and effective. The researcher asked the following questions based on the mentioned points. “Which of the following methods do you find most appropriate for learning?” Based on the question, the answer given by the student is as follows.

*“Most of the time, learning by touching, seeing, hearing and doing by itself leads to quick learning. Learning can be quick and effective by studying any subject matter through group discussions, interacting with each other and relating to practical life.”*

Based on the feedback given by the students, it can be said that the students learn by engaging themselves in the study for which they have been taught using interactive learning styles, group discussion learning styles, ICT based, instructional learning styles and problem solving learning styles. Therefore, it seems to be effective to teach students through interactions, group discussions, instructional, ICT based and problem-solving learning style.

### **Finding and Discussion**

#### **Qualitative Finding**

- Warm up activities have vary according to the nature of lesson and it also plays crucial role for students learning and achievement. Depending on the nature of the subject matter, the teacher used different learning stimulus strategies based on the student's response. Therefore, using strategies that motivate according to the nature of the subject matter, it is considered effective to use students' learning methods and motivating stimuli towards learning.

- Study in group is preferred by the students which help them on the concept building, memorization, time saving and so on. If the teacher monitors the group discussion and facilitate them if they feel confusion, that make the learning effective and help for their learning. So that when the student learn by group learning style is mostly use.
- Note making is necessary for the students to secure good score in examination and long lasting learning. It also helps them to clear their doubts and remember the content easily which has been taught in the classroom. Students make the note instantly in the classroom by themselves if they assumed that is important for examination. So that, note making and note taking learning style is best way for learning effectively.
- Most of the subjects of science, teaching using ICT has been found to be effective, simple and clear understanding. Therefore, the use of ICT-based learning methods in teaching and learning proved to be effective.
- Students respond to interact with their friend and teachers, when they feel conclusion on the contain. Its duration varies on the basis of the content and nature. If the content is title bit a complex the duration is long and if it is the duration becomes shorter. It always facilitates the students to grasp the idea easily build the confident to talk and interact with friends and teachers. So that interaction based teaching style is effective for classroom learning.
- The students learn by engaging themselves in the study for which they have been taught using interactive learning styles, group discussion learning styles, instructional learning styles and problem solving learning styles.
- Teacher has created a student friendly environment to create a healthy classroom environment. It was found that students with different abilities were taught through individual and group discussions as per the need.
- Group discussion methods in science teaching and learning help to achieve effective and cognitive objectives. It also helps to build students' confidence. It helps to provide freedom of expression to learn from the pros and cons of comparative discussion. The group discussion method helps to develop the habit of collaboration. This method is suitable for students to reach a conclusion with the help of team spirit and cooperation.

- Teachers are using ICT based teaching style in their classroom for effective teaching. Most of the sample teacher used different tools, which is related to information communication technology like as multimedia, email, internet, power points etc. it is clear that in most of the subjects of science, teaching using ICT has been found to be effective, simple and clear understanding. Therefore, the use of ICT-based teaching methods in teaching and learning proved to be effective.
- The students were instructed to read the notes written by the teacher and practice a lot of related problems. It is necessary to give instructions to achieve objective educational achievement. When the teacher provides the right guidance, it is easier for the student to learn.
- The students feel comfortable only when writing notes and also write notes as it is easy to learn and read. When writing notes, the teacher should write down important things, formulas, principles, possible, and complex problems. Notes are also needed to keep students active in science teaching and learning and to learn in a comfortable way. Reading the notes makes it easy for the students to get the desired marks even in the exams.
- The teacher taught by engaging themselves in the teaching for which they have been taught using interactive teaching styles, group discussion teaching styles, instructional teaching styles and problem solving teaching styles concept mapping teaching style. Therefore, it seems to be effective to teach students through interactions, group discussions, instructional and problem-solving learning style.

### **Quantitative Finding**

- The majority of the students had positive perception towards science subject is most curious to learn.
- The student's responses towards the instructional teaching style are supported for effective learning. It means instructional learning style mostly used in teaching and learning process.
- The participant response, ICT based learning style helps to learn easy and fast way of learning science subject.

