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Centre for Educational Research and Development
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Centre for Educational Research and Development (CERD)
Paro College of Education, Paro
Royal University of Bhutan.

Telephone : +975 08 272011
Facsimile : +975 08 271917
E-mail Address : cerd.pce@rub.edu.bt

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Bilingualism and the Comprehension Skills in Primary School Students: An Experimental Study

Dorji Wangchuk[1]

Abstract

This experimental study was conducted over a 5-week period in one of the rural primary schools in Paro and additional data gathered from English teachers and primary school students (grade III – V) from six dzongkhags. Adopting the mixed methodology design, the study was conducted to find out if L1 could be used as a resource in L2 class to enhance the listening comprehension skills of primary school students. Some of the findings, among others, indicated that primary school English teachers often translated difficult English words, phrases and concepts into Dzongkha or other languages the students were familiar with so that their students understood the lessons better. Students themselves found it quite motivating to learn English through the translation method (bilingualism). The study also found that students performed better in the listening comprehension test during the post-test (which used both English and Dzongkha languages) compared to the pre-test (which used only the target language English). The overall result from the study indicated that L1 can be used as a resource to improve listening comprehension skills of primary school students.

Key Words: bilingualism, first language (L1), second language (L2), comprehension skills, primary school students

Introduction

Although English is the medium of instruction in all the schools across Bhutan, students tend to use L1 (mother tongue - in this case Dzongkha) in an L2 (second language - in this case English) class. In a study conducted by Wangchuk (2007), it was discovered that very few students interacted in English while completing a group task. The study also found that teachers generously translated L2 (English) to L1 (Dzongkha) if students did not understand a word or a phrase or could not comprehend a particular concept. While the arrangement of translating L2 into L1 is carried out with good intentions, some theorize that such methodology weakens students' ability to learn English language.

1. Senior Lecturer, Dean of Acacemic Affairs, Paro College of Education. E-mail: dorjiwangchuk.pce@rub.edu.bt

Kalivoda (1990), for instance, propounds that "frequent shift of L1 to L2 restrict opportunity for uninterrupted L2 listening, which in turn, influences learners to disregard L2 when communicating in the classroom" (p. 55). That is to say that while the 'translation method' helps students to understand the meaning of the text to a certain extent, in no way does it help them to express themselves in English, be it in writing or speaking. However, there are also claims which point out that children learn L2 better if L1 is frequently used in the language classrooms. The study by Yoshii (2006) shows that "L2 learners rely on word-to-word links (lexical links) in early stages, but as their L2 proficiency develops, they link L2 directly to concepts (conceptual links)" (p.103). Gardner's Motivational Theory (2007), Krashen's Affective Filter Theory (Krashen & Terrell, 1983), and Cummins' theories (1983, 2008) all support this claim. In the Bhutanese context, whether L1 acts as a resource or hinders in the acquisition of L2 is a moot point since no such study has been conducted to this effect.

Therefore, there was an ardent need to find out the co-relation between English and Dzongkha and examine whether or not bilingualism contributes to English language learning. In this light, this study tried to seek answers to the following four questions. How does L1 help children to learn L2? How does L1 interfere in acquisition of L2? How can the knowledge in L1 successfully be used in learning L2? How does the usage of L1 in L2 class enhance comprehension skills of primary school (PS) students?

Theoretical underpinning and literature review

Several theories posit that a bilingual/multilingual class is more effective in teaching of the target language than a monolingual class which tends to use only the target language. The Affective Filter Hypothesis states that "attitudinal variables relating to success in second language acquisition relate directly to language acquisition" (Krashen & Terrell, 1983, p.37). The hypothesis claims that when affective conditions are not optimal, or when learners are not motivated or do not identify with speakers of the second language, a mental block called the 'affective filter' or a 'screen' is created which impedes the input from reaching parts of the brain responsible for language acquisition. Use of L1 in an L2 class effectively removes this filter. In the language education context, this theory implies that L2 'comprehensible input' could be presented in a low-anxiety situation for more conducive learning conditions. Given the stress-free environment, it would eventually motivate learners to learn the target language. This is important as it positively boosts the learners' self-esteem. Studies conducted by Heyde (cited in Brown, 2007) found that self-esteem correlated positively with performance on the oral production of language. That is to say that the learners with greater self esteem performed better in oral production compared to those who suffered from low self esteem.

While Cummins' (2008, p. 78) theories on bilingualism such as BICS (basic interpersonal communication skills) indicate that a bilingual class assists learners in acquiring listening and speaking skills "fairly quickly (because in day-to-day, face-to-face conversations, meaning is supported by a range of contextual cues, gestures, intonation, facial expression, immediate feedback, negotiation of meaning, etc.)", and CALP (cognitive academic language proficiency) eventually make them academically more proficient. BICS motivates learners and CALP eventually delivers what learners always aspire for- competency in academic tasks. These researches clearly indicate the importance that language teachers must attach to L1 in learning L2.

In the Bhutanese context, "Bhutan is essentially a bilingual society" (Royal Education Council [REC], 2012, p.89), practically and officially, although the word 'bilingualism' or 'multilingualism' is not explicitly mentioned. The fact that three-forth of Bhutanese learners learn two languages at the same time in the same grade already make it a bilingual class. "There is a simultaneous introduction of both the languages at the kindergarten level and transition from basic interpersonal communicative skills (BICS) in the kindergarten grades to Cognitive Academic Language Proficiency (CALP) in the primary and higher grades" (REC, 2012, p. 105). Then, of course, learners come with a host of other languages which are spoken in the schools and are tolerated in the classrooms while doing group tasks or dyad activities. Along with their languages, learners also bring in their unique cultures, all of which are important, not just for the sake of culture, but for the enhancement of a second language.

Interestingly, in the Bhutanese classrooms, both L1 and L2 are given equal importance, unlike some other situations where L2 is taught at the cost of L1 (subtractive bilingualism). This is important because one of the ways to create a conducive learning environment is to allow learners to speak their mother tongue in group discussions or accept their answers which are given in L1 and transform the language class into a "language as a resource for meaning making" class, in Halliday's (1978) words. The classroom instructions could be in English, but once in a while it motivates learners to learn L2 if their L1 is respected, and that is what teachers in Bhutan do- respect linguistic diversity.

In fact, with the use of native language or Dzongkha which learners are more comfortable with, Vygotsky's Zone of Proximal Development (ZPD) which stresses the fundamental role of social interaction in cognitive development and 'meaning making' process also comes into vogue. Using learners' own language (L1) in L2 education helps learners to make the text more meaningful since it relates to their lives and their surroundings. Vygotsky's second theory of 'mediation' or 'more knowledgeable other' is also quite apt here, in the sense that learners can avail help in the form of 'scaffolding' from teachers, parents, peers or anyone who is more knowledgeable than they are in the area

of language learning, provided the language being learnt is associated with their native language. Since learners are familiar with the content, they do not hesitate to make queries, seek clarifications or ask questions where they fail to understand something in the L2 and this develops their confidence and ability to interact with others.

Hinkel (1999, p. 2) is of the view that "second language can rarely be learned or taught without addressing the culture of the community in which it is used", L1 being the culture in which learners are all familiar with. Besides, there is another factor involving the use of teaching materials in the second language classrooms. If topics or lessons are predominantly based on foreign/ target language culture, it would lead to a cultural shock and language shock for non-native speakers. Thus, L1 can be used as a resource for L2 lessons. Gardner (2007) proposed that second language acquisition takes place in many different contexts and the first thing that must be looked into is the nature of context itself, i.e. whether the learning environment is adequately safe and conducive for the learners. Using L1 in L2 education is one of the means of making the learning environment conducive.

However, normally what happens in the second language learning classroom is that teaching 'L2' often takes the form of teaching information about another country, other people, other belief systems, traditions, ideologies and so forth in the target language (L2) itself. Language classes seldom make use of the learners' own language to teach the second language. Sarroub (cited in Porto, 2009, p. 47) states that "the significance of cultural factors in foreign language education is reflected in the notion of 'in-betweenness', which refers to the locality of culture, i.e. the immediate adaptation of one's performance or identity to one's textual, social, cultural, and physical surroundings". As learners try to relate the text to their own experiences, beliefs systems and values in their own language or languages they are familiar with, it becomes easier for them to learn a second language.

Some scholars view language as a way to describe and represent human experience and understanding of the world. These views, beliefs and values are then communicated through a common language thereby establishing a link between language and culture of that community. The same principle is shared by Kramsch (1998, p. 8) who believes that "language and culture are inseparable and constitute a single universe or domain of experience" in a given society. Thus, two important things have to be taken care of if English language education is to be imparted to the learners. Favourable teaching and learning conditions have to be created followed by "the adoption of suitable pedagogic processes" (Mahanand, 2013, p. 21). Using L1 provides both the conditions necessary for the enhancement of English language education.

Nevertheless, there are also theories which argue that L1 hinders learning of

L2- Cummins' SUP (separate underlying proficiency) being the case in point. SUP functions on the premise that learning in L1 will prevent learning of L2, and materials and language in L1 will act as a hindrance in the learning of L2. In the Bhutanese context, many people are of view that constant usage of L1 (Dzongkha) in L2 (English) class must be the cause of poor English standards in the schools. Therefore, the proponents of SUP emphasize that using of L1 should be avoided in the L2 classrooms.

Notwithstanding this theory, common underlying proficiency (CUP) is a concept which believes that at the deeper level, fundamentals of language are same whether it is L1 or L2 and that L1 can be used as a resource to learn additional languages. The CUP hypothesis believes that Language skills from L1 can be transferred to develop similar skills in the new language. And in doing so, he/she can become bi-literate as well as a bilingual. Translated into the Bhutanese classrooms, it means learning of English (L2) as well as learning of Dzongkha (L1). From the linguistic perspective, bi/multilingualism helps in learning the second language.

While numerous researches have been conducted both in the area of L1 as a resource or hindrance in other counties, no such study has been carried out in Bhutanese classrooms to determine if L1 is really a resource or a hindrance. Since 'SUP' and 'CUP' and 'immersion' and 'submersion' classrooms already exist, either by default or by design, a thorough study had to be conducted to find out the impact of bilingualism in L2 learning.

Methodology

For this study, a mixed method of researching was used considering its advantages over a unitary method of researching. For instance, I could build a study based on the strength of both quantitative and qualitative research methods, and by doing so, it could provide a complete picture of a research problem. Besides it provided researcher the freedom to employ all methods and work with statistics and words simultaneously. For the experiment, 'pretest/posttest design' was used as "it could measure change in a situation, phenomenon, issue, problem or attitude, and was very appropriate for measuring the effectiveness of a programme" (Kumar, 1999, p. 83). Since this study is basically about finding out the impact of using L1 in L2 on enhancing listening comprehension skills at the Primary School (PS) level, 'pre-test/post-test model' was found to be very apt for the present study.

Purposive sampling was used for this study. It is a non-representative subset of some larger population and was "selected based on the knowledge of a population and the purpose of the study" (Crossman, n.d. p. 1). This type of sampling was very appropriate for this study on two grounds. One, the study was to be conducted at the PS level and so only students from primary schools

could be the samples. Two, the study also involved interviewing PS teachers, but not all PS teachers were to be interviewed, since the interview schedules and questionnaires were structured for PS English teachers only.

As of 2011, Bhutan had 20,833 PS and 29,439 Community Primary Schools (National Statistics Board [NSB], 2012, p. 49) scattered all across Bhutan. All the PS could have been the potential place of study. However, it was neither logically possible nor financially viable to visit all the PS in Bhutan. Therefore, I used 100 PS teachers and 100 PS students from six dzongkhags of Bhutan viz. Thimphu, Paro, Punakha, Wangdue, Haa and Chhukha. For the experiment, I used one of the rural primary schools from Paro since that was the only school where all the students spoke only Dzongkha as the mother tongue. The school was very appropriate for the study since it involved conducting an experiment on how L1 influenced the learning of L2.

Research tools included survey questionnaires for PS English teachers and PS students, lesson observations, document analysis, and practical lesson interventions.

Results of the analysis of teachers' questionnaires

Of the 100 primary school English teachers who took part in the study, 41 percent of them spoke Dzongkha as their mother tongue followed by Sharchokkha (27%), and Lhotshamkha (10%). The remaining 22 percent spoke Khengkha, Kurtoephha or Bumthangkha. About 81 percent of them have been teaching English in the PS for more than seven years, be it in rural schools (7%), semi-urban (23%), town (39%) or in cities (31%). The minimum qualification these teachers have is Primary Teacher Certificate (50%). However, 44 percent of them have the qualification of a Bachelor's degree (B. Ed.) and an aggregate of six percent have M. Ed degrees (3%) and Postgraduate Diploma in Education (3%).

Data analysis of the teachers' questionnaires indicated that while 50 percent seldom used, and nine percent 'never' used languages other than English in English lessons, eight percent of English teachers 'always' used and another 33 percent 'often' used languages other than English in English lessons. About 56 percent of them thought that some topics in English textbook had to be translated into the languages students were familiar with as they felt that content prescribed in the syllabus was unfamiliar and difficult to grasp (45% agree to some extent). In fact a small number of them (6%) were of opinion that up to 50 percent of lessons must be translated into languages students were familiar with. Although 32 percent disagreed that translating English into Dzongkha would motivate learners to learn English, four percent strongly agreed and 48 percent agreed to some extent that translations would motivate them to learn English.

A bare minimum of 14 percent said that they did not face any problems

while teaching English in the class, but 85 percent responded otherwise and said that to overcome the problems they either changed the strategies (51%) or translated the content into Dzongkha (40%). An overwhelming 85 percent of them attributed the learners' lack of interest as the cause of the problem and indicated that unfamiliar text (43%), difficult lessons (5%) coupled with students' poor proficiency in English (41%) resulted in their disinterest in English.

Although 94 percent said that they teach listening skills, and four percent admitted not teaching listening skills, none of them were too sure about its types. Most of the respondents said that listening types included strategies like 'listen and colour', 'listening to the rhymes', 'games and listening activities', 'comprehension listening', and 'giving instructions' Only one teacher mentioned about 'critical listening' and 'discriminative listening'. Other strategies that most of the teachers used are 'listen and follow instructions', giving instructions', 'question and answer', 'read aloud' and 'story telling', and 'lecture method'. The least used methods include 'listening to tapes', 'listening to guest speakers', 'dictations', 'daily news', and 'listening to music'.

When it came to the question of whether or not the methods they adopted to teach listening comprehension was stimulating for the students, 18 percent of teachers said it was, 11 percent said it was not, and 62 percent said it was stimulating to a certain extent. In contrast, 32 percent of them felt that there was 'very much' a need to improve the teaching methods of listening comprehension skills followed by 55 percent of teachers who agreed to some extent. Only 8 percent felt there was no need to change the teaching techniques of listening comprehension skills.

About 64 percent used L1-L2 translation method to teach listening comprehension. They reasoned that children faced difficulty in understanding certain concepts. So, translations made it easier for them to understand. Translations helped children to remember vocabularies and when they understood better, they could make connections to words. Besides, many children came from illiterate family backgrounds, and simplification was necessary for better understanding of the text. And for unfamiliar names, difficult vocabularies and concepts, translation was the only answer.

However, about 27 percent said that they did not use translation method reasoning that students would never be motivated to use English and justified that they would always listen to the language they were familiar with instead. Others argued that the translation method discouraged children to learn English and encouraged them to get used to listening to L1.

More than 70 percent thought that using the translation method in the primary language classes could enhance their students' listening skills to a certain extent. They pointed out that if students did not understand what the teacher said in

English, they lost interest in the lesson being taught. Some translation also helped in clarifying difficult terms and concepts. But they also pointed out that too much translation would make students dependent and cautioned that one must not get into the habit of translating all the time.

Regarding the issue of whether or not there are any specific activities in the English syllabus to teach listening comprehension skills, a majority of teachers said that there are no specific listening activities. They thought that all the activities are generic in nature and the syllabus only listed the listening activities to be carried out without specifying which listening activity. Besides, the syllabus is more focused on reading and writing strategies, and not on listening comprehension. There are a few activities like book talk, storytelling, listen to rhythm of the poem, tell fables and listen to fables, retelling dialogues, discussions, debates, answering questions, etc. But these activities are not adequate to teach different types of listening comprehension.

Results of the analysis of students' questionnaires

Of the 100 respondents, students from class III constituted 13 percent, students of class IV constituted 50 percent and class V students 37 percent. More than half of them (59%) came from rural community schools while 11 percent, 25 percent, and four percent came from semi-urban, town, and city schools respectively. A good 70 percent of them spoke Dzongkha as their mother tongue, 13 percent spoke Sharchokkha as their mother tongue, and the remaining 17 percent either spoke Khengkha, Lhotshamkha, Kurtoep or others as their mother tongue.

Although 95 percent of the students used English to talk to their English teachers, only 11 percent of them used English while talking to their friends. More than three quarters (78%) of them used Dzongkha to talk to their friends and as few as two percent used Dzongkha to talk to their English teachers. The data revealed that 40 percent of students used only English while doing group activities, 56 percent of them used both English and Dzongkha and the remaining two percent and one percent used only Dzongkha and other languages respectively during group activities.

It is to be noted that 63 percent of students said that their English teachers used other languages besides English; although, 36 percent said their English teachers did not use other languages in an English class. While only one percent said that their English teachers 'always' used other languages in an English class, two percent agreed that they 'very often' did, and another 76 percent of them said that they 'sometimes' used other languages. However, substantial 20 percent of students said that their English teacher 'never' used other languages in an English class.

When it came to the question of 'how they find their English textbook', 30

percent of them said that they found it 'very easy', another 30 percent said they found it 'easy', three percent said they found it boring, 29 percent responded that it is 'difficult', and seven percent of them found it to be 'very difficult'. However, 67 percent of the respondents rated the essays/stories/poems (content) included in the English textbook as 'very good' and additional 26 percent of them rated them as 'good'. While five percent of them rated the content as 'okay', only two percent of them rated the content of the textbook as 'boring'.

When asked how the students found the lessons in English, 64 percent of them responded that they found it 'good and interesting', two percent responded that they found it 'interesting to some extent', 31 percent found it to be okay and the last one percent said they found the lessons 'not very interesting'. And those who found the English lessons not very interesting attributed the reasons to 'unfamiliar topics' (8%), 'uninteresting poems and stories' (3%) and 'difficult language' (4%).

Almost all of the respondents (96%) agreed that the present English syllabus was relevant to their needs, and 83 percent of them liked the teaching methods of their English teachers. Only three percent of them said 'not very much' when asked if they liked the teaching methods of their English teachers.

As many as 72 percent of the respondents thought that learning English would be 'very much' enjoyable if their English teachers translated difficult concepts into Dzongkha or other languages that they understood, and another 5% thought that their lessons would become enjoyable 'to some extent' if translations were done. Most of the respondents favoured the inclusion of the translation method just because they understood the difficult words and concept better and many of them believed that through translation, it improved their listening skills. A few of them who said 'no' to the translation method were of opinion that the only way to learn English was through English and reasoned out that they rather get confused if lessons were translated into Dzongkha. Further, 18 percent of them thought that they 'might not enjoy much' and three percent of them thought they 'would not enjoy at all' if lessons were translated into Dzongkha.

About 61 percent of the respondents liked their teachers' way of teaching the listening skills followed by 35 percent who found it to be okay. The remaining four percent did not like it very much. When asked how often their English teachers used the translation method to teach them listening skills, only five percent said that they 'always' did and one percent responded 'never'. An overwhelming 93 percent, however, agreed that their teachers 'sometimes' used the translation method to teach them listening skills.

Almost all of the respondents said that their teachers used stories, poems, songs, rhymes, essays, games, book talk, etc. to teach them listening skills. A few of them responded that their teachers used 'giving instructions' and 'talking in Dzongkha' to teach them listening skills. The analysis of data also showed

that some of the commonest strategies through which they would improve their listening skills were: songs and rhymes, stories, poems and speeches.

When asked if they knew that listening could be classified under four categories, only 18 percent of them responded in affirmative, and the remaining 82 percent had no idea of the types of listening skills. Even the 18 percent who agreed that listening skills are of four types, did not actually know it as all of them gave the answers like 'reading', 'speaking', 'listening' and 'writing'.

The pre-test and post-test experiment

For the pre-test and post-test experiment, I chose class III from one of the rural primary schools of Paro – the only school with a bilingual class. All the students in that class spoke only Dzongkha as their mother tongue and they were not exposed to any other languages besides Dzongkha and English. It was important to choose a monolingual class to provide the same opportunity to all the students, and to create authentic listening lessons for L2-L1 translation.

In the pretest, students (n=12) were asked to listen to the readings from The Peace Ring – the graded reader meant for class III students. The text was read twice after which they were asked to answer a set of 10 objective questions and two subjective questions. No translation was used in this phase. The test was marked out of 20.

I decided to do the intervention (treatment phase) a week later so that I could analyse the data of the pretest and use the results of the data more meaningfully during the intervention phase. In this phase, I used L1 (Dzongkha) whenever necessary in L2 (English) class particularly in translating difficult English words, phrases or terms into Dzongkha. In this case too, I used texts which were carefully graded for class III students. I took a session of 30 minutes each for five weeks totaling to five sessions in five weeks.

The post-test was administered at the end of week 5. Hiawatha's Kind Heart – the graded reader for class III was used for this purpose. Like in the pretest, students were asked to listen to teacher's reading of the text and then answer 10 MCQ and two subjective questions that required reasoning. Unlike the pre-test, the text was read in English with Dzongkha translations wherever necessary.

The average marks students scored during the pretest in the MCQ was 5 and 1.5 in the objective questions with an aggregate of 6.5 (M=6.5) (refer table No. 1). The lowest marks students scored during the pre-test was 3 marks and highest was 11 marks {range 3-11} with most of the students scoring only 7 marks (M=7) out of 20. However, in the post-test, average marks students achieved under MCQ was 5.83 and 2.58 marks under subjective questions with the overall average of 8.41 marks (M=8.41) out of 20. While the range in the post-test was 2-12, most of the students scored 12 marks (33.33%). Total marks 12 students scored during the pre-test was 78, but the same group of students scored 101 marks with an increase of 23 marks after the treatment phase.

Table No. 1: Results of the analysis of the pre-test and post-test data experiment

Student ID	**Pre-test (MCQ)-10**	**10 (Subjective)**	**20 (Total)**	**Post-test (MCQ)-10**	**10 (Subjective)**	**20 (Total)**
Std01	6	3	9	7	5	**12**
Std02	4	3	7	7	5	**12**
Std03	5	0	5	6	0	**6**
Std04	8	3	11	8	3	**11**
Std05	3	3	6	5	0	**5**
Std06	7	0	7	7	5	**12**
Std07	7	0	7	5	0	**5**
Std08	5	0	5	7	3	**10**
Std09	5	3	8	7	5	**12**
Std10	4	3	7	5	5	**10**
Std11	3	0	3	4	0	**4**
Std12	3	0	3	2	0	**2**
Total Marks	**60**	**18**	**78**	**70**	**31**	**101**
Mean Marks	**5**	**1.5**	**6.5**	**5.83**	**2.58**	**8.41**
Range	**3-8**	**0-3**	**3-11**	**2-8**	**0-5**	**2-12**
Mode	**3**	**0**	**7**	**7**	**5**	**12**

Discussion

Several theories point out that a bilingual or multilingual classes are more effective in the teaching of a target language rather than a monolingual class which tends to use only the target language. Research by Cummins (1983, p.

376) demonstrates the interdependence of L1 and L2 in the learners' ability for academic excellence. Applied to the Bhutanese English-Dzongkha context, Cummins theory denotes that Dzongkha instructions, which develop first language Dzongkha listening skills (for example) for Dzongkha speaking students, is not about just developing Dzongkha listening skills, but also deeper conceptual and linguistic proficiency which is strongly related to the development of English language and general academic skills. Put differently, although the surface aspects like pronunciation, intonation, and grammatical structures are different, the underlying cognitive/academic proficiency is common across languages. This common underlying proficiency makes possible the transfer of cognitive and linguistic skills from one language to another. If this be the case, learning the second language English should not be a major problem particularly because CUP provides the base for the development of both the first language (L1- Dzongkha) and the second language (L2-English). It also follows that any expansion of CUP that takes place in one language will have a beneficial effect on the other language(s). This clearly shows how L1 helps children to learn the L2.

The results from the analysis of teachers' questionnaires (n=100) indicate that all the English teachers who are basically bilinguals use languages other than English in an English class with 33 percent of them 'often' using bilingualism as a strategy to teach English. In fact, 56 percent of them think that some topics in the English syllabus should be translated into languages students understand so that students would be motivated to learn English (4% strongly agree, and 48% agree to some extent that English must be translated to languages students understand). More than 50 percent of the English teachers feel that 'up to certain extent', translations are necessary as the content presented in the prescribed text are unfamiliar and difficult to understand.

However, about 27 percent said that they do not use the translation method reasoning that students will never be motivated to use English. They reasoned out that students would always like to listen in the language they are familiar with, not English. Still some argued that the translation method discouraged children to learn English as they would get used to listening in the L1 thereby depriving the students of learning English. But such apprehensions are quite natural since there are also theories which argue that L1 will prevent learning of L2, and materials and language in L1 will act as a hindrance in the learning of L2.

Nonetheless, the teachers who thought that bilingualism (translations) benefited students far outweighed those who thought otherwise. Besides, translations were already used in the English lessons in varying degrees and students seemed not only to enjoy it, they attributed bilingualism as one of the motivating factors to learn English as the results from the analysis of the students' questionnaires clearly pointed out.

A few of them who said 'no' to the translation method are of opinion that the only way to learn English is through English and that the students get confused if English lessons are translated into Dzongkha. They also argued that translations are not enjoyable and stressed that it should not be used in English classes. Notwithstanding this small percentage of students who disagreed with the fact that L1 can be used as resource to learn L2, many students wanted translations to be used as a strategy.

The results of the analysis of the pre-test and post-test scores also affirm the fact that bilingualism has benefits particularly in enhancing children's listening skills. During the pre-test, majority of students (n=12) performed poorly with an average mean of only 6.5 percent from the total of 20 marks with 50 percent of them scoring 0 (zero) in subjective questions. After the treatment phase, the overall mean improved to 8.41 marks and number of students scoring 0 (zero) decreased to 41.6 percent. Even by comparing the mode, we can conclude that using bilingualism strategy has helped. For instance, during the pre-test, most of the students scored an average of 7 marks (mode=7) in contrast to 12 marks (mode=12) that the same group of students scored after the treatment phase. The overall difference between the results of the pre-test post-test experiment is positive (difference of mean = 5 marks). Since the controlled variable was 'Dzongkha language', it can be safely concluded that the improvement of listening skills in students was due to the usage of Dzongkha language.

Whether we look from the teachers' perspectives or students opinions or whether we practically study the theory 'bilingualism is a resource in learning of L2,' using pre-test and post-test experiment and finding out the impact of the new theory or examine literature reviews, all the results converge to one point – bilingualism has a positive impact in second language learning. Therefore, it can be deduced that use of L1 helps children to learn the L2 and this is particularly true when it comes to the enhancement of listening comprehension skills of PS students.

One of the results from the data analysis of both the teachers' and students' questionnaires is that none of the students seem to know the types of listening skills. Whether it is 'discriminative listening' such as listening for different sounds; or 'comprehensive listening' such as listening for understanding; or 'critical listening' such as listening for evaluation or 'empathic listening' such as listening to understand the feelings and emotions of the speakers, they all meant the same thing to them. A few students who said that there are four types of listening skills actually mistook four language skills (reading, writing, listening and speaking) as four types of listening skills. Even English teachers whose minimum qualification were PTC and had minimum of two years of teaching English in primary schools did not know of the types of listening skills. Therefore, how they taught different types of listening skills to students is an

area of further research.

