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Editorial

When a nation is called upon to measure up to a purpose it has hitherto been unaccustomed to, it often appears as though all the resources of its received wisdom are inadequate to justly command the promise of the new. We sway midway between the security, with all its imperfections, of the known and the uncertainty, with all the glitter and glow, of the unknown. Salvation for nations and for peoples comes in the creative intersection between the wholesome inheritance of the past and the edifying possibilities of the futures.

Great opportunities are aften squandered and missions failed for want of men to match the hour. How might we fare in our own Bhutanese context as we try to marshal the challenges presented by the ushering in of a brave new world? So said the former American President Franklin D Roosevelt, “We cannot always build the future for our youth but we can build the youth for our future”. Herein could lie a critical rationale to acknowledge and empower the redeeming graces of education.

In the good old days, Plato required that all citizens should participate in the political life of the nation. And politics had yet to acquire the not-so-encouraging connotations that it has today. What does it take to ensure all citizens participate in and benefit from the opportunities being ushered in? How do we ensure that politics can still be clean and democracy healthy? Can we have a Bhutanese brand of democracy that is truly creative and inspiring? Ms Els Heijnen provides several critical pointers to the relationship between education and democratic citizenship in her insightful article.

The arguments for and against the integrated science curriculum and its consequences on educational standards have been presented by Mr. Ajit Sherpa Based on an extensive study of the new curriculum. Folk-songs in Bhutanese Literature written in English by Mr. Chandrasekhar Sharma throws interesting light on an area that is often taken for granted. Ms. Dawa Lhamo’s review of Cracking India affirms the primacy of home and family in our life.

A look at Education in Bhutan by Mr. Shanker Lal Dahal marks the highs and lows in our efforts to bring the light of learning to all our children in the country in an environment of our own making. Mr. Kinley Dorji’s Borrowings in Pasap Kha makes informative reading as he brings to bear a linguist’s insights into the nuances and subtleties of one of our diverse dialets. Environmental Sustainability and Teacher Education by Mr. Sonam Rinchen establishes the inescapable role of teacher education in affirming and advancing the complex relationships between humans and our environment.

Even as Rabsel moves into its tenth issue, we would like to acknowledge the continued interest shown in its contents by our readers. As you could see, the journal has attempted to provide a forum for our education’s stake-holders, particularly educators, to share their reflections and experiences. As we enter an ever more exciting and challenging phase, it is all the more important for us to make uss of this forum and share our visions and convictions about something that is ever so vital for the success of our national goals – education.

May the glory of Spring light you way. Tashi Delek

Thakur S Powdyel

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Perspectives of secondary school science teachers on integrated science in Bhutanese schools

AJIT SHERPA
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Abstract

This paper discusses the views of teachers on integrated science in Bhutan. The information was gathered by interviewing the secondary school science teachers under Wangduephodrang Dzongkhag (district). The integrated science course is a new curriculum comprising of physics, chemistry and biology for classes seven and eight in the Bhutanese Education system that started in 1999.

The problem started when people passed judgments on and raised lot of criticism about integrated science. Although pertinent and serious, till date, no research has been done in Bhutan to address this issue. The current study was initiated to find out the real views and experiences of science teachers with the aim to address some of the confusions that school teachers and public have regarding integrated science. In order to carryout this study, I found qualitative research method more suitable, particularly the elements of phenomenological studies such as interviews and field-notes. Therefore, twenty three secondary school science teachers were interviewed and observed.

The interviews revealed multiple perspectives of science teachers and the economic advantages of integrated science. The study also talks about hindrances faced by science teachers and the reasons for the ineffectiveness of the integrated science programme in lower secondary schools

AUTOBIOGRAPHICAL REFLECTION

This is a flashback of my own learning experiences, the process that began in my early childhood days. Perhaps, my mother is my first teacher who taught me how to eat food, walk and talk. At home, my mother used to tell me not to play with knife or fire, not to go to the riverside and so on. Then, I started going to school at the age of seven, and as a school-going child, I was curious to learn many things. Both my parents were uneducated and they could not help me in the field of academics. For that reason, my formal learning was left to the teachers and me. It is not surprising that different people learn through different situations and experiences. In my case, the process of learning was not at all smooth, yet it was remarkable. Some experiences were enjoyable, while the others were not so pleasant.

Childhood Learning Experience

The journey of my formal education began after I was admitted to Choden Primary School on the outskirts of Thimphu. There, I could learn how to read and write. My friends taught me how to play football and Chinese Checkers. In the classroom, I was active and used to ask many questions, so my teachers liked me and I was

encouraged. As a child, I was fond of nursery rhymes like “Ba ba black sheep” or “Twinkle twinkle, little star”. So singing rhymes in front of elders was a big show for me at that time. I learnt how to speak Dzongkha during my childhood.

However, my parent’s untimely divorce was a great setback in my early days of school life. This episode affected me psychologically and emotionally. In addition, my father took a second wife with two children. As a result, there were three of us to feed with his small salary. I felt a greater financial pressure as my father was an alcoholic and heavy smoker. During some winter vacations, I wanted to do some temporary jobs to earn some money so that I could meet the operating expenses at school. I learnt that getting a job for small children was difficult.

Teenage Learning Experience

Luckily, when I was thirteen years old in 1982, I got an opportunity to attend an entrance examination that enabled me to study in India through the scholarship offered by the Royal Government of Bhutan. In July of the same year, six months later, while I was studying in grade five, we finished our half-yearly examination. There was a short summer break and by the first week of August, the school reopened. Our class teacher, Mr. Tapan Das, announced the results. I stood second position in the class. Our mathematics teacher, Mr. C. B. Biswa, told us that there was a piece of good news and it was about the scholarship. He said that I had been through the entrance examination and was selected to study in India on a scholarship. So my placement was at Sainik School Tilaiya, Bihar. For this reason, the whole class congratulated me. This was the first time I had seen such mass appreciation for me. At that moment, I was utterly nervous and did not know what to do.I should have acknowledged my teacher and the friends, but I was confused.

I joined Sainik School at Tilaiya, Bihar, in Class VI where I studied for seven years as a boarder. Sainik School Tilaiya is a big well-equipped secondary school only for boys. Leaving behind my father, a half-brother and a sister for the first time to continue my education far away from home in another country was a bitter experience. Even the rustling of tree leaves in the winds behind the dormitory would frighten me at night. I was afraid to go to toilet at night. The severe heat during summer and the school rules guided by military-style punishment were the most difficult aspects of Sainik School life to adjust to.

Saturday used to be my favourite day because of less number of classes and a movie show in the evening at 8 pm. We used to have our dinner at 6.30 pm on Saturday and then move towards the theatre, where the movie used to be screened. Teachers and staff used to join the show with their families. Our principal used to arrive just five minutes before the show. The school captain used to command in a loud voice. As soon as the principal was seated, the movie would start. Students were required to maintain pin-drop silence throughout the show.

Well, this was how I could slowly understand the realities of life and build up my self-esteem, moral strength and other values through different situations, surroundings, friends, seniors and teachers. It was in that school as a learner that I could differentiate among military, boarding and day schools. I also learnt a great deal about

discipline, punctuality, good manners, honesty, art, truthfulness, patriotism, loyalty, sports, riding, shooting, swimming, sociability and leadership. Above all, tolerance of seniors is one extraordinary attribute that I learnt at Sainik School in the form of a hidden curriculum. The situation slowly improved as I started liking the place, friends, teachers and the surroundings. From this experience, I learnt how to think positively and adapt to changes.

Regarding academics, throughout the school days, teachers taught us by traditional lecture method. Dictating was the popular teaching strategy that teachers used in those days. I was left with two choices- either to understand or memorize the concepts. Rote-learning was the only technique of learning in those days. At times, I used to memorize so much that I nearly became a bookworm. I hardly had any experience outside the textbooks. Learning science outside the classrooms was possible sometimes through accident. Science practical were more or less based on individual discovery. The talk-and-chalk was the technique used in teaching. Somehow, I managed to complete class twelve in pure science and returned to Bhutan.

Once again, I was successful in getting second scholarship because I qualified for professional studies in 1989. I wanted to be a medical specialist but the selection committee during interview informed us that students who opted for medical and engineering colleges should have a minimum of 60 marks in each of the science subjects in class twelve examinations. Thus, my only aim to become a doctor was shattered because of two marks less in physics. As a result, I was offered to study Bachelor of Pharmacy course in Delhi University, India. Later, unfortunately, I had to drop the course due to domestic problems.

Adulthood Learning Experience

One day, I came to learn about the Bachelor of Education (B.Ed.) course through some of my senior friends already working as teachers. Therefore, as motivated by my friends and my personal experience as a temporary teacher, I finally decided and joined the teaching profession. The three years B.Ed. course at the Samtse College of Education was the peak of my learning concerning the teaching profession. At the institute, during the course of training, we were kept very busy with micro-teachings, video lessons, curricular activities, co-curricular activities, and writing assignments or projects. I took lot of interest and did my training to the best of my capacity to gain maximum learning. In particular, I found the training programme called 'Teaching Practice' very useful for the teacher-trainees to experience the teaching in real classroom situation in primary and secondary schools.
Palincsar, Brown, Scardamalia, Bransford & Cooking (1999) found out that teaching practices with different approaches to learning focus an individual on sense-making, self-assessment, and reflection on what worked and what needed improving. Therefore, in the light of Palincsar et al. (1999) my experience as a learner from three teaching practices at Chubachu Primary School (1992), Lungtenzampa Lower Secondary School (1993) and Yangchenphug Higher Secondary School (1994) helped me in self-assessing and to be a reflective science teacher. As a secondary school science teacher for more than twelve years, I have reflected on my teaching and realized that I haven't done anything of value other than usual routine work for the

cause of children till date. It was only then that I began to sense a professional challenge and I thought of doing some investigation.

Rationale behind the Research

This part of the paper describes how the idea of this research originated. Essentially, there were two reasons. Firstly, based on many years of personal experience as a science teacher even today, despite every attempt to teach science in the best possible ways, the net result has always been unsatisfactory as far as students' academic performance goes. At this point, I think it is appropriate to share my observation of students' performance in science. On average, I observed that many students are good in other subjects but poor in science. Which means that teaching science has not been effective.

In this connection, Hammond, Orcutt, Strobel, Krisch, Lit & Martin (2003) found out that teachers can be more effective in their work if they teach in ways that are compatible with the processes of learning. Effective teaching involves organizing the environment, organizing knowledge, information and activities and organizing people. Indeed, as Hammond et al. (2003) mentioned, I do strongly believe that organizing people, environment or knowledge would result in effective teaching. Perhaps, one or more of these elements may be missing in my approach.

Therefore, one purpose of this study is to explore answers to the questions that arose in my mind such as: How might we effectively organize science lessons? What are the perceptions of teachers about teaching science? How can we get students excited about science? Do schools have proper science laboratories? Do schools have adequate chemicals and apparatuses for conducting experiments? What do the experts say?

Secondly, the change in the science curriculum for classes seven and eight from science of three disciplines (Physics, Chemistry and Biology) to integrated science during recent years created a big issue among parents and educators. I have heard many comments, come across people passing judgments and criticism about integrated science. Yes, the reality is unknown as no research has been done in Bhutan so far to address this issue. Being a science teacher, I could not resist my temptation to explore why people grumble about integrated science.

For that reason, I believed finding the views of science teachers regarding the subject is incredibly important. So I made a research proposal to study the ***Perspectives of secondary school science teachers on integrated science in Bhutanese schools.*** Through this study, I hope to find out the real views and experiences of science teachers and address some of the confusions that school teachers and the public have regarding this particular change in the science curriculum.

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

Change is the law of nature. In the same way, change in educational development is inevitable. As indicated earlier, over the past few years, there has been a kind of shift in the secondary school science curriculum. The three disciplines of science namely

physics, chemistry and biology have now been combined into one integrated science (general science) for class seven and eight in Bhutan.

The integrated science curriculum came into effect in Bhutanese lower secondary schools starting from the academic session of 1999. Selected science teachers from all over Bhutan underwent 15 days Science Induction Workshop at Samtse College of Education in January 1999. Until now, many science teachers have undergone similar science induction courses. Since the inception of integrated science, we have just completed seven academic years and I feel that we are still in the early years of its development. This new curriculum is currently passing through its transition period. I, therefore, would like to address the negative comments made by few science teachers earlier. To label something as good or bad, we need to have a standard of measurement. In terms of integrated science, how do we measure it because it is a newly adopted curriculum? I think, it is inappropriate to make a hasty decision about integrated science without conducting proper investigation.

Moreover, the integrated science, being a new initiative in our system, has produced some doubt in my mind: how the change agents (participants) would react to such a process. Such a situation has provided an opportunity to carry out literature review regarding the change in curriculum.

A Review of Related Literature

Curriculum is the experience, both planned and unplanned, that enhances (and sometimes impedes) the education and growth of students (Parkay & Standford, 1998). In other words, curriculum is a set of documents, which includes several topics to be taught in a particular class. The topics are arranged with specific aims and objectives in sequence in such a way so that it could provide all learners with prior educational needs.

Before we proceed, let us make ourselves clear about what is integrated curriculum? An integrated curriculum is one in which children broadly explore knowledge in various subjects attempting to break down barriers between subjects (Humphreys, 1981).

Similarly, the integrated science is a curriculum made by the integration of various disciplines of science. The curriculum is designed to support students' knowledge so that they would be able to understand science better at secondary level. Particularly, it would be helpful to those students with the background of general science at the primary level (Kothari, 1996, as cited in Yadav, 1995).

Perspectives of Curriculum Planner

I believe that the Bhutanese curriculum planners who were involved in creating the integrated science curriculum must have taken a lot of pain and seriously thought about it. This initiative is the first of its kind as far as the science curriculum in Bhutan at the secondary level is concerned. Further, Director of Curriculum and Professional Support Division in Bhutan (CAPSD) wrote:

> The Integrated science is an attempt to create a truly Bhutanese science for our students. It was felt that an integrated science would best serve this purpose. This would enable students to see the fundamental unity of science, common approach to solve problems of scientific nature and that students would more readily appreciate how science was relevant to them if the course was structured in this way. This course aims not only to make science learning interesting, relevant and more purposeful but also provides a foundation for secondary science. (Dorji, 2000, as cited in CAPSD, 2000, p.v).

In the above paragraph, we can see the clear purpose of the new integrated science programme for the children in Bhutanese context. It was created with the intention of blending the unity of physics, chemistry and biology. The focus was in making science teaching interesting and enabling students to understand the relevance of science in their everyday life. No doubt, a team sacrificing their precious time and energy prepared it. We do appreciate their contribution, effort and the embedded values.

While studying the objectives of the integrated science curriculum for class six, seven and eight prepared by the National Council for Educational Research and Training (NCERT) in India,I found most of the objectives prescribed in the Bhutanese integrated science curriculum for classes seven and eight were similar. For example, the objectives such as: to put emphasis on the relevance of science to daily life, familiarize the students with the experimental nature of science and to emphasize the unity of methods of various disciplines of science (NCERT, 1995, as cited in Yadav, 1995, p. 41-42). Moreover, the rationale specified in the integrated science programme is in line with 'The purpose of school education in Bhutan'.

However, we should not be surprised when we see some teachers resisting changes. Even in some of the developed nations, many schools that are changing or wanting to change have failed due to the conservative habits and reluctance of parents, employers, politicians and teachers (Burnham & Bowring-Carr, 1977). I believe, we do have quite a good number of science teachers in Bhutan who are resistant to changes.

In a similar study, Giddens (cited in Busher, 2003) asserts teacher specialization as another reason for resistance to change, at least in the secondary school. Science teachers are not usually 'generalists'. They are specialized in particular subjects with high demand in the teaching force and anything which seems to shake this specialization is seen as a threat. Possibly, some science teachers in Bhutan who are resisting changes may be worried about fading of knowledge in their specialized subject.

Broadly, in Bhutan, science teachers present different intellectual, cultural, linguistic, educational, academic, national, gender, age and experience-related realities. At present, about half of the secondary school science teachers in the country are Bhutanese nationals and more than half are expatriates from India (Policy and Planning Division-PPD, 2006). I came across a few science teachers who made critical remarks such as: "integrated science comparatively is not as good as science of three disciplines. It is a condensed book and the contents of integrated science are not enough. Students who complete class eight studying integrated science cannot cope with the science of three disciplines in class nine".

As a consequence of these critical remarks, I was suspicious of the effectiveness of integrated science in the classroom. For that reason, I was encouraged to personally meet with the science teachers in the field to discuss the views.

My thirst to know more about the effectiveness of the integrated science programme from the perspectives of secondary school science teachers motivated me to look for related literature in similar studies. In this context, Kyriacou (1996) states, effective teaching as productively achieving pupils' learning as intended by the teacher. Provided the teacher should have a clear idea of what has to be imparted, and the teacher needs to work out comprehensive lesson plan to achieve this.

In view of the above facts, my understanding regarding effective teaching is the teacher's readiness to teach through proper planning. Effective teaching would depend upon what aspects of the learning experience contribute to its efficiency and how these aspects would result in the learner. Effective teaching to me is more of good delivery of knowledge, skill or value. This issue was highlighted during one of the education conferences held annually.

The Eighth Annual Education Conference (AEC) held at Khuruthang in 2004 resolved 'to improve the quality of education.' Improving quality of education was seen as one of the challenges facing the Education Sector. The house discussed and reiterated the importance of providing the best possible to the children as per the command of His Majesty the King. It resolved that relevant departments and divisions continue to make endeavours in enhancing the quality of education throughout the kingdom (Excerpt from the eighth- AEC).

The resolution expressed the need to improve the quality of education. It is the obligation of every citizen of Bhutan to commit ourselves to fulfilling the hopes and aspirations of our noble King. In order to do this, we need to improve the quality of teaching. In this regard, Dorji (2003, p.77) through his study concluded, "The quality of teacher should precede the quality of education". It means that in order to uplift the quality of education, we must first uplift the quality of teachers. Henceforth, the schools should strive to improve the effectiveness of classroom teaching in all the subjects by making some provisions for the professional development of teachers. As a science teacher, my attention would draw towards the effectiveness of integrated science from the viewpoints of Bhutanese science teachers. In recent years, researcher and educator such as Kyriacou (1996) suggested investigation to be carried out from three related perspectives: They are the teachers' perspective, the pupils' perspective and the activities perspective. My focus in this paper is from the teachers' point of view (teachers' perspective). A science teacher (Druger, 1999) in the United States prepared an article regarding a perspective on teaching integrated science which tells us that:

> Teaching integrated science is also difficult because teachers seem generally ill-prepared to do so. Most science teachers have been prepared through separate disciplines and have little experience with integrated science. The situation is similar concerning the nature of science. Teachers are expected to help students learn what scientific

> research is all about. Yet, most teachers have not had any real science research experience in their teacher preparation programs (p. 2).

I partly agree with the contents of the above article, as it is relevant to the Bhutanese context. Science teachers are trained to teach two elective subjects from the three disciplines- physics, chemistry and biology. A teacher-trainee can take any two subjects of their choice as elective in the training institutes. While talking in context of teaching integrated science, obviously, it is going to be difficult to teach the subject, which is not taken as an elective. For example, my elective subjects are chemistry and biology, I am confident to teach the sub-topics related to my elective subjects. Whereas, have to admit that I felt uncomfortable to teach the portion from physics fused in integrated science a few years ago. I assume many science teachers might have had similar experiences.

Earlier, the 15 days in-service Science Induction Workshop conducted in the year 1999 was a crash course and the focus was teaching of activities. There was no time to deal with the three disciplines of integrated science. However, the B.Ed. and Post-Graduate teacher-trainees having science subjects are now familiarized with the new science curriculum in the training institutes.

According to Rinchen (2001) who worked as a science teacher in secondary schools for some years, science is learned in abstraction by memorizing. He saw that students are not able to apply scientific knowledge to solve their everyday problems, nor are they able to relate their knowledge to the environment to make better sense of the world. So, it is disappointing to know that many students fail to understand the exact purpose of learning science.