- The student's responses towards the when subject matter of science are particularly thought on real life, it support easier learn and behaviorally effective for science learning in classroom.
- The participant response, it can be calculate that most of the students that learn science for making knowledge by relating daily life events.
- The participant response, It can be calculate that most of the students are never learn science subject lonely or individually. So that individual style is not applicable for science learning.
- The participant response, It can be calculate that most of the students are learn science by using group learning style.
- The student's responses towards the collaboratly learning style in small group with same objectives. It can be calculate that most of the students are learn science by collaboratly learning style.
- The participant response, it can be calculate that most of the students are necessary to take note for effective, sustainably learning for science subject.
- The participant response, it can be calculate that most of the students are necessary to make note for effective, sustainably learning for science subject.
- The participant response, it can be calculate that most of the students have satisfied to learn logically. It helps to better understanding for learn science .so that this type of learning style is necessary for science leaning.
- The participant response, it can be calculated that most of the students have learn science by making knowledge on own meaning linking with daily activities. It helps to better understanding for learn science .so that this type of learning style is necessary for science leaning.
- The participant response, it can be calculated that most of the students have learn science by laboratory learning style. It helps to better understanding for learn science .the science lab. It useful for teaching and learning activities in an experimental way. So it is necessary and everyone should use it.
- The participant response, it can be calculated that most of the students have negative response towards lecture style. So, that this type of learning style is not applicable for science leaning.



- The participant response, it can be calculated that most of the students have learn science by motivating. So that motivation learning style is necessary for science leaning.

### **Triangulations**

Quality education can be expected to make the teaching and learning process effective. In order to get quality education, both the learning process and the teaching process must be effective. Learning is meaningful and practical only when the learning process and the teaching process are coordinated. When teaching according to traditional teaching methods, learning is not practical and is not used in daily life, it is only focused on exams and also creates confusion in the learning process of the students. In order to make learning purposeful and meaningful, teaching and learning should be done in a student-friendly environment using student-centred teaching methods.

Learning from a student-centred teaching method does not create confusion in students' learning, creates a sense of curiosity, motivates students to learn, and makes it easier and faster to acquire knowledge of the subject matter. According to the results of the interviews, observations and discussions conducted formed for the purpose of research, various strategies have been made available to create a student friendly environment. Learning can be effective, meaningful, time related and student friendly which is presented in the following way: Instructional strategies are use for teaching and learning process in science teaching similarly, ICT based strategies are effective for teaching and learning process in science teaching, interaction and group discussion strategies are also effective for teaching and learning process in science teaching, problem solving strategies are effective for teaching and learning process in science teaching, note making and taking also helpful for teaching and learning process in science teaching similarly, motivated teaching style are effective for useful learning.

### **Quan-Qual Triangulation**

Lev Vygotsky social cultural theory implies that the culture is the prime determinant of the individual development. Therefore, a child's learning is affected in ways by culture, including the culture of teaching environment, friendship of peers group in which he is brought up. According to this knowledge is co-constructed and

individual learn from one another. The learner must be engaged in the learning process. ZPD of this theory explains the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. According to Vygotsky's theory teaching and learning style should be used to emphasize interaction between learners and learning style. Social and cultural background of the student has more effect in the perception or thoughts regarding anything rather than just the cognitive development. Perception of one student may not match with other as their difference in needs and interest due to their difference in socio-cultural factors (Tamang, 2020).

Jean piaget constructivist theory explain that learning is an active process in which learners construct new ideas or concepts based upon their past and current knowledge. Instruction is not a matter of getting learners to commit results to mind rather it is to teach to participate in the process that makes possible the establishment of knowledge. The teaching styles of teacher should not see the student as a mechanical object but an organic individual that individual actively construct meaning based on prior experiences and using accepted models in a particular disciplines. It can be concluded that in my qualitative finding most of the students create a own meaning by their grouping, collaborating and linking daily activities. In my research based on the Jean Piaget theory implies that most of the students learn itself combining by daily life activities and past experience. Similarly, teachers teach through the students previous knowledge and lining with new existing activities.