It must be also noted that 85 percent of primary school English teachers come across problems while teaching the English texts, one of the causes of which can be attributed to the learner's lack of interest in reading the text. While learners' poor proficiency in English accounts to 41 percent, majority of them feel that unfamiliar content (43%) and difficult lessons (8%) are some of the other reasons why students show little interest in learning English. Therefore, lesson reviews and content analysis could be another area of research in future. Hopefully, after a thorough study, curriculum developers could design lessons which are interesting and learner-friendly so that students would show an interest in learning the lessons.

Conclusions

Although bilingualism is not formally a prescribed strategy in Bhutan, it is quite popular among the teachers and students in primary schools and they use this strategy to learn new concepts as well as comprehend English lessons. Contrary to the preconceived notion of mother tongue impeding learning of a second language, findings from this research confirm that L1 can be used as a meaningful resource in the ESL (English as second language) classrooms.

Such findings have far reaching implications for teacher training colleges, the Ministry of Education (MoE), curriculum developers and language teachers. Colleges of Education can use 'bilingualism as an alternative strategy' in training teachers how to teach the target language. The MoE can frame language policies pertaining to bilingualism. Curriculum developers and language teachers can take advantage of the study findings and practice bilingualism as a resource to teach the target language.

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Exploring the Final Year Pre-Service Teachers' Sense of Self-Efficacy Beliefs

Kezang Sherab[1] and Bijoy Kr. Rai[2]

Abstract

Teachers are at the heart of any education system. Their judgement about their ability to influence students' learning and achievement play an important role in providing quality education. Teachers play an important role in ensuring quality learning for students irrespective of the quality of curriculum and other school facilities. Teacher preparation programmes must focus on inculcating the right kind of beliefs about teaching and learning in pre-service teachers. It is often true that behaviour follows one's beliefs. Once beliefs are formed, it is difficult to change. Teacher education programmes have a responsibility for shaping pre-service teachers' beliefs in their ability to teach referred to as their self-efficacy beliefs. This sequential mixed methods study aimed to explore for the first time the level of pre-service teachers' perceived sense of self-efficacy beliefs for teaching primary curriculum subjects and infusing GNH values in the Bhutanese context. The participants were final year pre-service teachers (n= 213). A 24-item teacher self-efficacy belief instrument developed by Tschannen-Moran and Hoy (2001) was used. The survey also included a 5-item scale to measure the self-efficacy beliefs of pre-service teachers for infusing GNH values. The four focus group discussions centred on their experiences garnered during their three and a half years stay in the College to build self-efficacy were conducted. Results revealed that pre-service teachers' self-efficacy was generally higher and that it did not vary significantly by gender, age, parents' occupation, and the type of course they took. Similarly, efficacy for infusing GNH values was also quite high with significant differences in terms of only parents' occupation. Implications for teacher training colleges are presented and also the need for future research is identified.

Key Words: Pre-service teachers; Self-efficacy beliefs; GNH values; Quality Education;

1. Senior Lecturer, Dean of Research, Paro College of Education.
E-mail: kezangsherab.pce@rub.edu.bt

2. Senior Lecturer, M.Ed Programme Leader, Paro College of Education.
E-mail: bijoykrai.pce@rub.edu.bt

Context of the Study

The debate over the perceived decline in the quality of education has become an on-going phenomenon in the Bhutanese education system (Sherab & Dorji, 2013, REC, 2009) which according to the existing literature is a universal issue (Cheng & Tam, 1997; Heyneman, 1997). One of the indicators of a quality education is the quality of teachers. Teachers are at the heart of any education system. There is research to show that teachers play an important role in ensuring quality learning for students irrespective of the quality of curriculum and other school facilities (Cole & Knowles, 2000; Holt, 2003; Linnakyla, 2006; UNESCO, 2004). However, in the Bhutanese context, teaching has not always been a profession of choice for many. Many join teaching as a last resort. The Government has failed to attract quality candidates for teacher training (MoE, 2014). This is evident from the higher education selection process of high school graduates as teacher candidates are selected only after the completion of selection for other tertiary institutions. Education colleges get the lowest rung of the high school graduates to be trained as teachers (REC, 2012). It is time now that we ask ourselves– is it possible for an average or below average high school graduate to become a good teacher? In other countries such as Singapore and Finland where there are world-class education systems, teacher candidates are selected from the top 10 percentage of the high school or university graduates.

Over the years, the quality of Bhutanese teacher graduates has been questioned (REC, 2009; REC, 2012, MoE, 2014). Given the quality of teacher candidates, one must ask if it is reasonable to expect high quality teacher graduates. With such developments taking place, the two teacher education colleges in the country has put in place several measures to increase the quality of teacher graduates. One of the measures was the increase of the training duration for the Bachelor of Education (B. Ed) programme from three years to four years in 2009. B. Ed programme is for the high school graduates (grade 12) who are interested to take up teaching profession. The main goal of increasing the B. Ed programme to four years was to prepare prospective teachers adequately in terms of both the subject content as well as pedagogical knowledge and skills (PCE, 2009; Wangmo, Subba, Penjor, Jurme, & Yangdon, 2015). However, there are still criticisms indicating that Bhutanese teachers are not prepared well to face the 21st Century teaching challenges. Recently the Ministry of Education has been investing a great deal of money to equip in-service teachers with 'Teachers introduced to transformative pedagogy' (Wangdi, 2016). The impact of such an initiative would be visible some few years down the line, which will be of great interest to the researchers. However, as of now, due to lack of research on teacher quality such claims cannot be ascertained. While there are many indicators of teacher preparedness and quality, this study aimed to explore for the first time the final year pre-service teachers' self-efficacy beliefs during their 7th Semester

of their four-year programme to understand the quality of training programme.

Teacher education programmes have a responsibility to shape the self-efficacy beliefs of pre-service teachers and to create a strong basis for future beliefs and learning (Pajares, 1993; Pendergast, Garvis, & Keogh, 2011; Wookcock, 2011) when they are in their formative years (Woolfolk-Hoy & Spero, 2005). Woodcock (2011) argues that once beliefs are formed, it is difficult to change. Therefore, it is imperative that pre-service teachers get adequate opportunity to develop their self-efficacy beliefs for teaching. Understanding the nature of pre-service teachers' self-efficacy would help teacher educators prepare future teachers with required knowledge, skills, attitude, and commitment to teaching as a lifelong career. However, in the Bhutanese context, the natures of pre-service teachers' self-efficacy beliefs remain unexplored. Therefore, this study was aimed at exploring and understanding the nature of pre-service teachers' self-efficacy beliefs for the first time.

Objectives:

The main objectives of this study were to:

- Examine the factor structure of the pre-service teacher self-efficacy belief scale;
- Explore the nature and level of final year pre-service teachers' self-efficacy beliefs;
- Evaluate if there are significant differences in pre-service teachers' self-efficacy beliefs in terms of various demographic characteristics such as gender, age, father's occupation, mother's occupation, and course; and
- Investigate the impact of teacher education programmes on pre-service teachers' self-efficacy beliefs.

Perceived Sense of Self-efficacy

According to Bandura (1997, p. 3) a perceived sense of self-efficacy belief is referred to as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments." Research has shown that self-efficacy beliefs have a strong predictive potential, that individuals with high sense of self-efficacy beliefs are more likely to visualise successful outcomes and the ones with low sense of efficacy visualise failure (Bandura, 1997; Stajkovic & Luthans, 1998). The efficacy theory has been used in a wide variety of situations to predict effort, exertion, persistence, actions, and coping from infancy to old age (Bandura, 2000; Kavanagh, 1992; Williams, 1992). Bandura (1977, p. 6) rightly mentions that:

> Efficacious people are quick to take advantage of opportunity structures and figure out ways to circumvent institutional constraints or change

> them by collective action. Conversely, inefficacious people are less apt to exploit the enabling opportunities provided by the social system and are easily discouraged by institutional impediments.

According to Bandura (1977), one's sense of perceived efficacy beliefs is formed based on four sources of information – enactive mastery experiences, vicarious experiences, verbal persuasion, and physiological and emotional states. It is imperative that these four sources of efficacy information are available to help individuals develop higher efficacy beliefs depending on the task in hand.

The self-efficacy theory has received increasing attention in educational research over the last few decades and its usefulness has been well documented (Dembo & Gibson, 1985; Fives, 2003; Henson, 2001; Hoy & Woolfolk, 1993; Pajares, 2007; Tschannen-Moran & Gareis, 2004). Gavora (2010, p. 18) states, "teacher self-efficacy belief is the teacher's personal (i.e., self-perceived) belief in an ability to plan instruction and accomplish instructional objectives. It is in effect the conviction the teacher has about his/her ability to teach students efficiently and effectively." A robust sense of teacher self-efficacy beliefs (TSEB) has been shown to bring about improvement in various educational practices and that they are more willing to take risk. There is evidence to show that TSEB is an indicator of teacher effort, perseverance, commitment, motivation, enthusiasm, instructional behaviour, and student achievement (Goddard, 2001; Knoblauch, 2004; Tschannen-Moran & Hoy, 2001) and therefore, it is important that teachers possess higher self-efficacy beliefs for teaching, which otherwise would have a negative impact on the quality of education. Discussing the importance of teacher self-efficacy, Chan (2005, p. 159) comments, "Examining individual teacher self-efficacy can be a powerful tool to understanding and improving teacher education."

While relevance and usefulness of TSEB has been well researched and documented in terms of in-service teachers there is not much research on pre-service teacher self-efficacy beliefs (PSTSEB). For Bhutan, this is the first attempt known to explore the efficacy beliefs of pre-service teachers. PSTSEB refers to the future beliefs of their capabilities to be effective teachers. Research has shown that self-efficacy belief is a task or domain and situation or context specific (Knoblauch, 2004; Sherab, 2013). For instance, a physical education teacher might be efficacious in teaching badminton skills but not football skills. Likewise, context plays an important role in studying efficacy beliefs. It would be easier to teach Buddhist values to a student whose religion is Buddhist than to a non-Buddhist student. In this study, we propose to use PSTSEB as a measure to indicate the quality of primary school teacher preparation at the Paro College of Education. This is reasonable because there is enough literature to show that, teachers' efficacy beliefs have a positive correlation with how a teacher is going

to perform the task of teaching (Sherab, 2013; Tschannen-Moran & Hoy, 2001). In a similar pattern, efficacious pre-service teachers are likely to put in more effort, be patient, use a variety of teaching and assessment techniques, engage students meaningfully in the learning process, and become successful classroom managers in comparison to the inefficacious pre-service teachers. Therefore, it is essential to understand the nature and level of PSTSEB and provide appropriate interventions to help pre-service teachers develop a robust sense of efficacy beliefs. The nature and development of the beliefs of pre-service teachers should be explored to better understand the roads these beliefs have travelled through and the direction they are taking (Pajares, 1993).

Some studies in the international contexts have shown that pre-service teachers exhibit higher levels of efficacy beliefs (Duffin, French & Patrick, 2012; Woolfolk-Hoy & Spero, 2005). While it is beyond the scope of this study to examine the level of in-service teacher efficacy, the focus of this study is on the pre-service teachers' efficacy. Would Bhutanese pre-service teachers also exhibit higher levels of efficacy as found in other countries? If so what would be the contributing factors? Would pre-service teacher efficacy differ in terms of various personal characteristics such as gender, age, course, and parents' occupation? To this date no research has been carried out to reveal the level and nature of Bhutanese PSTSEB.

Literature indicates that teacher education programmes need to be designed to impact PSTSEB because "teachers' beliefs are more malleable during the years of teacher preparation, rather than once an individual is in a classroom" (Decker & Rimm-Kaufman, n.d, p. 46). There is also evidence to show that the training years are a critical period for pre-service teachers to learn new beliefs and change their existing beliefs about teaching which have been accrued based on their school experiences (Bandura, 1977, 1997; Decker & Rimm-Kaufman, n.d; Pajares, 1993: Woolfolk & Hoy, 1990; Woolfolk-Hoy & Spero, 2005;) otherwise once they become full-fledged teachers, it would be difficult to unlearn any inappropriate beliefs they may hold. Evidence suggests that with years of teaching experience, teacher efficacy becomes more stable and more resistant to change (Pajares, 1996; Tschannen-Moran, Hoy & Hoy, 1998; Woodcock, 2011). Therefore, it is important for pre-service teachers to develop higher levels of efficacy beliefs and perceive themselves as capable of overcoming the challenges of the teaching profession.

Teacher educators need to increase the awareness of beliefs of pre-service teachers. Research has shown that some of the most powerful sources of efficacy information for the pre-service teachers are their microteaching experiences (Mergler & Tangen, 2010) and practicum experiences (Knoblauch, 2004). Would this be similar to the Bhutanese pre-service teachers? What would be some of the factors that play significant roles in building their efficacy? This study was

designed to address some of these concerns.

Research Question

- What levels of self-efficacy beliefs (PSTSEB) for teaching do the final year pre-service teachers hold?
- What levels of self-efficacy beliefs (PSTSEB) for infusion of GNH values do the final year pre-service teachers hold?
- Is there a significant correlation between the PSTSEB for teaching and PSTSEB for infusing GNH values?
- Is there a correlation between PSTSEB and infusion of GNH values scales?
- Is there a significant difference in PSTSEB for teaching in terms of categorical variables such as gender, age, course, and their parents' occupation?
- Is there a significant difference in PSTSEB for infusing GNH values in terms of categorical variables such as gender, age, course, and their parents' occupation?

Methods and Analysis

This study employed a sequential mixed methods study beginning with a pre-service teacher self-efficacy belief (PSTSEB) survey. Once the survey data was analysed, a total of four focus group discussions were conducted to generate in-depth understanding of their teaching self-efficacy beliefs.

The survey instrument consisted of 29 items that measured overall pre-service teachers' teaching self-efficacy beliefs. Out of the 29 items, 24-item teacher self-efficacy belief scale was borrowed from Tschannen-Moran and Hoy (2001), which is also used for measuring pre-service teachers' teaching self-efficacy beliefs. This validated scale which is widely used by educational researchers is composed of three sub-scales – an eight item-scale measuring teacher efficacy for student engagement; an eight item-scale measuring teacher efficacy for instructional strategies, and another eight item-scale measuring teacher efficacy for classroom management. However, the authors who designed this scale advise that the factor structure of the sub-scales is not reliable for pre-service teachers because they do not distinguish between the three areas of teacher functioning. As a result, Tschannen-Moran and Hoy (2001) recommend using only the full-scale score for pre-service teachers and not the sub-scale scores.

The survey also had a five-item scale that measured pre-service teachers' efficacy for infusing Gross National Happiness values (Sherab, 2013). This five-item scale on GNH was included, as teachers are now required to infuse GNH values into their academic subjects. Sherab's (2013) earlier research discovered that in-service teachers had lower efficacy beliefs for infusing GNH values (M=

3.79 for a five-point Likert type scale). This study wanted to explore if pre-service teachers hold similar levels of efficacy beliefs for infusing GNH values.

After entering the data from the questionnaire into SPSS database, a thorough screening process was undertaken to confirm that the data was entered correctly and to understand the distribution characteristics of each item. Descriptive analysis of all the 29 items showed no substantive non-normality in terms of skewness, kurtosis, and outliers. The cases of missing values were also observed to be minimal and without any form of pattern.

From a total of 258 final year B. Ed pre-service teachers, 213 returned their survey questionnaire (82.6% response rate). Demographic characteristics of the participants are shown in Table 1. The mean age of the participants was 23.69 years (minimum 20 and maximum 33 years). Ethics approval was obtained from the College Research Committee.

Table 1: Demographic characteristics

Characteristic	Category	n	%*
Gender	Male	104	49
	Female	109	51
Father's occupation	Farmer	155	73
	Others (Govt. servant, business, corporate, private)	24	25
Mother's occupation	Farmer	141	66
	Others (House wife, private, govt. servant, business)	65	31
Programme	B. Ed Primary	123	58
	B.Ed Secondary/B.Ed Dzongkha	88	41

* *the percentage for each characteristic does not add up to 100 percent due to missing values*

Based on the survey findings, in the second phase, a total of four focus group interviews (2 representing B. Ed Primary programme, 1 representing Secondary Mathematics and IT programme and 1 representing the Dzongkha programme) were conducted consisting of 5 to 7 members in each group.

Results and Findings

This section is divided into two parts. The first part presents findings from the first phase survey study and the second part presents the findings from the second phase focus group interviews and open-ended comments from the survey questionnaire.

Principal Component Analyses

Prior to the Principal Component Analysis (PCA), Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Barlet's Test of Sphericity (BTS) were conducted. KMOs for both the scales were greater than the minimum requirement of 0.6 and BTSs showed statistically significant results ($p < .01$) for both the scales with large chi-square values indicating suitability of items for component analysis (Manning & Munro, 2007).

PCA was conducted using varimax rotation to confirm if the 24-item TSEB scale did not have subsets of items when it comes to measuring the pre-service teachers' teaching self-efficacy beliefs, as found by Tschannen-Moran and Hoy (2001) in the context of United States' pre-service teacher survey. The current study conducted with the Bhutanese pre-service teachers confirms that the TSEB scale does not have sub-construct/s, as there are many items that load into more than one component and more over items that belong to particular sub-construct in the in-service teacher survey were all mixed up (see Table 2). Such findings suggest that the factor structure of the TSEB sub-scales applicable for in-service teachers is not reliable for pre-service teachers even in the Bhutanese context. This is mainly because pre-service teachers are not able to distinguish between the different areas of teacher functioning. It is likely that whatever they imagine for themselves in one area, they tend to imagine for all the areas of teaching. As a result, the data analysis in this study is based on only the full-scale score and not the sub-scale scores. Hence, the component is referred to as pre-service teachers' self-efficacy belief (PSTSEB) for teaching scale for the purpose of this study. The Cronbach's reliability alpha for this scale was .94. The number in front of each item is the serial number of each item in the survey questionnaire.

Table 2: Rotated component matrix for PSTSEB for teaching scale

Item	Component		
	1	2	3
11) To what extent can you craft/design good questions for your students?	.726		
20) To what extent can you provide an alternative explanation or example when students are confused?	.634		
23) How well can you implement alternative teaching strategies in your classroom?	.615		
17) How much can you do to adjust your lessons to the proper level for individual students?	.591		
9) How much can you do to help your students value learning?	.574		
7) How well can you respond to difficult questions from your students?	.556		
14) How much can you do to improve the understanding of a student who is failing?	.547		.491
24) How well can you provide appropriate challenges for very capable students?	.527	.477	
18) How much can you use a variety of assessment strategies?	.508	.408	
8) How well can you establish routines to keep activities running smoothly?	.484		
10) How much can you gauge/measure student comprehension of what you have taught?	.473	.429	
12) How much can you do to foster student creativity?	.456	.418	
16) How well can you establish a classroom management system with each group of students?		.725	
15) How much can you do to calm a student who is disruptive or noisy?		.702	
21) How well can you respond to defiant/disobedient students?	.518	.641	
3) How much can you do to control disruptive behaviour in the classroom?		.606	
19) How well can you keep a few problem students form ruining/ spoiling an entire lesson?		.599	
13) How much can you do to get children to follow classroom rules?			
4) How much can you do to motivate students who show low interest in their studies?			.810
(1) How much can you do to get through to the most difficult students?		.452	.683
5) To what extent can you make your expectations clear about student behaviour?			.655
2) How much can you do to help your students think critically?			.558
22) How much can you assist families in helping their children do well in school?			.532
6) How much can you do to get students to believe they can do well in school work?			.496

PCA was also conducted for the 5-item pre-service teachers' self-efficacy beliefs for infusing GNH values scale. All the 5 items loaded into only one component indicating that there were no sub-scales (see Table 3). Thus, this component is referred to as PSTSEB for the infusion of GNH values scale. The Cronbach's reliability alpha for this scale was .90.

Table 3: Component matrix for PSTSEB for infusing GNH values scale

Item	Component 1
27) I know how to adapt GNH values lessons to the needs of my students	.882
26) I know how to create GNH values lessons that hold my students' interest	.880
28) I can easily integrate the teaching of values into my academic lessons	.849
25) I know how to design lessons that enables all my students to master GNH values	.846
29) I can teach values lessons as effectively as I do other academic subjects	.782

Level of pre-service teachers' self-efficacy beliefs

To understand the level of pre-service teachers' self-efficacy beliefs for teaching, the scores for each of the 24 items from PSTSEB for teaching were aggregated and a mean score was computed (see Table 3). Similarly, a mean score was computed using the scores of 5 items from the PSTSEB for infusing GNH values (see Table 3). For a 9-point Likert type scale items a mean of 7.20 and 7.05 appears to be bit higher than the centre point of 5. This is an indication that the final year pre-service teachers have higher self-efficacy for teaching as well as for infusing GNH values into teaching of academic subjects. The findings from this study corroborate the earlier findings that the pre-service teachers usually exhibit higher self-efficacy beliefs.

Table 3: Final year pre-service teachers' SEB components with mean and SD (n=213)

Self-efficacy component	N	Mean	Std. Deviation
PSTSEB for teaching	213	7.20	.866
PSTSEB for infusing GNH values	213	7.05	1.221

Correlation

As shown in the table 4 below a significant positive correlation was found between PSTSEB for teaching and PSTSEB for infusing GNH values, $r = .69$, $p < .05$. This is an indication that the increase in the pre-service teachers' teaching self-efficacy is likely to increase their self-efficacy for infusing GNH values and vice versa.

Table 4: Correlations

		PSTSEB	GNH
PSTSEB	Pearson Correlation	1	.692**
	Sig. (2-tailed)		.000
	N	213	213
GNH	Pearson Correlation	.692**	1
	Sig. (2-tailed)	.000	
	N	213	213

**. *Correlation is significant at the 0.01 level (2-tailed).*

Pre-service teachers' self-efficacy belief components compared on demographic characteristics

A total of five one-way MANOVAs (Multivariate Analysis) were conducted between two pre-service teachers' self-efficacy belief components as dependent variables and five demographic characteristics (gender, programme, age, father's occupation, and mother's occupation) as independent variables to explore if there were any statistically significant differences in the scores of the two dependent variables. Inspection of multivariate Box's M Test showed significance ($p<05$) for only one MANOVA (*course)* indicating that observed covariance matrices of this dependent variable was not equal across groups. However, an examination of the standard deviations for various groups showed that differences are minimal. Inspection of Levene's tests for each of the two dependent variables

to check homogeneity of variances revealed only one significant result for self-efficacy to infuse GNH values in terms of father's occupation. Inspection of standard deviations for the dependent variable showed relatively small differences between the grouping categories, which suggested that violation of the assumption of homogeneity of variances had not been very serious. This finding indicated that the MANOVA should be interpreted.

Results of Multivariate F-tests

The overall multivariate F-tests (see Table 5) showed significant difference for father's occupation and marginally significant difference for mother's occupation. The differences for all other independent variables (gender, age, and programme) were non-significant.

Table 5: MANOVA results showing significant differences on two components

Effect	Wilks Lamda	F	Hypoth-esis df	Error df	Sig.	Partial Eta Squared
Father's Occu-pation	.950	2.650	4.000	406.000	.033	.025
Mother's Occu-pation	.960	2.100	4.000	404.000	.080	.020

Results of Univariate F-tests

Following significant multivariate F-tests for father's occupation and marginal significance for mother's occupation, univariate F-tests were examined to identify which component contributed to the significance. Furthermore, Posthoc Tukey HSD multiple comparisons tests were consulted to identify which categories were significantly different. According to the results of univariate F-tests as shown in table 6 both father's and mother's occupation showed statistically significant differences on PSTSEB for infusing GNH values component. However, examination of the effect size as measured by Partial Eta Squared (see Table 6) for both the significant variables indicated that the actual variance explained in the mean values between various categories were very small (3.5% and 3.8%).

Table 6: Tests of Between-Subjects Effects for GNH values component with significant results

MANOVA effect	Dependent variable	Type III Sum of Squares	df	Error df	F	Sig.	Partial Eta Squared
Father's occupation	PSTSEB for infusing GNH values	10.828	2	204	3.652	=.028	.035
Mother's occupation	PSTSEB for infusing GNH values	11.772	2	203	3.971	=.020	.038

The pre-service teachers' self-efficacy for infusing GNH values significantly differed in terms of both father's and mother's occupation. For father's occupation, consultation of Posthoc Tukey HSD multiple comparison test for PSTSEB for infusing GNH values showed that the mean for the pre-service teachers whose fathers were farmers (Mean = 7.17, SD = 1.16) was significantly higher than the mean for pre-service teachers whose fathers were in others category such as government service, corporate, private, business (Mean = 6.58, SD = 1.43). In terms of mother's occupation, Posthoc Tukey HSD multiple comparison tests for PSTSEB for infusing GNH values showed that the mean for pre-service teachers whose mothers were farmers (M = 7.20, SD = 1.20) was significantly higher than the mean for pre-service teachers whose mother were in others category such as government service, housewives, businesses and corporate sector (M= 6.66, SD = 1.29). Such findings are an indication that the pre-service teachers who come from a farming background are likely to do much better in terms of infusing GNH values into their academic lessons while compared to the pre-service teachers whose fathers were in the government service, business, and corporate sector and mothers who were in the government service, housewives, and business sector.

Findings from the focus group interviews

A total of four focus group interviews (n= 5-7 each) were conducted to get an in-depth understanding of the pre-service teacher efficacy. Interview data were analysed using thematic coding procedure, which are presented in this section. Each of the focus groups is referred to as PFG1 (Primary Focus Group1), PFG2 (Primary Focus Group2), SFG3 (Secondary Focus Group3) and DFG4 (Dzongkha Focus Group4). A few open-ended comments in the survey

questionnaire made by the survey respondents were also included as a part of the qualitative analysis in this section. The common themes that emerged from the interview transcripts are presented in the following section.

Beliefs about teaching profession

Findings clearly indicate that pre-service teachers had completely different beliefs about teaching prior to the commencement of their training programme in the College. Some of these pre-service teachers thought that teaching was all about providing "information from the textbook", "teachers have all the knowledge", "teaching job to be hectic", "boring and burdensome", "salary not good", and that it was a "low profile job" (PFG1, PFG2, SFG3). Some of the members from PFG2 expressed that they were forced to take up teaching profession by their elder siblings. This is a clear indication that many high school graduates join the teaching profession without their own genuine interest. According to PFG1 some of their own teachers in the schools followed traditional way of teaching and were most often harsh to those who did not know how to deal with students. These teachers often scolded and used corporal punishment with their students. As a result, "these students were scared of learning" (PFG1). However, members of all the four focus groups confessed that after three and a half years of training and especially after six months of practicum, they now believe that teaching is not only about giving information to the students from the textbooks, but that teachers act as a guide and that teaching requires hard work and commitment. They have now realised that teaching is a noble profession and not at all boring although they need to be committed and dedicated. Such findings indicate existence of higher self-efficacy beliefs amongst pre-service teachers. Having decided to face the challenges of the teaching profession, one survey respondent (ID 62) boldly states, "teaching students may be challenging but as far as I am concerned, my interest is in shaping upcoming youth's life. I am always ready to face challenges for better learning." Such commitments from future teachers would go a long way in inculcating the right kind of beliefs about teaching in all the prospective teachers.

Main sources of efficacy information

Members of the PFG1 believed that micro-teaching experiences, teaching skills and strategies classes (although there are other modules), positive comments, and motivation from their college tutors helped them boost their self-confidence. Other focus group members were also of the opinion that modules such as teaching skills and strategies were very useful for them. Pointing to the importance of learning teaching strategies at the College, one of the survey respondents (ID 108) commented, "I am confident enough to teach to the students because we are familiar with all [the] strategies that we learned in the College."

Discussing the importance of how tutors in the College help pre-service teachers gain confidence and develop positive attitude towards the teaching profession, another survey respondent (ID 61) shared:

> It is the effort [that] the tutors have put to help us gain a lot of confidence in holding this position. Teaching us, guiding us through the life of teaching, I learned a lot. Their attitude motivated me in achieving the positive qualities of a teacher. Now I am going to live as a teacher as it is the way to serve and achieve GNH.