Even today, with the new development of integrated science, the effect of learning science by Bhutanese students does not seem to me to improve. So to a certain extent, I do agree with the above statement. I also feel that students learn integrated science in abstraction. It seems that students do not understand the importance of scientific theories. In my experience, students do not seem to recognize the connections among the sciences. But, to my surprise, the findings of the researchers presented a positive picture.

Positive Findings from the Research

When similar studies were held at different places by researchers like Ahern, Czernaik, Sandmann, & Weber, (1999), they discovered that the:

> Integrated curricula have gained a great deal of acceptance among educators. Many educators provide testimonials about the effectiveness of units they teach, and many professional organizations stress integration across the curriculum.....Curriculum integration has become incredibly popular among educators in recent years. The idea of connecting subject areas has considerable face validity, because it seems like commonsense. In the real world, people's lives are not separated into separate subjects; therefore, it seems only logical that subject areas should not be separated in schools. Almost

every national reform effort is currently stressing the need to integrate or make connections among the curriculum (p.1).

My insight regarding the positive findings of research clearly supports curriculum integration if the idea is based on connecting different subjects. Integrated curricula have already gained popularity among educators in many nations around the world. I think Bhutanese educators would also come up with similar experiences. Positively, it should serve as one of the cornerstones towards creating schools' teaching effectiveness, if it is based on the needs and interests of students. In addition, integrated science provides the student with exposure and connections between the study of science and their real life.

Druger (1999) on the other hand, states that most science educators would agree that it is highly desirable for students to have basic knowledge in all major scientific disciplines, such as biology, chemistry, physics and earth science. As a science teacher, I do believe that the integrated science curriculum should accord equal importance to biology, chemistry and physics in terms of content without being biased.

Current Advantages of Integrated Science in Bhutan

The integration of science from three separate disciplines has helped the Ministry of Education in Bhutan to resolve teacher shortage problem, eased children to carry and study one science textbook instead of three, and, above all, it helped us to save financial resources. Anyway, one thing we need to remember is that at any rate, nothing can ever compensate for the quality of science except through effective teaching. To me, effectiveness of integrated science solely rests on the preparedness of a teacher who is actually involved in teaching integrated science.

METHODOLOGY: QUALITATIVE RESEARCH

(PHENOMENOLOGICAL STUDY)

This part of the paper is an attempt to uncover the reality about integrated science in Bhutan through the eyes of secondary school science teachers. It describes the methodology used to carry out this study. Namgyel (2003) states methodology as the system of methods and principles used in a particular study. Most methods use a range of techniques to collect data for the study.

Challenges of the Study

In this world, there are millions of people like sand on the shore of sea. Each of us looks at things from different angles. Everyone is right in their own way. Individually, people differ in their ideology but similar type of experience can remove such differences. Further, what troubled me was the unfounded remarks made by different people about the integrated science for lower secondary schools in Bhutan. Often, remarks made by people prove false.

In order to answer the new questions arising from reflections, collecting authentic information for evidence was the foremost challenge posed by my study. At the same time, I had to face other challenges such as inadequate library references, lack of access to internet facility, location of school away from the centre, lack of consultancy, limited time and burden of heavy work load having to teach as well as look after the school administration. In the beginning, I was a bit worried but moral support and

encouragement of my colleagues gave me added strength to marshal the task that I undertook. In some way, the starting was smooth but the course of continuation became harder and harder.

Nevertheless, I was determined to carry out this study and hear from the science teachers themselves. I guess this study using an appropriate research method would be able to remove some of the confusions that school teachers and the public have regarding integrated science. That's why I have chosen qualitative research paradigm which has been described in the remaining sections of this chapter.

Qualitative Research Paradigm

In this section of the study, I describe the methodology used to find out the views of the participants about the current integrated science curriculum as mentioned earlier. In order to carry out this study, I have chosen the qualitative research strategy because of its advantage for the researcher to understand behavior as it occurs naturally, without artificial control and at the same time collection of data would be in the form of words or pictures rather than numbers. In particular, the research project is becoming very popular these days especially in the field of education because it is easy to manage, without demanding high flown theoretical frameworks, is practically oriented and every teacher can use it. That's why in order to make this project successful, I have done it in the form of a research project.

Qualitative research examines qualities, and through it, we can better understand human behaviour and experience (Bogdan & Biklen, 1998). I wanted to learn about the problems faced by teachers through actual involvement and active participation. I went personally and met with teachers in schools in order to observe them practically. I have used descriptive words rather than numbers to convey what I have learned about the phenomenon. There are five kinds of qualitative research strategies available to qualitative researchers such as: case studies, ethnographies, phenomenological studies, grounded theory, and content analysis. I believed phenomenological studies would be best for exploring the views of participants. Therefore, the key method chosen for this research is a phenomenological study.

Phenomenological Study

In my research, I have used the elements of phenomenology. According to McMillan & Wergin (2002), phenomenological studies are used to describe and interpret the experiences of people in order to understand the real meaning of the experience as perceived by those studied. The essential assumption is that there are multiple ways of experiencing and interpreting the same event or situation, and that the meaning of the phenomena to each person is what holds reality.

As such, participant perspectives are the focus of my study. Individuals who were likely to be participants were selected based on their experience with the phenomena being studied, and on their willingness to be interviewed. This approach allowed me to conduct my study in a natural setting with open instruction and free expression of ideas to obtain a holistic, in-depth understanding of the phenomenon under study. It also involved interpretation of ideas and thoughts put forward by the participants mainly focusing their beliefs and practices.

Being a science teacher, I had personal experiences related to the phenomenon. Further I wanted to gain a better understanding of the experiences of others. By having multiple perspectives on the same situation, I could then make some generalizations of what something was like from an insider's point of view (Holstein & Gubrium, 1994). I planned to gather firsthand information about the new integrated science from the secondary school science teachers through careful observation and a series of interviews.

Interviews

Interviewing has been identified as a way to gain access to other person's viewpoint because one would not know what is really going on in the other person's mind and experiences. In that respect, qualitative interviewing begins with the assumption that the views of others are meaningful and clear. It is the technique of bringing participants to the world of researcher (Patton, 1990, cited in Chewang, 1999, p. 34).

According to Patton (1990), there are three approaches to qualitative interviewing, such as:

(i) The informal conversations
(ii) The guided interview approach
(iii) The standard open-ended interview

When it comes to preparation, all three approaches differ in their conceptualization, groundwork or instrumentation. Each has its own strengths and weaknesses. However, in the case of this study, I began with informal conversations and ended with guided interview approach to collect the required information.

Informal Conversations

The informal conversation is a non-directive process that allows the interviewees greater freedom to express their views (Cicourel, 1964). The main intention of using informal conversation was to understand the background information of individual science teachers. This process avoided involving wrong participants, for example, there were some science teachers who were interested but they did not have firsthand experience. Later, with prior permission from the concerned participants, I somehow managed informal conversations individually with twenty-three science teachers in the district that lasted about fifteen minutes each during their free time. Some teachers I met personally after school hours, while with other teachers I made appointments on telephone and we discussed the issues through telephone. It took two weeks to complete the informal conversations.

During the informal conversations, nine semi-structured objective-type of questions were asked to the individual science teachers purposely to derive their personal experiences and impression of the subject. The last question was to confirm whether they were interested to join extensive interviews. The information collected through this method helped me to select the suitable participants for the extensive guided interviews (2-3 hours interview in person including tape recording and field notes).

Participants Selection

There were twenty-three science teachers working in four lower secondary schools and two high schools in Wangduephodrang District during the academic year 2006. Among them twelve were Bhutanese and eleven were Indians. Two schools were categorized under urban and the others came under semi-urban. All six were government supported schools located within the distance of 40 kilometers from the office of District Headquarters. Five out of the six were boarding schools. The first criterion of selection was the willingness of teachers to participate. Teachers who volunteered to be participants were having at least two years of integrated science teaching experience. Following the technique of random selection of one participant from each school, I selected eight participants altogether irrespective of their gender and age for the extensive interview.

Data Sources and Collection

Science teachers of secondary schools in Wangduephodrang District were the sources of my data. The data were collected through interviewing in two phases. The purpose of phase one informal interview was to collect science teachers' background information for the selection of suitable participants. The second phase formal interview was aimed at collecting comprehensive data for this investigation.

Subsequently, the data were collected using the instruments discussed above within the period of three months and the report of collected data from my participants is presented under the heading data collection.

Timing of the Project

By the middle of January, 2006, I picked up a few topics and discussed them with my supervisor. With his guidance, towards the end of the month, I was able to narrow down and choose a specific topic for the study. It was followed by collection of ethics review forms and clearance certificate from the M. Ed. Coordinator, Paro College of Education (PCE) on May 9, 2006.

A week later, I began the interview sessions and continued them for two months covering all my participants. For nearly everyone, I tried to arrange the interviews on Sundays or holidays depending upon the willingness of my participants to sacrifice their leisure. Sometimes, we did it after school hours. After every interview, I brought the audio-taped data and transcribed the same at home. The process of transcribing the interview involved replaying the audio-taped data repeatedly until I wrote contexts in papers several times and it took me about five days for each interview. I was able to transcribe the information through careful listening and was able to complete it by July 21, 2006. Again, from the following day until August 10, 2006, I revisited the participants for the third time to crosscheck my transcription. During the second week of August, I finalized transcribing the interview and by the third week, I submitted the first draft copy of my project work to my supervisor and co-supervisor. Positively, towards the end of September, 2006, I received valuable comments and feedback from my tutors. As per their suggestions, I made necessary editorial corrections and changes. Towards the end of October 2006, I resubmitted my project. Further, I

consulted my tutors in person during the month of January 2007 and discussed my project at length. Finally, I submitted my final research project on January 22, 2007.

Ethical Considerations

To carry out research successfully, it was important to keep in mind certain ethical considerations. Bogdan and Biklen (1998) commented, "Ethics in research are the principles of right and wrong that a particular group accepts at a particular time" (p. 42). Hence, in every step of carrying out research, there are ethical concerns. In the case of this research, I identified the following ethical issues:

Ethical Issues on Research Topic and Permission

The first step associated with this research topic was to seek permission from my supervisor, which I did in January 2006. Secondly, I was to seek permission from the Human Research Ethics Committee, PCE under the Royal University of Bhutan. In order to get the permission, as a researcher, I filled in non-evasive procedures form and submitted the same to the concerned authority. My research proposal containing research topic and rationale was formally approved by the research committee with necessary feedback. Thirdly, I wrote a letter to and got permission from the Director of School Education, Ministry of Education, Thimphu, to carry out my research. I also obtained permission from the District Education Officer as well as the concerned school heads.

Ethical Issues and Matters of Confidentiality

As a researcher, I undertook to protect all the data collected from the participants, and I made sure that the information obtained was kept confidential. The names of participants were not shown anywhere in the write-ups but are replaced by "pseudonyms" (Creswell, 2003).

Ethical Issues on Transparency

As a researcher, it was my prime duty to convey the purpose of study to the participants very clearly, so that they could understand the nature of my research, and feel confident throughout the process of inquiry. Otherwise, the participants would have hesitated. In addition, the participants were vested with rights and freedom to object to the interpretation of data before the preparation of final version.

Ethical Issues about the Rights of Participants

I allowed the participants their right to participate voluntarily. The participants were also given the right to ask question and their privacy was respected. Time, place and venue for the interviews were decided by the participants as per their convenience.

Ethical Issues in Data Analysis and Interpretation

Using the qualitative research approach, I provided an accurate account of the information. After the interpretation and analysis of the data, a draft copy was shown to the participants for clarification, verification and validation.

Validating the Accuracy of Findings

The investigation becomes reliable only through validity- it is considered as the strength of qualitative research. Essentially, it is used to confirm whether the findings are accurate from the standpoint of the researcher, the participant, or the readers (Creswell & Miller, 2000). Henceforth, to validate the accuracy of my findings, I applied the method known as member-checking (Creswell, 2003, p.196). Sticking to this process, as mentioned in the ethical considerations, I revisited and consulted my participants once again and confirmed the interpretation of my data before preparing the final research project report. The process was completed upon the approval of my participants after cross-checking the data presented in my first copy of the draft research project.

DATA COLLECTION

This unit provides an account of how the data was collected. It also tells the reader what the data consists of. Creswell (2003) discovered that data for phenomenological study comes from multiple sources such as observations, interviews, documents and audio-visual materials. For this study, I used interviews with science teachers as the primary sources of data. Unlike a survey or questionnaire, I encouraged my participants to give full descriptions of their experiences including their thoughts, feelings and practices. Oral interview was used to explore science teachers' outlook on integrated science in lower secondary schools.

As stated in the previous chapter, I conducted face-to-face interviews with participants while doubts were clarified using telephone or personal contact. The interviews comprised of semi-structured and open-ended questions, which were recorded in an audio tape-recorder for transcribing. I thought interviewing science teachers was fairly appropriate in my situation because I was trying to investigate the issue from the standpoint of science teachers. However, among the twenty-three informal conversations, I found the following example worth sharing:

Sample Informal Conversations

This informal conversation was conducted through telephone on Thursday evening, May 25, 2006. Mr. X is an expatriate science teacher holding a Master of Science (M.Sc.) degree as well as Bachelor of Education (B.Ed.) degree. His specialized subject is botany. Presently, he is teaching science in a lower secondary school but he has worked in a high school as well. He has served in more than three different schools in Bhutan. The information shared during the interview was written down in the form of field-notes and the transcription was done later.

> Researcher : How long have you been teaching science?
> Participant : I have been teaching science for the last 27 years.
> Researcher : How long have you been teaching integrated science?
> Participant : For the past five and half years.
> Researcher : Do you follow science teachers' manual to teach integrated science?
> Participant : Obviously, one must follow the teachers' manual to teach

integrated science?

Researcher : Is integrated science relevant to the Bhutanese context?

Participant : To certain extent, I mean for a certain period of time integrated science is relevant for Bhutanese society but it may not be relevant in the future.

Researcher : How many science periods do you teach in a week?

Participant : 30 periods

Researcher : What is the average number of students in each class?

Participant : On an average, we have about 40 students in every section.

Researcher : If you are given an opportunity to choose between the three disciplines of science and integrated science, which one would you prefer to teach? Why?

Participant : I would prefer to teach bifurcated syllabus rather than integrated science because the subject knowledge will be more. May be I was not trained for integrated science. This is a new concept for me.

Researcher : Are you interested to join a formal extensive interview later on that would take about two hours?

Participant: Yes, I am.

Researcher : If you are interested to join formal extensive interview, please kindly confirm the date, time and venue for the interview as per your convenience.

Participant : Alright, let me think properly and I will call you back to confirm the date, time and place for the extensive interview.

Guided Interview Approach

The rationale behind using guided interview approach was mainly to collect comprehensive data from the participants on the subject being studied.

In addition, it conveyed to me what I needed to know exactly. At the same time, it allowed me to choose a certain number of relevant questions providing to me the flexibility to decide their length. Since I conducted such a study for the first time, my knowledge concerning the interview technique was very limited. The guided approach helped me by giving me confidence and direction in conducting the interviews.

According to McMillan and Wergin (2002), in phenomenological qualitative study, a guided interview helps to examine the experiences and perceptions of selected participants.

Using this approach, I, as an interviewer, could specify the topics and issues in an outline form in advance. Here, I prepared an interview guide in advance and decided the sequence or wording of questions to be used during the course of the interview.

To carry out the guided interview, I visited all the six schools in the district and had discussions with my participants. Since the interview involved fairly long discussions, it was not easy to remember all the responses of my participants. Therefore, I used a tape-recorder for audio-taping the guided extensive interview. This helped me to keep

track of the responses and avoid loss of relevant information. In this regard, Ely, Anzul, Friedman, Garner & Steinmetz (1991) suggest:

> Recording notes is a labourious task; the mental image that comes to mind whenever we need to keep field notes is a pencil and paper. However, given the modern technology today, it makes little sense not to use things like video and audio-taping. Today recording is one of the most popular teacher research methods, audio recorders have become an excellent tool for recording and storing information (cited in Rinchen, 2001, p. 71).

Owing to the above suggestion, I recorded the interview conversations using audio-tape and maintained short field-notes. In the process of my guided interview sessions, twenty-three semi-structured and open-ended questions were asked to the eight selected participants. The information collected through this method helped me to identify common themes. The guided interview was conducted sitting face-to-face with the participants. Each interview was a lengthy discussion of approximately two hours and it took six weeks to meet with all eight participants and complete the interviews.

Sample Guided Interview

The formal guided interview was an extension of the previous informal conversational interview. As agreed earlier, the participant X made a telephone call and said; "Let us meet for the formal extensive interview on 10th June, 2006 (Saturday) after the school at 2.30 pm. I will be more comfortable if we can discuss in my residence". Hence, on mutual understanding the interview was conducted on the specified date, time and place meeting face-to-face and these were the discussions:

> Researcher : Does your school have a proper science laboratory?
> Participant : We do have a science room where chemicals and equipment are kept but it cannot be considered a science laboratory because we cannot conduct experiments due to its size. Moreover, there is no basin, water tap, activity stool and table for students and the room itself is very congested.
> Researcher : If there is no proper science laboratory in your school, how do you perform experiments / activities?
> Participant : Since the laboratory is small and dingy, most of the activities are done in the classroom itself through teacher demonstration or by the students outside the classroom on the ground.
> Researcher : If there is no proper science laboratory in your school, what percentage of the total activities mentioned in the textbook are actually possible?
> Participant : About 60-70% activities of the total activities mentioned in the textbook are actually possible. To be honest, we are not able to do the remaining activities due to lack of required chemicals, apparatus, proper place or even due to large number of students.
> Researcher : Does your school have enough chemicals and apparatus for science practical?
> Participant : No, no, no

Researcher : How is the present integrated science different compared with the science of three disciplines ten years ago?
Participant : Present integrated science being in a reduced form has certainly narrowed down in terms of contents. Whereas physics, chemistry and biology were broader in terms of contents.
Researcher : What is your opinion about block periods in science classes?
Participant : Block periods in science classes help to conduct the experiments or activities comfortably and effectively. At the same time, we have to remember that too many block periods are not good.
Researcher : Which strategy do you employ most to teach integrated science? Explain a specific reason.

Participant : Maximum number of times.....(laughs)..... I use..... group activity strategy. This is because it is good to involve the students in the lesson rather than teacher spoon-feeding the information all the time.
Researcher : Which strategy do you employ least to teach integrated science and why?
Participant : Lecture method because children don't like it.
Researcher : Where do you get these strategies?
Participant: From my training, reading teacher educational programme books, internet sources and discussion with colleagues.
Researcher: What is your personal opinion about integrated science for class VII & VIII?
Participant: .....umnnn.....I feel that integrated science for class VII and VIII lacks many aspects of science which otherwise students at this level should know about.
Researcher: Do you feel that the content of integrated science is linked with class VI science?
Participant: Yes, of course, there is some link.
Researcher: Do you feel that integrated science in class VII and VIII provides a good understanding of the science in higher classes?
Participant: I don't think integrated science for class VII & VIII would at all provide a good understanding of science in higher classes, as the curriculum is in a condensed form trying to cover all three branches of science in one book.
Researcher: Is integrated science suitable for the development of future science and technology in Bhutan?
Participant: I am not sure so I have no comments.
Researcher: What problem do you face in teaching integrated science?
Participant: I have not faced any major problem till now although a the information given in the text seems to be brief where we have to refer to other texts. Sometimes, not always, I find difficulty in managing time and materials for carrying out activities which are given in the syllabus.
Researcher: Are the students, who have studied integrated science, able to cope with physics, chemistry and biology in class IX? If yes, what are some of the indicators?
Participant: No, only the exceptional ones survive and others perish.