Brain-based educational theory have relevance to the study of student learning style preferences and instructional strategies. Further classification systems rely upon these basic theoretical differences as a basis for organizing the wide variety of specific models. For example, systems have been presented in which learning style models are classified as ability- or personality-based as related to learning styles, approaches to learning, or intellectual development and using a continuum from a focus on fixed traits to a greater emphasis on personal preferences and orientations. In my research involves exploring the ways by which the brain works to facilitate learning. It takes into consideration the natural and physiological processes that occur during learning and uses this understanding to guide educational practice.

Understanding the functions of the brain and incorporating this in designing learning experiences can significantly improve the effectiveness of student learning.

Grasha model of teaching styles shows that it is possible that teachers possess each of the teaching styles to varying degrees that could be blended together. He therefore developed four clusters of teaching styles: Cluster 1 (expert/formal authority style – i.e. traditional teacher-centered classroom processes), Cluster 2 (personal model/expert/formal/authority style – i.e. provides personal modelling; guiding and coaching), Cluster 3 (facilitator/personal model/expert style – i.e. emphasizes collaborative and student-centered learning processes), and Cluster 4 (delegator/facilitator/expert style – emphasizes independent group and individual learning activities). Each cluster reflects some blends of styles are dominant and others are secondary. According to this theory in teaching learning process emphasis students centred and also supported by teacher as facilitators and create the student friendly environment in teaching learning process. In my research finding student centred teaching style is mostly appropriate in teaching learning process.

Benzie model of teaching style shows that assertive style of teaching require clear instructor-determined expectations with regards to all aspects of the teaching and learning process. It enables to instructor to use class time more productivity for teaching and provide supportive control. The supportive styles of teaching helps instructors motivate students to get involved in the learning process and to reflect on what they are learning. This approach encourages acquiring learning skills, self-management skills and responsible learners. The collaborative style focuses on the developmental need of many students by drawing on students' ideas and personal experience. This approach is helpful in teaching problem-solving skills The facilitative style allows for more student self- understanding. It correlates with the humanistic approach to learning and represents a shift to one of empowering the students to learn theory and skills.

## **Chapter V: Conclusion and Implications**

### **Conclusion**

The learning process and the teaching process are important for learning to be meaningful and effective. Therefore, by testing the student's prior knowledge, by understanding the student's psychology, teaching is a model of effective teaching and learning. Based on the above-mentioned explanations and analysis, the teachers' observation of the teaching method in three sections before entering the subject, during the course of the subject and at the end of the activity was observed. If it can be used on a daily basis, both teaching and learning will be effective and meaningful.

The main aims of my study is to exist the teaching and learning style of school science in Panchther district. On the basis of research aims concluded the dominance teaching and learning style and find out the best existing teaching and learning style. Researcher used the both qualitative and quantitative design for meet that aims and objective.

From the study concluded that student follow the instruction carefully, student actively participate in discussion only talented students are handling in group, most of the student make quick note during teaching process student learn with connecting daily activities students are curious towards subject matter students actively interact with teacher no equal environment first and last bench learning style effect of sitting management in learning style. Researcher summarize that all students are learn using instruction, group discussion, interaction, note making and connecting daily life situation are used in learning process. Using such king of learning process which is helps to effective and meaningful learning.

From the likert scale concluded that most of the student are interesting for learn science subject. Student are positive response towards the instructional, interaction, group discussion, ICT based, problem solving, note taking and note making learning style. Similarly some of the students are not agree about the lecture method and individual learning. The majority of students are totally agreeing mention above such kind of learning style.

In this research, teachers and students' response on teaching-learning activities and learning strategies was obtained by making various questions according to the semi-structure interview. In the teaching-learning activities, the teachers were found

to have lecture, group discussions, interactive as well as ICT based teaching. However, it was found that the mentioned methods were used sparingly by motivating the students in a systematic manner. If it can be organized according to the student's interest, need, number of students, then effective purposeful learning can be done. In addition, learning can be made systematic if students are encouraged to learn according to the teacher's instructions by creating a student-friendly environment in the classroom.