It is therefore important that pre-service teachers be exposed to well-structured micro-teaching experiences, hands-on skills and strategies classes, positive and constructive feedback, and appropriate motivation from their tutors to maintain high levels of self-efficacy beliefs. All the four focus groups found teaching practice experience challenging, yet enjoyable and a meaningful learning experience. Members of the PFG2 expressed that teaching practice played a very important role in changing their mindset towards the teaching profession. Such evidence suggests that hands-on field experiences are useful to these prospective teachers in preparing them to become professional teachers. It is important that pre-service teachers experience success during their micro-teaching sessions as well as during their practicum.

Discussion and Conclusion

The current research which is the first of its kind in the Bhutanese education system to study the self-efficacy beliefs of pre-service teachers confirm the earlier findings that the pre-service teachers usually exhibit higher teaching self-efficacy beliefs (Gavora, 2010; Tschannen-Moran & Hoy, 2001). The findings from this study also corroborated the earlier finding that the pre-service teachers unlike in-service teachers are not able to distinguish sub-constructs from the 24-item teacher self-efficacy scale developed by Tschnnan-Moran and Hoy (2001), which has three sub-scales– student engagement, instructional strategies, and classroom management. As advised by Tschannen-Moran and Hoy (2001, p. 801) this is an indication that "subscale scores have little meaning for prospective teachers who are yet to assume real teaching responsibilities." Findings from both phases of the study also corroborated to show that Bhutanese pre-service teachers have higher teaching self-efficacy beliefs. This is an indication that the programmes offered at the College adequately prepares them to face the challenges of a professional teacher. However, it would also indicate that pre-service teachers are still naïve and really do not yet understand the complexity of the teaching task. It would be interesting to follow this cohort of pre-service teachers into their teaching career to examine if they are able to maintain such higher efficacy beliefs.

Evidence from this study also unveiled likely sources of efficacy information as– micro-teaching and practicum experiences, modules such as teaching strategies and skills, tutors' positive feedback and constructive comments, and appropriate motivation. Such findings have practical implications for teacher education programmes. It is important that education colleges maintain such high levels of support to their pre-service teachers all throughout their training period.

One interesting finding from this study was that the pre-service teachers significantly differed in their self-efficacy for infusing GNH values in terms of both father's and mother's occupation. Students from farming background showed significantly higher self-efficacy to infuse GNH values into their teaching lessons compared to their counterparts whose fathers and mothers were government servants, corporate, and business people. While there is no clear explanation for such finding, it can be speculated that students with a farming background are modest and aware of GNH values such as honesty, respect, kindness, and empathy in comparison to those students who are born and raised in the towns and cities. As Sherab had reported Bhutanese society has been increasingly witnessing youth related problems such as drug abuse, alcohol, teenage pregnancy, and suicide mostly in the cities (Sherab, 2013) and this issue merits further research to explore and establish if there is any causal linkage. Such findings have implications for teacher education colleges. It is imperative that teacher education programmes implement efficacy- building interventions to prepare pre-service teachers with knowledge, attitude and skills related to the infusion of GNH values into their academic lessons. Teacher education programmes should focus more on helping the pre-service teachers to be more aware of their own beliefs and other associated factors. Pre-service teachers need to understand how their own beliefs can influence their learning while they are in teacher education programmes.

This study addressed the pre-service teachers' general teaching efficacy and infusion of GNH values efficacy in the Bhutanese context for the first time. Given the value of teacher beliefs in an education system, there is an urgent need for subject specific efficacy research to enhance the quality of education in Bhutan.

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A Literature Review on the 'Funds of Knowledge' Concept

Tshering Wangmo[1]

Abstract

This paper is an excerpt from the literature review for a PhD thesis in Early Childhood Education. It presents a comprehensive history of the concept of 'funds of knowledge'. This concept is the theoretical hub for the thesis titled "Examining ''funds of knowledge as children transition from home to school in Bhutan: In the context of 'Educating for Gross National Happiness' (GNH). The paper begins with the origins of the 'funds of knowledge' studies, the variant definitions and the multiple tenets of the concept followed by some of the contemporary theories such as educating for GNH, the socio-cultural and historical theory, the partnership theory and the household learning theories. These theories are extensions of the concept of 'funds of knowledge' and are very pertinent to the field of Early Childhood Care and Development.

Key words: funds of knowledge, educating for GNH, socio-cultural theory, partnerships, learning in household

Introduction

Based on the need for a sound understanding of best practices in Early Childhood Care and Development for Bhutan, I pursued a PhD study that had a focus on the intersection of home, community and school. It provides a way to access and appreciate the contexts, strengths, values, knowledge and culture of the community of which schools are a part. Currently the relationship between home and school and the practical aspects of sharing 'funds of knowledge' between the two are not well understood and hence not developed in Bhutan. However, when teachers realize the rich resources that lie within their own communities, families and children, they will then be able to meaningfully integrate them into school activities, learning and ultimately into the curriculum. This would result in the use of a pedagogy that is more culturally responsive and inclusive. Therefore, in this paper I share the concept of 'funds of knowledge' which many researchers in this area of study consider as the most important and necessary lens through which to view education for young children.

1. Senior Lecturer, ECCD Programme Leader, Paro College of Education.
E-mail: tsherignwangmo.pce@rub.edu.bt

This paper is condensed from the literature review of my PhD study titled, "Examining funds of knowledge as children transition from home to school in Bhutan: In the context of 'Educating for Gross National Happiness" (GNH). The paper begins with a comprehensive history of the 'funds of knowledge' studies followed by discussions on the important aspects of these studies namely; the multiple tenets of the 'funds of knowledge' studies, the use of teachers as researchers and some pertinent theories and principles that are related to the concept.

The 'funds of knowledge' studies

The beginnings

The first 'funds of knowledge' studies had their beginnings in the city of South Tucson in Arizona where the majority of the population consisted of US Mexicans. The studies began as a four-year (1988-1992) collaborative project between the University of Arizona's Bureau of Applied Research in Anthropology and the College of Education. Velez-Ibanez (1992, p.132) states:

> Since genius is not necessary to conclude that there is a direct relationship for U.S Mexicans especially between income and education, the focus of work undertaken for (the) four years' is to take, 'advantage of the strategic 'funds of knowledge' of U. S. Mexican households of Tucson, Arizona in order to revitalize the relationships of various sorts between home, school and in fact perhaps, even redefining them to the extent that they benefitted students, parents, teachers and administrators.

The primary objective of the collaboration was "to develop innovations in teaching that drew on the knowledge and skills found in local households" (Moll, Amanti, Neff & Gonzalez, 1992, p.132).

Some of the earlier studies, such as Greenberg (1989); Velez-Ibanez and Greenberg (1990) and Velez-Ibanez (1988) adopted a more anthropological approach to studying the US Mexican and Yaqui households and their social capital. The primary focus of those studies was more on the nature of the reciprocal social relationships through which knowledge was transmitted, transformed and utilized (Velez-Ibanez, 1995). Velez-lbanez (1988, p. 142) defines reciprocity as an "attempt to establish a social relationship on an enduring basis, whether symmetrical or asymmetrical, the exchange expresses and symbolizes human social interdependence". Reciprocity and social interdependence are essential and much-practised traits in most Bhutanese households and communities. The Planning Commission of Bhutan (1999, p.19) reports this as one of the development assets of the country:

> Our highly dispersed populations developed over centuries into tightly-knit and self-regulating communities, bound together by unwritten laws, practices and customs that governed kinship and community relations and the use of such shared resources as irrigation water and grazing land. Without this tradition of cooperation and compromise, communities would have been unable to cope with threats and adversity or, indeed, to have survived in the harsh conditions that characterize most parts of our nation.

The Tucson researchers consisted of anthropologists, educational researchers, teachers and at times graduate students. The main researchers were Carlos Velez-Ibanez, Luis Moll, Norma Gonzalez and James Greenberg, the group that Velez-Ibanez (1995, p. 272) describes as the 'fearsome foursome' and much later Hogg (2011, p. 668) calls them the "Tucson Academics". I prefer to use the later term to refer to the group as I continue my discussion of their work. Velez-Ibanez and Greenberg (1990) coined the term 'funds of knowledge' which actually originated from Wolf's 1966 studies that focused on various household economic funds. Velez-Ibanez and Greenberg (1990, p. 314) assert that these funds entailed "wider sets of activities requiring specific strategic bodies of essential information that households need to maintain their well-being", which they ultimately defined as 'funds of knowledge'. Although their definition quite clearly separated itself from the earlier term of 'funds' as used by Wolf, it still attracted some criticism such as the possibilities of the term 'funds' creating a deficit view whereby some households could be considered more deficient in funds than others (Hughes et al., 2005, as cited in Oughton, 2010) and also of the 'funds of knowledge' concept on the whole being perceived as ideological and not being subjected to any questioning or deconstruction (Oughton, 2010).

The evolution of the definitions of the 'funds of knowledge' concept evolved within a decade of its use in various studies. Moll et al. (1992, p. 133) define 'funds of knowledge' as "historically developed and culturally accumulated bodies of knowledge and skills essential for household or individual functioning and wellbeing". Three years later Velez-Ibanez (1995, p. 253) defines 'funds of knowledge' as "all rural and urban skills, experience, technical knowledge of habitat and survival and the full inventory of social knowledge that households have developed for survival". Seven years later Gonzalez and Moll (2002, p. 625) redefine it as being based on the premise, "that people are competent and have knowledge and their life experiences have given them that knowledge". Although in different terms, this concept of 'funds of knowledge' was also evident in the National Education Framework (NEF) of Bhutan (REC, 2012). This document uses the term 'life skills' which is defined as the "abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands

and challenges of everyday life" (REC, 2012, p. 115). Velez-Ibanez (1988, as cited in Moll & Greenberg, 1990, p. 323) sums up 'funds of knowledge' with a short metaphorical description as the "nuts and bolts for survival".

In my close observation of all the definitions I noticed a subtle overtone. Generally they all referred only to positive knowledge. This in a way was confirmed by the statement from Moll et al. (1992, p. 134), "our analysis of 'funds of knowledge' represents a positive (and we, argue, realistic) view of households as containing ample cultural and cognitive resources with great potential utility for classroom instruction". I wondered what had happened to those 'funds of knowledge' that are not so positive. I then came across Zipin, (2009, p. 322) who also queries whether "only the positives in the student's life-worlds constitute the positive assets?" and Marshall and Toohey (2010, p. 237) who question: "What happens when the 'funds of knowledge' that the children bring to school challenge the curricular and institutional practices of the classroom?" For instance, Thomson and Hall (2008, p.93) quote an elementary teacher-participant in their research in England:

> We ended up with what I thought was a good piece of work but it was very controversial and they didn't print it . . .. They're like . . . ten or eleven and it is like Blimey . . .. I think they wanted a nice project that gave a good portrait of the school and the pupils and it came out as kind of dark. But [it was] really imaginative and I think really interesting as a piece of work from a primary school.

The Tucson Academics adopt a more positive stance in their studies and as a result, there is no mention of any of the "dark funds of knowledge'' referred to by Zipin (2009, p. 318) or to the "difficult knowledge" (Pitt & Britzman, 2006, p. 379) of the families in their studies. However, I feel such funds need to be addressed otherwise there is a risk of paying " lip service to the lives and experiences of children and their families" (Marshall & Toohey, 2010, p. 238). This is exactly what the 'funds of knowledge' endeavour hopes to reduce "so that pedagogy and content contextualization which are familiar, relevant, and meaningful to students from ethnic minority groups are not excluded" (Hogg, 2011, p. 671). Spindler and Spindler (1990, p. 108) claim that "learning about human cultures must occur emphatically and emotionally as well as conceptually and cognitively", therefore, a holistic perspective to the 'funds of knowledge' approach is more realistic. Challenging as it may be, it is crucial to be receptive to all kinds of funds, both the dark and the light so that the former can be overcome and the latter can be built upon (Scrimsher & Tudge, 2003, p. 308). The NEF of Bhutan states that "knowing that children come from different circumstances and have different needs, schools should build on the assets that children bring

from their homes and communities and also compensate for the shortcomings in the home and community" (REC, 2012, p. 139). With this in mind, I decided to remain more open to any kind of 'funds of knowledge' in the households, the communities and the school for sometimes such knowledge can be the basis on which productive dialogues among family members, children and the teachers can be constructed (Freire, 1998). At the same time, I would like to adopt the same optimistic view about the families as the Tucson Academics, for I too believe that "no matter what background our students have, there is knowledge in their homes that can be tapped into and used (meaningfully) in the classroom" (Amanti, 2005, p. 132).

Although Velez-Ibanez and Greenberg (1990) were the initiators of the 'funds of knowledge' studies, it was Moll et al.'s 1992 studies with a more educational focus that caught the attention of many researchers, especially educators. The Tucson Academics and the school teachers added a new dimension to the study of 'funds of knowledge' by theorising the practices of the households and later applying those theories in the classrooms. They confirmed that by capitalizing on household and other community resources, teachers could prepare classroom lessons that "far exceeded the rote learning that the children were used to" (Moll et al., 1992, p. 132).

The Tucson studies were generally focused on the 'at risk' elementary school children of Mexican-American families described as "students from economically poor backgrounds, who have limited proficiency in English, who have high absentee rates or who frequently move from school to school" (Velez-Ibanez, 1995, p. 265). In a study before the 'funds of knowledge' project, Moll and Diaz (1987, p. 300) state:

> It is our contention that existing classroom practices not only underestimate and constrain what children display intellectually, but also help distort explanations of school performance. It is also our contention that the strategic application of cultural resources in instruction is one important way of obtaining change in academic performance and of demonstrating that there is nothing about the children's language, culture, or intellectual capacities that should handicap their schooling.

As mentioned earlier, the Tucson research team consisted also of teachers from schools. Although I did not involve teachers in my research in the way they did for their studies, the experiences described by the teachers such as Tenery, Amanti, Hensley, Sandoval-Taylor, Browning-Aiken, and Messing (Gonzalez, Moll, & Amanti, 2005a) were of immense interest and relevance for my study. Their experiences showcased the multiple facets of the 'funds of knowledge' concept and approach strengthening the foundation on which my inquiry was

constructed. From the rich experiences of the Tucson Academics, I was able to gather a number of tenets of the 'funds of knowledge' concept that I perceived relevant for my study. In the following section, I discuss some of the most significant of these.

The multiple tenets of the 'funds of knowledge' concept

The Tucson Academics used several catchphrases that illustrated meaningfully the many tenets of the 'funds of knowledge' approach. Phrases such as: repositories of knowledge; zone of comfort; a zone of practice; a basis for *confianza*; pedagogical, strategic and cultural resources; critical for understanding teaching and learning; the 'cultural clue', dynamic in content; thick social contexts, multi-stranded in relationships; reflexive process and many more (Gonzalez et al., 1995; Velez-Ibanez & Greenberg, 1992; Moll et al., 1992) provided clarity to my comprehension of the approach as well as helped me look at my inquiry with a much clearer perspective. For instance, in the discussion of the theoretical groundwork for their studies, Gonzalez et al. (2005a, p. 25) emphasize that culture and 'funds of knowledge' are not the same and by moving away from the "stereotypical notions of culture" we "can come to a deeper appreciation of the dynamic and emergent conditions of the lived experiences". I believe my inquiry should not move too far away from the "stereotypical notions of culture" of the context of the study. Bhutanese cherish and value the unique Bhutanese culture, which is generally deeply rooted in the daily lives of the Bhutanese. Most important is the, "preservation and promotion of culture" (GNH Commission of Bhutan, 2009), one of the four pillars that the country has adopted as its developmental philosophy for GNH. In the rush to modernise, the Bhutanese traditions and the indigenous ways of doing things that have served us well for centuries and given us our identity are in danger of being eroded. However, I do agree with Gonzalez (2005b, p. 43) on the "ultimate value of going beyond culture". She affirms that:

> ... it opens up spaces for the construction of new fields wherein students are not locked into an assumed unilineal heritage. It allows for variability within populations rather than only between populations. More importantly, the ''funds of knowledge'' of a community occupy that space between structure and agency, between the received historical circumstances of a group, and the infinite variations that social agents are able to negotiate within a structure.

The Planning Commission of Bhutan (1999, p. 25) recommends, "we [Bhutanese] must continue to be social synthesizers and assimilate the positive forces for change making them our own and accommodating them within

our own distinctive model of development". In my study I address both the stereotypical culture of the nation as well as the more specific Bhutanese household cultures, for the former provides a rich basis for understanding the latter as they are embedded in each other. Metaphorically speaking, the national culture is like the warp through which the 'funds of knowledge' approach should enable the weaving of the fine weft of household cultures.

The teacher-researchers

Moll and Greenberg's 1990 study records the beginnings of engaging teachers in the 'funds of knowledge' project. They formed an after school laboratory or a study group that Moll (2005, p. 17) calls the "centre of gravity" due to its pertinence to their research project. In this after school laboratory, the researchers and teachers sifted through the home data gleaned by the researchers to explore the most innovative ways of using such data in their classes. They discovered that despite the economic status or educational standard of the households, the Mexican-American households possessed an abundance of wide-ranging 'funds of knowledge' (Velez-Ibanez & Greenberg, 1992; Gonzalez et al., 1993; Moll et al., 1992; Moll & Gonzalez, 1997). Unfortunately, the schools failed to notice these rich household sources of knowledge and their various forms of transmission, thus losing the opportunities of using them in the classrooms

During the study group activities the researchers ironically observed that while advocating participatory learning in the classrooms, their own study group activities were using a 'transmission' model, where the teachers sifted through the data gathered by the researchers (Gonzalez, et al., 1993, para. 12). They realized that the "connection of the household and the teacher could not come about through a field researcher as intermediary and that a bond had to be formed interpersonally, evocatively and reciprocally" (Gonzalez, et al., 1993, para. 12). In the later studies such as Gonzales et al. (1995), they involved the teachers as researchers. After some training in ethnographic field methods such as participant-observation, open-ended interviewing strategies, life histories, and case studies, a selected group of voluntary teachers entered the households of their students with the master researchers on a collaborative endeavour to learn from the families. That is when the Tucson Academics revolutionized the meaning of home visits. Gonzalez et al. (1993, para. 18) declares that, "the conventional model of home visits was turned on its head" when teachers visited the households to learn rather than attempt to teach the family or to visit for disciplinary reasons. These experiences provided a license to transcend all boundaries for both teachers and parents, not just for gathering information from each other but more to develop an enduring, reciprocal and genuine partnership between the two (Cairney, 2000). With the families and the communities, they initiated a relationship of "partners for progress" (Langhout, Rappaport, &

Simmons, 2002, p. 328) that is not just a one sided practice (Ashton et al., 2008; Eberly, Joshi, & Konzal, 2007; Hughes & Greenhough, 2006; Christenson, 2003; Epstein, 2001; Epstein & Sanders, 2002, 2006) as is the normal custom between schools and homes at the moment in Bhutan.

Their research program mainly revolved around three different forms of activities, which were household visits, after school study groups and the classroom studies. Although several policy documents in Bhutan now seem to emphasize the importance of family, community and school partnerships with more urgency, home visits are still understood more as ways to inform. Ball (2012, p. 50) reports, "research on the nature of childhood and local 'funds of knowledge' about supporting optimal child development is almost non-existent in Bhutan". The Tucson Academics confirm that they had not tested their data with the children to prove that the 'funds of knowledge' approach works. However, their theoretically informed case studies of the classrooms incorporating the knowledge gleaned from the households and the rich narrative accounts of the teachers' work in the classrooms are very convincing and assuring. I see it as a concept worth exploring in a country like Bhutan where "there is much teachers do not know about their students or families that could be helpful in the classroom" (Moll et al., 2005, p. 79) and where promoting and preserving culture is considered as one of the main goals of GNH (GNH Commission of Bhutan, 2009).

The theories and principles related to the 'funds of knowledge' concept

Educating for GNH

In 2010 hundreds of educators from all over Bhutan gathered in Paro to attend the 'Educating for GNH' workshop. After days of listening to presentations on the concept of 'Educating for GNH' and carrying out group work to explore ways of incorporating the GNH principles into school curriculum, it was agreed that 'Educating for GNH' was the theory that the education system should adopt in providing 'wholesome education" to its young citizens. The "Education without compromise" document (ESRCoB, 2008, p. 12) describes "wholesome education" as "a goal of cultivating the personal, academic, intellectual, psychological, emotional, spiritual, social and occupational dimensions of all Bhutanese children so that they grow up into well-balanced, properly integrated and sensitive human beings". The 27th Educational policy guideline and instructions (MoE, 2009) recommends that principles of inclusiveness, parent participation in the education of their children and enabling learning environments for effective teaching-learning be an integral part of educational planning, implementation, monitoring and evaluation.

Many more such statements are reified in numerous recent documents by the Ministry of Education of Bhutan, which sometimes make me wonder like

Fleer (2003, p. 64): have "we positioned ourselves so strongly within the rhetoric of the profession that it is difficult to introduce new ideas, or indeed, think of other ways of doing things?" Much remains to be actually practised in the field so that we can achieve what we aspire to in theory. The awareness of the gap between the home and the school and the aspiration to contribute something to fulfilling the vision of the GNH philosophy, led me to the present research. An exploration of the children's household repositories of knowledge will not only fulfil the vision set out in 'Educating for GNH' but will also be able to transform the pedagogy of schooling into a harmonious effort between the home, community and school to educate children. Much of the actual practice of GNH such as conserving and protecting the environment, preserving and promoting culture, social and economic equity and good governance, all have their humble beginnings in the home. Therefore, what can be more meaningful and useful than exploring what Gonzalez et al. (2005a, p. 40) theorize as "what it is that people do, and what they say about what they do" which in fact is their household 'funds of knowledge', an appropriate starting point for the 'Educating for GNH' mission?

The socio-cultural and historical theory

Braun (2009, p. 13) quotes a Buddhist monk; "GNH is about using yourself and your potentials to benefit all sentient beings. Considering the individual as separate from others and his environment, is a delusion and not reality - all is connected". On a similar note Vygotsky (1978) proclaims that learning does not take place in a vacuum and to understand learning we need to understand its social, cultural and historical context, within which the child learns and develops through interaction with others. To further clarify 'historical' dimensions, he adds that this term does not mean the study of the past but a "study in motion" (Vygotsky 1997, p. 43), of constant changes. These perspectives gave rise to socio-cultural and historical theories and the social origins of knowledge and development.

Vygotsky believes that instruction leads and supports development through the interaction of two kinds of concepts, the *everyday* or the spontaneous concept and the *scientific* or the schooled concept. He asserts that "conscious awareness enters through the gate opened up by the scientific concept" (Vygotsky, 1987, p. 191). Vygotsky's socio-cultural and historical theory asserts that the scientific concepts springboard the everyday concepts to novel heights through the reciprocal relationships with more competent others (Scrimsher & Tudge, 2003), jointly constructing what counts as knowledge in their life world. It is this that Moll and colleagues refer to as 'funds of knowledge'. Wink and Putney (2002, p. 85) conclude that "Moll's work is an extension of Lev Vygotsky's"; their perspectives and theories share the same essence. They explain that 'funds

of knowledge' relates well to the Vygotskian notion of the relationship between the individual and the collective, the individual knowledge of the household and the collective community knowledge of which the school is a part. However, Bouillion and Gomez (2000, p. 878) point out that in many cases, "schools are *in* communities, however, not *of* communities", causing a rift between the two.

Vygotsky (1978, p. 88) asserts, "Development of the individual is a process in which children grow into the intellectual life of those around them". His paradigm for zone of proximal development (ZPD) concentrates on how a child can become what he not yet is rather than what he is. ZPD is one of Vygotsky's most widely known concepts that affirm his belief in "performance before competence" (Moll, 1990, p. 3). This separates him from his contemporaries such as Piaget who believed that development should take place before learning. Thus the legacy of Vygotsky's socio-cultural perspectives of learning and development provide very useful coat hooks upon which to hang most of the tenets of the 'funds of knowledge' concept for they are grounded in socio-cultural and historical theories. He believes in the 'situatedness' of what all must do to live and thrive through a constant mediation process between the individual and the collective.

Many others shared the same socio-cultural and historical principle in their own ways. Lave (1991) describes such theories as situated learning where both knowledge and learning are situated within a community of practice (Wenger, 1998) which Wells (1999) describes as the community of inquirers, whereby the child intensively participates as a legitimate peripheral participant (Rogoff, Paradise, Arauz, Correa-Chavez, & Angelillo, 2003) carrying out "the ordinary practices of the culture" (Brown, Collins, & Duguid, 1989, p. 34). Fleer (2003, p. 76) concurs that, "meaning does not reside in an individual or even in printed matter, but rather exists through a dynamic process of living in the world". Van Manen (1994, p. 141) further consolidates the social cultural perspective by explaining that children are not like seeds or acorn that grow in isolation or from within. He adds, "It is only in certain relational contexts that the thinking life, the developing identity, the moral personality, the emotional spirit, the educational learning and socio-psychological maturing of the young person occurs" (Van Manen, 1994, p. 140).

The array of terminologies and phrases used by the socio-cultural theorists all lead to one common theme that expresses the importance of context and relationships as the keys to children's development and enculturation into their communities. Fleer (2006, p. 139) confirms that "cultural and institutional inter-subjectivity offers one way forward". People and their social world cannot be separated for they are well knitted together in an "overlapping sphere of influence" (Epstein & Sanders, 2002, p. 411) within comprehensive ecological systems that interact with one another (Bronfenbrenner, 1979, 1986). The typical

notion of learning as an individual process, that it has a beginning and an end, that it can be segregated from other activities and is a product of teaching, is a huge fallacy (Wenger, 1998, p. 3). Human thinking can never be described as an individual act as it is always mediated and distributed among other people, things and settings (Vygotsky 1987, 1978; Pea, 1993) and that everybody belongs to a community of practice that is existent in every setting in which we work out common sense through mutual engagement (Wenger, 1999, 1998; Lave, 1991; Lave & Wenger 1991). Wenger (1998, p. 47) emphasizes that "a common sense can be commonsensical only because it is a sense in common". This socio-cultural perspective of people making sense of things together defies the notion that learning is an accretion of information and skills instead it advocates it as an ever-changing process of participation in day-to-day life. Van Manen (1994, p. 139) holds that "a teacher who does not understand the inner life of a child does not know who it is that he or she is teaching". By this definition, a study of the child's household 'funds of knowledge' informs the teacher as well as his/her teaching.

The partnership theory

Gonzalez et al. (2005a, p. x) caution readers that the 'funds of knowledge' approach should not be mistaken for parent participation programs; neither does it involve any attempts to educate parents on 'how to do school' although "both can be a fortuitous result of this approach if desired". It is this "fortuitous result" that I believe is one of the strong characteristics of the 'funds of knowledge' approach. The relationship between the triad of home, community and the school unfortunately has not yet been picked up yet even though it has been expressed as desirable in many of the official documents of Bhutan. The individual "school policies and practices are not always aligned with such notions" (Christenson, 2003, p. 455). Sugarman (2010, p. 96) claims that:

> Educators who perceive home and communities as their defining pedagogical characteristic in terms of the strengths and resources that they possess, can shift the power dynamics of the educational institutions by supporting an exchange of knowledge and skills between educators, students and families.

Many researchers have referred to the gap between the triad through the use of such words as discontinuity (McIntyre, Rosebery, & Gonzalez, 2001), chasm and dissonance (Souto-Manning & Swick, 2006), cultural discontinuity (Tyler at al., 2008; Ogbu, 1982) and disconnection (Basu & Barton, 2006; Boullion & Gomes, 2000). As a solution to these many descriptors of deficiency, Epstein (2001, p. 4) advocates the term "partnership" for he argues that this would highlight the joint responsibilities of the triad for the children's learning and development.