Researcher: If no, which disciplines of science do the students in majority find difficulty to adjust in higher classes?
Participant: Students find lot of difficulties in physics and chemistry but Some how children manage biology.
Researcher: Do you invite guest speakers into the classroom for science lessons? How often?
Participant: Yes, only once or twice a year.
Researcher: What do you think would be the outcome of integrated science in the future?
Participant: I think…….(paused)…….. integrated science cannot lead the kingdom towards scientific perfection at par with other countries of the world. We will remain as silent spectators to the scientific events taking place in other countries. I even feel the standard of science is at risk. As such, there may be lesser citizens opting science in future.
Researcher: What do the science teachers think is the reason that CAPSD-(Curriculum and Professional Support Division) introduced this new integrated science?
Participant: Well! I guess…….. to simplify science as a subject, to make science learning based on activities, relate learning of science to immediate environment, contextualize science in Bhutanese system and solve teacher shortage problem.
Researcher: What is your opinion about the revised second edition integrated science for class VIII?
Participant: Revised second edition integrated science printed in 2003 seems much better than the first edition due to additional chapters such as light and chemical communications.
Researcher: In your opinion, what are the strengths of integrated science?
Participant: Integrated science is related to the Bhutanese environment, most of the lessons are activity based, it reduces science periods and number of science teachers resulting in saving resources.
Researcher: In your opinion, what are the weaknesses of integrated science?
Participant: Limited information, very easy and not challenging, unclear concepts and theories, lack of scientific reasoning in certain portion. Its biology oriented so the physics and chemistr contents are still not sufficient.
Researcher: Do you have any suggestions / recommendations for integrated science?
Participant: I feel revising the present book providing equal importanc all three branches of science would best serve the purpose of integrated science.

The two session interview between the researcher and participant X is an example, which depicts the views of science teachers in general regarding integrated science for Bhutanese lower secondary schools. In a nutshell, if we consider these interview responses as a base for the larger population, it provides us a rough picture of what integrated science is like from the insider's point of view.

Since it was not possible for me to present all the data collected from twenty-three participants, only one example of each type of interview has been given. However, it may not be correct to conclude anything definitively just by looking at one or two examples. At this stage, the analysis of data as a whole became crucial for this study. That's why, the description of data analysis is elaborated separately basically to present the findings of this study.

ANALYSIS OF THE DATA

This section presents an analysis of the data collected from participants through interviews. It also reports the findings that resulted from the researcher's interpretation of the data in the form of general description of the study, as visualized through the eyes of teachers.

There are different techniques of data analysis- each varies in its presentation depending on the nature of the research method used for study. Creswell (2003) found out that the process of data analysis involves making sense out of the raw data. It demands preparing and tailoring the data beyond the more common ways to specific types of qualitative research strategies (p. 190).

Purposely, this study was more inclined towards finding the perspectives of an identified section of educators. So, I adopted Creswell's four-steps method of data analysis. Creswell (1998) in this regard designed a method of data analysis which is ideal for phenomenological study. The method comprises of four steps:

1. Identifying statements that relate to the topic
2. Grouping statements into "meaning units."
3. Seeking divergent perspectives
4. Constructing a composite

Appropriately, I saw the four-steps method recommended by Creswell absolutely suitable for the analysis of this study. Therefore, in line with Creswell's recommendations, I divided the process of my data analysis into four stages.

Stage one: Identifying statements that relate to the topic

As a researcher, being in the initial stage of data analysis, I replayed the audio-recorded interview discussions several times in order to identify the information. When I was fully convinced about the intent of the responses, I sorted out the information into two headings as statements and key words. All the statements were further broken down into segments such as content, science lab, limited resources like chemicals and equipment, block periods, activities, extra responsibilities and large number of students.

Stage two: Grouping statements into "meaning units."

This is the stage where I grouped the segmented data into categories that reflected various characteristics (meanings) of the phenomenon as it was experienced. To get at the essential meaning of the experience, a common approach was used to abstract the

themes. According to Waters (2006), it is important to take care of the individual behaviours of the participants while abstracting themes.

Subsequently, from the collection of my data, I grouped the information into five broad meaning units such as teachers' preference, teachers' suggestions, hindrances to teaching science, teachers' concerns and teachers' attitude.

Stage three: Seeking divergent perspectives

In this stage, I considered the views of different participants looking at them in various ways. I found that all twenty-three science teachers in the district were very cooperative and they responded positively. All of them were honest and did not hesitate to share their views based on their personal experience. On average, there was consistency in the responses of my participants.

Sixty-one percent of the science teachers in Wangduephodrang District agreed that class seven integrated science is well organized and it is better than class eight science. More specifically, Mr. M.C. Menon pointed out that "there are errors in class VIII science textbook and the laws are twisted."

Surprisingly, responses about the possibility of conducting activities without science laboratory varied from 20 to 90 percent. My conscience about this big range tells me the practical implications of teachers' mentality and preparedness to teach. It seems like some science teachers are more committed than others. Kamlesh and Shakuntala stated that "Integrated science has no link either with class VI or with class IX". In this context, teachers need to understand that the curriculum in Bhutanese Education system is a spiral curriculum (from pre-primary to higher secondary level).

Seventy-five percent of the high school science teachers found students not able to cope with physics and chemistry in higher classes. These science teachers said that "Students entering high school with the background of integrated science are not able to understand physics and chemistry in class IX". It is believed that integrated science offers less quantity of physics and chemistry content-wise. Rinzin and Chhophel said that "Integrated science is below the level of class VII and VIII".

Really, it is sad to know that the revised edition integrated science (supposed to be teachers' reference) published in the year 2003 has not been supplied to all the lower secondary schools. As a result, all science teachers who are presently teaching in high schools and also thirty percent science teachers working in lower secondary schools haven't yet seen the revised edition integrated science.

Stage four: Constructing a composite

After completing stage three, having read various meaning units and divergent perspectives of participants, I sensed that it was essential to develop an overall report of the study as experienced by the science teachers. The report in general expresses the core theme *i.e. multiple perspectives of science teachers on integrated science*.

In relation to the literature review as stated earlier, I learnt that researchers and educators have found multiple perspectives on integrated science. On one hand, the

science teachers in the United States expressed difficulty in teaching integrated science because teachers were trained through separate disciplines. On the other hand, a group of researchers supported integrated curricula as they found success stories among educators through their studies in the United States.

However, there is a big difference between Bhutan and United States. Teachers in Bhutan are less qualified and less experienced as compared to the teachers in the United States. According to Dorji (2005), there are three types of teachers in Bhutan. First, poorly educated, untrained or poorly trained teachers, second better-educated or better-trained teachers, and third well-educated or well-trained teachers (p.72-76). If integrated science curricula have been successful in the United States, it is not necessary that it would be successful in Bhutan as well.

In a way, science teachers in Bhutan have emphasized a lot on the limited contents of integrated science. If the emphasis is inclined more towards content, Dorji (2005), through his research, declares:

> A well-educated and well-trained teacher can lead, facilitate and enrich learning experiences for pupils. For their part, pupils will enjoy them as learning opportunities rather than obliged tasks. The teacher possesses a recognized level of knowledge that is well above the level being taught to the students and is more interested in how the students learn. The teacher's inner security is high (p.76).

I fully agree with the above passage because a professional teacher is one who is well-educated and well-trained, a professional teacher would be able to facilitate measurable learning experiences for pupils. A professionally competent teacher would go beyond the textbook contents and prepare a comprehensive lesson plan suitable for children.

Nevertheless, this study reveals multiple perspectives of science teachers in Bhutan. When I looked at and considered the various ways in which different teachers experienced the phenomenon, I tried my best to use various meanings to develop an overall description of the phenomenon as teachers typically experience it. The highlight was on common themes despite diversity in the individuals and settings studied (Mason & Bramble, 1997). I interpreted the data and drew a conclusion about the phenomenon I was studying in the form of a composite of teachers' experiences to discover the practical implications of my findings.

Findings

Teachers' Preference

Findings form this research suggest that seventy-eight percent of science teachers in Wangduephodrang District preferred to teach science under three separate disciplines i.e. physics, chemistry and biology. According to the existing literature, Druger (1999) "Most science educators would agree that it is highly desirable for students to have basic knowledge in all major scientific disciplines, such as biology, chemistry and physics." Therefore, this preference matches with the preference of the majority of

science teachers in Bhutan. Seventy-two percent of science teachers said that "They preferred to teach science of three disciplines in lower secondary school."

Hindrances to Teaching Science

I noticed some impediments affecting science teachers' professionalism. Basically, from the observations, I found the complaints of teachers quite genuine as they are familiar with the common problems.

(i) Science Laboratory: Except for high schools, in most cases, lower secondary schools do not have proper science laboratories. There is a room for science chemicals and equipment in every lower secondary school which serves the purpose of science storeroom. However, it cannot be used as science laboratory due to lack of space. The size of the science room in one of the lower secondary schools measured 3.26 x 4.67 square metre. In fact, it is smaller than half the size of a normal classroom. Therefore, the idea of conducting experiments in the laboratory remains questionable.

(ii) Limited resources: Teachers complained about not having received enough resources such as chemicals and apparatuses. All the four lower secondary schools in the district reported having limited stock of laboratory chemicals and equipment.

(iii) Laboratory Assistants: In high schools, there are three laboratory assistants, whereas, only one laboratory assistant is placed in lower secondary schools. Science teachers found that laboratory assistants are not competent enough because they lack science content and technical expertise.

(iv) Classroom size: Teachers felt that they are not able to do justice in terms of providing equal practical opportunities to all the students due to large number of students in every classroom.

(v) Extra responsibilities of teachers: Unlike in day school, teachers working in boarding schools have to take a lot of extra responsibilities such as; supervision of morning, evening and night studies, meals, games and prayer apart from regular classes. They do not get enough time to prepare comprehensive lesson plans.

(vi) The status of science subject: Dophu and Rajendra pointed out that "An important factor affecting science teaching in Bhutan is that students do not take science seriously at lower secondary schools. It is because science is labelled as minor subject whereas English, Dzongkha and Mathematics are major subjects".

Teachers' Concern

In general, science teachers did not say that integrated science as a whole is bad but the teachers voiced their dissatisfaction mainly in terms of content. Moreover, teachers feel that the text does not have equal treatment of physics, biology, and chemistry. More importance has been given to biology whereas physics and chemistry are neglected. Therefore, science teachers' main worry was the fading of elective subject knowledge or diversion from the mastery of their specialized subject. Science teachers are also concerned about editorial errors in the integrated science textbook.

Teachers' Attitude

The attitude of teacher towards the subject plays a vital role. In this connection, Wright & Housebell (1981, as cited in Tshering, 1995), discovered that high school and junior high school teachers singled out teacher attitude as the most influential factor in developing students' interest in science. On the contrary, in the Bhutanese secondary schools, science teachers seem to be dissatisfied with integrated science. For instance, during the guided interview, science teachers in one of the secondary schools reported that:

> Integrated science is not challenging because most topics are environmental basis, not scientific basis and there are many negative aspects. If science curriculum at Lower secondary level means to prepare pupils adequately for higher science scopes, then definitely it is a mistake to integrate them. The course contents are not sufficient and good backgrounds for all three disciplines of sciences are not met. (Nanda, Tshering & Kelly, Gaselo Middle Secondary School, Wangduephodrang, 2006).

In my opinion, responses such as the above indicate the negative impression of science teachers about the subject and such responses might be a demotivating factor indirectly affecting students' interest in science.

Teachers' Suggestions

Teachers' suggestions are crucial for this study because they are the ones who have first-hand experience with the integrated science text and classroom instructions. I believe that teachers working in the field should know better than anyone else. From the analysis of the teachers' suggestions, I found seven workable recommendations on how to improve integrated science. They are:

First, teachers believed that providing equal importance to all the three branches of science adding some more contents in each discipline would best serve the purpose of integrated science.

Second, teachers felt that there are too many activities in the textbook and some are very simple and, of course, removing repeated and unwanted activities would be meaningful.

Third, teachers suggested revision of the textbook after every three years including new and challenging topics that could motivate students to study science and technology.

Fourth, some teachers suggested that adding more basics of chemistry and physics would enable students in better understanding science and enable them to cope better in higher classes.

Fifth, lower secondary schools need to make provision for creating proper science laboratory at this level to promote science practicals.

Sixth, prepare a budget proposal by the school head with a provision to purchase adequate chemicals and apparatuses every year at the school level.

Seventh, make provision to consider science as a major subject.

OVERALL SUMMARY

The General Report

This section provides a summary of the whole project. This research was an attempt to explore the views of secondary school science teachers on integrated science in our schools. The study began with sharing of author's personal learning experiences supported by explanation for the research. The literature review was done to gain additional background knowledge on the topic so that some comparison could be made with the present study. It was further developed by writing the details of qualitative research method. Since the nature of this study was exploratory and analytical, I adopted interview using audio-taping and field-notes for data collection as my research method. The data was collected from the science teachers working in Wangduephodrang district. Analysis of data was done following the technique designed by Creswell (1998) as a part of the project and finally concluded by giving the summary and recommendations.

The study has concluded by identifying a core theme called 'multiple perspectives of science teachers' whereby some science teachers supported the idea of integrated science while many opted to have physics, biology and chemistry separately. Besides, science educators are of the opinion that content should be seriously emphasized whether it is integrated science or bifurcated syllabus. In this regard, CAPSD could reconsider the viewpoints of science teachers and use their suggestions to improve the integrated science curriculum at lower secondary level in the near future. Additionally, to make the teaching of integrated science more effective, the relevant departments under the Ministry of Education could make necessary arrangements for timely supply of resources that are needed.

In data analysis, it was found that integrated science, like any other subject, has both advantages and disadvantages. The present advantages have been discussed in chapter three but science teachers expressed more disadvantages of integrated science. Most importantly, parents and educators may need to remember that the effectiveness of integrated science is not only affected by just one factor like inadequate content but also by other factors like lack of resources. Therefore, the findings from the study may have significant implications for the improvement of Bhutanese integrated science curriculum in future.

Experiences gained from the Study

I have gained a good amount of knowledge and skills by writing this project. The things that I have learnt throughout the process will create a lasting effect in my life because it is invaluable. I performed this study with full dedication in the subject for a good cause and not just to get my degree.

Eventually, to me it provided an opportunity on an attractive scale such as looking for resources, selecting references, how to be innovative at times, focusing on the subject, writing-rewriting, reading-rereading and thinking-rethinking, examining the interviews, making decision on the data.

Unquestionably, this study helped me to broaden my knowledge and changed my outlook positively. Although, data collection was not so difficult, I realized that one must be cool and patient during the process of data collection because it is time-consuming. However, as a novice researcher, I found transcribing and abstracting themes from the collected data a very challenging task. More than anything else, I understood at least one method of qualitative research, namely phenomenological study. The approach used for this study made me to devote a lot of time and concentrate on my work. Another interesting experience worth mentioning is that I read my draft copy more than twenty times and every time I realized that there were endless corrections to be made.

Finally, I have credited all the ideas borrowed from other sources. I believe the findings of my research would be meaningful to others. For that reason, I think my research regarding the "Perspectives of secondary school science teachers on integrated science in Bhutanese schools" will act as an eye-opener generating rewarding discussion among parents and educators in Bhutan.

Limitations of the Study

The study was carried out using the limited references especially from the point of literature review in the Bhutanese context. Intended observations were not possible due to distance between the researcher and participants. The findings of this study should not be generalized to cover the whole country because the research was done consulting participants based in one district due to limited time. The researcher, being novice in the field of research, lacks experience in data collection and interpretation. In Bhutan, the integrated science itself is passing through the initial stage of its development so the subject is still under observation.

Suggestions for Future Researchers

As far as the integrated science is concerned, this research is just one aspect out of many. There are several factors affecting the success of teaching integrated science which, I as a researcher, and my participants, might have overlooked. Although success and failure are part of any kind of study, I believe this study was intended for a good cause at least towards improvement of integrated science in Bhutanese lower secondary schools. Hence, I propose to highlight some points for future researchers. This is an investigation drawing attention only from the perspectives of secondary school science teachers. Future scope waits to explore on these topics:

- Finding the perspectives of students- what do students feel about science lessons?
- Finding the perspectives of other teachers- What do they think?
- Finding the perspectives of parents- What role can Bhutanese parents play to promote science education?

- Finding the perspectives of curriculum planner in terms of promoting future science and technology education in Bhutan.
- Finding the perspectives from the Bhutan Board of Examinations (BBE) results to explore how many students opted for science after class ten and how many qualify for professional studies completing class twelve- could be a comparative study of past and present trends.

Recommendations

Based on the findings from the study, I would like to recommend the following: A proposal be made by the Ministry of Education for the construction of science laboratories in all lower secondary schools; the heads of school at the lower secondary level need to prepare annual budget proposal for the procurement of appropriate chemicals and apparatuses required for teaching integrated science; wherever possible, science teachers need to improvise teaching aids (be innovative and use references apart from the textbook). If possible, consider science as a major subject; science teachers to view integrated science more positively, and, finally curriculum planners to revise the textbook adding some more content of physics and chemistry. In doing so, I hope the purpose for which integrated science was made would be achieved.

Conclusion

This research may be viewed seriously as the findings are based on experiences of science teachers. The mere supply of integrated science textbook and teachers' manual is not enough. In almost all lower secondary schools, the study of integrated science is hampered due to barriers such as lack of science laboratories, inadequate chemicals, inappropriate apparatus and the science teachers' negative outlook.

Nevertheless, this study provides suggestions of science teachers that may be useful to uplift the quality of integrated science in Bhutanese lower secondary schools. Therefore, it's high time that each and every science teacher find some means for innovation wherever possible through proper communication with each other.

Zangmo (2003) asserted "thinking critically helps in learning" but I strongly feel that science teachers need to improve their outlook towards integrated science in a more positive way, at least, from the point of view of time, resources, effort, relevance and the purpose of integrated science in Bhutanese context. However, science teachers should not expect a miracle overnight.

In a nutshell, integrated science is not a failure but a stepping stone to success. It needs further improvement because science teachers involved in integrated science teaching are professionally challenged. Finally, I would like to suggest that the quality of integrated science could be improved if both the field implementers (science teachers) and the curriculum planners take some initiative.

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Education for democratic citizenship
To learn democracy, children and young people must *do* democracy.

Els Heijnen – Project Advisor:
Support to Teacher Education Programme

Respect, tolerance, a willingness to learn from one another (and potentially conflicting views) are the values on which democracy thrives and which schools should teach and practice.

The mission of a public education system is to offer the best possible education to all children and young people it serves. Because some fundamental human values are unchanging, there are aspects of school life and learning that remain the same from generation to generation. On the other hand, the world in which children and young people are growing up is constantly changing, creating challenges for each new generation. There are, thus, aspects of school culture and classroom practices that will always be subject to change in response to such new challenges. Teachers and educators must carry this task forward – preserving the good of the past, while meeting the challenges of changing times!

Schools are places where diverse children and young people are gathered together. Their diversity may range from language and religion to ability, intelligence and social class. Such great variety does not exist in a private place like home. It exists where people from different private worlds are brought together on common ground, where private perspectives and personal values are brought to the surface around mutual problems and concerns. Compared to life at home, schools are like cross-roads or marketplaces where much social interaction takes place, to be transformed into *social learning*. When aimed at democratic ends, interaction in schools can facilitate children's development into thoughtful, responsible and active citizens who are tolerant, respect diversity, and recognize injustice. Educators must seize these teaching and modeling opportunities.

Every human being should be recognized as being a citizen. Children and young people are also full citizens. They are born with rights that are described in the UN Convention on the Rights of the Child (CRC) and as children grow into adulthood, new rights and responsibilities are acquired.

There is a great variety in the concepts and terminology used to define education for democratic citizenship, including civic education, social education, human rights education and citizenship education.

Education for democratic citizenship is a lifelong learning experience, preparing individuals for civic and political participation, which implies that rights are respected and responsibilities accepted, while valuing cultural and social diversity. In a world where negative role models, the glorification of violence, and materialism abound, children and young people may not acquire positive social skills or values simply by

being told to do so. If children are to truly learn what it means to be active and responsible members of a democratic society, such principles must become part of the working fabric of everyday school life. Children and young people need opportunities to explore values and their implications for themselves, others and the larger society!