## **Implications**

### **Practical level implication**

Students must apply their current understandings in new situations in order to build new knowledge, teachers must engage students in learning, bringing students' current understandings to the forefront. Teachers can ensure that learning experiences incorporate problems that are important to students, not those that are primarily important to teachers and the educational system. Teachers can also encourage group interaction, where the interplay among participants helps individual students become explicit about their own understanding by comparing it to that of their peers.

Another implication of the findings is to include more collaborative strategies to give teachers an intense opportunity to examine science content in the classroom. Giving the students more scientific opportunities in the classroom can enhance conceptual understanding of the concepts being applied. Enhanced science investigations can actively involve students in carrying out the processes of science by moving from observing and measuring concrete objects to classifying, hypothesizing, and interpreting results

The techniques and methods involve encouragement of students' direct involvement through discussion, group-work, students' presentation, debates, simulations, brainstorming and individual study. There should be student autonomy. Evaluation should be for learning. Learned information should be evaluated not the memorized ones. Learning should continue on evaluation. The process of learning should be evaluated not the outcomes. Performance, problem based learning, group works and practical matters are used for evaluation.

Another implication of this study is that approach of learning is a guideline for the facilitator and teachers to adapt in classroom individualization of learning. Students' levels of participation in the learning process are linked to their teachers' levels of participation in their own learning processes. If teachers are to make the necessary changes in moving towards motivate classrooms, they need to be supported in their own learning.

### **Policy level implication**

It helps to instructional designers design and develop teaching and learning experiences. One of the crucial things instructional designers can do is make sure that students have opportunities to practice actively what they are learning. What the instructional designer adds to the process is the experiences of learning and practicing. Instructional designers know how people learn and have ideas on how to help them learn better. If we are looking for engaging learning activities or ways to make practice closer to real life skills, we need instructional designers.

Policy makers must realize the impact of policy decisions on successful implementation of flexible contextualized curriculum, student friendly learning environment, appropriate style use in classroom practice and formative assessment system of learning.

### **Further Research Related Recommendations**

I am not a complete researcher. Therefore, the present study was unable to occupy several areas related to the topic. The finding of this research may not be generalized to all contexts as it has a lot of limitations. It has limited in terms of only five teaching and learning style, study population, study area, sample, and data collection tools. So, for the further research, some other related areas can be recommended which are;

- This study was carried out only on performance of teacher and student towards teaching and learning style in science classroom at secondary level.
- The further researcher can be carried out the others teaching and learning style used by teacher and students.

- The same research can be concluded in the teacher and students of other level tool.
- The further researcher can be carried out the teaching and learning style used by teacher and students of other district of Nepal.
- Similar studies should be conducted in other subject as well.
- Further research might also explore the constructivist-based teaching of teachers who have endorsements in secondary level school sciences.

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## Appendix I

### Teacher observation form

Name of school.....

Name of teacher.....

Students no. ....

### Teaching style used in the initiation of class

- Learning environment
- Revised the previous knowledge
- Asked related question for previous content
- Create supportive, silence & curious environment in classroom activities
- Create a good relationship with students

### Teaching style used by science teacher while classroom teaching:

- Using instructional materials
- Using cooperative/ group learning activities
- Using improvised materials
- Provide proper time for completion of task
- Connecting course content to current events
- Playing attention towards demonstration activities
- Focused on students centered activities
- Encourage students participation
- Provide positive emotion to enhance learning
- Presentation skills
- Focused on students interest and level
- Teach by constructive way
- interact with students
- Explain course content
- Content knowledge

### Teaching style used at the end of classroom

- Summarizing the whole content at the end of class
- Students happiness at the end of classroom
- Evaluation of students
- Solving the students curiosity / problems

- ) Provide feedback, reward and reinforcement at the end of classroom
- ) Provide some assignment for students

## Appendix II

### Students observation form

Name of school.....

Students no. ....