Langhout et al. (2002, p. 331) adopted the slogan "Partners for Progress" for their home and school garden project. However, Cairney (2000, p. 164) chooses the term "genuine partnership", as many such earlier partnerships failed to work as they were mostly geared towards what the home and the community could do for the school or what the schools had to say to them. This he believed was not a genuine relationship, but is, what Galindo and Sheldon (2012, p. 91) describe as, "low intensity generic contacts". With the absence of a genuine partnership, teachers tend to view the child as a "home-child" and the "school-child" and in the process fail to see the "whole child" (Epstein, 2001, p. 5).

Drawing on the works of Moll et al., (1992) other researchers such as Hugh and Pollard (2006) and Hugh and Greenhough (2006) carried out some interesting exercises such as the 'shoe box activity', the 'video activity' and the 'class recipe book project' to enhance the relationships between the triad. Feiler, Greenhough, Winter, Salway, and Scanlan, (2006) set up exhibitions at a supermarket so that parents who were hesitant to come to school attended the exhibitions at the supermarket with more ease.

Despite the many barriers to partnership (Feiler et al., 2006; Hill & Taylor, 2004; Morris & Taylor, 1998), it is still worth the effort to try and establish a genuine partnership, as many researchers such as Galindo and Sheldon (2012), Hill and Taylor (2004), Epstein and Sanders (2002) and Epstein (2001) confirm that this relationship could assure children's school success and parents' confidence. Ashton and Cairney (2001), Ashton et al. (2008) and Christenson (2003) maintain that children's cognition develops as a result of congruence between home and school. If this is true, then one of the promising enabling factors for promoting a genuine partnership is by appraising and mobilising household 'funds of knowledge', so that children, families and teachers can be embedded in an education system that is truly local and relevant, or in the case of this study, "Made in Bhutan" (Ball, 2012).

The household learning theories

Children are not empty vessels (Van Manen, 1991) and neither are they banks (Freire, 1998) or blank slates (Cummins, 1996). They come to school with a variety of "virtual bags" (Thomson & Hall, 2008) from which the teacher can understand "what it is that they bring into the classroom; what defines their present understanding, mood, emotional state and readiness to deal with the subject matter and the world of the school" (Van Manen, 1991, p. 7). Learning does not just depend on teaching in a classroom (Lave, 1991). The households and communities provide authentic situations for learning; authentic in the sense of being relevant to the daily lives and activities of children (Vygotsky, 1986), which Rogoff et al. (2003) describes as situations in which children are generally eager to participate and Wells (2000, p. 8) describes as "activities that have real

meaning and purpose". Lave and Wenger (1991, p. 68) describe such learning as an outcome of "apprenticeship" where learning just takes place in the course of daily life without any professional teaching effort being required as children become "quintessentially legitimate peripheral participants in the adult social world" (Lave & Wenger, 1991, p. 31). The Tucson Academics described this situation as the 'zone of comfort' as they ventured through the households and communities of the Mexican Americans and the Yaqui families. It is in this zone where children with the help of the other members of their family hone their "zone of proximal development" (Vygotsky, 1987, 1978). Vygotsky (1986, p. 188.) believes that "what the child can do in cooperation today, he can do alone tomorrow. Therefore, the only kind of instruction is that which marches ahead of development and leads it". Adults may manifest certain aspects of 'funds of knowledge', however the actual "organization of learning is in the hands of the children themselves" (Velez-Ibanez & Greenberg, 2005, p. 61).

Vygotsky recommends play, especially socio-dramatic play as the most appropriate enhancer of ZPD and as a major source of learning. From the socio-cultural perspectives, imaginative socio-dramatic plays develop abstract thoughts through which children can practise being an adult ahead of time. Riojas-Cortez (2001, p. 35) describes such play as a mediation tool that children use for learning and also as a means through which the teacher can better understand a child. The three most prominent early year curricula namely the *Te Whariki* of New Zealand (1996), the *Early Years Learning Framework* (EYLF) of Australia (2009) and the *Early Years Foundation Stage* of England (2008) emphasize play as one of the most important contexts for learning. However, the concept of play in the schools of Bhutan is more general and loose; one that refers to all activities that are not literacy and numeracy lessons.

Right from the times of Watson, Thorndike, Skinner and Pavlov, behaviourists believe that observation is essential for effective learning. Decades later, Rogoff and her colleagues ascertain that children can learn through 'observing and listening-in' on activities of adults and others as legitimate peripheral participants. They maintain this to be a "powerful form of fostering learning" even if it is in a form of "third party participation" (Rogoff et al., 2003, p. 176 & 178), as it is not mandatory that all learning has to be direct and declarative. As a legitimate peripheral or as a third party participant, a great deal of learning takes place even if there is no direct involvement in any activity (Brown et al., 1989, p. 40). Every interaction between parents and children need not necessarily be geared towards making the latter learn something although in most of these acts there will be some pedagogical intent which is natural of parent-children relationships (Van Manen, 1991). Thus education becomes an 'all-encompassing' term at home where experiences are not educationally designed (Hedges & Cullen, 2012) for children are naturally embedded in the, "historically accumulated and culturally

developed 'funds of knowledge' (Moll et al., 1992).

Correa-Chavez and Rogoff (2009), Correa-Chavez, Rogoff, and Arauz, (2005), and Morelli, Rogoff, and Angelillo, (2003) conducted research on children from traditional American indigenous backgrounds and children from European American backgrounds to test their attention span during some set activities in which some of these children were involved only as third party observers. The findings were consistent on all occasions in that the children from a traditional American indigenous background maintained more sustained attention than those from a European American background. This suggests that children "who grow up in a community in which they are expected to attend to ongoing events attend keenly even in situations when they are not directly addressed" (Correa-Chavez & Rogoff, 2009, p. 630). In Bhutan, particularly, in the rural areas, children are a part of most adult activities and conversations. In most situations children are third party observers or listeners, who do not get involved in the discussions; for it is considered impolite for children to quiz adults and overtly become involved. However, in most cases children listen and observe intently to everything that happens around them, in the process learning many things. In these situations, as Wertsch and Stone (1979) acknowledge that the process is both the learning and the product.

Paradise and Rogoff (2009, p. 107) argue that learning that is contextualized differs from the prototypical learning in the schools, where information and skills are broken down into manageable chunks, "often with little chance of seeing how they all fit together". Hall (1990, p. 39) imagines this way of learning to be like "building blocks" which he compares to the "sea of information" that can be gleaned from real life experiences. Van Manen (1991, p. 9) states that education should focus on the world of experiences for "experience can open up understanding that restores a sense of embodied knowing" which science and technology blurred due to the very nature of their discipline. Vygotsky recommends that the "everyday concepts (spontaneous) and the schooled concepts (scientific) should work together harmoniously so as to provide organization to children's thinking (Wink & Putney, 2002, p. 31). On a similar note Freire (1983) recommends the "reading of the world" before the "reading of the words", how the two should work together to provide better comprehension by creating a "third space" (Moje et al., 2004) of "inter-subjectivity" (Vygotsky 1987) which Hedegaard (1998) describes as the "double move". She (Hedegaard, 1998, p. 120) explains that "the lower level of the zone of proximal development is delineated by the traditions of practice that have characterized the students' lives (and) the upper level is delineated by the possibilities of practice". Thus teaching within the ZPD is a "double move between the students' experience and their exposure to theoretical concepts" (Hedegaard, 1998, p. 120) in the schools.

Conclusion

This paper is a synopsis of my journey to find the essence of the concept that I had adopted for my study. In the process, I cherry-picked the many diverse terms and phrases that illustrated the theories and principles to which 'funds of knowledge' could be related. I began with a history of the beginnings of the concept that introduced me to the 'funds of knowledge' *gurus* and their practices. Once I acquired a sound knowledge of the original idea, I began to explore other arenas for similar theories and principles that directly or indirectly upheld the 'funds of knowledge' concept with their own reified terms. This venture further enriched and consolidated my understanding, which in turn gave me the confidence and the comfort to undertake my study that focused on the home, community and the school 'funds of knowledge'.

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Contextual and Graphing Activities to Teach the Fundamentals of Calculus and the Relationship between Differentiation and Integration for Grade Eleven Students

Kinley[1]

Abstract

Calculus is cryptic in nature and made more abstract using algebraic symbols and notations. Calculus is used in many disciplines and it is a gateway for higher studies. An introductory calculus is always emphasized on rote and manipulative of algebraic symbols and notations despite the fact that it is very important for higher studies. Teaching students with clear concepts in rich contextual aspects is very important in this calculus world. Therefore, this paper presents contextual and graphing activities to teach the concepts of the fundamentals of calculus and the relationship between differentiation and integration in the introductory calculus course for higher secondary school students. This study was administered to sixty-five students in grade eleven. The results showed that students had improved the conceptual understanding of the fundamentals of calculus and the relationship between differentiation and integration when contextually real experiments and graphing activities are employed.

Keywords: calculus, differentiation, integration, fundamentals of calculus, relationships

Introduction

Learning calculus has always been difficult for higher secondary students in Bhutan. This is because students were taught calculus using mathematical symbols and notations without actually relating to contextual or real life situations. The textbook used in introductory calculus course in higher secondary schools are full of mathematical symbols and notations without a single contextual explanation or examples. The teachers who taught calculus were those teachers who had learned and used the same textbook fifteen years ago. The mathematics syllabus and textbooks for higher secondary school has remained the same for decades in the Bhutanese education system. This research has been carried out to find out the conceptual understanding of the Fundamentals of Calculus and the Relationship between Differentiation and Integration for grade eleven students in one of the higher secondary schools in Bhutan.

1. Teacher, Motithang Higher Secondary School, Thimphu.
Email: kinley@education.gov.bt

The Problem in Teaching Calculus

Calculus is an exciting subject considered one of the greatest achievements of the human intellect (Hughes-Hallett et al., 2003). The success in calculus depends largely on the knowledge of the mathematics that precedes calculus: algebra, geometry, functions, and trigonometry. Calculus has a wide range of disciplines because of its importance. Moreover, for most students in mathematics and science, introductory calculus is the entry-point to undergraduate mathematics. The inadequate preparation of students in introductory calculus course in higher secondary level might further hinder the conceptual understanding of calculus in higher studies. The studies (Tall, 1993; Orhun, 2012; Schwalbach & Dosemagen, 2000; Mundy & Graham 1994; Orton, 1983a) revealed that the students who graduated from traditional calculus class had very superficial and incomplete understanding of the basic concepts in calculus. The students can use symbols and notations to solve calculus problems but face difficulty in relating it to real life situations when they were provided questions with mathematical symbols and notations and then later asked to interpret it in the context of a real situation.

There are numerous reasons why higher secondary students of Bhutan lack in the basic concepts of calculus. The students at the secondary level are not well prepared in the conceptual aspects particularly in calculus because the teaching methods emphasized on mechanical reasoning in the study (Kinley, Laosinchai & Wongkia, 2014). In calculus courses, the study is mostly prioritized on multiple exercises instead of emphasizing the understanding of the main concepts, principles and properties of calculus by explaining why these concepts, principles and properties are related to a realistic situation. Most of the students might have difficulty relating concepts they have learnt in the classroom to real world situations if the concepts are not linked to contextual aspects (Stroyan, 2011). In fact, the actual concepts of calculus originated from contextual applications. Another reason could be the lack of qualified teachers teaching calculus course in higher secondary levels and if teachers are not updated with the modern methods of teaching, students could get demotivated. In addition, due to the cryptic nature of calculus and use of non-appropriate textbooks in the classroom, students' lack interest and dedicate insufficient time to study calculus. Most of the textbooks used for introductory calculus courses are full of algebraic symbols and notations (Malhotra, Gupta & Gangal, 2010). Great concerns were shown by Cipra (1998); Steen (1988); and White and Micahelmore, (1996) to develop a conceptual understanding of calculus topics due to the rote learning taking place in introductory calculus courses. Many studies have demonstrated that students' difficulty in understanding calculus are caused by their weak understanding of limits (Dubinsky, 1996; Tall & Vinner, 1981; Williams, 1991) and the inability to use functions and limits to reason and represent relationships (Tarmizi, 2010; Carlson & Oehrtman., 2005; Monk

& Nemirovksy, 1994; Thompson, 1994). The limits are the central concepts in calculus to understand continuity, derivative, and integral.

Despite the fact that students have difficulty in the conceptual understanding of calculus, most of the introductory calculus courses are introduced with algebraic manipulation and formal definitions (Klymchuk, Zverkova, Gruenwald, & Sauerbier, 2010.) which is similar too in the Bhutanese context. According to Tall (1993) calculus becomes more abstract and difficult for students to conceptualize when formal calculus is introduced first instead of informal calculus. Moreover, Tall (2004) emphasized that the mathematical thinking develops through our own perception of real world objects and our actions upon them which he referred to as conceptual embodiment and then build on actions that are symbolized as a process or concept, which may remain at the procedural level or may be operated at a higher level which he referred to as perceptual symbolism.

According to Tall (1975 & 1996), the beginning of calculus should be intuitive and related directly to concrete experiences and transit to analysis in higher studies for a long-term schema for calculus and analysis. The students in the beginning of the calculus course need to be instilled with feelings and overall ideas of calculus intuitively so that the students build the basic foundations of calculus. To address the gap of current teaching of calculus in higher secondary schools, the lessons were developed based on building concepts of calculus formulated by Tall (1997) as mentioned below.

Theoretical Framework

After the in depth review of grade eleven calculus syllabus and textbooks of higher secondary schools of Bhutan, the lesson plans were developed based on the building concepts of calculus formulated by Tall (1975 & 1997) and implemented to grade eleven students. According to Tall, calculus should be taught from real world to theoretical calculus at the elementary level. Students experiencing the real activities would be able to coordinate and form clear images when they learn theoretical calculus. The activities are developed in simple and basic ways using hands on activities and graphs. Moreover, the activity was designed using locally available resources to suit the students' learning atmosphere following Tall's building concepts of calculus. In grade eleven, the chapter on calculus begins from functions, limits and continuity, differential calculus and integral calculus. The lessons on each topic are mentioned below.

(i). Concept of Limits and Continuity

According to Mundy and Graham, (1994) students had difficulty understanding differentiation and integration because they have problems understanding the concepts of limits and continuity. Both differentiation and

integration are based on concepts of limits and continuity. Perhaps the first stage is to let students discover intuitive understanding of limits through the activities. Involving students in the activity will help them to sense the feeling of forming concept images intuitively (Tall & Vinner, 1981) which will help them in the formal definition of limits.

In this activity, students in a group draw a circle using the 100 cm non-elastic rope, and chalk on a car park. A fixed point is the point on the rope that lies on the circumference of the circle except the starting point of the rope. In Figure 1a, point A is the starting point of the rope, and point B on the circumference of the circle is the end-point of the rope called 1 fixed point per rope. Students measure the circumference of the circle using the non-elastic rope. They mark one fixed point per rope on the circumference of the circle as shown in Figure 1a and take same one fixed point per rope on the circumference of the circle. Point B becomes the starting point of the rope and point C becomes the fixed point per rope as shown in Figure 1b. Students again take same one fixed point per rope on the circumference of the circle. The fixed point becomes the starting point of the rope and end of the rope becomes the fixed point as shown in Figure 1(c–f) until the starting point A becomes the last fixed point per rope. Then, the students count the number of ropes when one fixed point per rope on the circumference is taken to measure the circumference of the circle, and record it on the worksheet. They can find the perimeter of the polygon ABCEDF (Figure 1f).

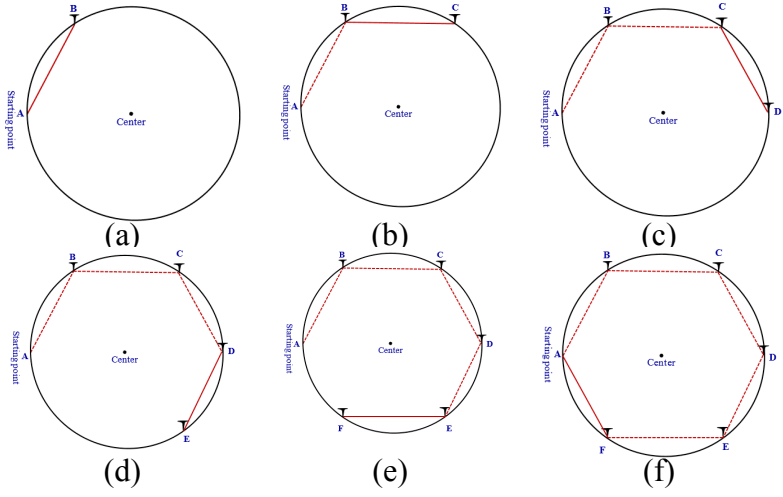
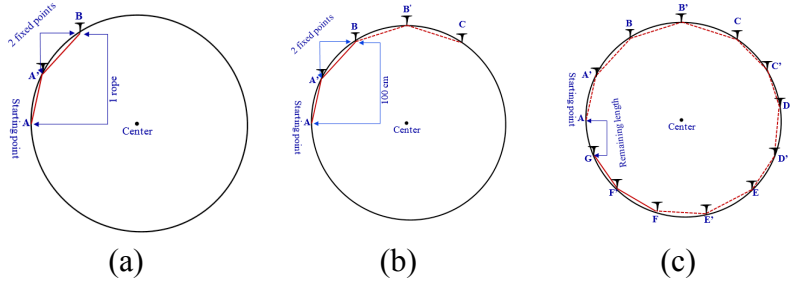


Figure 1 Measuring the circumference of the circle by making two fixed points per rope.

Students measure the circumference of the circle again by increasing the number of fixed points per rope. They take two fixed points per rope on the circumference of the circle (Figure 2a). Point A is the starting point, and point A' and B are two fixed points per rope on the circumference of the circle. They continue to take same two fixed points per rope on the circumference of the circle until no more two fixed points per rope can be taken on the circumference of the circle, and count the number of rope on the circumference of the circle, and measure the remaining length between the end of the rope or fixed point G, and the starting point A (Figure 2c), and record the length of the perimeter of the polygon on the worksheet. Students continue increasing the number of fixed points per rope (3 fixed points, 4 fixed points …) on the circumference of the circle, and record the numbers of rope and the remaining lengths on the worksheet until students cannot measure the remaining length between starting point of the rope in the beginning and the last fixed point per rope on the circumference of the circle.



(a) (b) (c)

Figure 2 Measuring the circumference of the circle by making two fixed points per rope.

The teacher needs to ask probing questions to generate what the students have observed from the activities rather than explaining the results of the activities. What did you observe from the data collected? What happened, when you increased the number of fixed points per rope? What will happen if you further increased the number of fixed points per rope? In addition, what would be the circumference of the circle? As the number of fixed points on the circumference of the circle per rope increases, the perimeter of the formed polygons approaches the circumference of the circle. This activity will help the students form the concept of limits intuitively.

Once the students have an intuitive concept of limits, basic functions are taken to introduce the concepts further using the graphs. Sketching the graph of the function such as $f(x) = 2$, for $f(x) = x$ and finding the limit at $x = 1$ and $x = 4$ respectively. Then the students should be able to represent the limits, $\lim_{x \to 1} 2$

and $\lim_{x\to 4}(x)$ on the graph but before that, students are to tabulate the values of x approaching closer to 1 and 4 from both left and right such as, x = 0.9, 0.09, 0.009 from left of 1 and x = 1.1, 1.001, 1.001 from right of 1; similarly, x = 3.9, 3.09, 3.009 from left of 4 and x = 4.1, 4.01, 4.001 from right of 4. This is to build the students' intuition of limits from algebraic and graphical representation.

Then slowly moving to a formal approach, the students are introduced with the function, $f(x)=\frac{x^2-4}{x-2}$ to find the limit of the function, $f(x)$ at x = 2. This function can help the students to interpret the differentiation and integration algebraically through the concepts of limits and continuity (Elk, 1998). The teacher can ask probing questions to introduce the concepts of continuity simultaneously when students sketch the graph of $f(x)=\frac{x^2-4}{x-2}$ such as, what happens to the function, $f(x)=\frac{x^2-4}{x-2}$ when x = 2? What are the values of x in order to define the function? Sketch the graph of the function for all values of x except at $f(x)=\frac{x^2-4}{x-2}$? The student might sketch the graph of $f(x)=\frac{x^2-4}{x-2}$ with the gap at $\lim_{x\to}$ —— ^{3}? Is function continuous at $\lim_{x\to 1}\frac{x^3-1}{x-1}=3$? At what values of x is the function continuous? Does the limit exist at x = 2?

Even Tall and Vinner's (1981) study revealed that the first year students out of 70, only four students could explain the meaning of similar function in the form, $\lim_{x\to 1}\frac{x^3-1}{x-1}=3$ and write the formal definition $\lim_{x\to a} f(x)=c$. However, majority of the students could explain the meaning of $\lim_{x\to 1}\frac{x^3-1}{x-1}=3$ even though they could not write the formal definition. It showed that once the students developed a concept image, they heavily rely on it even after they are exposed to formal definition. Similarly in study by Tall and Vinner, (1981) at a university in England, out of 41 students, 35 claimed that $f(x)=\frac{1}{x}(x\neq 0)$ is discontinuous function as the graph of this function has a gap and not defined at the origin even if they are heavily met with the formal definition of continuity as f is said to be continuous at a if $f(x)=\frac{1}{x}(x\neq 0)$. Tall and Vinner, (1981) argued that the students definitely come to the conclusion that $f(x)=\frac{1}{x}(x\neq 0)$ is continuous function if they have used the formal definition.

(ii). Concept of Differentiation and Integration and their relationship

Many of the textbooks used in introductory calculus courses introduce the concepts of differentiation and integration from the functions using symbols and notations, and then represent it in the form of a graph. This approach often

led the students to solve fiendish of symbolic problem which students have no understanding of what they are learning (Tall, 1990).So in this inclined plane activity, the lesson is designed in such a way that students perform the activity and record the readings on the worksheet. Then, the readings are interpreted on the graph to learn the concepts of differentiation and integration by relating it to the inclined plane activity. Mundy and Graham's (1994) study revealed that the students were not able to integrate the concepts of limits, continuity, differentiation, and integration together when it was taught separately and did not make the link. The key idea of inclined plane activity is to make it experimentally real for the students to relate the concepts of differentiation and integration contextually, graphically and then algebraically.

The inclined plane is designed using locally available materials by fixing a four meter dissected pipe on a wooden plank as shown in Figure 3.

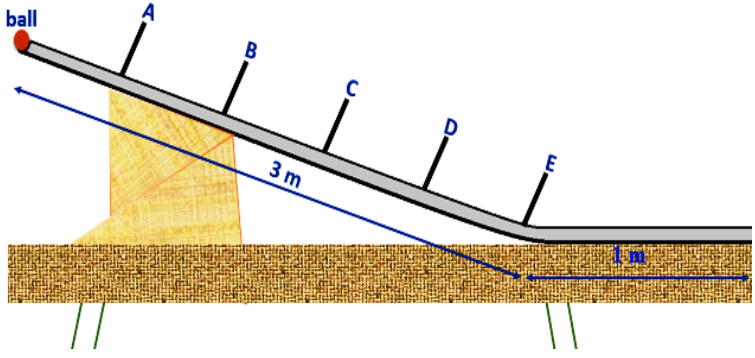


Figure 3: Inclined plane

Students begin by discussing in groups how they can find the time taken by the ball from top of the inclined plane to each stopping point on the inclined plane. On the inclined plane, students select stopping points A, B, C, D and E (at least five different points), measure the distance between the top of the inclined plane and each stopping point (Figure 3), and record the distances on the worksheet. At each stopping point, students release the ball from the top of the inclined plane, and measure the time that the ball takes to hit the stopping point, and repeat releasing the ball at least five times. Then, students record the time on the worksheet. To help students minimize the error involved in measuring the time taken by the ball, they are asked to find the average time taken by the ball for each distance.

The data collected by students may not be precise enough to get the exact theoretical expected results. However, students should be able to relate the

inclined plane activity in the context of motion. The distance is directly proportional to time squared for the free falling object. To teach the concepts of differentiation, integration and their relationship graphically, we prefer a smooth curve on the distance-time graph. Therefore, the teacher can pool all the data from the groups and calculate the expected value of acceleration to form the equation of motion in terms of distance and time. The acceleration of the ball was calculated from the data as $a = 0.20$ m/s^2. The value of acceleration was used to form the equation of the moving ball $s = \frac{1}{10}t^2$ and used the equation to sketch the graph.

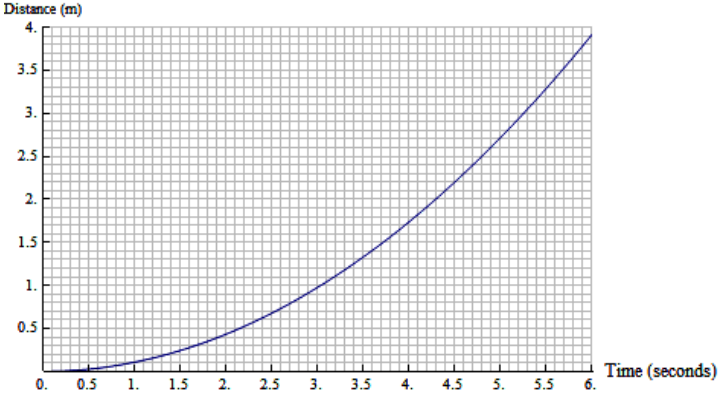


Figure 4 The graph of $s = 0.1t^2$

Each student is provided with theoretical graph of Figure 4, and asked to find the slope of the curve at the particular instant of time, for example, $t =$ 3.2seconds. The slope of the graph will give the velocity of the ball at particular instant of time. The unit of the slope should help students figure out that it represents the velocity of the ball. The teacher can ask probing questions to introduce the concepts of differentiation. What is the distance covered by the ball in 3 seconds? How long does it take for the ball to cover the distance of 2.5 m? What is the unit of the slope? What does the unit of the slope tell you? Regarding the unit, what does the slope of the curve indicate? What would be the velocity of the ball at 3.5 seconds? Moreover, how do you find the velocity of the ball at 3.5 seconds?

Students should be able to explain how they found out the velocity of the ball by relating it to the slope of the curve to the inclined plane activity. The teacher also needs to guide students to find the slope of the curve. The slopes are different at different point on the curve unlike the slope of a straight line. Students should select the appropriate points on the curve to find the slope of

the curve at that point to get an accurate slope. The teacher should guide them on how to find the slope of the curve by asking probing questions rather than giving direct instructions to find the slope of the curve. Students should be able to figure out the difference when they take different points on the curve to find the slope accurately. The teacher needs to tell students that they have to take two points, keeping the point that they want to find the slope. However, the teacher can confirm that taking the middle value is more accurate using algebraic differentiation in later part of the lesson. Then the teacher can introduce the term differentiation as a process of finding the slope of a line, and also finding the velocity at an instant *t*. Then, students are introduced to the concept of derivative at that point. Students already learnt how to find the slope of the curve from distance-time graph as shown in Figure 4. The velocity corresponds to the slopes in the graph of distance versus time. Average velocity corresponds to the slope of a secant line that connects two points, and instantaneous velocity corresponds to the slope of the curve.

Now to introduce the concepts of integration, students already know the slope of the speed-time graph from the differentiation-learning unit. Students are asked to sketch the slope of the speed-time graph as shown in Figure 5. The slope of the speed-time graph represented the acceleration of the ball on the inclined plane. Students divide the area under the acceleration-time graph in Figure 4 into six parts as shown in Figure 6. Students are asked to find the area of each part and plot the accumulated area on another set of coordinates as shown in Figure 6.When students find the area of each part under the line and sketch the accumulated area on another set of coordinates; they should be able to figure out that it gave the speed-time graph. Moreover, from the unit of the area (m/s), they should be able to figure out that it was the speed of the ball.