> *"School [ ] is a key provider of education for democracy as it (a) allows a systematic learning of citizenship-related knowledge, (b) facilitates an early practice of democratic principles (e.g. participation, collective negotiation, representation), (c) is an institution of public interest, subject to accountability and public control, (d) is a space of law where various stakeholders work together, and (e) is a self-governing and self-developing organization."*

[5] UNESCO Tool for Quality Assurance of Education for Citizenship in Schools – pg. 26

Education for democratic citizenship corresponds with the overarching teaching and learning objectives and processes. It is *social* learning, learning *in* society, *about* society and *for* society. Its learning outcomes may include, for example, students becoming progressively more able to:

- question and respond constructively to the ideas and actions of others;
- contribute to discussions in ways that are assertive and, at the same time, attentive to and respectful of contributions of others;
- develop informed and reasoned opinions about societal issues (e.g. social, economic, environmental, political);
- understand and value cultural and community diversity (including in schools and classrooms) and be respectful of other people;
- understand, value and defend social justice;
- confront views and actions that are harmful to the wellbeing of individuals and communities;
- identify and frame their own questions and problems and suggest possible solutions;
- imagine alternatives to current ways of doing things.

In the context of learning and development this can be further focused on school-community issues such as projects to improve the school environment and ethos, including consultation exercises and the development of effective student councils; meaningful participation in decision-making about rules, rewards and sanctions; contributing actively to the development and operation of policies regarding issues like discrimination and bullying, and negotiating and helping to organize and taking part in community-based activities, including voluntary work in the local community.

Education for democratic citizenship is an important quality aspect of public education and should be an integral part of school self-evaluation and development planning. The central idea is that children and young people are enabled to develop the capability for thoughtful and responsible participation in different aspects of life in their communities and the wider society.

Everyone belongs to various types of communities – both communities of place (village; district; nation) and communities of interest (linked to a common concern or purpose). Democratic citizenship involves enjoying rights and exercising responsibilities in these various communities. Children and young people learn most about citizenship by *being* active citizens. Schools should model the kind of society in which active citizenship is encouraged by providing students with opportunities to take on responsibilities and exercise choice. This requires an open, participatory environment that recognizes the importance of actively involving children and young people.

The rights and responsibilities of citizens are reciprocal in many respects. If we all have a right to be treated with respect, then it follows that we also have an obligation to treat others with respect. If we all have a right to an opinion on matters that affect our lives, then we have a responsibility to attend to the views of others on matters that affect them.

However, it is also clear that perceptions of rights and responsibilities by individuals in different social groups are sometimes in conflict. Education for democratic citizenship must recognize the existence of such conflicts, and must help young people develop strategies for dealing effectively with controversy. Such strategies include negotiation, compromise, awareness of the impact of conflict on the overall well-being of the community and the environment, and development of well-informed respect for differences between people.

At the same time, young people need to learn that although individuals should always be treated with respect, some of the views some people may hold, including those associated with discrimination, racism or fundamentalism, are a threat to the well-being of individuals and communities, and must be opposed.

Can what students tell us make a difference? The answer is 'yes'! Feedback from children and young people on teaching and learning provides a practical agenda for change that can help fine-tune or more fundamentally, identify and shape improvement strategies. Their insights can help us to 'see' things that we do not normally pay attention to, but that matter to them.

Rudduck / Flutter (2004) "How to improve your school – Giving pupils a voice"

Education for democratic citizenship is important because every society needs people to contribute effectively, in different ways, to the future well-being of society. In addition, people are more likely to understand the reasons for policies and procedures, and, therefore genuinely subscribe to them, when they have been actively involved in developing them.

While all individuals share the rights and responsibilities of citizenship, regardless of status, knowledge or skills, it is not always exercised with effectiveness. A variety of personal and social circumstances can impede a person's capacity for active citizenship. For example, homeless people may not secure their right to vote, simply because they have no address. People feeling marginalized and discriminated against

may feel alienated. They often see no point in participating in a system that seems remote from their problems.

It is in the interest both of individuals and society as a whole, that the rights and responsibilities of democratic citizenship are well understood, that young people develop the ability needed to function effectively in a democratic society, and structures are provided to enable them to do so. Schools may be the best place to start such a process. The right of children and young people to participate in decision-making on matters that affect their daily lives is stated in the Convention on the Rights of the Child (CRC). Student participation lies at the heart of learning democratic citizenship through experience. In some countries, this implies that school-heads must include in their school development plans in what ways and to what extent they will involve students in decision-making processes in the everyday running of the school. As teachers and school administrators, we should *want* students to be active participants, voicing their views, listening to others, respecting different views and reaching consensus.

Some of us may find this difficult and we may think students should be protected from the diversity of opinions and potential conflicting views. It brings up questions like, if a textbook is controversial, should we use it or not? If a speaker says something that is potentially objectionable, should we avoid it? If a powerful advocacy group complains about something that is going on in the school, should we appease them? Or in short, should educational environments be conflict-free environments?

National public education systems must, I believe, serve a broad constituency and the needs of the community in all its diversity. For that reason, conflicting perspectives need to be systematically built into education. Conflicts are not, per se, negative. When *appropriately handled*, conflicts can be a community-building experience for schools, as they provide students with a genuine experience of democracy in action. Education for democratic citizenship cannot happen in an artificially conflict-free environment. Dealing with conflicting values is a key component of citizenship. The core challenge is learning to cope creatively with controversy and to make informed choices. Children and young people will learn these skills only if educators enable them to encounter situations that require using them.

Religion is often one of such “conflicts”. Should *all* students follow the religious values of the majority by making top-down decisions without wider participatory discussions and potential conflicts or would it be better to introduce such “conflicts” into the classroom – fairly, honestly, and, above all, educationally? The same may apply to issues around the right to be educated in one’s own mother tongue and the right to be included in mainstream education irrespective of learning ability or learning needs. To encourage critical reflection and problem-solving skills in students, we may want them to think about the pros and cons of different approaches, and actively engage them in the designs of programmes. We can turn diversity of views and approaches into opportunities for learning and community-building. It is important for students to learn about possible opposing opinions such as regarding evolution or sexual orientation, discuss and debate such and present their own point of view. They can learn from critics and defenders of certain views or approaches to inspire them to develop and use the citizenship skills that we talk so much about but so rarely have a chance to witness.

If we avoid discussing these differences in schools, we are imparting values by default. We are telling young people that we don't trust them to deal with diversity, present in their own communities. We are also telling them that we - adults - do not know how to deal with conflict and diversity ourselves.

Education for democratic citizenship must help children and young people to become open-minded and problem-solvers. Experience from other countries has shown how young people between eight and 18 years have made lasting contributions to their communities. In the process, they learned about citizenship and about working together – with diverse people - to make a difference. Not only adults, children and young people are also concerned about their schools, communities and the wider society. For example, a group of pregnant students organized a school-based day-care service in South Africa. A group of middle school students worked for three years to create a community playground in Sri Lanka. A group of 7th grade girls and boys developed a curriculum that focused on issues of gender stereotypes and gender-based harassment in Germany.

Adults may start guiding rather than leading students in such initiatives and develop an appreciation and respect for their students while watching them identifying issues, devising strategies to deal with them and evaluating their own progress.

I believe education for democratic citizenship is a responsibility of every teacher. It is not just a subject like mathematics or Dzonghka and must be considered part and parcel of every area of study and of all teaching and learning. All teachers have a role to play, which they may do through:

- the content of their teaching and most significantly, the way in which it is taught;
- the connections they are able to make between apparently disparate areas of study and young people's social and community experience;
- their relationships with children and young people and their readiness to listen to and take account of their views.

Much of education for democratic citizenship can take place through learning and teaching within subjects at all education levels - from pre-primary education to higher secondary education. An overall challenge for curriculum designers and planners is to ensure that each young person's entitlement to education for democratic citizenship through 'mainstream' teaching and learning is provided by means of a varied, carefully planned and progressive programme of learning experiences.

There are certain guiding principles to take into account by all teachers, such as that s*ocial* learning is as important as academic learning, that *how* children learn is as important as *what* they learn, that the greatest cognitive development occurs through *social interaction,* that *knowing* the children we teach – individually and developmentally – is as important as knowing the content we teach, and, that there are *social* skills that all children need in order to be successful academically and socially, such as cooperation, assertion, responsibility, empathy and self-control

The values of education for democratic citizenship, which are also values of the Child-Friendly School (CFS), are a sustaining force of human society and progress. Schools have a role to play in the development of a better, more equal and inclusive society. What children and young people learn now will have an impact on the future society and so education must have values at its heart and teach and practice those values.

References and resources for further reading:

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4. Rudduck/Flutter (2004) "How to improve your school – Giving pupils a voice"
5. UNESCO (2005) *"Tool for Quality Assurance of Education for Democratic Citizenship in Schools"*
6. *Living Values Education* (2005) www.livingvalues.net

See also: http://unesdoc.unesco.org/images/0011/001115/111581eo.pdf (A selected list of UNESCO practical and reference materials related to civics education)

EDUCATION in Bhutan - Looking Back and Looking Forward

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What features is a brief overview of education in Bhutan. First, there is a brief overview of formal schooling in Bhutan. Here, we were heavily indebted to the teaching expertise of educators from other countries and we tried to aspire to reach standards set outside our country**.** Secondly, there is a critical analysis of where Bhutanese education finds itself today, at a time when we envision free universal education and nation-wide literacy. In the move from education for a few to education for all, certain problems arise. Some of these problems will be explored, such as maintaining educational standards, deploying teaching personnel, training and upgrading Bhutanese teachers, qualification requirements for entering the teaching profession. The purpose of this paper is to initiate a discussion on how we can best move forward to achieve our national goals despite the obstacles along the path.

Historical background

Bhutan opened its doors to modern education in the late 1950's under the dynamic leadership of His Majesty the late king Jigme Dorji Wangchuck. He is rightly called the "father of modern Bhutan" because of the contributions he made to improving the lives of his subjects, especially adopting a modern system of education, and the opening of the first schools, discarding the age-old policy of isolation, and making Bhutan a member of various international organizations like the Colombo Plan, United Nations Organizations.

Prior to 1960's, most children received traditional education from parents and other family members at home while a few were sent to the monastic schools for religious education. Most boys were taught by their fathers, uncles, grandfathers how to do subsistence farming, how to handle and take care of animals, build shelters, weave mats, repair roof of the houses, etc. Most girls were taught by older women and mothers and sisters how to manage the household jobs of growing and preparing food, fetching water, caring for the younger children, spinning and weaving cloth, collecting firewood, sowing seeds etc. Children herded animals beginning at the age of five or six. Only a few got to have formal education. They were usually the sons and daughters of wealthy families or noble families. They were sent to schools in India.

Within a span of five decades, Bhutan has seen tremendous progress, especially in providing formal education to its people. We have already achieved a literacy rate of 59.5% (Population and Housing Census of Bhutan, 2005) and it is expected to be 100% in next few years. She has already set a national goal of "Education for All" by the year 2015 (National report on development of education, p.9). Just a decade ago, most of the students in schools were provided with not only free hostel, schools and teachers, but also all the necessities like school dress, shoes, sports attire, toiletries, blankets, mattress, etc. It is hard to believe that any other nation does all this, to educate its population. Bhutan is not a rich country to provide all these facilities; it has been one of the poorest countries in the world. However, the commitment of the

far-sighted King has shown his love for his citizens to provide education that need to fit in the modern society.

At the beginning, we did not have teachers of our own; all the teachers in Bhutan were expatriates who were hired from other countries. Their commitment should not be forgotten; they worked hard for our people. They adapted themselves to Bhutan and provided education and fulfilled the responsibilities they were entrusted with. We have not forgotten them. A few names in particular remain close to our heart because they dedicated their lives to uplift the youth of Bhutan. Two names that come to mind are the Late Father William Mackey from Canada and Father G E Leclaire who were principals in Sherubtse. There were many others, particularly from India, some of whom even dedicated their entire lives to teaching in Bhutan. Some came as young men and returned to their homeland as old grandfathers after serving for 30 to 40 years; others are still working here. They have been in Bhutan for last 30 to 35 years. Thanks to the commitment and the service of all the teachers who have served to educate the Bhutanese youth. The Bhutanese people acknowledge that they have worked well when we needed them and we are proud of them as committed teachers. Even today, 12% of the teachers in Bhutan (General Statistics, 2006) are expatriates and we appreciate their continued commitment.

It has been the system of formal education that has made a great difference. The teachers recruited at that time served well, and the heads knew exactly how to run the schools. Those teachers who taught them were highly qualified; almost all the teachers were degree-holders, having at least a Bachelors degree in education or in general education. It did not matter which class they taught, but preference in recruitment was given to higher qualifications. In every school that somebody visited, a gentle-looking middle-aged gentleman or woman occupied the head teacher's office. They were well-experienced and had been in the field for many years as a teacher and then as a head. They earned respect by their age and by the number of years in service. Their words were well considered because they were senior members in the organization. The system ran very well because the persons on the top deserved the respect from everybody and were respected. The directives they gave were almost like law and people knew that what he would say because he was experienced and knew well. I feel this profile of the system has made the organizations/schools very strong and academic achievement was good then. Apart from these, the teacher-student ratio was well maintained. The head teacher and the officials involved did effective monitoring, as there were only a few schools to be monitored. Most importantly, the teachers were allotted the classes as per the right combination of their subject and they were competent enough to handle the subject they were allotted.

Education today

Today, our leaders, the top officials, diplomats, important responsibility-holders who are working in shaping Bhutan to adapt to changing times, are the products of these committed teachers. The standard of education provided in the early schools was commendable. These were the times when classes III and IV could read and write letters and applications. Many of the top officials today may not be highly qualified with academic degrees but they are occupying important government posts and serving well, as their experience, their understanding, and other job-related skills are

commendable. They are managing well not only in running their offices and departments, but also succeeding in important international forums and seminars. These officials have been able to convince the international community of Bhutan's achievements and progress. Because of them, the world has started looking upon Bhutan as a model of sustainable development techniques to be adapted/modelled by other countries. Bhutan has not compromised its important culture just for the sake of development alone; the two move forward simultaneously. We have been able to do this because of the farsighted king and the officials who were highly educated if not well-qualified in formal education in other developed nations.

Although we adopted the modern system of education very late in comparison with many other countries of the under-developed world, our literacy rate is much higher now than that of other developing countries. Owing to the small demand for an educated labour force in the job market, many of our students did not pursue higher studies; rather they took up jobs, which were readily available. If someone had completed primary education, jobs were not a problem since around 85% of Bhutan's population did subsistence farming. For those who completed secondary education, the jobs were a matter of choice just about 10 to 15 years ago. Now, the scenario is changing. The government is becoming more concerned about the qualifications required for entering into the job market. This is forcing more students to pursue higher studies to meet the demand of the job market. It's not surprising to see bosses whose formal academic qualifications are minimal in comparison to those of his/her subordinates. This does not matter as somebody who is in the job is doing well and has fulfilled the needs of the time though that particular job today may be demanding higher qualifications for entry. This scene may not last long as an increasing number of highly educated and specialized personnel are coming into the job markets.

> The growing consciousness among parents to educate their children is pressurizing government to open more schools around the country. Today, the government has opened as many as 512 schools and institutions (General Statistics 2006) spread all over the country. To ease the pressure of enrollment and to provide facilities in the needy areas, opening of community schools is being encouraged through a decentralized policy, whereby Dzongkhag Education Officers are given power to open a community school in their jurisdiction. Also, opening of private schools is encouraged and already we have a few schools opened up to higher secondary levels; the momentum is picking up.

We have now community schools in almost all the villages with at least a teacher each. Even opening of these many schools has not eased the pressure at higher secondary level. Less than 50% of students who pass class X have the chance to pursue higher studies. The rest are left with no option but to take up whatever jobs may come their way.

As said earlier, Bhutan is making progress in education. Many community schools are opened; many primary schools are upgraded to lower secondary and middle secondary and to higher secondary school levels. We have as many as 21 higher secondary schools now (General Statistics 2006), apart from the private ones. There is no doubt that we have been able to provide more education to many more remote areas. But are we ensuring the quality of education that needs to be imparted? Has this not resulted in a compromise on quality for the sake of quantity? While upgrading schools, have we

provided adequate facilities that are needed? Is the manpower deployed strategically? Those in education would do well to sit down together and analyze the questions properly. There are doubts among some whether we are heading in right direction.

> Some people say today that the quality of education has gone down drastically than in the past. Is this true? If yes, what have we done to overcome this criticism and regain the standard that was once admired and respected by all? Where are we going wrong? If the criticism is unfounded, are we up to the standard? If yes, why do some people feel that standards have fallen? Some people feel that there is enough educated manpower loitering in the market but not actively engaged in the job market. We need to answer all these questions if we are to move forward in maintaining the standard of education for the entire population.

The government has been spending a huge amount in meeting the standard of education as per the requirements of the time. The budget outlay for education for the 9th Five Year Plan is Nu 10,209.404 million, which is 15% of the total government plan outlay (9th Five Year Plan, Implementation Plan, Education Sector, 2003, p.10), itself is indicative of this. The curriculum that was followed a decade ago has been completely replaced by a new curriculum that is designed to meet the needs of modern Bhutan.

> *The fundamental tenets of the new curriculum were that it consists of syllabi relevant to the needs of Bhutan, stressing the history and culture of the kingdom, aiming to turn out mature students ready and willing to play an adult role in the growth and developments of the country* (ED, 1993 cited in Dorji, 2005 p.97).

The very system of learning has changed from traditional learning to a new approach to primary education (NAPE) with assistance from various donor agencies. New textbooks have been written by CAPSS with assistance from experts from outside. Up to class VIII, the whole set of old textbooks has been changed and Bhutanese curriculum implemented. Many teachers have been trained in foreign countries in teaching in new ways and management courses. In turn, these teachers have been conducting nationwide in-service programmes like seminars, workshops for other teachers. In general, all the primary teachers in the field are exposed to the new system of education that is being implemented. Collister & Etherton, (1999) cited in Dorji (2005) state,

> *The emphasis would shift from teaching to learning; and at any one time, children could be working on different activities such as looking up reference books, model making, devising charts or recording fieldwork observations (p.100)*

Even the training centres are accordingly designed. We can see that tables, chairs, desks, and other teaching resources are made in the ways that meet the demands of new curriculum in the two colleges of education today where the new recruits are trained. Huge amounts have been spent in buying various types of teaching aids and in supplying them to the schools. No schools were left out with limited resources. Pilot schools were more generously equipped. Several surveys have been done and the impact of the new system was studied. The officials involved was reported that the system is working and matching the needs of the time.

But I am afraid whether we will be able to justify the inputs the government has made, in the light of the skepticism that the parents and observers have in their mind i.e. "education standards are going down". I personally feel that there is no way the standard should go down with such a heavy input in human resource and the material resource that the government has put in place. If the standard has really gone down, we should start asking ourselves where we are going wrong. Is it that the manpower trained did not do enough to improve the system? Was it too early to change the system? Do we have a balance of resources in urban and rural schools to uplift the standard as the standard also means the over-all performances? These are questions we have to ask. With so much input in terms of human and material resources, the expectations today are for better standards in comparison to the earlier times. We are better equipped now in terms of facilities. With coming up of road networks, telecommunication facilities, better postal services, upgraded working environment, readily available resources in the markets, there should not be a compromise in the quality.

If we ask the people involved in the field about the quality of education in comparison to the earlier times and of the standards elsewhere, everybody says that the standards have gone down. The standard of English is not up to the expectation and to address the concern, the Centre for Educational Research and Development (CERD) investigated the issue and published *The Silken Knot: Standards for English for Schools in Bhutan* in 2002 and the new English curriculum is based on the recommendations made in *The Silken Knot*. If the standard of English has gone down, all subjects that are taught in English have been affected too. The problem-solving abilities of students especially in mathematics and science are becoming poor as they involve English translation into equations. If asked why, the immediate response of people involved in the field would be large numbers of students in the classes, lack of teaching aids, teacher shortages, not the right combination of teaching subjects etc. If these are genuine reasons, is it not high time that we work together and put things in the right track before it's too late? Or, do we just complain alone and let things go by, which might affect the upcoming generations.