S .N	Learning styles	Yes	No	Remarks
1	Students listen to teacher carefully			
2	Students actively participate in discussions			
3	Students learn collaboratively			
4	Students make quick note during teaching process			
5	Students use problem solving method			
6	Students curiosity towards subject matter			
7	Students actively interact with teacher			
8	Students give attention			
9	Equal environment of first benches & last benches students in learning style			
10	Effect of students sitting management in learning style			



### Appendix III

#### Likert scales for students:

About yourselves:

Students name:

Gender:

Schools Name:

Choose any one answer for each question and each question required one tick ( ) in five points.

**Note : S.A= Strongly Agree, A= Agree, U= Undecided, D= Disagree, S.D= Strongly Disagree.**

Statements	S.A	A	U	D	S.D
Science classroom activities are interesting					
Science class activities are usually boring					
I can learn more if my teacher providing instruction to me					
I feel more easy and faster when my teacher teach with ICT or audio visual method					
If the subject matter of science are practically thought best on real life situation then, i will learn more easier and faster					
I feel very confident about my ability to learn on my own in science class					
I feel confusion and difficulties when i studies any science subject matter being alone					

I can learn more easier and sustainably about any subject matter of science with my friends in group					
I enjoy participating in small group activities during science class					
I like to note given by science teacher at the time of teaching					
At the time of science class i like to note myself because it makes me more easy to understand					
I like to be part of discussion with logic and reason on science subject matter					
I like to learn all kind of subject matter of science connecting with every activities					
I don't like to be part of science lab because it is harmful					
I think science subject is difficult and monotonous					
I think science subject is not teached by lectured style					
I wants my teacher to give me more recognition for the good work i do					
I write down every think the teacher said in science class					
If I like a science topic i try to find out more about it on my own					

## Appendix IV

### Questioners of teachers

- 1) Do you give instructions to yours students at the time teaching or not?  
.....
- 2) How often do you use auditory method of teaching why do you do so?  
.....
- 3) Which method do you prefer to tech student individually or in groups?  
.....
- 4) Can individuals method of teaching can be affective? How?  
.....
- 5) Do you teach science subject in group teaching method? What does you  
group-teaching method is affective or individual teaching.  
.....
- 6) Do you use audio visual teaching style to make easy and successful teaching?  
If yes, it is effective science subject?  
.....
- 7) Do you take students for interaction style of teaching science? If you take in  
it? How do you conduct it?  
.....
- 8) Do you let your students to note important point at the time of teaching of not?  
Or you just teach orally based on fact concept and principles?  
.....
- 9) Which teaching styles/strategies do you think are effective for science subject  
teaching?  
.....

## Appendix V

### Questioner to students

- 1) What activities does your science teacher do at the beginning of class as a warm up?

.....

- 2) Do you science teacher provide you the effective, easy and fast way to understand science related subject matter?

.....

- 3) Do you like to study individually or in group or for easy and fast understanding?

.....

- 4) What do you think group discussion learning style is effective? Do your teachers teach in-group with discussions?

.....

- 5) Your science teacher provides you not for confusion? Do you like to take note given by your teacher?

.....

- 6) Do you note yourself at the time of teacher teaching class?

.....

- 7) Now often your science teacher teach science subject using ICT?

.....

- 8) What do you think your learning theories of science subject helps in everyday your works ?

.....

- 9) How often do you take part in interactions about any science subject matter? What do you think about interaction teaching for science subject? Is it effective? Why?

.....

## **Appendix VI**

### **Name of sample schools**

- i. Shree Siddheswori Secondary Schools
- ii. Shree Jorpokhari Secondary Schools
- iii. Shree Siddhakali Secondary Schools
- iv. Shreejanga Secondary Schools
- v. Shree Jayabhawani Secondary Schools
- vi. Shree Nilgiri Secondary Schools

## Appendix VII

Meaning of rating	Rating for positive statement	Rating for negative statement
Strongly Agree	5	1
Agree	4	2
Undecided	3	3
Disagree	2	4
Strongly Disagree	1	5

Source: Khanal, 2015