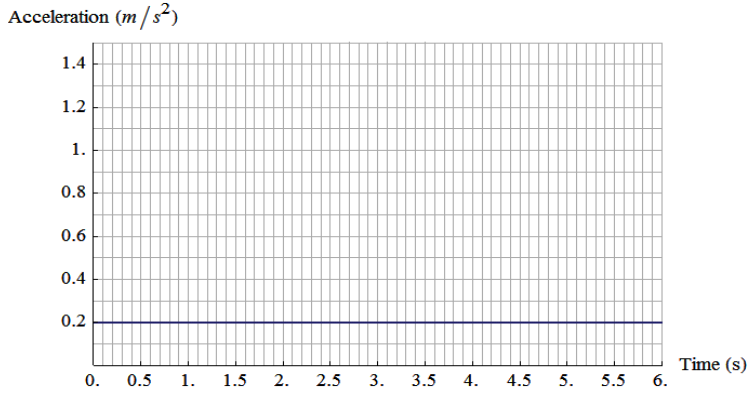


Figure 5 Acceleration-time graph.

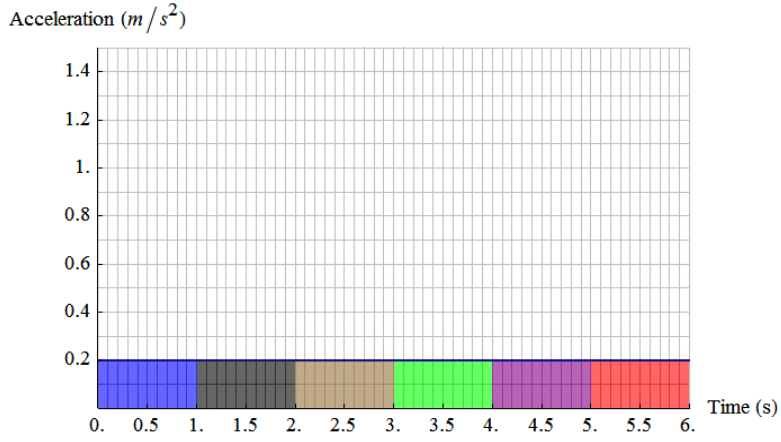


Figure 6 Acceleration-time graph showing the areas of six parts under the line.

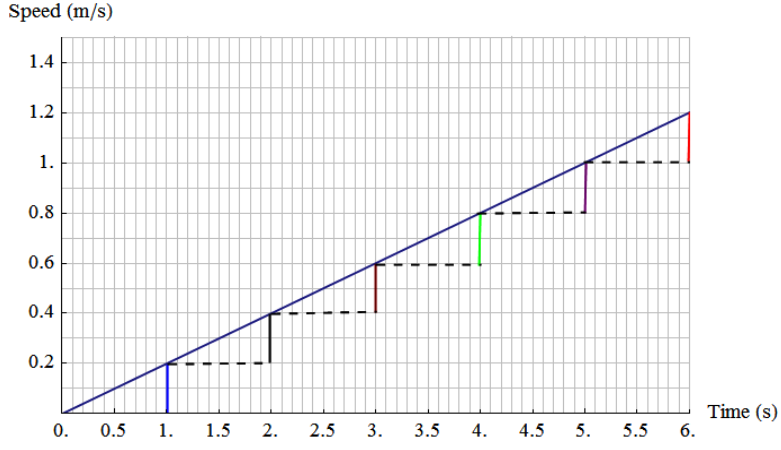


Figure 7 The accumulated area under the line of Figure 6

Students are asked to answer the questions regarding the activity to introduce the concept of integration. What is the unit of the area when you find the area under the line? What does the unit of the area indicate? The unit of the area under the line was m/s which indicated that the area was the speed of the ball on the inclined plane. The teacher could introduce the term definite integral as the area

under the graph between a specific interval. However, the teacher must make clear links between the area under the graph and the inclined activity graphically and contextually. This will help students to form clear concept images.

The students compare the process of integration with differentiation in terms of the inclined plane activity to see the practicability in real situations and connect the ideas of differentiation and integration in the form of graph and then to algebraic symbols and notations. The students should figure out that the "Integration is the inverse process of differentiation"

Now students should be able to picture the relationship between differentiation and integration contextually in terms of distance and velocity of a rolling ball from the inclined plane activity; graphically in terms of slope for differentiation and area under the line for integration, and denote the symbols and notations algebraically in a contextual situation. The students will get a clear picture of differentiation and integration and easily grasp the meaning of symbols and notations used in calculus. The symbols and notations used in calculus are always abstract for the students if they fail to interpret its meaning in contextual situations. According to Tall (2010) calculus builds on the evidences of our human senses and to make it meaningful for later development from practical aspects to theoretical development in mathematical analysis, supporting the intuition is necessary for application in the teaching and learning process.

Methodology

This study was conducted in one of the schools in Bhutan consisting of sixty-five grade eleven students. The pre-test was administered for one hour followed by intervention of learning units on limits, continuity, differentiation, and integration for 960 minutes. Then the post-test was conducted for 1 hour at the end of the lesson. The pre-test and post-test consists of five parallel questions. Six students were also interviewed to validate the findings of the pre-test and post-test results.

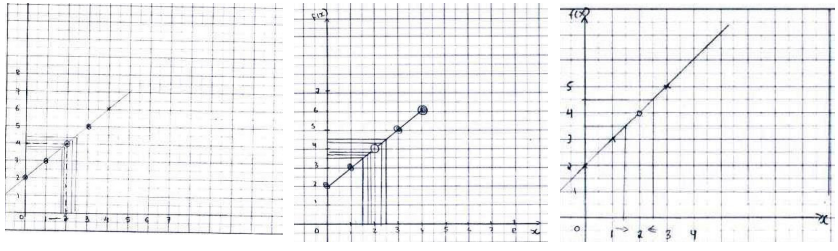
Results

The pre-test was used to assess students' prior knowledge while the post-test was used to follow the enhancement of students' understanding of the fundamentals of calculus. The pre-test scores of 65 students range from 0 to 1 out of 20 marks while the post-test scores range from 6 to 20 out of 20 marks. There is a significant improvement in students' scores in the post-test after the intervention of learning units compared to the pre-test scores. To validate and support the finding from the conceptual understanding test, six students from the experimental group were interviewed. The students' conceptual understanding of limits, differentiation and integration was investigated followed by their ability to apply the concepts of differentiation and integration in explaining the

relationship contextually and graphically between differentiation and integration, and algebraically. Each student was interviewed for about an hour. The interview was recorded and the graphs used for answering the interview questions were analyzed. The six students consisted of the two highest scorers, the two middle scorers, and the two lowest scorers based on their mathematics mid-term scores of academic year 2013. All the semi-structured interview responses from the six students were transcribed and analyzed as follows.

(a) Limits

The function $f(x) = \frac{x^2 - 4}{x - 2}$ was given to the students with graph papers, and they were asked to identify at which point the function was not defined. After a few minutes of algebraic calculation on the paper, the students found that the function is not defined at $x = 2$. All the six students could figure out that the limit of the function does exist at the point $x = 2$. When the students were asked what was the limit of the function when x approaches 2? Five students were able to figure out that the limit of the function was 4 as x approached 2. Students A and B drew the lines closer and closer to 2 on the horizontal x-axis, and then to the vertical y-axis, which corresponded to 4 (see Figure 10a and b). They tried to explain by drawing lines rather than speaking verbally.



(a) Student A (b) Student B (c) Student C

Figure 10 Limit of the function $f(x) = \frac{x^2 - 4}{x - 2}$ sketch by students

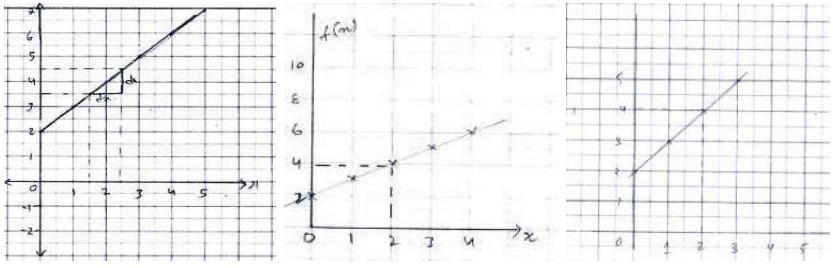
Students E and F also said that the limit of $f(x) = \frac{x^2 - 4}{x - 2}$ exists as x approaches 2.

1. Student E: *When we take x = 2, then it lies in f(x). It is 4, so limit exists. In order to find the limit, we have to see whether 2 is meeting with f(x).*

2. Student F: *When x = 2, the line reaches to the limit of 4.*

Student D said "*No*" and later said that the limit was 4. When he was asked to explain, he drew a small triangle on the graph and seemed to find the derivative at $x = 2$, and could not explain how he got the limit of the function. Rather he was confused in finding the limit and could not relate and apply the concept of limit in finding the derivative of the given function.

Students A, B and C sketched the graph of the function correctly by indicating a gap at $f(x)=\frac{x^2-4}{x-2}$ (see Figure 10a, b and c). When the function was not defined at $x = 2$ however, the students D, E and F sketched the graph of the function $f(x)=\frac{x^2-4}{x-2}$ without a gap at $x = 2$. They simplified the function to $f(x) = x + 2$ and ignored that the function is not defined at $x = 2$ (Figure 11d,(e and f).



(d) Student D (e) Student E (f) Student F

Figure 11 Limit of the function $f(x)=\frac{x^2-4}{x-2}$ sketch by students.

Although the function $f(x)=\frac{x^2-4}{x-2}$ is not defined at $x = 2$, the limit of the function does exist as x approaches 2. All the six students simplified the function $f(x)=\frac{x^2-4}{x-2}$ to $f(x)=\frac{}{x-2}$ in order to sketch the graph. However, three students did not realize that the function is not defined at $x = 2$ when they sketched the graph of $f(x)=\frac{x^2-4}{x-2}$ and sketched the function without a gap at $x = 2$. Student D showed the misunderstanding of the concept of limits with derivative when he drew a triangle on the line to explain how he found the limit of the function at $x = 2$. This result indicates that students D, E and F did not have a clear concept of limits even though they have an intuitive idea of limits.

(b) Differentiation and Integration and their relationship

To investigate the students' conceptual understanding of differentiation and

integration, and the relationship between differentiation and integration, the students were asked the following questions.

The graph represents a car travelling from A to B and its distance *s* in kilometers from the starting point A is given by the function $s(t) = t^2$ where *t* is the time taken in hours as shown in Figure 12

1. How far has the car travelled in 5 hours?
2. How long does the car take to travel 16 km?
3. What is the car's average velocity over; (i) the first 2 hours? (ii) the first 4 hours? (iii) between $t = 2$ hours and $t = 5$ hours.
4. What is the velocity of the car at $t =$ hours? Explain how you get your answer.
5. Can you find the velocity of the car at $t = 1, 2, 3, 4,$ and 5 hours and sketch the velocity of the car on another graph?
6. What is the area under the newly sketched graph in (e); (i) the first 1 hour? (ii) the first 2 hours? (iii) the first 3 hours? (iv) the first 4 hours? (v) the first 5 hours?
7. Sketch the area under the graph on another graph. What does the newly sketched graph tells you regarding the graph of Figure 12?

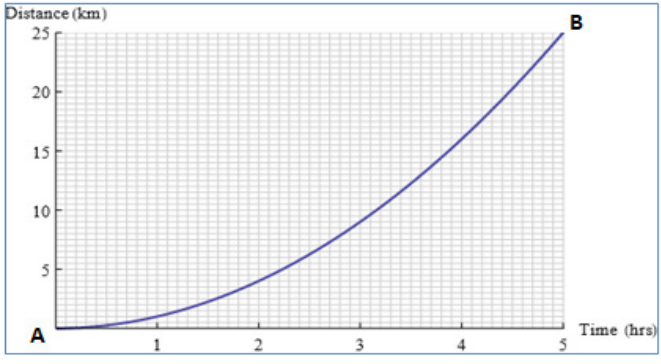
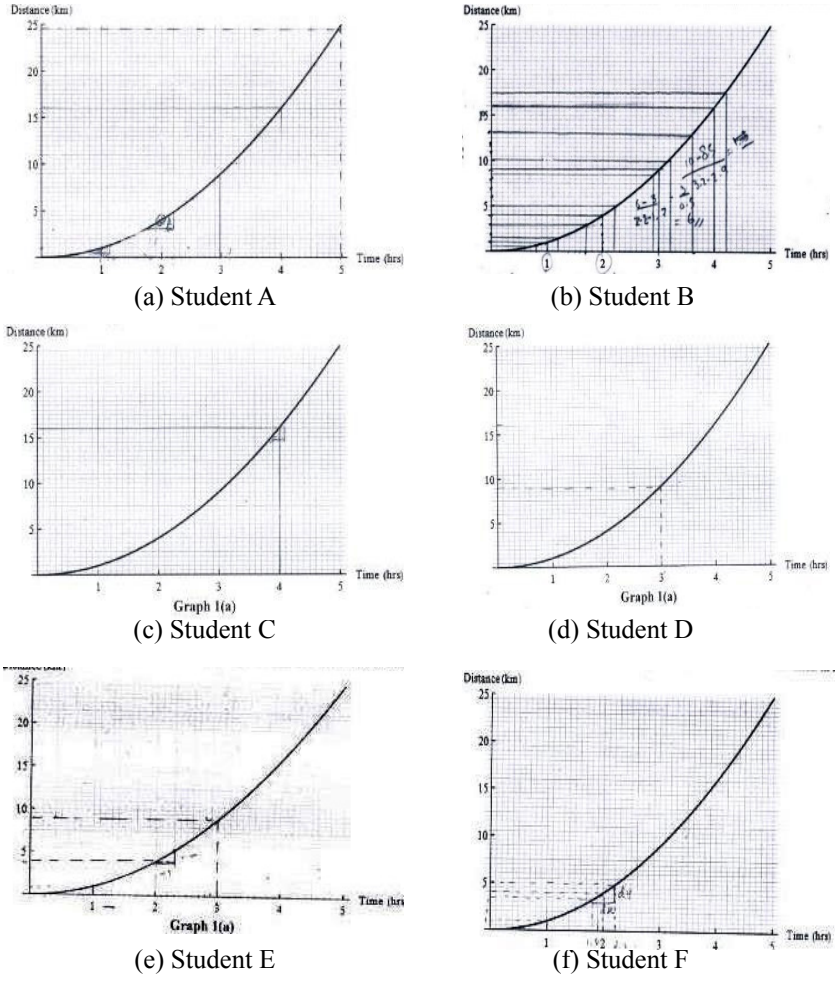


Figure 12 Graph of the function $s(t) = t^2$

The first two questions (a) and (b) asked students to figure out whether they could read the graph to find the distance and time. All the students used rulers and pencils to draw the lines from 5 hours on the horizontal axis (time) to the graph and then from the graph to the vertical axis (distance) to answer that the car had travelled the distance of 25 km in 5 hours. Similarly, the students drew the

lines from the vertical axis to the graph and then to the horizontal axis to answer that the car took 4 hours to cover the distance of 16 km as shown in Figure 13.



(a) Student A (b) Student B

(c) Student C (d) Student D

(e) Student E (f) Student F

Figure 13 Students drawing the lines to find the distance and time from the graph

When the students were asked to find the average velocity over the first 2 hours, first 4 hours and between $t = 2$ hours and $t = 5$ hours, students A and B used the velocity = distance over time ($v = \frac{s}{t}$) formula to find the average

velocity. Students C, D, E and F used the slope formula $\left(Slope = \frac{rise}{run} \right)$ to find the average velocity.

However, when the students were asked to find the velocity of the car at $t = 2$ hours, student A found the velocity of the car by using the concept of slope (Figure 13(a)). Student B used the concept of limit as well as slope while students C, D, E, and F used the concept of slope as well as the equation of the line to find the velocity of the car at $t = 2$ hours as described below.

1. Student A: *We have to keep this point* $t = 2$ *in the middle of the two points...then we find the slope of these two points.*

2. Student B: *I used the concept of the limit that I drew line closer and closer to 2, then by using the formula of slope, rise over run. I found out the velocity.*

3. Student C: *When I used the graph, I find the slope of the line taking small divisions* [points] *on the line keeping the point to find the slope between the two points. We* [I] *also find using differentiation* [using equation of the line].

Student A was not very confident about finding the derivative at a point from the graph and thought that the algebraic formula for derivative always gives the correct answer. She used the equation of the line $s(t) = t^2$ to find the derivative at the point although she could explain how to calculate the slope from the graph without using the equation of the line. Student B could explain explicitly how to find the velocity at $t = 2$ by using the graph (Figure 13(b)) as well as the equation of the line. She was confident about using the graphical method to find the derivative rather than using the equation of the line.

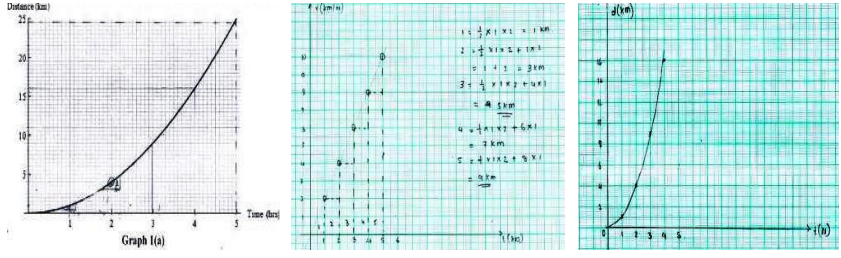
Student C and D were able to choose two precise points on the graph to find the derivative at $t = 2$ and they took beyond the given time of two minutes to use the equation of the graph to find the derivative (Figure 13(c) and (d) although they could do it correctly. They did not look very convinced when they used the equation of the line to find the velocity of the car. Student E and F calculated the velocity at $t = 2$ hours using both the graph and equation of the line. They could choose the precise points on the graph to find the derivative but could not read the graph. Student E could differentiate the equation of the line in terms of variable *x* and *y* but could not use it to find the derivative at $t =$. Similarly, student F tried to use the equation of line to find the derivative and did incorrectly. Students E and F seemed to memorize the steps during the learning process rather than conceptually understanding and they also lacked the earlier graphing skills.

The above results indicated that students were more confident in finding

the derivative at the point using the graphical method. Students expressed their understanding of the derivative easier using graphs than using the equation of the line. Most of the students could not relate the equation of the line to the context and explain although they knew the process of using the equation to find the derivative. Students always looked for short-cut method to get the end results. Student A was pre-occupied to get an end result rather understanding the concept. She could find the derivative at a point using equation very easily emphasizing the process of differentiation.

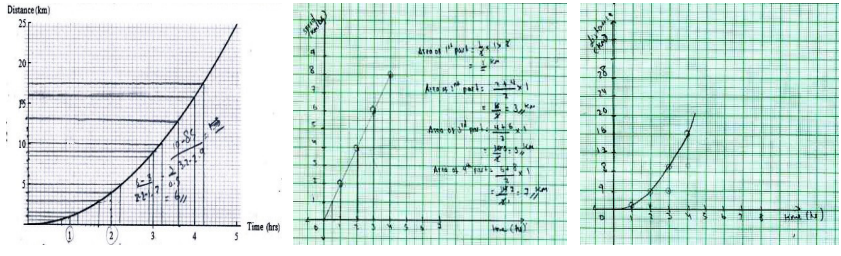
The students were also asked to find the velocity of the car at $t = 1, 2, 3, 4$, and 5 hours and sketch the velocity of the car. Four students could find the velocity of the car at $t = 1, 2, 3, 4$, and 5 hours. Student A used the equation of the line to find the velocity of the car at each instant of time while students B, C and D used the graphical method. Student E and F tried to find the velocity of the car using the graphical method but could not perform the calculation correctly. They seemed to have a partial idea about finding the derivative from the graph.

Then the students were asked to find the area under the graph of the velocity and sketch the area on another graph. Figures 14–17 shows the graph sketched by students A, B, C, and D after finding the velocity at each instant of time.



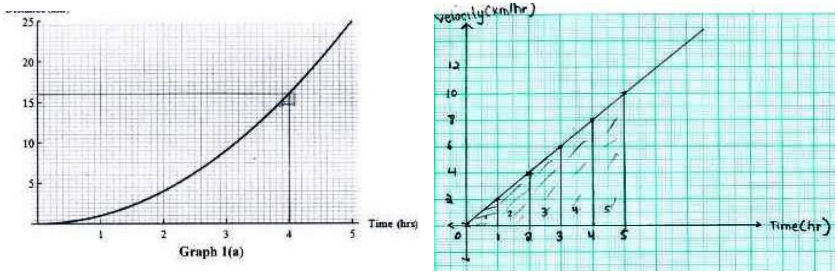
(a) (b) (c)

Figure 14 Student A: Finding the derivative and area under the line



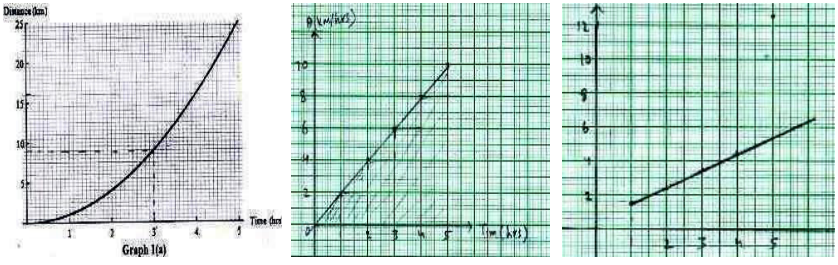
(a) (b) (c)

Figure 15 Student B: Finding the derivative and area under the line



(a) (b)

Figure 16 Student C: Finding the derivative and area under the line



(a) (b) (c)

Figure 17 Student D: Finding the derivative and area under the line

Student A used the equation of the graph to find the velocity at each instant of time while students B, C, and D used the graphical method. Students E and F could not calculate the velocity of the car as they performed the calculation incorrectly. Finding the area of each part under the graph and plotting on another graph was not very difficult for students A, B, and C (Figure 14b and c–16b and c). Student D had a wrong pre-conceived notion that the area under the graph would give the acceleration-time graph, and sketched graph incorrectly (Figure 17c). This could be due to rote learning during the implementation of the learning unit rather than understanding of the concept.

Then the students were asked to make connections between the graph of Figure 4.2 and the graphs of 14b, 15b, 16b, and 17b in terms of the unit of the slope of the former and area under the latter. The unit of the slope of graph 4.2 would be in km/hour and then finding the area under graphs 14b, 15b, 16b and 17b would give back the distance in km same as the graph of Figure 4.2. Students A, B, and C could explain the relationship between the graphs easily while student D sketched the graph of the area incorrectly (Figure 17c). Some of excerpts from the students' interview are as follows.

1. Student A: *Finding the derivative of graph* [Figure 14a], *we get the velocity and when we find the area of the graph* [Figure 14b]*, we get the graph* [Figure 14c], *the distance-time.*

2. Student B: *The difference between the integration and differentiation is that integration is the anti-derivative* [inverse process] *of differentiation to find the differentiation, we used the slope …when we integrate… we used the area of the given* [under the curve]…

Once students were able to relate the unit of the slope with the unit of the area under the graph contextually, the graphical picture reassured students. All the six students have grasped the concepts of differentiation and integration contextually and graphically. However, low achiever students have difficulty establishing the relationship between differentiation and integration.

Discussion and Conclusions

There have been numerous studies done to improve the teaching of the concepts of the fundamentals of calculus but there has been no concrete study done on teaching the fundamentals of calculus and the relationship between differentiation and integration using the contextual and graphing activities based on the learning cycle.

Learning mathematics becomes concrete and it helps to visualize the concepts when real activities are used in the teaching and learning process (Doorman, 2002; Kwon, 2002). Students are motivated to learn when they are physically involved in the activities and get a real feel for the activities. There were three activities in the learning units to help students develop the intuitive ideas about limits, continuity, differentiation, and integration. They were measuring circumference, inclined plane, and graphing activities.

The measuring circumference of a circle activity was designed to help students get the intuitive concepts of limits. The students had pre-knowledge of finding the circumference of a circle using the formula $C = 2\pi r$. However, using a rope and taking fixed points on the circumference of a circle would give students the intuitive concepts of limits when they compare with the circumference of a circle calculated using the formula. This activity helped students to get a physical feel for limits before graphing methods were introduced to teach the limits concept. The students could also visualize the limits intuitively from the graph when they sketched the graph from the number of fixed points per rope versus the perimeter of a circle. To get better visualization from the graph, the students needed to take more number of fixed points per rope. During the activity, the students took only five fixed points per rope, which were not very clear for visualizing that the limit as the number of fixed points per rope increased approached the perimeter of a circle. The remaining length on the circumference

was very small (in mm) as the number of fixed points per rope increased. The students should be very careful and precise in measuring the remaining length after taking the fixed points per rope on the circumference of a circle.

Galileo's inclined plane experiment to measure the time by slowing down the motion of the falling body in 1638 was one of the greatest contributions to science (MacDougal, 2012; Straulino, 2008). Using the idea of Galileo's inclined plane, the locally available dissected pipe, and a wooden plank was used to design the inclined plane experiment. Historically famous Galileo's inclined plane experiment has built the students' curiosity to learn calculus. However, revisiting the concepts of motion (distance, velocity, and acceleration) was needed for the students to relate the inclined plane activity to the context of derivative and integral. The students should have an idea about the relationship between the time and the distance of a moving object in an ideal condition $(s \propto t^2)$ as they have already studied in physics. The time recorded by the students between the release of the ball from the top of the inclined plane and each stopping point deviated significantly from the theoretically expected time. This was an unexpected result. In fact to measure time accurately, the inclined plane was set at minimal inclination (approximately 8 degrees) and students repeated the experiment at the minimum of five times for each stopping point. Major errors were committed by students when they were not able to synchronize the starting and stopping time of a ball for each stopping point using a digital stopwatch. Nonetheless, the students' recorded time for each stopping point were grouped together to align the recorded time with the expected time and sketch the graph of distance versus time to teach the concepts of derivative and integral

A more accurate way of measuring time is to video record the inclined plane experiment. Mark the scale on the inclined plane and video record the release of the ball from the top to the end of the inclined plane and then ask the students to measure the time from the video recording. The video recording can save time and resources, and students can also use video recording at home or anywhere if they have computer and other technological devices to watch the video recording.

Although the students should already be familiar with graphs, some of the students lacked the graphing skills. Some students faced difficulty reading the graph. Therefore, the specific area where students commit errors in graphing should be investigated first and then a remedial course should be offered if necessary.

The pre-test scores of the students were very low, which indicated that they had not learnt the fundamentals of calculus and the relationship between differentiation and integration before. According to Department for Curriculum and Research Development's (2014) syllabus for grade-11 mathematics course, the introductory calculus course is only introduced in grade 11. During the time of the research study, the units on calculus had yet to start in both schools.

The post-test scores of the students indicated that the learning units were effective in enhancing the conceptual understanding of the fundamentals of calculus. This study is consistent with the similar study conducted by Nevill and John (1998) where they tested the effects of mathematical function plotter and an associated pedagogical approach in the teaching of elementary calculus to grade elevens. The treatment group was taught by the graphical computer-based approach while the control group was taught by a traditional limit-based approach. The results showed that the students in the treatment group were able to complete the standard algorithms of differentiation and interpret the results in a manner superior to those in the control group and the graphical approach places the concepts in a context thus enhancing the students' links between concept image and concept definition.

This study used contextually real experiments and graphing activities to teach the concepts of the fundamentals of calculus and the relationship between the differentiation and integration. The students can perform the activities and get the real feeling and use graph to visualize the results and then relate it to algebraic methods. Another study by Orhun (2012) suggested that the real life situations and their graphical representations were needed by the students for better conceptual understanding of calculus, which is in line with this study as contextually real and graphing activities were used to teach the concepts of calculus. Orhun (2012) investigated 102 high school students in grade eleven to find how they made the connection between the graphs of derived functions and some properties of the original functions. The results indicated that the students had difficulties in interpreting the graph of the derived function and did not use mathematical language to describe the graph of the derived function.