It's true that, at present, there are large numbers of students, but accordingly the number of teachers have been increased. The teacher-student ratio remains almost unchanged even today. This should not be the excuse for low standards. Then where might we be going wrong? We will have to find out whether the placement of teachers is rightly done as per the requirements of the schools. If we compare the urban schools with the rural schools, the differences are obvious. There are hardly any schools in urban areas where we have teacher shortages; rather we might find some teachers taking fewer periods than they're supposed to take, which is compensated for by the rural schools and the ratio looks fine but the reality is different. There are schools in the far-flung villages with a single teacher with seventy to eighty students with various sections starting from pre-primary to classes VI- all to be managed single-handedly. In some cases, these schools are three to four days away from the Dzongkhag headquarters. The teacher has to go to the Dzongkhag every month to collect salary and to do other official works. The journey to and fro takes 7 to 8 days. He's officially on duty and the school is closed down. If he is away from the school for 7 to 8 days in a month, what kind of quality do we expect from him? What quality students are we producing when the teacher is missing these many days from the

school? If this is the case, then does opening of community school support “education for all”? It calls for some serious thoughts to address these problems.

Some proposed solutions

If this is the situation, why can't we merge together two to three community schools and provide enough teachers so that others, while on official duty, could substitute the absentee. Like in the past, we can think of opening of hostels for the school, which are merged together. The parents may be encouraged to visit school every weekend and do the necessary washing required for the children. This is still a practice in some primary schools and is working well. No doubt, hostel life cannot substitute the warm hearth and parents love', but the school need not be closed down because of the teachers' absence. In doing this, we will have enough teachers for a particular school. If we have enough teachers, each teacher may be encouraged to teach a particular subject, whereby it becomes the responsibility of the teacher to produce best results in his/her subjects. Thus, there is indirect competition among teachers to excel in his/her subjects. In the class teacher system, a particular teacher goes to the class and spends whole day in the same class changing the subject after every bell. Is it not monotonous for the students to see the same teacher throughout the day in the same class? Do the students feel that other teachers in the school as their teachers if they are not coming and teaching them, or do they feel that the teacher who spends whole day in their class alone is their teacher? We have been encouraging class teacher system, teaching all subjects. Different people have different abilities in different fields. One may be good in English but poor in mathematics, and likewise for all the subjects. Are we not trying to become a Jack of all trades and master of none? We will have to weigh the options as the same resources deployed in different ways might make the difference in uplifting the standards of education in our schools.

To meet the demands of the community and primary schools as discussed earlier, the government has spent huge amounts in training the Bhutanese teachers for multi-grade teaching. Many of these teachers were trained in foreign countries. They have the capabilities to do the job they're trained for. Are these trained teachers placed in schools where their multi-grade teaching skills are required? Many of these trained teachers were immediately posted elsewhere, some as heads and others as administrative officers, where their specific teaching is not directly involved. The schools where there are serious needs are left at the mercy of the fresh graduates from training institutions who we feel have lots of potential to meet the demands of the school, but the reality may not be as expected. He/ she may not have the experience to meet such expectations when alone in the field. I feel that there should be a system of keeping records and posting teachers with the expertise they are trained for and where their service is needed. There should not be compromise on the resources spent; otherwise, it's a total waste of government resources if one is posted an area where the training received cannot be applied.

The government is already aware of the fact that teacher's requisite qualification is a must if we are to move with the time and to maintain a high standard of education in the schools. The entry qualification to become a teacher has been raised from class X to XII even for primary level. This means that now we are going to have teachers in all the schools with a minimum qualification of Bachelor's degree. At the same time, other teachers who are less qualified are given opportunities to raise their qualifications

either through distance education courses or by appearing (Class 10 & 12)at board examination as private candidates. When the government has put in so much of resources and has given opportunities to move with the time, it's the duty of the teachers to reciprocate in the same way. This already is a step ahead; education has undertaken to uplift the standard in the schools. There should be a strong system established to check the appropriateness of courses we are offering and whether the courses are really done by the teachers to enhance their qualifications. If the teachers are not able to teach at the levels expected after the course, it becomes a total waste of the resources.

To meet the demands of the increasing number of students in the lower, middle and higher secondary levels, the government has been upgrading many schools. With this initiative the government has taken, we have been able to provide education to the students who otherwise would not have a chance for further education. But many of the schools, which are recently upgraded, have the facilities that were there earlier without any extra resources added to them. Schools are having difficult times in managing with the limited facilities. In some cases, even the whole faculty has remained the same without any additional manpower or resources- only the school has been upgraded. It's very important at the initial phases of establishment to impart quality education, but the faculty themselves are not confident to teach at the higher levels all of a sudden. In some cases, not even a single lower secondary level trained teacher has been posted, the whole set of faculty is primary trained but the school has been upgraded. This is happening not because we have the limited resources at our disposal but because we have not properly planned our resources and utilized them at proper places. When a school is upgraded, if the teachers from a well-established school are transferred from within, these teachers, already experienced in handling the classes, and resources will be in a better position to set the school well at the fastest possible time.

Many of the parents are very skeptical about these problems prevailing in the recently upgraded schools and want their children to be admitted in well-established schools. Because of this, we have numerous problems during the admission. We have now the policy of providing education in the student's own Dzongkhag, and the child has to be with his/her parent. To implement the policy effectively, there should be a balance of resources in all the Dzongkhags. This can only be done if we do mass transfers of the experienced teachers who have been in the established schools for years. Well-maintained records and the designated people in the Dzongkhag need to work closely with the education headquarters and share information as per the needs of the schools.

Conclusion

The Education Ministry is working hard and striving towards achieving the national goal "Education for All". This can only be achieved if and only if every member in the Education Ministry realizes the importance the government attaches to education for all the children of this country. With the right people in right places, I hope that we will be able to overcome all these problems in the shortest possible time and maintain a high standard of education, which Bhutan is proud of in the world. I am also confident that we can be a model of excellence and quality education during the reign of our 5th Druk Gyalpo.

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Locating Homeland in Bapsi Sidwa's *Cracking India (Ice-Candy Man)*
(now made into a Bollywood film called *The Earth*)

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William Safran states that "diaspora are deeply invested in a memory, vision, or myth about the original homeland to which they hope to return" (quoted in Needham 2000, 13). The diaspora's deep-seated memory of the past is a result of physical displacement from the original homeland. Having lost the familiarity of the social and cultural setting, the diasporan try to return or connect to their original homeland by recreating past events. The return is more of an imagined account than a literal one for the diaspora writer. Rather than suffer from rootless ness, the writer tries to overcome the physical and psychological crises by maintaining a link with the homeland. The link is established by delving into the past history to identify the ethnic origin and the homeland. The need to re-live history and locate home is so intense that the attachment to homeland comes clearly out in the writing. Salman Rushdie claims that "our physical alienation from India almost inevitably means that we will not be capable of reclaiming precisely the thing that was lost; that we will, in short, create fictions, not actual cities or villages, but invisible ones, imaginary homelands, Indias of the mind" (1991, 10). Hence, it could be argued that Bapsi Sidhwa's *Cracking India* (1991) is an account of an imaginary homeland "concerned with the individual's or community's attachment to the centrifugal homeland" (Ramraj, 1996, 216). The attachment is established through a historical reconstruction of the great upheaval that plagued the Indian subcontinent with the departure of the British. The events, incidents and happenings narrated through Lenny's eyes give an unbiased position of the Parsis during the Partition. This paper will trace the reconstruction of an imaginary homeland through a historical narrative, revealing how the writer articulates an unconscious attachment to her homeland and her ethnic identity, despite traumatic historical and cultural dislocation.

Unquestionably, the narrative of the novel is infused with traces of nostalgia over the loss of home and displacement. Living in a foreign land, there is a compelling need to cling to the memory of the past. To overcome the feeling of rootlessness and to keep alive one's culture and tradition, the immigrant attaches self to memory. The narrative encapsulates the sensitivity of a diverse historical climate—a portrayal of historical accounts based on the recollection of the Partition of India. Sidhwa's position as a diaspora in the U.S. echoes Rushdie's sentiments: "It's my present that is foreign, and that the past is home" (1991, 9). It is true that the immigrant's position in the new land is not always secure; it is often beset with a sense of longing and belonging. The immigrant often feels alienated and displaced, feels the desire to integrate into the mainstream society, yet, at the same time wanting to keep alive memories of the homeland. Rushdie claims that "exiles, or emigrants, or expatriates, are haunted by some sense of loss, some urge to reclaim, to look back, even at the risk of being mutated into pillars of salt" (1991, 10). Because of the loss of the familiar milieu, migrants are forced to "make a new imaginative relationship with the world" (quoted in Sanga, 2001, 19). It becomes imperative for the writer to root himself or herself in

ideas and memories rather than places. The re-enactment of an imaginary homeland is a phenomenon of migration and displacement. Hence, the writer feels an urge to recreate and establish the relationship by digging into the past and building an imaginary homeland.

Consequently, Sidhwa's narrative in *Cracking India* could be a diasporic sensitivity to recreate the past through a historical narrative. Forced by cultural displacement, egged on by a desire to re-inhabit and re-enact the past, Sidhwa reconstructs an imaginary homeland from a historical angle. She takes the persona of a girl-child, Lenny, and, through her, Sidhwa gives a subtle and sensitive rendering of the past, giving it a different mode of experience and the writer's memory of history as a girl child. The history of pain seems to permeate throughout the novel. The historical and political aspects of the Partition unfold graphically through the eyes of young Lenny. Since her time is spent in the company of the adults, her perception of the world is from an adult's perspective—observant and intelligent, which gives a naturalistic approach that enables the narrator to uncover patterns of historical significance.

Considering the customs and tradition depicted in the novel, Sidhwa also exposes the spirit of the period that brings out her multiple displacements in the figure of Lenny. Lenny is an eight-year old polio-infected girl and she is unable to go to school unlike any other normal child, and has no friend of her age. She stays home and roams the street of Lahore with her ayah. Her little world is filled with loneliness. Lenny says, "My world is compressed. Warris Road, lined with rain gutters, lies between Queens Road and Jail Road: [...] a distant canal cuts the road at the periphery of my world" (11). The excerpt undoubtedly reveals Lenny's world and her displacement. Her gender is another cause of displacement. Despite her intelligent observation, it is beyond her faculty to comprehend the constant gendering that goes on around the house. As the time goes by, Lenny is often hit with anxiety and fear. The extract evidently reflects her apprehension: "as the years advance, my sense of inadequacy and unworth advances. I have to think faster—on my toes as it were...offering lengthier and lengthier chatter to fill up the infernal time..." (88). She tries harder to fit into the circle, but the snide remarks about her ungainliness and her dark complexion undoubtedly distance her further, even from her parents.

Sidhwa's portrayal of the relation between the mother and the daughter is a clear indication of Lenny's alienation. Moreover, since Lenny belongs to the Parsi community, there is an additional displacement. Lenny says that, "my nuclear family is reduced to irrelevant nonmenclatures—we are Parsi" (102), and the Hindu children yell in a derogatory manner, calling them: "Crow eaters!" (108). Lenny's references to these insults definitely suggest Parsi marginalization from the mainstream Hindu and Muslim society. They neither fit into the Hindu setup, nor into the Muslim because they do not belong to that land- they have come from Persia bringing with them a different religion and cultural setup. The encounter at Lawrence Gardens is a humiliating experience for Lenny. Her shadow glides over a Brahmin Pandit, eating out of a leaf-bowl and the expression on the Brahmin changes to that of "terror, passion, and pain," because her shadow has violated his virtue. She says, "I am a diseased maggot. [...]. Now I know surely. One man's religion is another man's poison. I experience this feeling of utter degradation, of being an untouchable excrescence, an outcast" (125). It is clear that Lenny feels that they (Parsi) are an outcast from both sections of the society. Thus, Sidhwa's depiction of the multiple displacement of her

child heroine conveys her own sense of alienation. The shift of narrative from self-subjectivity to the child's adult consciousness re-enacts her past, thereby building a continuity of the past through the eyes and voice of the girl-child, Lenny. Moreover, she gives an insight into and the taste of the environment that she grew up in. Her allusions give realism to the description of the cultural and historical milieu that defines the root that attaches Sidhwa to her homeland.

Stuart Hall maintains that "all notions of identity, howsoever fractured and displaced, have a real set of histories that are anchored within real conditions ..." (quoted in Sanga, 2001, 21). In the spirit of what Hall says, Sidhwa's writing about Parsi history provides an authentic account of the Parsi diaspora, thereby restoring the past. Sidhwa's reflection on the Parsi diaspora from Persia is to be gripped by the conviction that she too has a history to reclaim like Rushdie's Bombay. The effects of migration bring to the forefront the idea of nation and a sense of national belonging: "Identity is not merely grounded to recover the past, it is the way in which writers are situated and constructed by the workings of the past" (Sanga, 2001, 21). Regardless of where she is, her reference to Parsi exodus and settlement in India unassumingly restore her identity and the past. Her description of the Godmother, Oldhusband, Slavesister, Mother, Father, Electric aunt, cousin and Dr. Bharucha epitomize the Parsi community and their cultural codes, allegiances, and their political ideals. Dr. Bharucha's reference to the Parsi exodus in the novel ostensibly signifies an association to Parsi history: "When we were kicked out of Persia by the Arabs thirteen hundred years ago [...] we got into boats and sailed to India!" He argues that although the Indian Prince refused to give them entry into the Indian land with a symbolic cup of milk, the Parsi forefathers stirred a spoonful of sugar in the milk, to convey that "with their decency and industry sweeten the lives of his subjects" (47). Dr. Bharucha's allusion to history authenticates Parsi history and identity.

The get-together of the Parsi community under the leadership of Dr. Bharucha at the Fire Temple in Lahore clearly underlines their fear as a minority. They were loyal to the British, now with the question of the British departure from India, the Parsis are in a dilemma, wondering to whom to owe their allegiance: "If we are stuck with the Hindus, they'll swipe our business from under our noses, and sell our grandfathers in the bargain: if we are stuck with the Muslim's, they'll convert us by the sword! And God help us if we're stuck with the Sikhs!" (46). At this juncture, the Parsi community decides to remain neutral: "Let whoever wishes rule! Hindu, Muslims, Sikh, Christian! We will abide by the rules of their land!" (48), since they are not sure which way the wind will blow. Therefore, the novel is structured around the interplay of memory and narrative discourse of history, revealing how a migrant's identity is often shaped by the feeling of marginalization and having to cope with differences and otherness brought on by the loss of a sense of history and belonging. Thus, Sidhwa's depiction of Parsi history and community reveals her unconscious attachment to her homeland and her community, claiming that she too has a history and identity to reclaim.

Interestingly, Sidhwa gives a picture of an unbiased view of the Parsi community to the religious schism fueled by the talk of Partition. Sidhwa's insertion of the neutral position of the Parsi community conveys a notion of linking her cultural identity and security. Since Parsis are a diaspora community in Pakistan, they have learnt to adapt to whichever country they belong and to take on the colour of the predominant culture. Thus, through the observant eyes of Lenny, the tale of horror and brutality

unfolds graphically. Lenny gives a gory detail of the chaos in Lahore between the Muslims, Hindus, and the Sikhs:

> Sikhs, their wild long hair and beards rampant, large fevered eyes glowing in fanatic faces, pours into narrow lane roaring slogans. [...]. A naked child, twitching on a spear struck between her shoulders, is waved like a flag: her screamless mouth agape, she is staring straight up at me" (144).

The image of the brutally-pierced child infuriates Lenny. She feels that under the name of religion and nationalism, young children become an ironic symbol of freedom. She gives the perspective of the horror from different viewpoints; and a vivid account of Muslims killing the Hindus, and Hindus burning down Muslim houses: "I stare at the tamasha, mesmerized by the spectacle. It is like a gigantic fireworks display in which stiff figures looking like spread eagled stick-dolls leap into the air. [...]. Charred limbs and burnt logs are falling from the sky" (147). The whole city burns for months and months. Lenny's description of the decapitated body in a gunnysack on the sidewalk is gruesome. She witnesses violence and terror of communalism. Lenny's narrative is so striking and pictorial that the horror is intensified. Sidhwa in her interview with Jussawalla claims:

> Scenes and the fires all over Lahore were part of my memory. The fires were like blood coloring the sky. It was a fearful sight. The chanting of slogans was again something very horrific to my child's ears. It was a threatening noise, full of danger to my family and my friends. So these emotions and images were in my mind, and I wanted to write a story of the Partition" (200).

Sidhwa states that the picture of the burning city is embedded there in the inner recess of her mind, which underlines the impact of the brutal Partition in the writer's mind. Since she is in a foreign land, the urge to connect self to homeland brings back all the memories. And her memory reconstructs the turbulent historical era of India. Therefore, Sidhwa's heritage of being a diaspora in India and the neutral position of the Parsi gives a fair advantage to witness the communal riots from a safe distance. She says that, "The struggle was between the Hindus and the Muslims, and as a Parsi, I felt I could give a dispassionate account of this huge, momentous struggle" (Bahri web). Although she says that she wants to give a dispassionate picture of Partition, however, it cannot be denied that the Partition did not have an awful effect on the individual. The horrifying picture of the Hindu-Muslim riot suggests that the impact is imprinted in her mind:

> There are certain images from my past which have always haunted me. Partition was a very violent experience for everybody in the Punjab. Although I was very young then, I saw chance killings, fires, and dead bodies. These are images which have stayed with me" (Singh 292).

Perhaps, Sidhwa feels that despite the horror of the Partition, even that part of brutal history has certain association to her life. The fact of being in a new situation, of never being able to forget the feeling of familiarity linked with the idea of home, shapes the migrant's identity. Apparently, her assertion of political binary of the Muslims and the Hindu advocates that she is rebuilding her past world through memory have stayed with her over the years. Her location in a foreign land and her reconstruction of the

historical affair alludes to her attachment to that scarred geography and its history, creating an imaginary homeland.

Lenny's godmother is a symbolic representation of the neutral position of the Parsi community. She offers help and assistance to whoever is in need regardless of caste, creed, and religion. It brings a sharp contrast between women and men. Men seem to be the destroyers, while women in the figure of Lenny's godmother seem to be the healers. Sidhwa's portrayal of the Christ-like-figure in the godmother conveys the harmonious nature of the Parsis and her attachment to that community that brought a certain healing effect to the burning city of Lahore. Although the Parsi advocates a neutral position, the horror of communalism evokes a sense of compassion; they shake off their passive neutrality and become the agent of a healing process. The family has a camp just for rescued abused women and they return these women to their respective families. The horror of communalism and the Partition has a psychological impact on an eight year old: "My heart is wrung with pity and horror" (226). Lenny says, "I burst into tears. I feel I will never stop crying" (229). Despite the horrific condition in the city, she gets a certain consolation out of her godmother's presence and the rescue attempts. They share a complementary relationship. Godmother has no children of her own and therefore she can shower all her love and affection on Lenny, while she obtains emotional sustenance from the godmother. Lenny says: "She hugs me. She is childless. The bond that ties her strength to my weakness, my fierce demands to her nurturing, my trust to her capacity to contain that trust—and my loneliness to her compassion—is stronger than the bond of motherhood" (13). Her relationship with her godmother substitutes her mother's love and absence. Her godmother is the source of power and has an uncanny strength, and plays a vital role in rescuing women. Lenny observes that her godmother has established a network of espionage to rescue the fallen women. She knows that "Godmother can move mountains from the paths of those she befriends and erect mountainous barriers where she deems it necessary" (223). It is she who attempts to rescue the abducted ayah from the clutches of her pimp husband, Ice-candy man. Sidhwa maintains that she had to create the godmother as an undaunting woman, so that she becomes the source of both physical and emotional support to Lenny: "She has to be empowered in order to save ayah, in order to support Lenny's isolation. She is again a great learning experience for Lenny, a kind of role model which her mother is not" (Jussawalla, 1992, 204). By empowering the godmother, Sidhwa makes her the epitome of the all-encompassing compassionate woman.

The ayah's role is very significant in the novel. She is not only a depiction of a gendered and a displaced figure for a nation that is traumatized and ravaged; she is representative of a sexualized gendered figure. In the beginning, the whole atmosphere in the city of Lahore is that of camaraderie and jovility, and ayah becomes a common ground for men of different religious and social milieu to congregate. The ayah's non-discriminating attitude towards all her admirers makes her a "symbol of the composite nature that India is" (Singh: 1992, 28). The ayah and Lenny often go off on a jaunt into the city with one or the other suitors and see the world unfolding before them and the gradual emergence of the pattern of communal discord. Amongst her suitors, the Masseur, the Ice-candy man, the Pathan, and Yousuf are prominent. Thus, it could also be said that ayah stands as a figure of mother India, people from diverse background living in harmony. Ironically, with the talk of Partition, harmony is disturbed; everybody becomes a different person. Lenny starts becoming aware of

religious bigotry. She says, “one day everybody is themselves—the next day they are Hindus, Muslims, Sikh, Christian. People shrink, dwindling into symbols ...” (101). Apparently, ayah becomes a token. Her very own suitor Ice-candy man abducts her. Her abduction evokes a sense of betrayal, loss, and pain and transmutes the tone of the novel. From a mother figure, she becomes a symbol of ruined India. The Ice-candy man who languishes and recites poetry becomes her pimp later on in the novel. There is literal and physical rape—the partition of India as a rape of the motherland and the rape of women in both the section of the Muslim and Hindu communities. Sidhwa says that “victory is celebrated on a woman’s body; vengeance is taken on a woman’s body” (3). Thus, the godmother makes sure that the ayah is rescued and handed over to her family in Amritsar. It appears that Sidhwa’s writing about the traumatic experience is a re-enactment of the past—memories of rape and plunder, a part of the historical syndrome of the Partition. Her detailed reference to all the events is more of her urge to root into ideas and memories, revealing her attachment to homeland. Thus, she tries to recreate and establish the relationship by digging into the painful memories and building an imaginary homeland on a historical context of the Partition giving it an “elegiac dimension” (Tripathi, 1995, 110).

Furthermore, the portrayal of the Ice-candy-man is not only a picture of plunder and brutality; he is an agent for the Partition and pimping of India. Since ayah stands for the plundered body of mother India, the figure of the Ice-candy-man stands for the politicians, who actually offer false promises to the people. Sidhwa asserts that, “part of my title Ice Candy Man did reflect on ice candy men, i.e., manipulative politicians who hold out false candies to people” (Singh, 1998, 293). Undoubtedly, the Partition is the upshot that has “emerged out of conflict over the state: a conflict about whether a single successor state ought to acquire the rightful authority to enforce its judgements over the entire population and territory” (Khilnani, 1997, 202). Sidhwa, in the course of her narrative, mentions Jinnah, Nehru and Gandhi and conveys the insidious nature of their politics that resulted in the division of the country. Sidhwa sarcastically refers to Gandhi’s politics as “ice lurking deep beneath the hypnotic and dynamic femininity of Gandhi’s non-violent exterior” (96). Thus, the Ice-candy man is an embodiment of the manipulative politicians. He is the medium that burns and cracks the country into two, an agent that breaks up the country with fire and bloodshed.

Moreover the portrayal of the Ice-candy-man also reveals the brutish nature of man. Sidhwa maintains, “I am showing how man’s nature changes into something very bestial when savage things happen” (Jussawalla, 1992, 205). Sidhwa’s depiction of the Ice-candy-man shows the double-sided nature of man. He is all promises one moment and the next he becomes ayah’s abductor and the agent of her dishonour. Sidhwa comments that:

> Ice-candy-man forced her into prostitution as a lot of kidnapped women were forced into it. From the beginning he had lusted for her, and at this point, affected by the bestiality around him, he took advantages of the situation” (Jussawalla, 1992, 205).

He becomes a symbol of the treacherous, dangerous, and contemptible man. He not only stands for a destructive force, he is like a leech who sucks the blood and spirit out of ayah and makes her a living dead. Thus, Sidhwa goes back in time and

recreates that part of the historical milieu of which she was also a part, thereby asserting her link to a historical root. Her memory of the past reveals the pain embedded in history and the selfish nature of the politicians. Hence Sidhwa's reference to the Partition is to "reconstruct the minutiae of elite intrigues, to show Partition's logic according to some intricate political calculus allegedly deployed by the actors involved" (199). So her allusive suggestion not only highlights the calculating nature of the politicians, but by this reference to the historical and political situation, she shows her attachment to that homeland regardless of its negative elements.

Furthermore, Sidhwa, in the narrative voice of Lenny, gives a thorough description of the imagery of the birth of a new country. Lenny gathers the knowledge of the Partition from ayah's suitors. Even the title of the novel conveys a brutal cracking of a country and giving of birth to a new country. Lenny contemplates: "India is going to be broken. Can anyone break a country? And what happens if they break it where our house is? Or crack it further up on Warris Road?" (101). Ayah gives a picture of how a big canal will be dug to separate the two countries—"crack India with a long, long canal." Sidhwa gives a vivid portrayal of violence and aggression. The experience of hostility and bloodshed, and the horrifying cries becomes more frequent and the narrative accordingly becomes tenser. Lenny observes:

> Despite all the residue of passion and regret, and loss of those who have in panic fled—the fire could not have burned ... Despite all the ruptured dreams, broken lives, buried gold, bricked in rupees, secret jewellery, lingering hopes... the fire could not have burned for months and months. But in my memory it is branded over an inordinate length of time: memory demands poetic licence" (149).

The imagery of the birth of a country is strongly brought out by the symbols of sound, fire, and blood. The novel hence reveals the dislocation of lives of many people regardless of who they are during the Partition. The multiple events and the brutal laceration in the wake of riots drive home the extremities of sadism connected to the birth of a new country. Her recreating the horrendous experience is bridging the past on the framework of memories—an "imaginative history" (Ramraj, 1996, 215). It also uncovers how she tries to retain her attachment to that original cultural and historical identity in the adopted land through a historical narrative. Thus, Lenny's narrative voice is very powerful as it evokes a feeling of shock and dismay.

Juxtaposed to the dislocation of the dominant communities of the Muslims, Hindus, and the Sikhs; Sidhwa also gives a different angle to the Partition from the perspective of the untouchables. The portrayal of values of caste and creed in her depiction of the untouchables reveals a different side to the history of Partition. No matter who their ruler is, they have always been a displaced and marginalized community from the mainstream society. They are the most oppressed in the society and alienated because of caste hierarchy: "they become more untouchables because they are entrenched deeper in their low Hindu castes, while the Sharmas and Daulatrams, Brahmins like Nehru, are dehumanized by their lofty caste and caste marks" (102). Thus, through the speculative eyes of Lenny, Sidhwa gives a different version of the untouchables with an ironic touch. In a way Sidhwa goes back into history to unveil the gross hierarchy of class, caste, and creed. Although the writer attaches self to memory and reconstructs her past life in a historical context, sometimes her narrative takes on a

different tone and seems to give a cynical account of that history that brought about disruption and dislocation to a lot of people. Her narrative incorporates a wide sweep of diverse culture and historical politics that alienated and dislocated millions of people during the Partition.

Therefore, through the wondering eyes of Lenny, Bapsi Sidhwa shows the disruption and traumatic separation that settled with the Partition and the brutality that ensued with the departure of the British. The narrative reconstructs history in all its ramifications in the dramatic portrayal of interaction among diverse communities and the cultural issues of values, religion, and politics. Sidhwa's observation of the Partition also illustrates and heightens her doubts and disappointment of modern politics, and she brings out the "unspeakable sadness at the heart of the idea of India" (Khilnani, 1997, 201). Thus, through the delicate description of the historical disturbance, Sidhwa reclaims the past through writing. Writing becomes a framework that affords a space that one can adjust and inhabit inspite of being displaced. Rabindranath Tagore postulates that "a country is not territorial, but ideational" (quoted in Khilnani, 1997, 198). Tagore's comment applies to Sidhwa also- writing manifests the unconscious association in the writer to the historical past of the country that has been left behind. Perhaps, the writer's "liminal or transitional state is too prolonged or too excruciating to cope with" (Ramraj, 1996, 217) that the writer makes a metaphorical return to her original homeland. The physical alienation from the familiar space and the urge to root oneself to the homeland becomes possible through ideas and imagination. Thus, writing accords a medium to travel home, re-examine familiar sites, and images from the landscape left behind. The theme and plot of the novel and her writing about the pain of Partition, her meticulous and lucid representation of her characters could thus be surmised as an account of a historical reconstruction that tries to locate the writer's unconscious attachment to her homeland and her Parsi identity. Hence, *Cracking India* is the locating and reclamation of an imaginary homeland through the historical narrative of Partition.

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BORROWING IN PASAP-KHA

Presented at the 12th Himalayan Languages Symposium & 27th Linguistic Society of Nepal, Katmandu, Nepal (26th to 28th December 2006)

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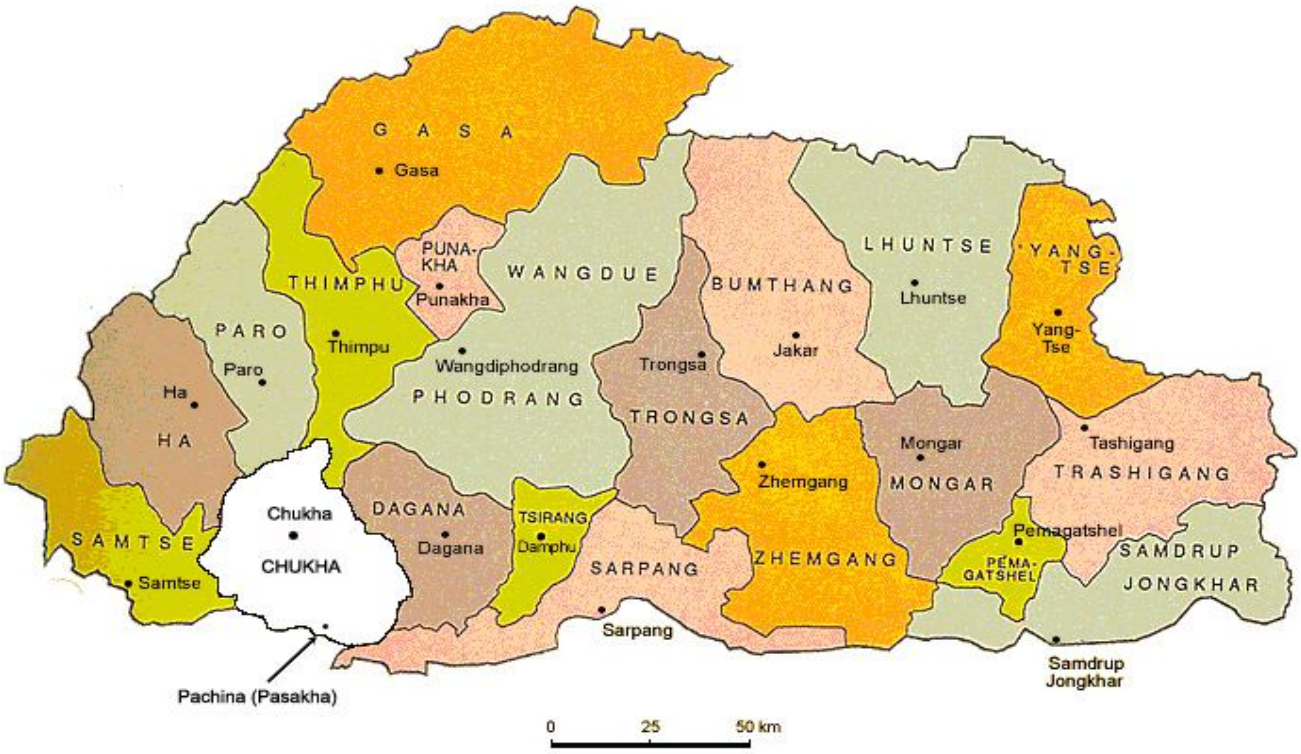
Introduction

> *The birth of language is the dawn of humanity ... before we had words, we were not human beings.* -Lederer (1991)

Language is one important attribute that distinguishes man from animal, besides other attributes. Thus, the quest for our knowledge on language is of enormous magnitude if one aspires to understand and appreciate the role of language in shaping man as human. The study of language furthermore portrays cultural, historical, social and anthropological background of the speaker. In this very effect I have done a dialectal research in Pasap-Kha (Pasap dialect of Dzongkha spoken in Pasakha, Chukha). Though the broad focus of my investigation is based on Dzongkha Dialectology the emphasis for the present paper is driven by *Language Contact* and *Borrowing* in Pasap-Kha.

Owing to the geographical proximity of our country with Indo-European language speaking countries Dzongkha has been borrowing linguistic features from these languages. Normally when languages come into contact lexical items are borrowed extensively, but Dzongkha shows features of borrowing taking place at the level of grammar and syntax. This curiosity further prodded me to explore the dialect.

The proper Pasakha town consists of dwellers from different geographical regions and linguistic backgrounds in Bhutan. Many of the natives of Pasap-Kha dwell in the rural Pasakha, and Pachina is one such village inhabited by the indigenous speakers. The Pasap population in the village is only a tiny minority surrounded by Lhotsam-Kha (Nepali) speakers in the periphery of the village.



A BIRD'S EYE VIEW OF THE PACHINA VILLAGE

Literature Review

According to S. Kemmer (n.d); 'Loan words are words adopted by the speakers of one language from a different language. 'Many linguists use 'loan words' and 'borrowing' metaphorically, though some others would refer 'borrowing' only to the 'process' of speakers adopting words from a source language into their native language, and 'loan words' to the borrowed item.

Linguistic borrowing is little different from customary borrowing, in that there is no literal lending process taking place. There is no transfer from one language to another, and no 'returning' words to the source language. They simply come to be used by a speech community that speaks a different language from the one they originated in.

In order for a language to borrow from another language certain conditions must be met. These are the conditions required in many of the instances of borrowing:

1. Two or more distinct languages come into contact.
2. As a result there is cultural contact.
3. Speech community is either bilingual or multilingual.
4. The speaker of the borrowing language must understand, or he thinks he understands the particular utterance in the source language.
5. The speaker of the borrowing language must have some motive, overt or covert, for the borrowing.

In many instances of borrowing, there seem to be two reasons: *the prestige motive* and *the need-filling motive.*

The Prestige Motive

People often admire and emulate the exotic culture. Given an option to choose between attending a traditional ceremonial occasion and a contemporary dance party, many youth of today in Bhutan would prefer to attend the latter to the first. As in this respect the speech of the exotic culture is also emulated and acquired. I presume 'prestige' as one of the motives Dzongkha borrowed many loan words particularly from English. This is even more obvious from the findings of Singye Namgyel, (2003).In all of the respondents' attitudes, English is regarded as a language of education, social status, social position, and prestige. Besides seeing it as the prestigious language, many informants regard English as the language of information technology, international lingua franca, and library language.

The Need-filling Motive

Modern education, technological development, international relation, trade and commerce may well be some of the motives behind Dzongkha borrowing under Need-filling motive. When new experiences, practices, and items enter the language, these bring with them new loan words into language system.

Loan words from Hindi, Nepali, and also English are borrowed to fulfill the Need-filling motive (Singye Namgyel, 2003).

Very little linguistic research is done in Bhutan's languages and dialects; particularly in Borrowing. But as one walks past the streets, overhears locutors communicate, use Dzongkha to conduct businesses, one often comes across lexical items that do not belong to Dzongkha. Kinley (2004) exposed striking examples of borrowing taking place in Dzongkha from Indo-European languages like English, Hindi and Nepali.

Stephen Watters (2004) too has revealed striking examples of syntactic and grammatical borrowing in *Pasap* dialect under *Chukha* district. Thus, this paper dwells on dialectal investigation into *Pasap-Kha* (a dialect of Dzongkha spoken in *Pachina, Pasakha*, under *Chukha* District.

Research Goals

1. To find out if *Pasap* dialect has undergone drastic change with the influence from Indo-European languages. If so, then to what extent did *Pasap* dialect change phonologically, lexically and syntactically?
2. To build a Corpus of *Pasap* dialect.
3. To investigate into a Dialectology of Dzongkha, and ultimately delineate a linguistic Isogloss of Dzongkha; which possibly will determine the region where standard / accepted Dzongkha is spoken.

Research Method: *Experimental Method.*

Following Milroy (1987) I have employed Experimental Method. This method refers to the investigators control over the data accessed. The method is used in conjunction with data independent of the investigator's own introspective observations, but does not involve inductively linguistic generalizations from that data source. Rather, a native speaker is used to provide specified types of fact about the target language or variety. The term 'experimental' is used broadly to describe any method which entails the direct manipulation of an informant's responses.

Sampling: *Judgment / Purposive Sampling*

According to Milroy (1987), in judgment sampling the researcher identifies in advance the types of speakers to be studied and then seeks out a quota of speakers who fit the specified categories. A good judgment sample needs to be based on some kind of defensible theoretical framework; in other words, the researcher needs to be able to demonstrate that his judgment is rational and well-motivated.

Judgment sampling is more appropriate for two reasons in my research. First, the samples used in linguistic surveys are in general not technically representative, and secondly, relatively small samples appear to be sufficient for useful accounts of language variation in a larger context.

Many linguists seem to prefer to employ the NORM (Native speaker, Older Speaker, Rural Speaker and Male Speaker) formula. This would exhibit the speaker's linguistic behaviour as of purely original devoid of educational and cultural influences.

Research Objective, and Informant Sampling and Social Network:

My Informant: *Mr. Phuntso, 41*

My choice of the informant would to a large extent dictate my objectives of the research. The principal informant, *Ap Phuntso*, 41 is a farmer from *Pachina* village in *Pasakha*. The village is some 30 kilometers east of *Pasakha* town. There are only few households in the village*. Ap Phuntsho*'s family has been settled there right from his grand parent's generation, and his spouse and in-laws too hail from the same village. He has never attended school, and has hardly been out of his village. There are LhotsamKha (Nepali) speaking settlements on the periphery of his village. As a young, enterprising man he would go to *Rangamati, (an* Indian boarder town in *Jalpaiguri* district, West Bengal) for trade. The code he used there was Nepali [most of the time] and Hindi. According to my informant, since the early 1990s the Royal Government of Bhutan has banned the trade link to the town, and since then *Phuntsho's* visit to the town has become infrequent.

AP PHUNTSO'S SINGLE ROOMED HOUSE

Data Elicitation: *Observation & Interview*

I have blended two methods for the elicitation of data. I dwelled with the family and recorded natural linguistic data. Interview was used while eliciting historical and cultural information about the informant, and for exclusive linguistic items such as **ornaments, emotions, sense perception** etc.

While interviewing I had to use lots of circumlocutions. Using a metalanguage was not convenient owing to the possibility of distorting the cultural and semantic connotations.

Owing to the goals of my investigation the domain of my linguistic data included the following themes:

Lexical items

1. Nature & environment
2. Mankind, sex and kinship
3. Fauna

4. Body parts. Bodily conditions and functions
5. Food, drinks cooking and utensils
6. Clothing ornaments and care
7. House, parts of house
8. Flora
9. Farming and agriculture
10. Professions
11. Transport
12. Sense perception
13. Emotions: temperamental, moral and aesthetics
14. Government
15. war
16. Law
17. Religion
18. Sports and games
19. Entertainment

Grammar

- Adjectives
- Adverbs
- Time aspect
- Question words
- Pre / post positions
- Word order
- Tense

Preliminary Findings:

Pasap-Kha has borrowed remarkably at different levels; strikingly in lexicon and syntax.