Majority of the students who participated in the study said that they needed more time and practice in the activities as well as to solve the problems. This is consistent with other studies (Klymchuk & Zverkova, 2001; Klymchuk, Zverkova, Gruenwald, & Sauerbier, 2010) where more than 500 university students from 9 countries also indicated that they found it difficult to move from the real world to the mathematical world because of limited time and practice in the application of the tasks. Practice is certainly one of the ways that help students to progress from novices to experts. According to Schwalbach and Dosemagen (2000), using concrete examples from physics classroom has developed a richer understanding of semantic as well as procedural knowledge in calculus, which is similar to the findings of this study. In this study, students used data generated by the movement of a pendulum, the motion of electronic cars on a flat horizontal surface and car's movement down a ramp to learn the physics concepts of position, velocity, and acceleration and made the physics concepts' connection to the calculus concepts of function, derivative and integral.

The concepts of calculus are always taught beginning from functions, limits,

continuity, differentiation, and integration at the end. The relationship between differentiation and integration is not stressed at the end. Therefore, teaching the students, the relationship between differentiation and integration contextually and graphically would further enhance the concepts of differentiation and integration. A mathematics classroom is rarely made realistic by involving students in the activities that are experimentally real to students. The learning of mathematics becomes more concrete and attractive when experimentally real activities are used. Students become motivated and interested and enjoy learning mathematics when they are involved in the activities.

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Sexual Harassment and the Bhutanese Culture: Experiences of the Pre-service B. Ed Student Teachers

Ugyen Tshomo[1]

Abstract

This paper discusses sexual harassment and how Bhutanese culture implicitly encourages certain aspects of sexual harassment especially through the symbolic phallus. The author brings in personal experiences and observations about sexual harassment. A survey was conducted to understand the prevalence and types of sexual harassment amongst pre-service B. Ed fourth year student teachers (n=113). Findings from this study indicate that sexual harassment is widespread and it can have a psychological impact on the victim. It highlights the need for the Bhutanese culture and beliefs to be softened and be a little more sensitive of human rights and sexual harassment policies. It sensitizes the readers about sexual harassment and how audiences can end encouraging sexual harassment.

Key words: phallus, Bhutanese culture, sexual, harassment, college students

Background

Bhutan known as an *oasis of innocence* (Bhutan Olympic Committee, n. d.) and happiness country to the outside world is expected to have fewer of all human criminalities or harassments. But contrary to expectation of people within and without, of late, it has been observed that sexual harassment is rampant to the extent that even an Australian tourist was sexually harassed (BBS, 2013).

Thus, this project was initiated after the researcher's observation on such reports frequenting the national newspapers and television. More so, being a tutor of the Comprehensive Sexuality Education module, the researcher's knowledge on sexual harassment was heightened. News on sexual abuses and molestation is becoming rampant in Bhutan. The newspapers reports disturbing reality of how pornographic clips are shared in mass media (Dema, 2015). South Asian Media (2nd Sept, 2015) published a report from BBS on women in *Drayangs* facing sexual harassments. In another newspaper, Bhutan Observer, an article justifies why sexual harassment must go (Dendup, 2009). The Prime Minister of

1. Senior Lecturer, Paro College of Education.
Email: ugyentshomo.pce@rub.edu.bt

Bhutan in his blog narrates how his wife and daughter were verbally harassed while on their evening walk (Tobgay, 2012). All these reports in newspapers contradict what most travel agents advertise about Bhutan being a happiness country without any sexual harassment (Bhutan travel portal, 2008). Such a sad plight is a growing concern for any Bhutanese. Thus, the researcher felt the need to explore if the college youths experience such sexual harassment. It is important that sexual manipulators are not encouraged to materialize their sexual fantasy. This paper also targets at informing the general mass and international audience on Bhutanese culture and beliefs.

Bhutanese tradition and culture, implicit sexual harassment

Culture is the ideas, customs, and social behaviour of a particular people or society (English Oxford living dictionaries, 2016). It is also a country or group with its own beliefs. Thus Bhutan has a unique culture and a set of beliefs which has been practiced and inherited for generations, among which *tsechu* is one, folk dances are another. Similarly strong beliefs about the phallus as representation of strength, warding off evil are other such cultural beliefs. *Atsara*s, *ter chham* and *story of pazabs* have been inbred in the culture and now have formed part of Bhutan.

The Phallus which is biologically a sexual organ or a symbol of sexual orientation in Bhutan symbolizes other beliefs as well. Bhutanese believe that hanging a phallic symbol, wearing it as *sungkey* or painting of it on the house walls can prevent the house and its inhabitants from being harmed by any kind of evil, or from mishaps due to water, air, fire and earth, and finally from slanderous gossip (Pommaret & Tobgay, 2008; Choden, 2014). Thus, because of such beliefs we can see the phallus hung in fields, from eaves of houses, painted on walls, crafted into walking stick, worn as *sungkey (*protection string/knot) and water hose mouths crafted into the shape of the phallus. During *Tsechu* every Bhutanese finds it hilarious to watch the *Atsara* swing the wooden phallus like a toy. They are, eccentric in behaviour, and even vulgar and abusive in language. Their action mostly is graphic and as per the definition (UNFPA, 2015; Bhutan Penal Code, 2004; UNHCR, 2005; WAO, 2011) they defy all forms of harassments (verbal, nonverbal, and visual). To the point these *Atsaras* poke people, especially women, with the wooden phallus. The wooden phallus in Chimi Lhakang is a precious symbol to be blessed for fertility. This very symbol, which the world and literature consider as private, is seen rampantly splashed all over in Bhutanese culture. A Bhutanese growing up in such a society probably finds it normal to see the phallus in a wooded form, a walking stick or painted in any size on the walls of the houses. According to Penjore (2007) they are created with a purpose to uproot evil from the minds of mortals.

Similarly, we have *Pazabs* at the Punakha Domche who represent soldiers

during the time of Zhabdrung. In the Domchhe they role play the victory over the Tibetans and sing their glorious song and dances. Wearing red *ghos* they shout with glory and sing victory songs, running through corridors of the Dzong holding, rubbing, squeezing women they encounter. Now this can be quite alarming if one is not aware of the belief and practices. According to hearsay, they have a license for the day to act thus. Even if they grope and molest, you are supposed to keep quiet.

Peling Ter Cham at the Jampel Lhakang is a naked dance. *Terchham* or Naked Dance was introduced by Pema Lingpa the great Treasure Discoverer to subdue the evil spirits who obstructed him from discovering treasures which were religious relics, scriptures, and statues (Bhutan Pristine Tours & Treks, 2014). Then we have the story of Drukpa Kuenley who used desire, emotion, and sexuality to arouse disillusionment and incite delight in his encounters (Dowman, 1983). According to word of mouth, in Paro when a group of women carrying manure for the fields or collecting dry leaves can catch and strip any male they encounter until the male rewards the group with money.

Another very common verbal harassment is through the expletive "*Jha Dha*" which etymologically means lick my dick and it is equivalent to "fuck you". This phrase is used profusely and casually just as most people use "fuck you/ fuck". The user need not be uttering it out of anger. It can be through excitement as well. But for some Bhutanese hearing it can put them in discomfort and thus it also becomes sexual harassment since it has a sexual meaning. As much as sexual harassment is rampant in most part of the world (Zindi, 1994; Reena & Saheab, 2014; Taiwo, Omole & Omole , 2014; Manohar, 2012; Imonikhe, Aluede, & Idogho, 2012; Interactive, 2001; Hill & Kearl, 2011; Mohamed, Baig, Trakic,Mallowa & Surajudeen, 2014) and especially in educational institutions the researcher wonders if the Bhutanese cultural practices discreetly provokes it and yet there is no research done on this issue, except for cause and consequences of rape (Dechen, 2014). Thus sexual harassment reports are not recorded or maintained properly due to lack of proper reporting systems or fear of being victimized. It is also because of the tiresome nature of court formalities. So this paper is the first of its kind especially in an education institute to get some idea of the existence of sexual harassment.

This paper will try to answer the following questions.

1. Is sexual harassment prevalent in Paro College of Education?
2. What are types of sexual harassment prevalent in the college
3. How do Bhutanese tradition and culture subtly augment sexual harassment?

Literature

Sexual harassment is a harassment which has a sexual undertone. It can be in the verbal, physical or visual form. According to UNFPA (2015), sexual harassment is any unwanted physical, verbal or written behaviours that have sexual overtones. Bhutan Penal Code states that, "a defendant shall be guilty of sexual harassment, if the defendant makes unwelcome physical, verbal or non-verbal abuse of sexual nature" (2004, Article 205, p. 28). This offense is graded as petty misdemeanor. Labor and Employment Act states sexual harassment as:

> Making an unwelcome sexual advance or an unwelcome request for sexual favours to the other person; or engaging in any other unwelcome conduct of a sexual nature in relation to the other person. Conduct of a sexual nature include (a) subjecting a person to any act of physical intimacy; (b) making any oral or written remark or statement with sexual connotations to a person or about a person in his or her presence; or (c) making any gesture, action or comment of a sexual nature in a person's presence. (RGOB, 2007, sections 16 to 18)

According to the United Nation Women (n. d. conclusion section para.3), sexual harassment is any "unwelcome sexual advance, request for sexual favour, verbal or physical conduct or gesture of a sexual nature, or any other behaviour of a sexual nature that might reasonably be expected or be perceived to cause offence or humiliation to another." World Health Organisation (WHO) defines sexual harassment as "any unwanted, unreciprocated and unwelcome behaviour of a sexual nature that is offensive to the person involved, and causes that person to be threatened, humiliated or embarrassed" (2002, topic sexual harassment, para 19). Thus, all the above definitions talk about unwanted physical, verbal or nonverbal acts with sexual overtones against someone's will.

Looking at the pattern of definitions, all describe sexual harassment as an act which is against the will of the person targeted and has sexual overtones in the physical, verbal and nonverbal forms. Physical sexual harassment is any unwelcome sexual activity in the form of touch which can put the victim in discomfort. Physical harassment, in relation to sexual harassment, is when a victim is touched in an inappropriate way. Most importantly, the victim is touched against his/her will. Sexual harassment claims of this nature can come about for many reasons including: massaging a person on any body part without first asking permission; playing with a person's hair; grabbing a person's clothes with the intention of ripping them off or revealing body parts; caressing a person's arm, hand, or any body part in a sexual way; grabbing a person's behind, breasts, or genitals without permission; hugging a person without permission; trying to kiss someone without asking; making bodily

contact with another person in a sexual way; cornering a victim with one's body; rubbing one's genitals on a person. Physical harassment may even be seen as touching oneself in front of someone. If it is done in a sexual manner and it makes someone feel uncomfortable, then it can be classified as physical harassment. The reason why it is important to recognize physical harassment and take action against it is because it can have permanent bearings on the victim. When a person has fallen victim to physical harassment, they often feel robbed. It is as if someone has assumed ownership over their body. Victims can often feel disgraced and vulnerable in many other situations after harassment has occurred (Business Laws, 2015; EEOC, 1999; SAPAC, 2015; WAO, 2011). It also has psychological impacts and affects the learning of students. It is also found out that sexual harassment can leave a woman traumatized and affected for life (Taiwo et al, 2014; Zindi, 1994; Manohar, 2012; Imonikhe et. al (2012, January 1).; Interactive, 2001; Hill & Kearl, 2011)

Similarly any verbal message which gives out sexual intentions and sexual overtones is verbal sexual harassment. Verbal sexual harassment can come in the form of written, direct voice or voice messages. Offensive or suggestive remarks, comments, jesting, sounds, questioning, suggestive comments or jokes, insults or taunts of a sexual nature, requests for sex or repeated unwanted requests to go out on dates, intrusive questions or statements about your private life are some examples of verbal harassment. It can also be referring to an adult as a girl, hunk, doll, babe, or honey, whistling at someone, cat calls, making sexual comments about a person's body or innuendos, turning work discussions into sexual topics, telling sexual jokes or stories, asking about sexual fantasies, preferences, or history, asking personal questions about social or sexual life, making kissing sounds, howling, and smacking lips, making sexual comments about a person's clothing, anatomy, or looks, repeatedly asking out a person who is not interested, telling lies or spreading rumours about a person's personal sex life (WAO, 2011; EEOC, 1999; Australian Human Rights Commission, n. d.).

Nonverbal sexual harassment includes all the nonverbal gestures which put the target under discomfort and make him/her feel uneasy. It means looking at a person up and down (elevator eyes), staring at someone or leering, blocking a person's path, following the person, giving personal gifts, displaying sexually suggestive visuals, making sexual gestures with hands or through body movements, making facial expressions such as winking, throwing kisses, or licking lips, displaying posters, magazines or screen savers of a sexual nature, sending sexually explicit emails or text messages, inappropriate advances on social networking sites, accessing sexually explicit internet sites, leering or ogling with suggestive overtones, licking lips or holding or eating food provocatively, hand signal or sign language denoting sexual activity, persistent flirting (WAO, 2011; EEO, 1999; Australian Human Rights Commission, n. d.).

Literature explicitly indicates that most of what Bhutanese call beliefs, culture and *tsechu* fall under sexual harassment directly or indirectly. But there has been no study pointing towards the existence of sexual harassment within the Bhutanese culture and beliefs. This study is the first of its kind. This study will make the audience question whether in name of culture we are encouraging sexual harassment. Is it that Bhutanese growing up in such a sexually explicit culture, where the phallus is part of everyday life, are so accustomed to physical, verbal and visual harassment? That Bhutanese have become too lenient to many sexual harassment and advances? Where literature defines these actions as sexual harassment, Bhutanese live with it as part of their tradition and culture. Bhutanese accept it as jest till the point they are caressed violently. Thus, many minor molestations must be ignored or not reported which eventually might be encouraging the sexual manipulator and thus leading to sexual violence. So Bhutanese at this juncture need to reflect on questions, like, should we redefine sexual harassment so that it aligns with our culture and tradition? Should we relook at certain aspects of our beliefs, tradition and culture so that it does not infringe on an individual's rights and privacy? Are we not sometimes going overboard in the name of tradition, culture and beliefs?

Through this study, a small move is made to discover the existence of sexual harassment in the college. This study can serve as starter by providing an overview of the prevalence of sexual harassment in an educational college. But deeper study must be conducted in order to find out who are the perpetrators of sexual harassments? And where exactly are the students harassed? Are Bhutanese beliefs and culture the cause of such sexual harassments? This study aims at educating participants and eventually informing the policy makers about the prevalence of sexual harassment so that they see the need for a policy in place.

Method of Study

Participants

This study adopted the survey method. Data for this study were obtained quantitatively from a simple randomly selected sample of 113 student teachers (52 male and 61female), B.Ed. final years of the Paro College of Education (PCE) during the 2016 academic session.

Measures

The survey used to obtain data for this study had two sections has been adapted from several sources (Imonikhe, Aluede, & Idogho, 2012; Interactive, 2001; Equal Opportunities Commission (EOC) partnered with the Hong Kong Professional Teachers' Union (HKPTU) and Hong Kong Federation of Education Workers (HKFEW), 2013; The Learning Network, 2013; Zindi, 1994). The researcher after borrowing ideas has modified the questions. The modification

became necessary since this is a first such survey ever conducted professionally and in an education institute and to fit in the context. The survey aimed to find out the prevalence of sexual harassment and the need for a policy in the college. Section A consisted of 16 items raised on a seven Likert scale with response ranging from never, rarely, occasionally, sometimes, frequently, usually, and every time.

Section B of the instrument was constructed by the researcher to examine students' knowledge on sexual harassment. This section is made up of two questions. *Write down your thoughts about sexual harassment at our college. What questions do you have on sexual harassment?* Expert comments were sought to improve the instrument.

Procedures

Questionnaires were personally administered to the participants in the first session. Copies of the questionnaire were retrieved from the respondents the same day. Data analysis was carried out using frequency counts and simple percentages in SPSS.

Result

The data revealed that sexual harassment is prevalent among the college students. Among the respondents, 51% male and 86.6% female agreed that they were sexually harassed with 25% female and 20.4 % male saying rarely, 38.3% female and 20.4% male sometimes,11.7% and 2% male frequently, 5% female usually, 3.3% female every time. The details of which are shown in figure 1.

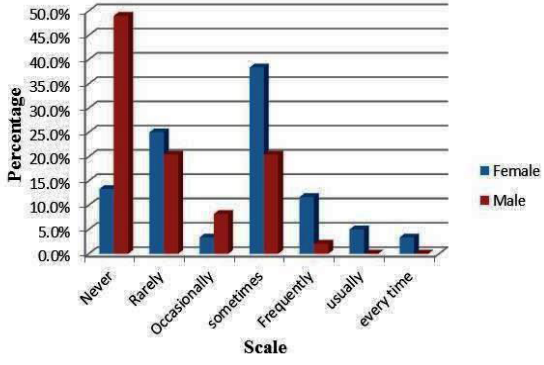

Figure 1: Sexual comment or joke or gesture

Similarly figure 2 articulates how this subtle way of sexual harassment (looking, staring, leering) is largely on female than male with 76.7% female and 47.1 % male spread over rarely to every time. To look at the details, it is 28.3% female and 17.6% male on rarely, 11.7% female and 15.7% male occasionally, 25% female and 11.8 % male sometimes,10% female and 2% male frequently,1.7% female every time. The larger audience might conclude looking at someone as an individual right but, we must know such acts fall under nonverbal sexual harassment includes staring, leering, elevator eyes which put the target under discomfort and make him/her feel uneasy (WAO, 2011; EEO, 1999; Australian Human Rights Commission, n. d.).

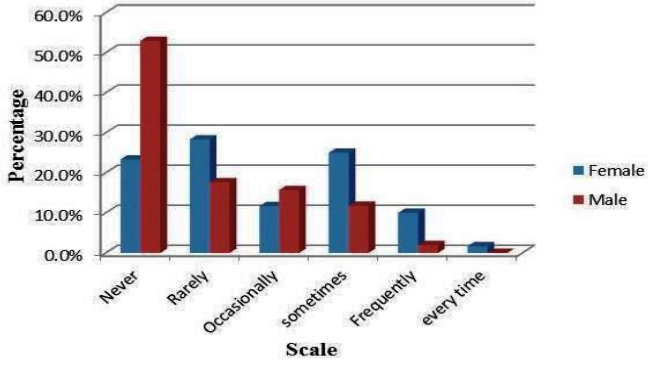

Figure 2: Sexual look

In terms of physical harassment, more of the female participants are sexually harassed comparing to the male. The details of which indicates 34.4% female and 19.6% male rarely, 8.2% female and 9.8% male occasionally, 19.7% female and 7.8% male sometimes, 3.9% male frequently and 1.6% female every time. This can also explain why we have more of females being raped than males in Bhutan. As cited in Dechen, (2014), rape as reported to Royal Bhutan Police(RBP) alone is 47 in 2007 to 71 in 2010 to 76 in 2012 and, 64 in 2013. Such physical harassment is very common in tsechu by atsara and pazaps for it has been in Bhutanese culture to touch and poke the audience with a wooden phallus. So because of such culture and beliefs pushing, dashing, holding any Bhutanese anywhere is perceived as normal.

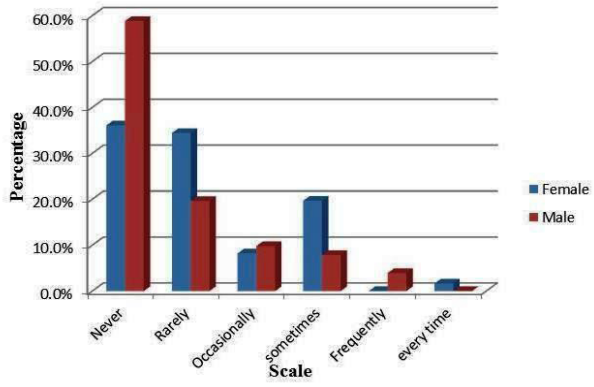

Figure 3: Physical sexual harassment

According to the data 60.6% female and 72.5% male were visually harassed. The data states 16.4% of female and 23.5% of male rarely harassed, 9.8% female and 15.7 % male occasionally, 29.5% female and 33.3% male sometimes,4.9 female usually The question here is could this be due to flooding of media and media messages? In Bhutan, WeChat being so popular it is often through digital flashing that visual harassments occur (Kuensel, 2015, let things private be private). Even if the viewers do not wish to see, some friends/acquaintance send them the pictures and so they become victims of visual harassment. And it is the male participants who are prone to visual harassment than female, possibly because the males are bolder and such clips or visual materials are more with men. On a similar topic see figure 5 on how visual harassment seem to gear more towards males than females.

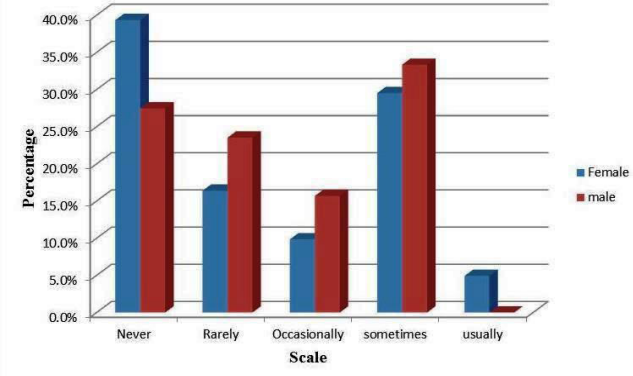

Figure 4: Visual harassment

Figure 5 generates interesting data with more males being visually harassed with sexual messages/graffiti on bathroom walls and lockers. With 88.5% female saying never and 76.5 male participants said never but 9.2% female and 13.7 male said rarely, 1.6% female and 2% male ocassionally, 3.9 % male sometimes,2% male frequently, 2% male every time.. This means more of the male participants are visually harassed. With 2% indicating every time, 2% of 52 means around 4 male participants feel they are visually harassed every time, which is alarming.

According to the researcher's personal observation this could be due to the common Bhutanese habits of drawing phallic symbols in every place. Phallic symbols are found sketched on toilet walls with names of some boys, on cars, windows and doors. This phallic symbol in Bhutan has become street art. Thus some of the participants must have been victims of such so called casual matters of the offender.

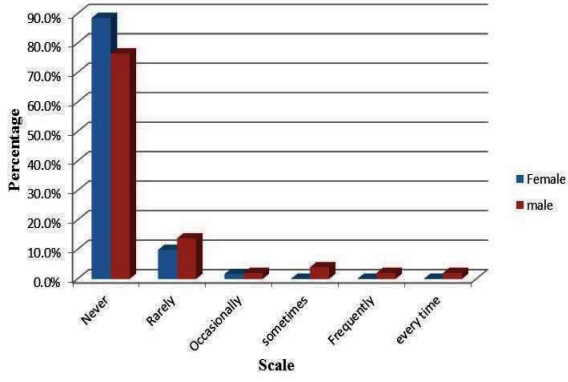

Figure 5: Visual harassment - Sexual messages & graffiti

When participants were asked on prevalence of sexual harassment in the college,

Only 16.4 % female and 34.7% male said never. Rest of participants agreed there is sexual harassment in the college with 27.9 % female and 20.4% male saying rarely, 11.5% female and 14.3% male agreeing it occurs occasionally, 26.2% female and 20.4% male agreed it happens sometimes, 4.9% female and 4.1% male said it happens frequently, 9.8% female and 4.1% male usually, 3.3% female and 2% male said it happens every time. With 86.3% female and 65.3% male agreed it is prevalent rarely, sometimes, frequently, every time (Figure 6). Table 1 validates an example of popular verbal harassment in the college which is quite common and occurs every time. Again here the victims are female.

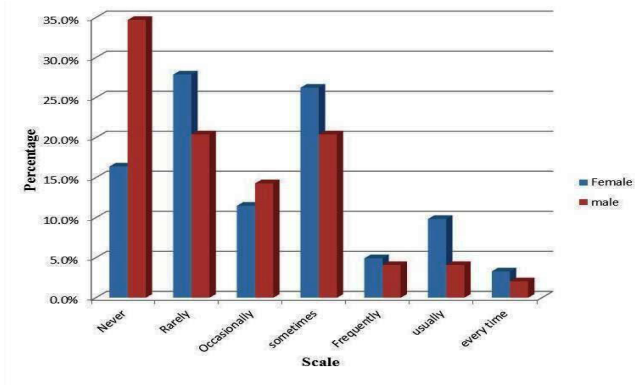

Figure 6: Sexual harassment in College

Table 1: Cat calling

Gender * 13. Is teasing and catcalling popular in the college? Crosstabulation

			13. Is teasing and catcalling popular in the college?							Total
			Never	Rarely	Occasionally	sometimes	Frequently	usually	every time	
Gender	Female	Count	2	6	5	13	13	9	12	60
		% within Gender	3.3%	10.0%	8.3%	21.7%	21.7%	15.0%	20.0%	100.0%
	male	Count	2	15	8	10	5	6	4	50
		% within Gender	4.0%	30.0%	16.0%	20.0%	10.0%	12.0%	8.0%	100.0%
Total		Count	4	21	13	23	18	15	16	110
		% within Gender	3.6%	19.1%	11.8%	20.9%	16.4%	13.6%	14.5%	100.0%

When participants were asked if a sexual harassment policy is required, most of the participants said yes. Interestingly, more females feel the need for such a policy. Of the total of 61 female participants, 96.6% agreed that policy is needed and 78.3% of them felt it is needed every time. However, of the 52 male participants, only 52% of them agreed that a policy regarding sexual harassment is needed every time in the college.

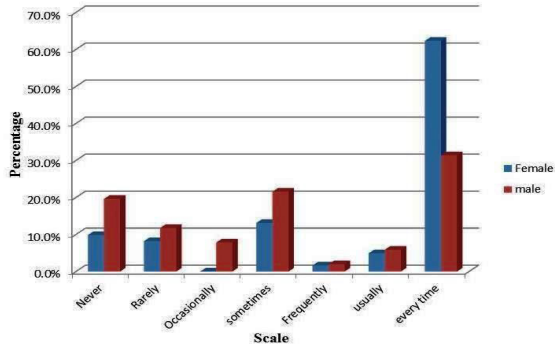

Figure 7: Report sexual harassment

When participants were asked if they would report sexual harassment again 62.3% female said they will every time, while 31.4 male participants said they will also report every time.

Reading through the second part of the questionnaire it indicates that student-teachers are still not much aware of sexual harassment details for they wish to have more seminars and workshops. Two hours of Comprehensive Sexuality Education (CSE) for sixteen weeks seem a little short. They wish that college could incorporate anti-sexual harassment policy to protect student teachers (check figure 8). More so they thought a clear line of reporting might also be set then.

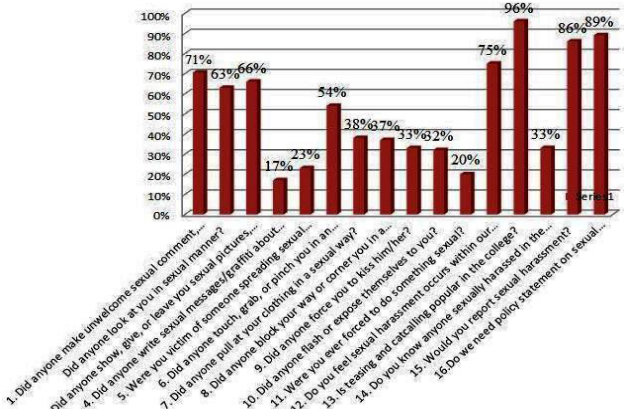

Figure 8: Overall view

Generally it is the female students who are sexually harassed compared to the male students. Figure 8 shows the detail of each sexual harassment and participants responses against each scale.