Lexical Borrowing

Concept Borrowed	Pasap-Kha	Dzongkha	Source language
Daughter in law's father	Samdhi	x	Hindi / Nepali
Daughter in law's mother	samdhi	x	do
Bag	Jola	dophe	do
Belt	peti	tham	do
Shawl	tauli	tora	do
Interest (money)	suu	Ke/che	do
Catapult	getis	bosim	Nepali
Dues (money)	bangkhi	bangkhi	Nepali / Hindi
All / whole	pura	Pura/gaira	do
Seat	siti	doethi	English
Week	haptha	doentha	Nepali / Hindi
Co-wife	kanchi	X	Nepali

Sister in law	hiim	X	Dialectal
Wife's sister	hiim	X	do
Lizard	chimsup	pchatsom	do
Snail	sinkuru	?	?
handkerchief	tsepcha	Tsepcha/tora	do
gate	getii	get	English
Betel leaf	pani	pani	Nepali / Hindi
plate	thali	thali	do
bed	palang	palang	do
fan	pangkha	lungkhor	do
cardamom	alenchi	alenchi	do
coconut	narewal	narel	do
Groundnut	badam	badam	do

Lexical borrowing in *Pasap-Kha* confirms additional borrowing in comparison with *Dzongkha*. For lexical items: ***Samadhi, peti, tauli, suu. Getis****, Dzongkha* has native terms, but owing to the geographical proximity and cultural assimilation *Pasap-Kha* has borrowed from the peripheral languages like Hindi and Nepali. Standard *Dzongkha* does not have (at least to my knowledge) words to refer to one's *sister in law* and *wife's sister*, and *handkerchief*, but the dialectal terms in Pasap-Kha are ***hiim*** and ***tsepcha.*** With standard *Dzongkha Pasap-Kha* too has borrowed terms like: ***Jolla, bangkhi, siti, pura, haaptha, kanchi, pani, thali, palang, pangkha, alenchi, narewal, badam*** etc. from Hindi and Nepali.

Pasap Phonology

Pasap-Kha has not diverged greatly in terms of phonology with standard Dzongkha. In fact, a current phonological trend in standard Dzongkha is the gradual omission of initial bilabial and sibilant consonant clusters like /p/ and /tš/ as in ***ptšam*** "broom"; /b/ and /j/ as in ***bja*** "bird/chicken", but these initial consonant clusters are very much intact in *Pasap-Kha.*

As in standard Dzongkha, in Pasap-Kha too the borrowed words from other languages have undergone phonological (pronunciation) change.

Syntax

So far I have seen a speaker making sardonic and cynical remarks on distorted vocabulary of Dzongkha, but such comments on syntax is a rare phenomenon. *Pasap-Kha* illustrates evidence of grammatical borrowing similar to Gumperz and Wilson's (1971) finding in Kupwar situation, in India, where Kannada, Urdu and Marathi resorted to grammatical and syntactic borrowing, because lexical borrowing had been checked for cultural and communal reasons.

In Pasap-Kha there is a syntactic *free variation* as in;

1. ***choe ming gadebe yin-na?*** and ***choe ming ga chi mo?*** "What is your name?"
2. ***Nga kho-lu ngo she*** and ***nga-gi kho ngo she*** "I know / recognize him".

The former grammatical structure in 1 and 2 are comparable to the *Nepali* syntax –

1. ***timro naam ke ban nu wun-tso?***
2. ***mo uslai chin-nu wuntso.***

This trend is not too overt in standard Dzongkha.

Findings in a nutshell

1. The extent and degree of borrowing is more in Pasap-Kha than in standard Dzongkha
2. The pronunciation of the borrowed words underwent phonological mutation as in standard Dzongkha
3. Some phonological features of Dzongkha that are losing in standard Dzongkha are still intact in Pasap-Kha
4. Pasap-Kha has resorted to grammatical and structural borrowing
5. There are some interesting dialectal lexemes in Pasap-Kha that are alien to Standard Dzongkha
6. For some concepts in Standard Dzongkha there are no names (lexemes), but Pasap-Kha has borrowed them from Hindi/Nepali

Educational Relevance:

The benefit of the findings of this research to educational academia is manifold:

- Linguistic research in Dzongkha and other dialects and languages of Bhutan is still in a budding stage; as a result the modules in the tertiary institutes which pertain to linguistics will have native illustrations and instances.
- As a language teacher, the researcher can draw upon the cultural and linguistic differences in Dzongkha and English, improving the vocabulary power of both Dzongkha and English and enhancing professional competence ultimately.
- The findings will throw remarkable insight into the study of native dialects and languages, and help local linguists in formulating a standard model for Dzongkha.
- Facilitate Dzongkha lexicographers in building and refining the Dzongkha Dictionary.
- The lexicon of Pasap-Kha should benefit school curriculum, especially Environment Studies and Social Science with its vocabulary.
- Serve as an eye opener to the truth of socio-linguistic situation in Bhutan.
- Eventually delineate an isogloss (a dialectal map) of Dzongkha, which possibly will further determine the region for a standard Dzongkha.

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Environmental Sustainability and Teacher Education

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Introduction

Albert Schweitzer said, “Man has lost the capacity to forsee and forestall. He will end by destroying the earth. Man can hardly even recognise the devils of his own creation.” (cited in Panneerselvam & Ramakrishna, 2003). Planet earth has been supporting and sustaining human life for many centuries. The inhabitants exploit the earth ruthlessly, without realizing that they are digging their own grave. The great saint Thiruvalluvar said “the earth is indomitably patient.” For how long can mother earth bear the relentless pressure exerted by human activities? If human beings do not stop exploiting mother earth, nature will take its own toll. How can one forget tsunamis, the earthquakes that shook Kashmir and Pakistan and devasted thousands of innocent lives. Though the three-mile island of Chernobyl, and Bhopal may be in a different locations around the globe, when the tragedies struck them, the repercussions were felt on the whole ecology of the earth. If we continue exploiting nature only God knows how many tsunamis are going to befall us.

Bhutan is a tiny nation sandwiched between two giants, China in the north and India in the south. Bhutan is known to the outside world through its miniature size (38,394 sq km), small population (734,340), good natured people, generous hospitality, simplicity, lush green mountains and intact vegetation, and above all, for according top priority to the concept of Gross National Happiness.

Environment is the backbone of the economy of every country whether developed or developing. Bhutan, though small, has a good area covered by pristine nature and over 64% of the total land is under forest (Curriculum and Professional Support Division [CAPSD], 1998), and environment has become an important economic asset, as far as energy and tourism are concerned. In Bhutan, forests form one of the most valuable and the biggest ever renewable natural resource. They are the sources of raw materials for almost all the growing industries and factories. Forests are also the source of different nutritious vegetables and fruits which supplement our diet.

Wildlife in Bhutan includes some of the rare species in the world such as black-necked crane, red panda, golden langur, rhinocerous, which are among the endangered species.

Bhutan has been identified as one of the ten bio-diversity hotspots in the world. Bhutan is among the few countries whose rich forest resources are still intact. Bhutan has received numerous awards and international recognition for protecting its bio-diversity. In the recent past, the J. Paul Getty Conservation Leadership Award for 2006 has been conferred on His Majesty the King of Bhutan Druk Gyalpo Jigme Singye Wangchuck in recognition of his leadership and deep concern for the environment (Kuensel, 2006).

In 2000, Bhutan recorded as many as 616 species of birds; this is a large number considering the size of the country. Of them, 16 bird species recorded in Bhutan have been identified as globally threatened by Bird Life International. One such species is the black-necked crane (Royal Society for the Protection of Nature [RSPN], 2000). Nature lovers, trekkers, biologists, and tourists from far and wide visit Bhutan to study our rich flora and fauna.

Unfortunately, many Bhutanese seem to be either complacent or have very little knowledge about bio-diversity. They fail to understand that many of today's desert countries had a rich bio-diversity once upon a time.

Culture and Environment

The Buddhists believe that human beings should live in harmony with nature. If one wants to seek happiness, one should refrain from greed and live harmoniously with nature instead of exploiting it in the ruthless manner.

In pursuit of development, most countries in the world have compromised on the quality of their environment. These countries become barren, suffer from greenhouse effect, pollution, frequent floods and landslides. Bhutan, with the guidance from the wise leaders and blessings from the deities, has excelled in defending herself from over-production, temptation to over-consumption, by overcoming major social and psychological challenges. But, Bhutan cannot afford to be naive when the whole world is in danger of an environmental catastrophe (Chhenpo, 2003).

There are several natural springs (drup chu) believed to be discovered by the divine power of saints. People use the holy water which is believed to have healing powers. These springs, when tested, were found to be safe for drinking and they have high mineral content. The Bhutanese have a strong conservation ethic, and, indeed respect for the natural world, as an essence of Buddhism.

Monks and recluse choose the forest to pray and meditate. The sanctity and purity to have effective meditation are provided by mother-nature in abundance. Our religious and social beliefs also demand that we show veneration and respect to nature and its bio-diversity as it is possessed by a deity who protects us from harm.

For the Bhutanese, the mountains, rocks, trees, lakes and rivers have everyday relevance. They act as a protective deity believed to be administered by spirits. For instance, big mountains or rocks nearby a house are considered to be sacred. People perform rituals and maintain cleanliness to please the deity who in turn protects the individuals and the community in the locality. It is also believed that defilement of a lake or river will be punished by instant storm, lightning and thunder. If we chop a tree near a house, the spirit will be angry with the family members. Any human activity that pollutes the area by destroying nature would bring displeasure to the deity, who would then trouble the defaulter leading to dire consequences.

Environment for food and medicine

Since time immemorial, nature has been home for the Bhutanese. Therefore, the Bhutanese regard nature as a means of fulfilling their needs and aspirations. Agriculture has been the predominant occupation of Bhutan and Bhutanese red rice is a unique item for export to various rice lovers around the world. A good deal of forest products such as mushrooms (shamu), cane shoot (patsha), green leaf (dambaru), fiddle-head (nakey), yams, and wild potatoes are consumed as supplementary vegetables. So, it is imperative that the future generations learn to sustain their relationship with nature and to coexist in harmony with it.

Bhutan is also well known for its abundance of medicinal herbs and cypress trees. These plants are the stuff of export to neighboring countries like China and India. Bhutan is gifted and blessed with many medicinal herbs such as barberous, *yartha guenboub* and Blue poppy that other countries are envious of. At the moment, *yartha guenboub* is highly prized- a kilogramme of it would cost close to Nu. 40,000 (US$ 870) within Bhutan. Juniper leaves are burnt during religious ceremonies as they give a strong aroma to purify the surroundings from defilements.

Environment and Development

Now, with the proliferation in human population and their activities, we observe a decline in some of the species. We also experience the migration of people from rural to urban areas seeking jobs and fortunes, leading to illegal settlements, rise in juvenile problems degrading the hygiene and sanitation of the place. In the last few decades, the number of vehicles has increased rapidly. The disposal of waste materials from urban centres has also become a daunting task.

In order to create job opportunities for the growing population, the government has been encouraging private entrepreneurs. The privatization drive has dire repercussion on the natural resources.

Though Bhutan broke from its shell of self-imposed isolation a few decades ago, it has come very far in terms of economic development and progress. Living conditions have improved without minimal impact on the environment. In many places, bulls in the field have been replaced by tractors, traditional stoves with Liquid Petroleum Gas (LPG) supported stoves. Many households have electronic gadgets. There are more vehicles on the road. People own transistors. There is also a television station and a mobile phone service provider.

Many countries have learnt that development comes at a price. Forests are stripped, soils eroded and people impoverished. So it is very essential that we follow a middle path that is a careful and balanced approach to development. In the years ahead, Bhutan will face rapidly growing local environmental problems as well as new global threats like acid rain, global warming, and ozone layer depletion.

People worldwide recognise and cherish the potentials of technology but how long can this technology sustain without the environment and its resources. “No amount of technology or monetary assets can make up for a razed forest, depleted soils, polluted waters, or ravaged climate” (Environment and Sustainable Development, 1990, p.3).

In countries like India and China, continuous increase in human population has placed inevitable pressure on the country's natural resources. A population which is growing rapidly can undermine natural resources as demonstrated tragically in many developing countries. The kingdom of Bhutan seemed to be sailing in the same boat, until our far-sighted leaders put a check to the steady annual growth of 3.1 percent. Through health campaigns, advocacy and women education, our leaders were able to achieve population stabilization and the maintenance of strong and healthy families. Her Majesty Ashi Sangay Choden Wangchuck is the Goodwill Ambassador of United Nations Population Fund (UNFPA). Under her patronage, women in Bhutan are committed to limit population growth. Family planning facilities are made available at all health centres free of cost. This is also geared to improve the health of women and check infant mortality and also to promote the education of women in order to boost their status in the society and reduce the incidence of childhood diseases. The women in Bhutan enjoy a relatively high status compared to women in many other societies.

"The human beings are being led to a dead end- all too literally. We are living by an ideology of death and accordingly we are destroying our own humanity and killing the planet. Even the one great success of the programme that has governed us, the attainment of material affluence, is now giving way to poverty" (Environmental and Sustainable Development p.20)

The impact that development has on environment is the expansion and maintenance of the transportation network. Among the most common detrimental effects resulting from the presence of roads and their maintenance are:

- Extensive cutting in soils and rocks
- Extensive blasting of rocks
- Heavy retaining walls
- The causal disposal of excavated rocks and soils downhill
- Limited funding; and inadequate institutional capabilities, particularly in terms of essential equipment and manpower.

(The Middle Path, 1998, p.55).

Tourism and its impacts on the environment

Bhutan is one of the popular destinations for tourists and outsiders as they are lured by the invariable Bhutanese culture, the pristine environment, rich flora and fauna. Tourism has helped to boost the small cottage industries besides bringing hard currency to the kingdom. Bhutan government felt that there was a need to regulate tourism as they saw large numbers of tourists visiting Bhutan. There is a risk of affecting our rich cultural heritage and rich biodiversity. Bhutan began to regulate tourism from 1974 (Tourism Authority of Bhutan [TAB], 1997).

It is imperative to monitor the flow of tourists as it is vital to preserving the pristine nature of Bhutan's higher elevations. Owing to its highly fragile nature of mountain ecosystems, once it is disturbed it takes long to repair the damage.

The more pressing tourism related environmental problems currently encountered are:

- The destruction of vegetation through the cutting down of slow-growing trees for firewood;
- The erosion of delicate vegetation;
- The creation of "garbage trails" from the indiscriminate disposal of non-bio-degradable waste; and
- The alteration of essentially sustainable farming and cropping patterns to unsustainable but highly profitable ones to meet the needs of affluent tourists.

(The Middle Path, 1998, p.52).

To mitigate these adverse impacts, some guidelines for environmentally friendly tourism have been drawn up by the Ministry of Trade and Industry (MTI).

- Rise in the tourist tariff to reduce the number of tourists visiting Bhutan;
- Use of Liquid Petroleum Gas (LPG) and kerosene fueled stove in place of firewood;
- The construction of permanent campsites, rest houses and toilet facilities along the trekking routes;
- The full retrieval of all non-biodegradables waste; and strict limits on the amount of washing and other activities that pollute the environment.

(The Middle Path, 1998, p.52).

Preservation of an environment

For Bhutan, safeguarding its natural resources and environment is a top priority. In order to uphold the forest coverage, Bhutan has converted most of its areas to natural reserves. Bhutan has the best bio-diversity in the whole of Asia and Bhutan occupies a special place in the global environment too.

The importance of biodiversity is increasingly being recognised throughout the world for the sustenance of the wealth of living organisms and as a genetic resource for humanity, besides providing food crop and medicinal resource for both current and future generations. Humans' reliance on the environment is so strong that a breakdown in one link can create a chain of disorders- with ruinous effects on human well-being.

The preservation of Bhutan's rich biodiversity corresponds to the national objectives. To safeguard our biodiversity, the Royal Government of Bhutan (RGoB) has established national parks, wildlife sanctuaries and nature reserves. The Forest and Nature Conservation Act establishes guidelines for the creation and management of all protected areas and empowers government officials to fulfill that mission. The Act calls for strategies for biodiversity conservation. Till today, 26% of the total land has been declared as protected area.

The existing protected lands are:

Sl no	Name	Dzongkhag	Area (sq km)
1	Jigme Dorji National Park	Paro/Thimphu/Gasa/Punakha	4,200.00
2	Black Mountain National Park	Wangdue/Trongsa/Zhemgang/Bumthang	1,400.00
3	Torsa Strict Nature Reserve	Ha/ Samtse	644.00
4	Thrumshingla National Park	Zhemgang/Bumthang/Mongar	768.00
5	Royal Manas National Park	Gelephu/Zhemgang/Samdrupjongkhar	1,000.00
6	Sakteng Wildlife Sanctuary	Trashigang	650.00
7	Kulong Chhu Wildlife Sanctuary	Lhuentse/Tashiyangtse	1,300.00
8	Phibsoo Wildlife Sanctuary	Gelephu	278.00
9	Khaling/Neoli Wildlife Sanctuary	Samdrup Jongkhar	273.00

(The Middle Path, 1998, p.58)

To resolve the problems of environmental degradation requires the promotion of mechanized and environmentally friendly road construction and avoidance of destructive practices. The government is undertaking a study that analyses the alternatives to automobile use, especially in the urban areas. Electric-powered vehicles are being experimented with in some countries. The use of bicycles in urban areas holds much promise in reducing vehicular pollution. The construction of tunnels can prevent road building on steep slopes, saving with it the associated erosion and river valley siltation. Boats are a viable means of transport in the southern areas. Ropeways can also provide short-distant transport and their use can be considerably expanded (The Middle Path, 1998). A spokesman for the Royal Society for the Protection of Nature notes, “Bhutan already has a strong conservation ethics, as respect for the natural world is a central element of Buddhism.” (cited in Environmental and Sustainable Development, p.20). Buddhism emphasises the oneness of humanity and nature, and so forms a strong foundation for environmental conservation and sustainable development.

As stated in Environmental and Sustainable Development, (1990, p.20): “Development can proceed slowly, but protecting our environment demands our full attention now” For instance, the Chhukha Power Project has minimal impact on the environment, flooding of farm lands has not been reported, requiring almost no resettlement. The power lines emanating from the power station have been intricately located without spoiling the scenic beauty or incurring other negative environmental consequences.

“Bhutan must keep her environment unspoilt, rather than damage it now and take corrective actions later. Our environment is our wealth, the source of our

nourishment, and the security of our future. Indeed, it is necessary for improving the quality of life itself." (Environmental and Sustainable Development, 1990, p.47).

Smt. Indira Gandhi, the late prime minister of India, stated at the United Nations Conference of Human Environment held in Stockholm in June 1972, "One cannot be truly human and civilized unless one looks upon not only all fellowmen but all creations with the eyes of a friend." (cited in Panneerselvam & Ramakrishna, 2003) She is still regarded as a champion of environmental conservation. The people all over the world have high regard for her for advocating her concern for the environment.

One of the most populous countries, India also places lot of emphasis on the need to protect environment. It has been deeply rooted even in the constitution. Article 48 states that " the state shall endeavor to protect and improve the environment to safeguard the forest and wildlife in the country." India has lot of wild life sanctuaries and reserve centres to protect flora and fauna. The defaulters are put to task. Even cine artist and cricket stars are not spared if they are at fault.

Nature and education

In Bhutan, environmental education is considered as a process of nurturing nature, environment, and inculcating a sense of appreciation of the environment.Bhutan has an ambitious programme of environmental education for schools. Education should be a centerpiece of any sustainable development programme. We need to educate people and teach the skills to effectively manage forests, building household energy systems, and maintaining sustainable agricultural systems. Equally, inculcating a basic philosophy of life such as basic values and practices of family, spirituality, and environmental stewardship is more important than being materialistic.

Nature is the home of all knowledge. Human beings learn from nature. In the schools, teachers organise field trips, tours, excursions, trekking and nature study as a part of the school curriculum and as recreational activity. Through such trips children learn to appreciate environment and to live in harmony with nature.

Environmental Education acquires a lot of importance in teacher education programmes. Educating teachers is going to have a multiplying effect as people who are ignorant and have different attitudes to their environment will be educated. Our teachers who deal with our future leaders must be made aware of the fact that we can improve the quality of our life by improving the environment. They need to inculcate in the children how to manage our environment properly. It is not only a question of air and water pollution. It includes elimination of famine, hunger, poverty, waste disposal, diseases, floods, soil erosion, malnutrition, extinction of flora and fauna, hygiene and sanitation. This is not just one country's problem, but a global concern. So it must be tackled globally.