Discussion

Overall percentage indicates that there is sexual harassment prevailing amongst student teachers. But the study does not go into details of all of those that are rampant in the college or beyond. Nonetheless it is alarming to see that sexual harassment is common in the college. Thus, the college in order to protect students and create a safer learning environment needs to come up with an anti-sexual harassment policy.

The study also indicated that most participants felt the need for a sexual harassment policy at the college, with 78.3% male and 52% female agreeing it is needed every time. So there is mass agreement on the urgency and need for a policy for the safety of the students.

Reading through the second part of the questionnaire participants expressed the need for more sexual harassment awareness workshops. They also wished to know the mode of reporting and the person concerned for recording sexual harassment cases. Participants also expressed that there is sexual harassment in the college and perpetrators can range from their male counterparts to anyone working in the college. Frequent seminar/workshops on the topic can create awareness and keep student teachers alert and aware of sexual harassment.

The findings also indicated the need for proper reporting procedures on sexual harassment in the college to be established with assurance to students that there will be no victimization and also guarantee the safety of those that reports. At the moment there is under-reporting because of the fear of the negative consequences such as bullying, ostracizing, further harassment and social stigma.

Conclusion and recommendation

Sexual harassment is observed as a common phenomenon that continues unrestricted in the college. Female students have greater vulnerabilities to unwelcome sexual advances from their perpetrators.

Findings from the paper indicate that there is sexual harassment in the college. Thus, there is a need to educate the mass regarding Bhutanese laws against sexual harassment. The need for more seminars and workshops were also expressed by the participants, more so as it will help educate the mass. The research also indicated that participants genuinely felt the need for a policy against sexual harassment to establish safety to the students. In order to enrich awareness on sexual harassment, a discussion on Bhutanese culture and beliefs and how it can be softened needs to be conducted as well. The data indicated rampant physical and visual harassment which can be due to result of habits which comes from our culture and beliefs.

In view of the above, the college needs to develop a justifiable system to redress such acts of indiscipline. Offenders must be nipped at the bud otherwise they might be encouraged. The University of Oregon (n. d.) expounds on this by

agreeing that ignoring the sexual harasser is ineffective; for harassers generally will not stop on their own. Ignoring such behaviors may even be understood as agreement. Thus the college authority needs to develop anti-sexual harassment policies into the system. The security unit in the college should be well equipped to provide prompt responses. The college counselors should be trained and skilled to handle cases of sexual harassment effectively. Telephone hotlines should also be made available to all students residing within and outside the campus. Finally appropriate disciplinary action should be taken against perpetrators and justice secured for the victims.

The study has established the occurrence of sexual harassment in the college but a detailed study needs to be done to discover the types of sexual harassment that exists in the college and locate the main perpetrators. So research on other variables such as peer harassment, staff harassment and key reasons for sexual harassment can be carried out to know if such types of harassment exist within the college so as to help protect students and implement such a policy for a safe college.

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འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་སྡེ་འོག་གི་ མཐོ་རིམ་སློབ་གྲྭ་གསུམ་ནང་ལུ་ ཆོས་སྐད་དང་ རྫོང་ཁའི་བྱ་ཚིག་ དུས་གསུམ་ལྷན་སྦྱང་ལུ་ དཀའ་དལ་དང་གདོང་ལེན།

བསམ་གཏན་མཐར་ཕྱིན།[1]

ཞིབ་འཚོལ་གྱི་བཅུད་དོན། **(Abtract)**

སྡུམ་རྟགས་དང་བཅད་གཞུང་ཚུ་ལྷག་པའི་སྐབས་ལུ་ ལུ་ཁག་ཨོས་ཅིག་དང་མཐུ་འཐོམས་ཨོས་ཅིག་བྱ་ཚིག་གི་དུས་གསུམ་འདི་ཕིན་པའི་ཁང་ ཡག་ལེན་འཐབ་པའི་སྐབས་ལུ་ དཀའ་དལ་ལེ་ཤ་ར་འབྱུང་ཡོད་པས་ འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་སྡེ་འོག་གི་ རྫོང་ཁའི་བྱ་ཚིག་དུས་གསུམ་སློབ་སྡེ་ནང་ལུ་ མཐོ་རིམ་སློབ་གྲྭ་ཁག་གསུམ་ནང་ལུ་ ཆོས་སྐད་དང་རྫོང་ཁའི་བྱ་ཚིག་དུས་གསུམ་ལྷན་སྦྱང་ལུ་ དཀའ་དལ་དང་གདོང་ལེན་གྱི་ཅ་ཅོ་འདུག་གི་ ཞིབ་འཚོལ་འབད་ཡི། ཞིབ་འཚོལ་འདི་ནང་ལུ་ དུས་གསུམ་ལྷན་སྦྱང་འབད་བའི་སྐབས་ཀྱི་མཐུན་རྐྱེན་ དཔེར་ན་ སློབ་དེབ་ ལྷག་ནིའི་དུས་ཚོད་ སློབ་སྟོན་ཚུ་ནང་ལུ་ དཀའ་དལ་གྱི་ཅ་ཅོ་འདུག་གི་ ཐབས་ཤེས་སྒེལ་མ་ (Mixed Method) གི་ཐོག་ལས་ ཞིབ་འཚོལ་འབད་ཡི། དེ་ཡང་ དངོས་ གཞི་ལས་ཐབས་ཤེས་ཀྱི་མཁོ་ཚན་ Survey གི་ཐོག་ལས་ གནད་སྡུད་བསྡུ་ལེན་དང་དེ་རྗེས་དཔྱད་འབད། དེ་ལས་ ལྷུངས་བཙན་ཐབས་ཤེས་ (Semi-structured Interview) སྤྱིག་བཀོད་ཚ་ཚ་ཚང་བའི་དྲི་བ་དྲིས་ལན་གྱི་ཐོག་ལས་ གནད་སྡུད་བསྡུ་ལེན་དང་ ཡིག་ཆ་དཔྱེ་དཔྱད་འབད་དེ། ཆོས་སྐད་དང་རྫོང་ཁ་གཉིས་ཀྱི་ ཐུ་ཚིག་གི་དུས་གསུམ་ལྷན་སྦྱང་འབད་བའི་སྐབས་ལུ་ འབྲུང་དོ་ཡོད་པའི་དཀའ་དལ་ཚུ་ སེལ་ཐབས་ཀྱི་སྒོས་འཆར་ཚུ་ཡང་བཀོད་དེ་ཡོད་པ་ཨིན།

གཅོ་ཚིག **(Key words)** ཐུ་ཚིག་གི་དུས་གསུམ། མ་འོངས་པ། ད་ལྟ་བ། འདས་པ། སྐུལ་ཚིག། ཐུ་ཟེད་ཐ་དད་པ། ཐུ་ཟེད་ ཐ་མི་དད་པ། ཟེད་འཛེལ་ལས་ཚིག ཟེད་མེད་ལས་ཚིག མཁོ་ཆས་དང་མཐུན་རྐྱེན། དཀའ་དལ་ དང་གདོང་ལེན། བློ་སྤྱོབས།

ཞིབ་འཚོལ་གྱི་དཀའ་དལ། **(Problem Statement)**

རྒྱལ་ཡོངས་ཀྱི་སྐད་ཡིག་རྩོད་ཁ་འདི་ འབྲུག་རྒྱལ་ཁབ་རང་དབང་རང་བཙན་གྱི་གཞི་དོན་ཅིག་ཨིན། དེ་ཡང་རྩོད་ཁའི་བརྒྱ་གསར་པ་ (༢༠༠༢) ནང་ལུ་བཀོད་ཡོད་མི་ནང་ མི་དབང་འཛིགས་མེད་སེམས་དབང་ཡུག་གི་ རྒྱལ་ཁབ་ཀྱི་ངོ་རྟགས་ཤར་ཏེ་ རྒྱལ་ཡོངས་སྐད་ཡིག་རྩོད་ཁ་འདི་ བདག་འཛིན་འཐབ་དགོ་ཡོད་མི་ཚུ་ གཅིག་ཁུ་ཡིན་ཟེར་ ཁས་ལེན་ཡོད་ཅིང་ རྒྱལ་ཡོངས་སྐད་ཡིག་རྩོད་ཁ་འདི་ བདག་འཛིན་འཐབ་དགོ་པའི་ཁུངས་ཀྱི་ཐོག་ལས་ ཁོང་ཚུ་ཡང་ ཁས་ལེན་ཡོད་པ་ཨིན།

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[1]. ལེགས་བཤད་པ། སྤྱི་རོལ་ཤེས་རིག་མཐོ་རིམ་སློབ་གྲྭ།
Email: samtentharchen.pce@rub.edu.bt

དགའ་སྐྱིད་དཔལ་འཛོམས་ཀྱི་ཀ་ཆེན་ཅིག་སྟེ་ ངོས་འཛིན་གནང་སྡེ་ཡོད་པ་མ་ཚད་ ངང་ལུགས་འབྲུག་པའི་ལམ་སྲོལ་རྒྱུའི་གྲལ་ལས་གཡ་ཆེ་ཤོས་ཞིན་མ་སྟེ་འདུག། དེ་འབདཔ་ལས་ ཆུལ་ཡོངས་སྐད་ཡིག་རྩོད་ཁའི་ ཉན་ནི་ སློབ་ནི་ སྡེ་ནི་བཞི་ཚར་ འབྲ་མཉམ་སྟེ་ ཡར་ཆུས་གཏུང་དགོས་ཅིག་ཞིན་རྒྱང་ད་ལྟེའི་གནས་སྡུངས་ནང་ལུ་འབདཝ་བ་ཅིན་ཡར་ཆུས་འགྲོ་མ་རྒྱུགས་པའི་དཀའ་དལ་འབྲུངས་བཞིན་འདུག། དེ་སྟེ་ཞིན་པའི་ཁྲངས་ཡང་ དཔལ་འབྱོར་དངངིན་ཆེན་མཁའ་འགྲོ་ (২০১৯) གིས་ རྩོད་ཁའི་ཁ་སྐད་ལག་ལེན་འཐབ་ནི་འདི་ ཆུལ་ཁབ་མཐའ་དབུས་མེད་པའི་མི་སེར་རྒྱ་གིས་ ཆུང་མཐོང་གནས་རྒྱལ་དང་ ལས་རིམ་རྒྱ་ལས་བརྟེན་ བརྒྱ་ཆ ৫০% དེ་ཅིག་ ཡར་དྲག་སོང་ཡོད་རྟུང་ འབྲི་ལྷག་གཉིས་ལུ་ དཀའ་དལ་འབྱུང་སྟེ་ར་ཡོད་པ་སྟེ་བཤད་དེ་འདུག

འབྲི་བའི་སྐབས་ཀྱི་དཀའ་དལ་འདི་ཡིག་སྟེབ་ནང་ལུ་འདུག་ཟེར་ཁ་ག་ཏོ་གས། དཔེགས་བསལ་ཡིག་སྟེབ་གཅིག་ནང་ལུ་ཞིན་ན་ དཔྱ་ཚུན་ཚོད་ཞིབ་འཚོལ་འབད་འབདཁ་ཅིག་མིན་འདུག ཞིན་རྟུང་ དགེས་སློབ་ཁང་ནང་ལུ་ ལོ་ངོ་ ১৫ གི་རིང་ལུ་ སློབ་སྟེན་འབད་ཡོད་པའི་ཉམས་སྐྱོངས་དཔའ་བཅུ་ལྔ་ཡིག་སྟེབ་ཀྱི་དཀའ་དལ་ཅིག་ བྱ་ཚིག་ཚུ་དུས་གསུམ་དང་འཁྲིལ་ཏེ་ ལག་ལེན་འཐབ་མ་ཚུགས་པ་སྟེ་མཐོ་རིམ་ཤེས་ཡོད་པས་ ཆོས་སྐད་དང་རྫོང་ཁའི་བྱ་ཚིག་དུས་གསུམ་ལག་ལེན་ལུ་ དཀའ་དལ་དང་གདོང་ལེན་གཏོ་ཅིར་འདུག་གཏི་ཞིབ་འཚོལ་འབད་ཡི།

དེ་འབདཔ་ལས་ ངཀིས་ཞིབ་འཚོལ་འདི་འབད་ཞིནམ་ལས་ དཀའ་དལ་ངོས་འཛིན་འབད་དེ་ སེལ་ཐབས་སྟོན་ཚུགས་པ་ཅིན་ སྤྱིར་ཀྱི་རྩོད་ཁ་གོང་འཕེལ་ ལྷག་པར་དུ་ཆུལ་འཛིན་གཙུག་ལག་སློའི་རྩོད་ཁའི་ལས་རིམ་ཚུ་ སྤུས་ཚད་དང་ལྡན་སྟེ་བྱིན་ཚུགས་ནི་ལུ་ཟན་ཐོགས་པའི་ཁར་ མ་འོངས་འབྲུག་མི་ཚུ་ ཡོ་གས་གྲུབ་ཅན་བཟོ་ཚུགས་ནི་ལུ་ཡང་ ཆུབ་སྟོང་བྱིན་ཚུགས་པའི་རེ་བ་ཞིན།

དྲི་བ་གཅོ་ཚེ། **(Research Question)**

འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་སྡེ་འོག་གི་ མཐོ་རིམ་སློབ་གྲྭ་གསུམ་ནང་ལུ་ ཆོས་སྐད་དང་རྫོང་ཁའི་བྱ་ཚིག་ དུས་གསུམ་སྦྱོར་སྦྱངལུ་ དཀའ་དལ་དང་དང་གདོང་ལེན་གཏོ་ཅིར་འདུག་གཏི?

ཡན་ལག་གི་དྲི་བ། **(Sub-questions)**

1. བདག་གཞན་དུས་གསུམ་སྦྱོར་ཚད་མི་སློབ་སྟུགས་ཚུ་གིས་ བདག་གཞན་དུས་གསུམ་འདི་ ཁག་ཆེཤ་སྟེ་ཏ་གོ་ནུག་གཏི?
2. བདག་གཞན་དུས་གསུམ་གྱི་ སྟོང་ཚན་དང་འཁེལ་བའི་མཐུན་རྐྱེན་ཚུ་ ཡངམ་འདུག་གཏི?
3. བདག་གཞན་དུས་གསུམ་གྱི་སྟོང་ཚན་འདི་ ཉན་སྟུང་འབདཝ་བའི་སྐབས་ལུ་ དཀའ་དལ་དང་ གདོང་ལེན་གཞན་གཏི་ཅིར་འདུག་གོ?
4. བདག་གཞན་དུས་གསུམ་སྦྱོར་ཚད་མི་སློབ་སྟུགས་ཚུ་གིས་ བྱ་ཚིག་གི་དུས་གསུམ་ཚུ་ ཁྱད་པར་ཕྱེ་སྟེ་ ལག་ལེན་འཐབ་ནི་ལུ་ ཟླ་སྟོབས་འདུག་གཏི?

རྩོམ་པའི་བསྒྲུབ་ཁེའུ། **(Literature Review)**

རྩོམ་རིག་བསྒྲུབ་ཁེའ་འདི་ནང་ལུ་ དང་པར་ ཆོས་སྐད་དང་རྫོང་ཁའི་བྱ་ཆོག་དུས་གསུམ་གྱི་གོ་དོན་དང་ དེས་ཆོག། གཉིས་པར་ བྱ་ཆོག་གི་དུས་གསུམ་གྱི་ཁྱད་པར་ཚུ་ ལེགས་ཤོམ་སྦེ་ཤེས་དགོ་པའི་ཁུངས་དང་ དགོས་པ། དེ་ལས་ གསུམ་པར་ བྱ་ཆོག་གི་དུས་གསུམ་དུས་དེབ་ཚུའི་ནང་ལུ་ དཀའ་ངལ་གི་ཅ་ཅ་འདུག་ག་ དབྱེ་བ་དཔྱད་དེ་བྱེས་ཡོད་པ་ཨིན།

༡) ཆོས་སྐད་དང་རྫོང་ཁའི་ བྱ་ཆོག་དུས་གསུམ་གྱི་གོ་དོན་དང་ དེས་ཆོག།

བྱ་ཆོག་ཅེར་བའི་གོ་དོན་ཡང་ ཆོས་སྐད་ནང་ལུ་བྱེས་ཡོད་པའི་དུས་ཚོད་ཅིག་ཤེས་ཀའི་ཐོག་ལས་ཀྱང་ བྱ་ཆོག་ཅེས་ཀི་འདི་ ལས་ཀ་དང་སྦྱོར་བ། སྒོ་གསུམ་གྱི་རྩོལ་བ་ལུ་ གོཕ་ཞིནམ་པས། ཆོག་ཅེར་ཀི་འདི་ དོན་གྱི་ངོས་དང་ཁྱད་པར་ སྤྱར་ཏེ་སྟོན་པའི་སྤྱ་ལུ་ངོས་བཟུང་ནུག དེ་འབདཔ་ལས་ གཅོ་བོ་ལུས་དག་ཡིད་གསུམ་གྱི་རྩོལ་བ་དང་གཡོ་འགུལ་གྱི་ངོ་བོའི་ཆ་ཤས་ཤེས་པ་ཨིན། ཆོ་དབང་བསོད་ནམས་ (༡༩༨༣) དང་ རྫོང་གོང་འཕེལ་ལྷན་ཚོགས་ (༢༠༡༡) ནང་ལུ་ཡང་ བྱ་ཆོག་ཅེར་ལགཔ་ལེན་འཐབ་ནུག། དེ་བཟུམ་སྦེ་ བྱ་བ་ཅེར་ཀི་འདི་ དཔེགས་ཡུལ་ཡོད་པའི་བྱ་སྤྱོད་ཀྱི་ཐུན་མོང་ཅིང་ཅ་ཅ་ཚུ་ཨིན། (བྱོ་བཟང་སྤྲོན་ལས། ༢༠༡༣)། དེ་དང་ཚ་ཅོ་ཆ་འདུཔ་སྦེ་ གནའ་ཅོ་ཅོ་ (ཀུན་དགའ་རྡོ་རྗེ་ ༢༠༡༤ ཤོག་གངས་ ༡) ནང་ལུ།

> ཐོག་མར་བྱ་ཆོག་ཅེས་པ་ནི། །ཉེད་པོའི་སྤྲོ་གསུམ་གང་རུང་དང་། །ཡང་ན་རྒྱུ་རྐྱེན་ཅི་རིགས་པས། །གལ་ཏེགལ་ཆེན་པར་ཕྱོགས་པ་འོ། །བྱ་ཆོག་ཅེས་པའི་སྒྲ་བཤད་ནི། །བྱ་ཞེས་བྱ་བའི་སྒྲ་བསྡུས་ཤིང་། །ཆོག་ནི་བྱ་བ་མཆོག་ཉིད་ཀྱི། །སྒྲ་འམ་རྗོད་ཉིད་ཐ་སྙད་བཏགས། །ཅེར་ སྒོ་གསུམ་གྱི་རྩོལ་བ་དང་ རྒྱུ་རྐྱེན་ལས་བྱུང་བའི་གལོ་འགྱལ་གྱི་ངོ་བོ་མཆོག་པའི་སྒྲ་ཆོག་གཅིག་ལུ་བཞག་ནུག།

རྫོང་གི་ནང་ལུ་བྱ་ཆོག་གི་གོ་དོན་ རྫོང་གོང་འཕེལ་ལྷན་ཚོགས་ (༢༠༠༤) དང་ (༢༠༡༠) གྱིས་ འབད་བ་ཅིན་ ལུ་འབད་བའི་ཆོག་བརྗོད་ལི་ཅིག་ལུ་ངོས་འཛིན་འབད་ནུག དེ་ལས་ རྫོང་གོང་འཕེལ་ལྷན་ཚོགས་ (༢༠༡༠) གྱིས་འབད་བ་ཅིན་ བྱ་བའི་དོན་སྟོན་པའི་ཆོག་གི་ར་ལུ་ བྱ་ཆོག་ཅེར་དོས་འཛིན་ འབད་ནུག རྫོང་གོང་འཕེལ་ལྷན་ཚོགས་ (༢༠༡༤ ཤོག་གངས་ ༡༠༡) ནང་ལུ་ “ལས་ཆོག་ཅེར་ཀི་འདི་ ཉེད་འཕེལ་དང་ཉེད་ཤེད། བྱ་ཉེད་ལས་གསུམ་ སྐུལ་ཆོག དུས་གསུམ་གྱི་ཆོག་གི་ཅ་ར་ཞིན་རུང་ སྤྱིར་བཏང་ལས་ཀྱི་དོན་སྟོན་པའི་ ཆོག་ཅིག་ལུ་སྐབས་ཞིན།” རྫོང་ཁའི་བཏ་གཞུང་དང་ སྐད་ཡིག་གི་དུས་ དེབ་ཚུ་ནང་ལུ་ ཉེད་འཕེལ་ལས་ཆོག་དང་ ཉེད་མེད་ལས་ཆོག། བྱ་ཉེད་ཐ་དད་པ་དང་མི་དད་པ། བྱ་ཉེད་ལས་གསུམ་དང་ བདག་གཞན་གྱི་གོ་དོན་ཁ་གསལ་སྦེ་མིན་འདུག།

༢) ཆོས་སྐད་དང་རྫོང་ཁའི་ བྱ་ཆོག་དུས་གསུམ་ ཤེས་དགོ་པའི་ཁུངས་དང་ཞེ་ཡན།

བྱ་ཆོག་གི་དུས་ཤེས་དགོ་པ་འདི་ གལ་ཆེ་ཏོག་ཙོ་ཅིག་ཨིན། དེ་ཡང་ རྒྱལ་བ་ཅོ་ཁ་པའི་ལུང་ (བསམ་གཏན་མཐར་ཕྱིན་ (༢༠༡༡ ཤོག་གངས་ ༩ ནང་ལུ) “རིག་ལམ་རྣམ་པར་སྡེ་བའི་རྣམ་དཔྱོད་དང་

། །གཞུང་ལུགས་གདམས་པར་ཤར་བའི་ཉམས་ལེན་དང་། །ཚིག་སྦྱོར་ཀུན་ལ་མཁས་པའི་ངག་གི་དཔལ། །ས་སྟེང་འདི་ནང་རིན་ཆེན་རྣམ་གསུམ་སྣང་། །" ཟེར་གསུངས་ཡོད་དོ་བཟུམ་སྦེ་ ཚིག་སྦྱོར་ལུ་ནོར་འཁྲུལ་མེད་པར་འབྲི་ནི་འདི་ ཤེས་རིག་ཡོན་ཏན་གྱི་གཞི་རྟེན་ངོ་མ་ཅིག་ཨིནམ་ལས་ ཚིག་སྦྱོར་ཕུན་སུམ་ཚོགས་པའི་རྒྱུ་ ཡི་གུའི་སྦྱོར་བ་འདི་ འཛམ་གླིང་ནང་ལུ་ ཁྱད་དུ་འཕགས་པའི་ནོར་བུ་རིན་པོ་ཆེ་ཨིནམ་སྦེ་གསུངས་ནུག ཚེ་དབང་བསོད་ནམས་ (༡༩༩༣ ཤོག་གྲངས་ ༢) ནང་ལུ་ "གང་ཞིག་ཚེགས་མེད་ཐོན་མིའི་བརྡ་སྤྲོད་ཀྱི། །ནོར་བུའི་མཛོད་ལ་འཛད་མེད་སྤྱོད་འདོད་ན། །དབང་པོའི་གྲངས་ལྡན་དུས་གསུམ་རྣམ་གཞག་གི །གཟིངས་འདི་བསྟེན་ན་མཁས་པའི་གོ་སར་དབང་། །" ཟེར་གསུངས་ཡོདཔ་མ་ཚད། བསམ་གཏན་མཐར་ཕྱིན་ (༢༠༡༡) གིས་འབད་བ་ཅིན་ རིག་པའི་གནས་ལུ་མཁས་པའི་གོ་ས་འདི་ ལེན་ཞིནམ་ལས་ འཆད་རྩོད་རྩོམ་པའི་ལྷ་འགན་འབག་དགོ་པ་ཅིན་ དུས་གསུམ་གྱི་ཁྱད་པར་ལེགས་ཤོམ་འབད་ཤེས་དགོཔ་འདི་གལ་ཆེ། ཟེར་བཤད་དེ་འདུག དེ་བཟུམ་སྦེ་ འགོས་པདྨ་རྒྱལ་མཚན་ (༢༠༡༡) རྡོ་རྗེ་རྒྱལ་པོ་ (༡༩༩༠) བློ་བཟང་རྒྱ་མཚོ་ (༡༩༤༩) སི་ཏུ་ཆོས་ཀྱི་འབྱུང་གནས་ (༡༩༤༧) ཚུ་གིས་ཡང་ འཆད་རྩོད་རྩོམ་གསུམ་གྱི་ལྷ་ཚུ་འབད་དགོ་པ་ཅིན་རྟགས་འཇུག་སྐབས་ཀྱི་ བདག་གཞན་དང་དུས་གསུམ་གྱི་རྣམ་གཞག་ཚུ་ཤེས་དགོཔ་གལ་ཅན་ཨིནམ་སྦེ་གསུངས་ཏེ་འདུག ཨིན་རུང་དུས་གསུམ་འདི་ལྷབ་སྦྱང་འབད་བའི་སྐབས་ལུ་ དཀའ་ངལ་དང་གནོད་ལེན་ཚུ་ག་ཅིར་འདུག་ག་ ཞིབ་འཚོལ་འབད་འབདཝ་ཅིག་མིན་འདུག། དེ་འབདཝ་ལས་ ངགིས་ འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་གྲྭ་འོག་གི་ མཐོ་རིམ་སློབ་གྲྭ་གསུམ་ནང་ལུ་ ཆོས་སྐད་དང་རྫོང་ཁའི་བྱ་ཚིག་དུས་གསུམ་ལྷབ་སྦྱང་དང་འབྲེལ་བའི་དཀའ་ངལ་དང་གནོད་ལེན་ཚུ་ ཧ་གོ་ནིའི་དོན་ལུ་ ཞིབ་འཚོལ་འབད་ཡི།

༢) ཆོས་སྐད་དང་རྫོང་ཁའི་ བྱ་ཚིག་དུས་གསུམ་ལྷབ་སྦྱང་དང་འབྲེལ་བའི་ དཀའ་ངལ།

ཆོས་སྐད་ཀྱི་བྱ་ཚིག་དུས་གསུམ་ཨིན་པ་ཅིན་ སི་ཏུ་པཎ་ཆེན་ཆོས་ཀྱི་འབྱུང་གནས་ (༡༩༤༧) ནང་ལུ་ བྱ་ཚིག་གི་དུས་གསུམ་ལུ་དཔེ་ལེ་ཤ་ར་བཀོད་ཡོད་རུང་ལག་ལེན་ཆེནམོ་ འཐབ་དགོཔ་མེད་པའི་བརྡ་སྐད་ཚུ་ཡང་ བཀོད་ཡོད་མི་འདི་ ལྷབ་སྦྱང་འབད་ནི་ལུ་དཀའ་ངལ་འདུག། རྡོ་རྗེ་རྒྱལ་པོ་ (༡༩༩༠) ཚེ་དབང་བསོད་ནམས་ (༢༠༠༩) ཚུ་གིས་འབད་བ་ཅིན་ བྱ་བྱེད་ཐ་དད་པ་དང་མི་དད་པ་ དེ་ལས་དུས་གསུམ་གྱི་སྐོར་ལས་བྲིས་ཡོད་རུང་ དཔེ་རེ་མ་གཏོགས་མིན་འདུག། དེ་བཟུམ་སྦེ་ རྡོ་རྗེ་རྒྱལ་པོ་ (༡༩༩༠) བློ་བཟང་རྒྱ་མཚོ་ (༡༩༤༩) བོད་རྒྱ་ཚིག་མཛོད་ཆེན་མོ་ (༡༩༤༥) འཇིགས་མེད་ཆོས་རྒྱལ་ (༢༠༠༩) བསྟན་འཛིན་དབང་ཕྱུག (༢༠༠༣) ཚུ་ནང་ལུ་ བྱ་བྱེད་ཐ་དད་པ་དང་མི་དད་པའི་ཁྱད་པར་ ཁ་གསལ་སྦྲེ་མེད་པའི་ཁར་བྱ་ཚིག་གཅིག་ལུ་ དུས་གསུམ་གྱི་སྟེབ་མ་འདྲཝ་ལེ་ཤ་བཀོད་དེ་འདུག།