The preservation of the environment will depend on how well we sensitize our teachers on preserving our natural inheritance. Teachers can create awareness in students of the environmental issues like waste disposal, air pollution, shifting cultivation, overgrazing, and illegal felling of trees through initiation of relevant activities.

Human lives are closely tied with bio-diversity on the earth. Imbalance in the bio-diversity is one of the pressing environmental concerns for the present generation. For example, scientists found out that in some parts of the world, certain trees were disappearing. Upon close analysis, they found out that it is because of the decrease in the number of birds called Dodo, hunted down by hunters (Environmental and Sustainable Development, 1990). This shows how imbalance in the eco-system could lead to the extinction of some species. So it is our duty to sustain and balance conservation of nature while fulfilling human needs.

Environmental Education in Samtse College of Education

Samtse College of Education (SCoE) is one of the two premier colleges in Bhutan, which offers bachelors degree in Education. Out of the myriad of modules ranging from counseling to functional information technology, environmental education also occupies a place of importance.

Environmental education is offered as a module under the auspices of Community and National Development (CND) and as an outdoor club activity such as Science for the Protection of Nature (SPN) Club, Scout Club, Mushroom Club, and Agriculture & Social Forestry Club.

1. Environmental Education

Aims: This module would help teachers to understand the basic concepts of environmental education such as:

- Aims of environmental education
- Environmental overview of Bhutan
- Environmental issues in Bhutan
- Government policies and programmes on environment
- Characteristics of environmental education
- Bodies and organizations which look after the conservation of environment.
- Biodiversity, ecosystem, and urbanization
- Awareness about nature and its conservation
- Measures toward the solution of environmental problems
- Using science and technology to solve environmental problems

(B.Ed Syllabus Handbook, 2005)

Guiding principles of Environmental Education Should

- Be a life-long process for all Bhutanese children and youth and consider the whole environment.
- Strike a balance between environmental protection and economic needs to ensure a sustainable future.
- Uphold and promote social and cultural values in the Bhutanese society and their future evolution to suit changing times.
- Help children to find possible solutions and alternatives to environmental problems and relate them to their own practical life situations.

- Develop environmental sensitivity, understanding, problem solving skills and values in students.
- Use variety of learning situations and teaching learning strategies.
- Emphasize practical activity and first-hand experience that stimulates learning by doing in different environmental situations.
- Promote the value and need for local, national and international cooperation in preventing and resolving environmental problems.

(B.Ed Syllabus Handbook, 2005)

Why Environmental Education in Teacher Education Programme?

> Over four decades of development in Bhutan have had a dramatic impact in the kingdom which has moved in a shorter period of time from medieval age into the twenty first century. A comprehensive network of roads, schools, urbanization, and growing private sector has brought inevitable changes in the environmental surroundings. There is increase in crime, household wastes, water pollution, traffic congestion, deforestation, forest fire, poaching, wildlife trade, housing, unemployment, high growth rate, rural-urban migration, dilution of culture due to aspiration for development, globalization, increasing materialism are becoming more visible today affecting the well being of the Bhutanese.
>
> (The Middle Path, 1998).

The following national documents support the need for Environmental Education in teacher education in Bhutan.

1. Biodiversity Action Plan for Bhutan.
2. Middle Path National Environmental Strategies for Bhutan.
3. Royal Government of Bhutan's (RGoB) Commitment for Agenda 21.
4. Nature Conservation Strategy.
5. Future Direction, World Wildlife Fund (WWF).
6. Bhutan Scout Association.
7. Royal Society for the Protection of Nature's (RSPN) Long-Term Strategy.

Community Based Natural Resource Management, Ministry of Agriculture (MoA

Delivery of the Environmental Education Course:

Theory input in the topics like biodiversity, ecosystem, pollution, urbanization, deforestation, acid rain, greenhouse, etc. The strategies used are lectures, presentations, seminars, discussions, role play and dramatization.

The students are required to write assignments and carry out activities like community service, awareness campaign, conduct survey on family planning, and pollution. They collect garbage and differentiate bio-degradable materials from the non-biodegradable materials. They also conduct water testing, stream study in the landslide prone area, write slogans and campaign, and carry out bird studies and habitat.

2. Outdoor activities (Clubs):

Goal: To promote rural flavoured education and instill in teachers a love for nature and its habitat.

Objectives:

- To promote dignity of labour and sense of rural flavoured education.
- To continue to maintain the campus green.
- To sustain the supply of green vegetables, meat, etc.
- To increase student's understanding of the environment.
- To develop knowledge, skills and a good attitude towards environment.
- To instill in students the habit of appreciating the aesthetic splendour of the area surrounding the campus, the home, the country and the world.
- To promote greater understanding of the global issues, cultures and respect for others since natural and environmental concerns and opportunities stretch beyond the national boundaries.

Activities of the clubs:

- Cleaning campaign to create awareness among the trainees and people in the campus about hygiene and sanitation.
- Sorting of bio-degradable and non-bio degradable materials and ensuring proper disposal of the same in and around the campus.
- Encourage use of paper bags instead of plastic by providing free paper bags made out of scrap.
- Maintaining campus green by planting trees during auspicious occasions like Social Forestry Day.
- Bird watching.
- Visit to the wildlife sanctuary in the neighbouring towns.
- Nature trekking to study flora and fauna.
- Organise literary activities such as quiz and open essay on the issues related to environment.
- Water testing and sending report to the concerned authorities to ensure safe drinking water.

School Curriculum and Environmental Education

Environmental Education is also incorporated in the school curriculum. For Pre-Primary to Class III it is taught as Environmental Studies (EVS), as Social Studies in Class IV and V and for higher classes, it is integrated with Geography and Science classes.

Besides this, environmental education is also initiated through other avenues like nature clubs in schools and tertiary institutes. There are about 63 nature clubs in the country most of which are initiated by the schools. (RSPN, 2000). All these clubs run under the umbrella of the Royal Society for the Protection of Nature which is the

one and only non-government and non-profit organization in Bhutan. Nature clubs were initiated in the country with the aim to encourage students to increase awareness and understanding of their local environment and to enable them to contribute to its conservation by sharing their knowledge and skills with their friends in school and the community.

In India, the need for including environmental education was keenly felt in all the schools and colleges. The National Policy on Education (1986) dictated the entire science curriculum to be revamped and oriented to activities which pertain to environmental issues from elementary school onwards. In Kenya too, school children are required to plant a tree on their birthdays in order to encourage them to nurture and appreciate the environment.

(cited in Panneerselvam & Ramakrishna, 2003, p.100)

i. could threaten waste-assimilation capacities and life support system of the biosphere and
ii. Utilization of the growing body of scientific and technological data to foster resource recovery and waste reduction. (Sharma & Tau, 1990, p.143).

Even mineral extraction starts with prospecting of ores and planning of extraction followed by quarrying. After quarrying, the last and the most important step is land reclamation and it is at this stage that degraded land is refilled with top soil and afforestation done so that the degraded land can be used again in future. Bhutan carries out afforestation in barren lands and plants trees in regions which have been destroyed by fire and illegal cutting.

According to CAPSD (2005)

Why Environmental Education in schools?

Environment is a dynamic phenomenon. Plants grow and die. Seasons change. Species appear and disappear. Temperature rises; there is soil erosion and landslide, blackouts in the sky, rivers are polluted. Children should be encouraged to explore these entire natural phenomena. Environmental education enables students to comprehend, analyze and evaluate the relationship between people and their surroundings and make mother earth sustainable for future generations.

Aims of Environmental Education in schools:

The mechanism through which students' learning becomes interesting and enriching by observing and watching things happening in their natural surrounding and using environment for learning purposes.

Some of the specific objectives are:

- To provide rural flavoured education.
- Develop and enhance children's love and respect for nature.
- Provide opportunities for students to discover the importance of natural environment as a learning source different from textbook and find ways to participate in protecting it.

- Expand school-based environmental education programmes and improve sanitation and hygiene practices at schools, at home and in the community.
- Develop respect for the conservation of natural environment to help keep provisions for future generations.
- Inculcate in children the appreciation of the aesthetic splendour of the area surrounding the school, the home, and the wider world.
- Promote greater understanding of the global issues, cultures and respect for others since natural and environmental concerns and opportunities stretch beyond the national boundaries.
- Expand students learning so that they will relate these experiences meaningfully with nature and environment. (Outdoor Education, 2000, pp. 5-6).

Delivery of Environmental Education in schools:

The school does not have a prescribed syllabus to impart environmental education to students. As said earlier, realizing the need to create awareness about the importance of nature and its preservation, the components of environmental education has been integrated in the school curriculum.

Most of the environmental activities in schools are carried under the auspices of clubs. Most of the clubs in the schools are affiliated to the RSPN and occasionally the club receives financial and material support from the RSPN. All the club coordinators are the beneficiaries of trainings provided by the RSPN in order to enhance their knowledge about the environment and their roles as club coordinators.

In order to motivate the students and the club coordinators to improve their commitment to and diligence in conservation, the RSPN has initiated awards for the best nature club. The potential coordinators are recognized through being given short trips to neighbouring countries.

Some of the activities carried out by the nature clubs in the schools are:

- School Waste Management Programme (construction of waste pits, providing bins for classrooms, collection of bottles and plastics for reuse and recycling).
- Environmental News Bulletin Board (members update information weekly).
- Plantation of saplings
- School Nature Garden
- Cleaning Campaigns
- Quiz and debate on environmental themes
- Talk on environment issues/conservation by Nature Club members in school morning assembly
- Observance of world environment events- World Environment Day, International Bird Watching Day.
- Skits/dramas during local festivals on environmental themes- eg. Water pollution and its impact on human and environmental health, impact of population on environment and quality of life.
- Organise short treks to local monasteries and biodiversity sites.

- Annual Nature Club Exhibition to exhibit their activities and spread awareness among the local community on environment issues. (RSPN, 2000, p.14).

Students can play a crucial role in raising awareness of the public in environmental education. For instance, some of the activities students carry out in the locality are:

- Organise environmental cleaning programmes in their locality and invite local people to participate.
- Demonstrating to people how to dispose garbage properly.
- Organise exhibitions, displays, and public debates on environmental issues.
- Organise concerts on environmental issues.
- Write articles on environmental issues of the locality and display them on the bulletin board of the school.
- Write articles to the media for sharing issues with a wider audience.
- Organise quiz, debate, essay writing, painting, posters and banners and assembly speech on environmental issues.
- Play role model at home and in school.
- Read books on environment.
- Organise events with themes like: Run for Environment, World Environment Day, Green Day in the school.

(Outdoor Education, 2000).

Integration of Environmental Education with other subjects

Environment is a rich source of education and has a strong link with various disciplines taught in the schools. Learning from the text can be linked with nature. In other words, textbook materials can be supplemented by exploring the environment. This will also break an old tradition of confining lessons within the classroom. For instance, science can be taught by testing the Ph of soil. The teaching of science is all about nature. A teacher could teach English by asking students to listen to all the sounds and describe them. Poetry is one subject that could be taught and conceived outdoors. Poetry is all about experiences, feelings, love, nature and emotions. People feel at ease and have a peace of mind when they see greens or see graceful birds. Ailing patients get a fresh lease of life being in the woods. A maths teacher can ask students to find the area of a leaf or the diameter of a tree trunk. Natural processes such as landforms, weather and climate, soil erosion, landslide and vegetation is geography. History lesson can also be taught using environment as most of the historical sites are in the woods.

A few suggestions for integrating Environmental Education with the regular school subjects are given below:

Chemistry:

Water: Pollution- sources of pollution – reasons – population – explosion – deforestation – over exploitation of ground water –water scarcity.

Air: Air pollution- sources-effects-importance of trees in the production of oxygen-ozone layer depletion-acid rain-greenhouse effect-relation between population and pollution-importance of nitrogen cycle-air pollutants from industries.

Botany: Importance of trees in preventing pollution- ozone layer depletion-noise control-trees in preventing soil erosion-use of medicinal plants-role of trees in building economy-use of pesticides-natural way of controlling pests.

Zoology: Protection and preservation of wildlife- evolution-extinction of species-need for conservation-food chain and food web-need for bio-diversity-balance of nature.

Physics: Conservation of energy- alternative sources of energy-solar cookers-biogas plants-windmills-noise pollution-trees reducing noise pollution-nuclear energy-harmful effects of noise pollution.

Geography: Importance of forest areas -mineral survey-industrial pollution-effect of CFC-
river systems-desertification.

History: The rise and fall of civilizations- wars and hazards of war-nuclear warfare.
(Panneerselvam & Ramakrishna, 2003, pp. 95-96)

Gross National Happiness (GNH) and Environment sustainability

Bhutan is one of the few countries in the world that accords top priority to Gross National Happiness (GNH) than to Gross Development Product (GDP). This noble idea was promulgated by His Majesty the King Jigme Singye Wangchuck of Bhutan. Since then, GNH has become our guiding philosophy and is embedded in developmental policies and activities. For the nation to be prosperous and for her subjects to attain happiness, there should be a balance between spiritual and material development. "Thus, the GNH is a harmonious blend of economic and material prosperity with spiritual and emotional contentment and fulfillment." (CAPSD, 2005, p.55).

Today, people are so obsessed with greed for power and wealth that they hardly have time for their family and friends. With increased passion for power and materialistic fascination, nations go to war, people fight people; families have conflicts, and heinous killings take place. Most people who indulge in inhuman acts are the ones who lack spirituality though they are competent and have power. So in Bhutanese schools, students are acquainted to both religious and non-religious activities to instill spirituality in the students.

Bhutan wishes to advance GNH by strengthening the four core areas called four pillars:

- Sustainable and equitable Economic Development.
- Conservation of Environment.
- Preservation and Promotion of Culture.
- Good Governance.

Conservation and sustenance of environment is one of the most important pillars of GNH. The economic growth of a nation alone cannot fetch happiness or peace to the people and the elites too would experience a diminution of happiness unless they are emotionally and spiritually sound. Environment shapes the behavior of living organisms and make them emotionally sound. For instance, the animals can move freely in the floor of trees looking for food, water and shelter.

In Bhutan, we look to nature as a means of livelihood, a recreational centre, and resource for learning and experimentation. The materials for art and craft, and tools for farm come from the forest. Huge quantities of wood are consumed as construction materials.

The beautiful landscape and rich environment lure visitors to Bhutan. So the sustainable use of environment is essential for the forthcoming generations. Thus, conservation is to be viewed as one of the several goals encompassed by a comprehensive framework within resource management.

The sustainable use of environmental resources can be realized through:

maintenance of the regenerative capacity of renewal resources, and avoidance of excessive pollution which

> The conservation of the ecosystem would prevent many natural disasters that would bring sufferings to the people but also ensure our very existence. Though there are no direct visible economic benefits, its conservation is a source of tourists' attraction and thus revenue earner. Furthermore, the conservation of the ecosystem would ensure the continued flow of rivers and thus development of hydropower (p. 56).

Conclusion

Human's relation with the environment cannot be emphasized enough. Over the years, human activity has brought harmful impacts and the deteriorating environment has become a critical situation for the human races. The modern day development, especially technological development has aggravated the situation. Although solutions and preventive measures to protect environment have begun, the rate at which it deteriorates is much faster. This is the greatest challenge that the entire world faces. Thus, human's desire and greed go so far that one day it will come to a halt when all green will turn to brown desert, when all mountains are denuded of trees and rains cause us to bleed, when all winds will cause suffocation, and all land full of pollutions. By the time we realize its consequences, it will be too late to repent.

Therefore, the entire globe should seriously work towards making this world environmentally rich and if in the name of development, humans should prefer utilizing environment, then use of appropriate technology which is environment friendly is a must.

Environment is the backbone of the economy for every nation and in order to make sure that life is supported continuously all of us (Forestry Department, MoA, the Planning Commission, NEC, etc) as decision-makers should join hands and work together towards the good management of the environment (The Middle Path, 1998).

The environment is getting contaminated every moment in spite of the existence of strict laws in all countries. Within the next few years "the entire world would be more crowded, more polluted, less stable ecologically and more vulnerable to disruption than it is today," (cited in Panneerselvam & Ramakrishna, 2003, p.100).

According to Panneerselvam & Ramakrishna (2003), the Third World War would not be a nuclear war. Instead, the battle will be between nature and human behaviour. In this war, we need armies of people motivated by a strong desire to stem the destruction of the natural resources. A global effort is needed in the environmental battles ahead. "Think globally and act locally" is the clarion call of naturalists. (p.100).

At this juncture, it is worth remembering the words of the naturalist Wendell Berry (cited in Panneerselvam & Ramakrishna, 2003, p.101);

> Make a home. Help to make a community.
> Be loyal to what you have. Put the interest of your community first.
> Love your neighbours-not the neighbours you pick out, but the ones you have.
> Love this miraculous world that we did not make, that is a gift to us.
> Find work, if you can, that does not damage.

In schools, through environment education, students should be taught to cause minimum disturbance to the environment, care for fire while picnicking, not polluting the area and defiling. Children and adult alike should be taught to dispose off waste properly and not to disturb the flora and fauna. They should not disturb the sentiments of the locality and the local deities. Care should be taken not to burn meat, smoke, or make noise while being in a certain area if you are warned earlier.

Nature clubs in schools should continue to organize various environmental programmes to raise public awareness through agricultural activities, flower gardening, social forestry, preservation of forest and regeneration of forest.

The RSPN should continue organising environment awareness programmes for the representatives of different bodies, organizations, policy makers and planners. For instance, In 1999, the RSPN initiated a project called the Integrated Black Necked Crane Conservation and Development Program (ICDP) at Phobjikha, a small village in Wangduephodrang in western Bhutan which is the biggest wintering site for the black-necked cranes. The survival of these species is under threat because of human interference. The project not only catered to the conservation of biodiversity but also brought economic benefit through such projects and visitors (RSPN, 2000).

In order to mitigate the impact of tourism industry on the country's environment and culture, similar awareness courses can be made available for tourist guides with the special mention of emerging environmental issues in Bhutan and worldwide and their direct or indirect influence on the environment.

Let us live by what is said by His Majesty King Jigme Singye Wangchuck of Bhutan;

> Through the centuries, the Bhutanese have treasured the natural environment and have looked upon it as the source of all life. This traditional reverence for

nature has delivered us into the twentieth century with our environment still richly intact. We wish to continue living in harmony with nature and to pass on this rich heritage to our future generations.

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Centre for Educational Research and Development

The Centre for Educational Research and Development is an idea whose time has come. The Centre has the following goals, among others:

- ✓ to support and undertake comprehensive and systematic curriculum development activities aimed at bringing about improvements in our education programmes;
- ✓ to foster a culture of enquiry and analysis in the continuous search of knowledge through regular interaction with research centres and institutes of repute;
- ✓ to study the current educational practices and developments in relevant fields and provide findings to the Ministry for consideration of policy options in relation to relevant educational goals, content, and methodology;
- ✓ to provide a forum for educators and researchers to support action-research and professional development for enhanced performance by our education stake-holders.
- ✓ to promote a national pool of scholarship and professionalism in the best traditions of research and development, for the flowering of the Bhutanese mind.

The major thrust areas of the Centre are research, publications and the professional support. To date, the Centre has developed a set of national standards for English for schools in Bhutan called *The Silken Knot*.

It has carried out a study on and made recommendations for the improvement of primary education and initiated modest programmes like the *Rinpung Experiment* and professional development activities, apart from participating in the *National Education Assessment*, among others.

CERD is currently working on the development of national standards for Mathematics and intends to do so for other discipline areas in the near future.

The Centre has followed the evolution of our education system and published *The Call: Stories of Yesteryears*, and begun an educational journal called *Rabsel. the CERD Educational Journal.*

Encouraging and initiating action research being one of its thrust areas, CERD invites contributions from our fellow-teachers, scholars, parents, students, and indeed, from anybody who has a stake in education, highlighting issues which have a bearing on the education of our children and the system as a whole.

Please send in your research papers, both hard and soft copies, to:

The Director
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NIE, Rinpung, Paro: BHUTAN
Or, email them to cerdir@druknet.bt