བྱེད་པ་པོ་དང་འབྲེལ་བའི་བྱེད་ལས་དང་ བྱ་བའི་ཡུལ་དང་འབྲེལ་བའི་བྱ་ལས་ཀྱི་ངོས་འཛིན་ནི་ རྡོ་རྗེ་རྒྱལ་པོའི་རྟགས་འཇུག་གི་དྲི་བ་དྲིས་ལན་ (༡༩༩༠ ཤོག་གྲངས་ ༡༦༨) ནང་ལུ། ཤིང་འདི་བདག་གིས་གཙོད་པར་བྱེད་དོ་ལྟ་ལུ་ བྱེད་པ་པོའི་མིང་ལ་བྱེད་སྒྲ་སྦྱར་ནས་ བྱ་བ་བཀོད་པ་ནི་ བྱེད་པ་པོ་དང་འབྲེལ་བའི་ལས་དང་། ཤིང་གཅད་པར་བྱ་ལྟ་བུ་ གཅད་བྱའི་ཤིང་དང་འབྲེལ་ནས་ བྱ་བ་བཀོད་པ་ནི་ བྱ་བའི་ཡུལ་དང་འབྲེལ་བའི་ལས་ཡིན་པར་ངོས་འཛིན་པ་བདེ་ཡང་། བྱེད་པ་པོ་དང་འབྲེལ་བའི་བྱེད་ལས་ལ་ དཔྱ་བ་དང་འདས་པའི་བྱ་ཚིག་མ་གཏོགས་ མ་འོངས་པའི་བྱ་ཚིག་ལག་ལེན་འཐབ་མེད་པ་དང་ དུས་གསུམ་

གང་འཚུག་པ་ དེ་ལེར་ན་ བདག་གིས་གཅོད་པར་འགྱུར། བདག་གིས་གཅོད་བཞིན་པ་ཡིན། བདག་གིས་ཤིང་བཅད་ཟིན་ལྟ་བུ་དང་། བྱ་བའི་ཡུལ་དང་འབེལ་བའི་བྱ་ཆོག་ལ་ དེ་ལེར་ན་ ཤིང་གཅད་རྒྱུ་ཡིན། ཤིང་བཅད་ཟིན་ལྟ་བུ་ དུས་མ་འོངས་པ་དང་འདས་པ་གཉིས་ལས་ དེ་ལྟ་བའི་བྱ་ཆོག་ལག་ལེན་འཐབ་མེད་པ་ནི་ ལག་ལེན་དངོས་དང་མི་མཐུན་མས།

སི་ཏུ་ཚོས་ཀྱི་འབྱུང་གནས་ (༡༨༤༣) གྱིས་ ལག་ལེན་འཐབ་དགོས་ཆེན་མོ་མེད་པའི་ བྱ་ཆོག་གི་དུས་གསུམ་དེ་ལེར་ན་ སེམས་ཀྱིས་བསྒྲུབ། ཟས་བསྒྲུས། ཕྱག་བཅའམས། ཤིང་བཅེར། གོས་བརྐྱན། ཐྲུང་མས་བཏུར། སྤྱི་ལ་བརྟབས། ཚུང་མ་བསྡེལ། ཆོར་བསྡིས་ ཚུ་ཡང་བགོད་ནུག

བསྟན་འཛིན་དབང་ཕྱུག་ (༡༩༤) གྱིས་ ཆྱེད་མེད་ལས་ཆོག་དང་བྱེད་འབྲེལ་ལས་ཆོག་ སྤེ་ཚན་སོ་སོར་ཕྱེ་ཡོད་རུང་ བྱ་ཆོག་ཚུ་སོ་སོར་མ་ཕྱེ་བར་སྤུ་བསྡེས་ཏེ་ བྱིས་འདུག། ཆེད་མེད་ལས་ཆོག་ནང་ལུ་ ཆེད་འབྲེལ་ལས་ཆོག་བྱིས་ཡོད་པ། དེ་ལེར་ན་ འཚང་། ཕྱིག། ཐོས། དམུར། ཡང་ བཞེངས། སྤྱོད། ལ་སོགས་བརྒྱ། དེ་བཟུམ་སྤེ་ཆེད་འབྲེལ་ལས་ཆོག་ནང་ལུ་ ཆེད་མེད་ལས་ཆོག་བྱིས་ཡོད་པ། དེ་ལེར་ན་ སྐྱེ། འཚིག འཁྱག བརྒྱལ། རྐེད། མཐོང་། ལ་སོགས་པ་བཟུམ། དེ་ལས་ལག་ལེན་འཐབ་དགོས་ ཚེནམོ་མེད་པའི་བཟ་རྐིང་ཚུ་ཡང་བྱིས་ཏེ་འདུག

འཇིགས་མེད་ཆོས་ཀྱལ་ (༡༩༨) གྱིས་ ཆྱེད་མེད་ལས་ཆོག་ལུ་ཡང་སྐྱལ་ཆོག་བྱིས་ཡོད་པ་མ་ཚད་ ཆོག་མཚོད་དང་ དུས་གསུམ་རེའུ་མིག་ཚུ་ནང་ལུ་བགོད་ཡོད་པའི་ དུས་གསུམ་མ་འབྲལ་དང་ ལག་ལེན་འཐབ་དགོས་མེད་པའི་བཟ་རྐིང་ཚུ་ཡང་བྱིས་ཏེ་ཡོད་པ་ལས་ ལྷག་མི་ཚུ་ལུ་མགུ་འཐོམ་སིག་སི་འདུག

རྗོང་ཁའི་བྱ་ཆོག་དུས་གསུམ་ལུ་ཡང་ རྗོང་ཁའི་བཟ་གཞུང་གསར་པ་ (༡༠༢) གཞི་རིམ་རྗོང་ཁའི་བཟ་གཞུང་ (༡༠༡) བར་རིམ་རྗོང་ཁའི་བཟ་གཞུང་ (༡༠༡) གོང་རིམ་རྗོང་ཁའི་བཟ་གཞུང་ (༡༠༡) ཚུ་ནང་ལུ་ རྗོང་ཁ་ནང་ལུ་ དུས་གསུམ་ལམ་སྟོན་མ་བསྡུས་བགོད་ཡོད་རུང་ དམིགས་བསལ་དུས་གསུམ་ལྷག་སྟོན་གྱི་དཀའ་ངལ་གྱི་སྐོར་ལས་བྱིས་ཏེ་མིན་འདུག

རྗོང་ཁའི་བཟ་གཞུང་གསར་པ་ (༡༠༢) ནང་ལུ་ ཆྱེད་པ་པོ་དང་འབྲེལ་བ་དང་མ་འབྲེལ་བའི་གོ་རིན་འདི་ ཉིར་སངས་མ་སྤེ་བགོད་ཡོད་རུང་ བྱ་ཆོག་ ཆྱེད་ཆོག་ སྐུལ་ཆོག་ དུས་ཆོག་ ཟེར་དབྱེ་བ་ཚུ་ཅུ་ཤས་ལས་མགོ་འཐོམ་སིག་སི་འདུག དེ་བཟུམ་སྤེ་ཆྱེད་འབྲེལ་གྱི་བྱ་ཆོག་ལུ་ བྱ་ཆོག་ ཆྱེད་ཆོག་ སྐུལ་ཆོག་ དུས་ཆོག་བཞི་དང་ ཆྱེད་མེད་ལས་ཆོག་ལུ་ དུས་ཆོག་དང་སྐྱོན་ཆོག་ཚུ་ཡོད་ཟེར་བའི་གསུངས་ཡོད་མི་འདི་ དེས་དེབ་གཞན་ཁ་ལས་ ཆྱེད་མེད་ལས་ཆོག་ལུ་ དབྱེ་བ་གཉིས་བཤད་ཡོད་མི་དང་ ཁུངས་ཡར་ཆགས་མཆིས་ནུག

དེ་ལས་ རྗོང་ཁའི་བཟ་གཞུང་གོང་རིམ་ (༡༠༡) ནང་ལུ་ ཆྱེད་པ་པོ་དང་འབྲེལ་བའི་ལས་ལུ་ ཁོ་གིས་ཡི་གུ་སྐྱེལ་འོང་ཟེར་ དུས་དུ་ལྟ་བའི་བྱ་ཆོག་དང་ ཆོག་གོགས་མ་འོངས་པ་འབད་ཡོད་མི་འདི་ཡང་ འགལ་བ་འདུག དེ་བཟུམ་སྤེ་ འཚོར་ཐྱི་འདས་པ་ལུ་ འགོར་ཡོད་པ་དང་ ལམ་སྟོན་མེད་པའི་དཀའ་ངལ་ཚུ་འདུག

རྗོང་ཁའི་བཟ་གཞུང་གསར་པ་ (༡༠༢) ནང་ལུ་ སྤྱིར་བཏང་བཟོ་པའི་གཞུང་ལས། འདས་པ་འཕྲལ་ཡོད་ཡང་འཚུག་ཡོད། །ད་ལྟ་བ་ལ་གཉིས་ཀ་མེད། །མ་འོངས་འཕྲལ་ཡོད་ཡང་འཚུག་མེད། །སྐུལ་ཆོག་འཕྲལ་མེད་ཡང་འཚུག་ཡོད། ཟེར་བཤད་ཡོད་མི་འདི་བྱ་ཆོག་གི་ར་ལུ་ལག་ལེན་འཐབ་བཏུབ་བཟུམ་སྤེ་གསུངས་ཡོད་མི་དང་ རྟགས་འཚུག་གི་གཞུང་གཞན་ལས་ དུས་གསུམ་ཆྱེ་བཀུར་མ་ཅིག་ལུ་ཙིན་ཧུའ་བབད་ བཤད་ པཤད་པ་གཉིས་ཡང་འཐལ་བ་འདུག

རྩོད་ཞ་གོང་འཕེལ་ལྟན་ཚོགས་ (২০১১) ནང་ལུ་ ཡིག་སྡེབ་འགྱུར་བ་ཡོད་པ་དང་ཝེད་པ་ཚུ་ སོ་སོར་ཕྱེ་སྡེ་བྱིས་ཡོད་རུང་ ཐུབ་ཀྱེད་ཐ་དད་པ་དང་ཝི་དད་པ། ཀྱེད་འཛེལ་ཡས་ཚིག་དང་ ཀྱེད་ཝེད་ལས་ཚིག་གི་ཁྱད་པར་ མ་ཕྱེ་བར་འདུག། དེ་ལས་ ཐུ་ཚིག་ལ་ལུ་ སྐུལ་ཚིག་གི་ཚབ་ལུ་ མ་འོངས་པའི་ཐུ་ཚིག་ ལག་ལེན་འཐབ་དགོ་པའི་ལམ་ལུགས་བཟོ་ཡོད་རུང་ ཐུ་ཚིག་ལ་ལུ་ཅིག་ལུ་ མ་འོངས་པ་འདི་ཝེན་པར་ དཔྱ་བ་བྱིས་ནུག

རྩོད་ཞའི་ཐུ་ཚིག་སྡེབ་གསར་བཟོ་རིགས་ སྡེབ་འཛམ་ཀྱོར་ཀྱོ་དང་འགྱུར་ཝེད་སྡེ་ལག་ལེན་འཐབ་དགོ་པ་ཨེན་རུང་ རྩོད་ཞའི་ཚིག་མཚོད་ ཀུན་བཟང་འཕེན་ལས་ (২০০২) ཚུ་ནང་ལུ་ སྡེབ་འགྱུར་བ་ཡོད་པ་སྡེ་བྱིས་ནུག། དཔེར་ན་ ཆུབ་བཟུམ། དེ་བཟུམ་སྡེ་ལ་ལུ་ ཡིག་སྡེབ་གཉིས་རེ་བྱིས་ནུག་ དཔེར་ན་ གཡིབ་དང་ཨིབ་བཟུམ།

དེ་འདབ་ཁ་ལས་ གོང་གི་རྩོམ་བྱིས་ཚུ་ནང་ལུ་ བགོད་དོ་བཟུམ་སྡེ་ མཐོ་རིམ་སློབ་གྲྭའི་དཔེ་མཚོད་ ཁང་དང་ ཁྲོམ་ཁ་ལས་འཐོབ་ཚུགས་པའི་ དཔེ་དེབ་ཚུ་ཡང་ མགུ་འཐོམ་སིག་སི་ཡོད་པ་ལས་ ལྷག་སྡུད་འབད་ནི་ལུ་དཀའ་དཔའ་དང་ གདོང་ལེན་སྤོམ་སྡེ་ར་འདུག།

ཞེབ་འཚོལ་ཐབས་ལམ་དང་མཁོ་ཆས། **(Methodology & tools)**

ཞེབ་འཚོལ་ཐབས་ལམ་ཡང་ གྲངས་འབྲེལ་ཐབས་ཤེས་ (quantitative research) དང་ ཁྱད་བཅན་ཐབས་ཤེས་ (qualitative research) གཉིས་ཆུང་འབྲེལ་ ཐབས་ཤེས་སྡེལ་མ་ (Mixed method) གི་ཐོག་ལས་འབད་ཡི།

ཐབས་ཤེས་སྡེལ་མ་ (Mixed method) དེ་ ལག་ལེན་འཐབ་དགོ་མི་འདི་ཡང་ ཤུར་པ་ (২০১১) གིས་ ཐབས་ཤེས་འདི་གི་ཐོག་ལས་ ཀ་ཅི་འབད་ དང་ ཀ་དེ་སྡེ་ཅར་མིའི་དྲི་བའི་ལན་ཚུ་ ཐོ་ཐུག་ཚུགས་པ་ཚ་ད་ བསམ་འཆར་ཚུ་ བཀག་ཆ་མེད་པར་སྐབས་ནིའི་གོ་སྐབས་སྡོམ་ཡོད་ཅར་ བགོད་ཡོད་པ་ཚ་ད་ ཐུགས་འཛེལ་ཐབས་ཤེས་ཀྱི་ཐོག་ལས་ ཐོབ་མིའི་གནད་སྡུད་བསྡུ་ལེན་འབད་ཡོད་ཚུ་ དེས་བདེན་ཞིན་མེན་ བརྟག་དཔྱད་འབད་ནིའི་དོན་ལས་ ཁྱད་བཅུད་ཀྱི་ཐོག་ལས་ཐོབ་པའི་གནད་སྡུད་ཚུ་ དང་ ཀ་བསྡུར་འབད་དེ་ དབྱེ་བ་དཔྱད་བཏུབ་ཅར་ཡང་ བགོད་དོ་བཟུམ་ ཨན་ཐོགས་སྡོམ་ཡོད་པ་ལས་ སྤེལ་མའི་ཐབས་ཤེས་འདི་ ལག་ལེན་འཐབ་ཅི།

གྲངས་འབྲེལ་ཐབས་ཤེས་ཀྱི་སྐབས་ ལན་ཐད་ཀར་ཀྱི་དྲི་ཞོག (Questionnaire) བཟོ་ཡི། དེ་ཡང་ བདག་གཞན་དུས་གསུམ་ཀྱི་སྤྱོད་ཚན་འདི་ ཁག་ཆེཤ་སྡེ་ཤ་གོ་ཐངས་དབྱེ་དཔྱད་ཀྱི་དོན་ལུ་ དྲི་རྟམ་ (Items) ༣ ། མཁོ་ཆས་དང་མཐུན་རྐྱེན་ལངམ་ཡོད་མེད་དབྱེ་དཔྱད་ཀྱི་དོན་ལུ་ དྲི་རྟམ་ (Items) ༩ ། སློབ་སྟོན་དང་འབྲེལ་བའི་དཀའ་དལ་དབྱེ་དཔྱད་ཀྱི་དོན་ལུ་ དྲི་རྟམ་ (Items) ༣ ། ཐུ་ཚིག་ཚུ་དུས་གསུམ་དང་འཁྱིལ་ལག་ལེན་འཐབ་ནི་ལུ་ བྱོ་སྤྱོབས་ཡོད་མེད་དབྱེ་དཔྱད་ཀྱི་དོན་ལུ་ དྲི་རྟམ་ (Items) ༧ ཡོངས་བསྡོམས་ དྲི་རྟམ་ ༢༢ (Likert's scale, five points) མཐས་མཚོག་ལེག་ཀྱྲི་གི་ འཛལ་ཚད་ཁྱད་ཚོས་ལྟ་ལྟན་ནང་ལུ་ བཟོ་ཞིན་ལས་ འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་སྡེའི་འོག་ལུ་ བདག་གཞན་དུས་གསུམ་ཀྱི་སྤྱོད་ཚན་ ལྷག་ནི་ཡོད་པའི་མཐོ་རིམ་སློབ་གྲྭ་གསུམ་ནང་ལུ་སོང་སྡེ་ གནད་སྡུད་ལེན་འབད་ཡི།

ཁྱད་བཅན་ཐབས་ཤེས་ཀྱི་སྐབས་ལུ་ ཞིན་པ་ཅིན་ སློབ་གྲྭ་རེ་ལས་ སློབ་ཕྲུག་ ༢ རེ་གདམ་འཐུ་

འབད་དེ་ (Semi-structured Interview) སྒྲིག་བཀོད་ཆམ་ཚང་བའི་དྲི་བ་དྲིས་ལན་གྱི་ཐོག་ལས་འབད་ཡི། དེ་ལས་དུས་གསུམ་གྱི་སློབ་ཚན་དང་འབྲེལ་བའི་ཡིག་ཆ་དང་ སློབ་དེབ་ཚུ་དབྱེ་ཞིབ་འབད་ཡོདཔ་མ་ཚད་ དུས་གསུམ་ལུ་ཉམས་མྱོང་ཡོད་པའི་མཁས་མཆོག་ ༩ དང་གཅིག་ཁར་ཡང་ དྲི་བ་དྲིས་ལན་འབད་ཡི།

དཔེ་ཚད་ **(Sampling)**

གྲངས་འབྲེལ་ཐབས་ཤེས་ (quantitative research) ནང་ལུ་ ལན་ཐེབ་ཀར་གྱི་དྲི་ཤོག་ (Questionnaire) བཟོ་ཞིནམ་ལས་ བརྟག་ཞིབ་ཀྱི་དོན་ལུ་ འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་སྡེའི་འོག་ལུ་ བདག་གཞན་དུས་གསུམ་གྱི་སློབ་ཚན་ ལྷབ་ནི་ཡོད་པའི་མཐོ་རིམ་སློབ་གྲྭ་གསུམ་ནང་ལས་ བདག་གཞན་དུས་གསུམ་གྱི་སློབ་ཚན་ལྷབ་ཚར་མི་སློབ་ཕྲུག་ བུམོ་ ༥༠ དང་ བུཚ་ ༥༠ རེ་གདམ་འཐུ་འབད་ནི་སྦྲི་བཞག་ཡོད་མི་དང་འབྲེལ་འབད་ཡི། ཨིན་རུང་ ཐིམ་ཕུག་རྒྱལ་འཛིན་མཐོ་རིམ་སློབ་སློབ་གྲྭ་ནང་ལུ་ བདག་གཞན་དུས་གསུམ་ལྷབ་ཚར་མི་སློབ་ཕྲུག་ ༣༢ ལས་མེདཔ་ལས་ གེ་ར་གདམ་འཐུ་འབད་ཡི།

ཁུངས་བཙུན་ཐབས་ཤེས་ (qualitative research) ནང་ལུ་ གྲངས་འབྲེལ་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་དང་འབྲེལ་ མཐོ་རིམ་སློབ་གྲྭ་རེ་ལས་ སློབ་ཕྲུག་ ༢ རེ་བསྡོམས་ ༦ དང་། དཀའ་ངལ་ཚུ་ལེགས་ཤོམ་སྦྲི་ཏ་གོ་ནིའི་དོན་ལས་ བྱ་ཚིག་གི་དུས་གསུམ་རྩོམ་སྒྲིག་འབད་མི་མཁས་མཆོག་ ༩ དང་ གཅིག་ཁར་ (Semi-structured) གི་ཐོག་ལས་ (Interview) དྲི་བ་དྲིས་ལན་འབད་ཡི། དེ་ལས་ རྫོང་ཁ་དང་ཆོས་སྐད་ཀྱི་དུས་གསུམ་ཡིག་ཆ་ ༡༠ དེ་ལས་སློབ་རིམ་ ༩ ལས་ ༡༢ ཚུན་གྱི་སློབ་དེབ་དང་ལག་དེབ་ཚུ་ཡང་ལྷག་སྟེ་ དབྱེ་ཞིབ་འབད་ཡི།

ཞིབ་འཚོལ་གྱི་བློ་གཏད་དང་ ཆ་བཞག་གོ་རིམ། **(Reliability and validity)**

བློ་གཏད་དང་ ཆ་བཞག་གི་དོན་ལུ་ འབད་ཐངས་ཀྱི་གོ་རིམ་ཡང་ དང་པར་ ཞིབ་འཚོལ་གྲོས་འཆར་བྲིས་ཞིནམ་ལས་ ཞིབ་འཚོལ་ཞལ་འཛོམས་ཁག་གཉིས་ནང་ལུ་སྤྲོད་ཞུ་འབད་དེ་ ལེགས་བཅོས་གྲོས་འཆར་དང་འབྲེལ་བསྐྱར་བཅོས་འབད་ཡི། དེ་ལས་ཞིབ་འཚོལ་གྱི་མགོ་ཆས་ཚུ་བཟོ་ཞིནམ་ལས་ གྲོས་སྟོན་པ་ (Mentors) མཁས་དབང་ སྐལ་བཟང་ཤེས་རབ་དང་ ཚེ་རིང་དོན་གྲུབ་གཉིས་ལུ་ ཕུལ་ཞིནམ་ལས་ གྲོས་འཆར་ལེན་ཏེ་ བསྐྱར་བཅོས་རྐྱབ། དེ་ལས་ དྲི་བ་ཚུ་མི་ངོམ་ ༣༠ ལུ་ མོ་བཏབ་འབད་དེ་ བཙོ་ཁ་རྐྱབ། གནད་སྡུད་བསྡུ་ལེན་འབད་བའི་སྐབས་ལུ་ཡང་ (Random) དང་འབྲེལ་འདྲ་མཉམ་སྦྲི་གདམ་འཐུ་འབད་དེ་ལེན་ཡི། གྲུབ་འབྲས་ཚུ་ཡང་ (SPSS) དབྱེ་དཔྱད་ཀྱི་ཐབས་ལམ་ནང་ལས་ ཁྲུད་ཚད་ལྡན་པའི་ཐབས་ཤེས་ (descriptive statistics) ནང་ལས་ ཆ་ཤས་ (frequencies, descriptives, crosstabs) ལག་ལེན་འཐབ་སྟེ་ དབྱེ་དཔྱད་འབད་ཡི། དེ་ལས་ གྲངས་འབྲེལ་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ལུ་གཞི་བཞག་སྟེ་ ཁུངས་བཙུན་ཞིབ་འཚོལ་གྱི་ གནད་སྡུད་ཚུ་བསྡུ་ལེན་འབད་དེ་ བརྗོད་དོན་དང་འབྲེལ་ཚན་རྟགས་བཀོད་ཞིནམ་ལས་ དབྱེ་དཔྱད་མཐིལ་ཕྱིན་འབད་ཡི།

ཀུན་སྤྱོད་རྣམ་གཞག (Ethical Considerations)

ཀུན་སྤྱོད་རྣམ་གཞག་འདི་ དང་པར་ འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་སྟེའི་འོག་ལུ་ ཡོད་པའི་མཐོ་རིམ་སློབ་གྲྭ་གསུམ་གྱི་མདོ་ཚེན་ཚུ་ལས་ གནད་སྡུད་ལེན་འབད་ཚོག་པའི་གནད་བ་ཡིག་ཐོག་ལུ་ ལེན་ཡི། དེ་ལས་ཞིབ་འཚོལ་ནང་ལུ་ བཅའ་མར་གཏོགས་མི་ཚུ་གིས་ ཞིབ་འཚོལ་པ་ལུ་ བློ་གཏད་ཚུགས་ནིའི་དོན་ལུ་ གནས་སྡུད་བསྡུ་ལེན་མ་འབད་བའི་ཅ་མར་ ཐོག་ཡོད་པའི་གནད་སྡུད་ཚུ་ གསང་བའི་ཐོག་ལས་ག་དེ་སྦེ་བཞག་ནི་ཨིན་ན་ སླབ་ཞིན་ལས་ ཞིབ་འཚོལ་ནང་ལུ་ བཅའ་མར་གཏོགས་བཙུག་ཡི།

ཞིབ་འཚོལ་གྱི་དྲི་བ་ནང་ལུ་ཡང་ གནས་ཚུལ་བྱིན་མི་དང་ བཅའ་མར་གཏོགས་མི་འདི་ གསང་བའི་ཐོག་ལས་བཞག་ནི་ཨིན་ཟེར་ ཁ་གསལ་འབད་བཀོད་ཅི། ཞིབ་འཚོལ་ནང་ལུ་ བཅའ་མར་གཏོགས་མི་ཚུ་ ལུ་ཡང་ བཅའ་མར་གཏོགས་དང་མི་གཏོགས་ཀྱི་རང་དབང་བྱིན་ཞིནམ་ལས་ དང་འདོད་ཡོད་མི་ཚུ་ལས་ རྒྱབ་ཅིག་ གནད་སྡུད་བསྡུ་ལེན་འབད་ཡི།

ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས། (Finding)

ཞིབ་འཚོལ་འདི་ནང་ལུ་ བཅའ་མར་གཏོགས་མི་འདི་ འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་སྟེའི་འོག་གི་ བདག་གཞན་དུས་གསུམ་གྱི་སྤྱོང་ཚན་སྟོན་དེ་ཡོད་པའི་མཐོ་རིམ་སློབ་གྲྭ་ གཉིས་ནང་ལས་ སློབ་ཕྲུག་ ༥༠ དང་ མོ་ ༥༠ རེ་གདམ་འཐུ་འབད་དེ་ཡོད་རུང་ མཐོ་རིམ་སློབ་གྲྭ་གཅིག་ནང་ལུ་ སློབ་ཕྲུག་ ༧༧ དང་ མོ་ ༢༧ ཡོངས་བསྡོམས་ ༡༡ ལས་མེད་པ་ལས་ གེ་ར་དུས་ཚད་སྤེ་གདམ་འཐུ་འབད་ཡི། དེ་འབདཔ་ལས་ དུས་ཚད་ཡོངས་བསྡོམས་ ༡༡༡ ཡོད་པ་ཨིན། གྲངས་ཀ་འདྲ་མཉམ་མེད་པའི་ ཁྱེར་བའི་ཡང་ སྤྱི་བཏང་ཞིབ་འཚོལ་གྲོས་འཆར་སྐབས་ལུ་ མཐོ་རིམ་སློབ་གྲྭ་རེ་ནང་ལས་ སློབ་ཕྲུག་ ༥༠ དང་ མོ་ ༥༠ རེ་ འདྲ་མཉམ་འཐུ་ནི་སྦེ་བཞག་ཏེ་ཡོད་རུང་ སློབ་གྲྭ་གཅིག་ནང་ལུ་ སློབ་ཕྲུག་གི་གྲངས་ཀ་ཡང་ཤ་ཅི་ཡོན། ཨིན་རུང་ ཡོད་མི་ཚུ་གི་ར་དུས་ཚད་སྤེ་གདམ་འཐུ་འབད་ཕ་ལས་ བཅའ་མར་གཏོགས་མི་ བརྒྱ་ཆ་ལས་བཅུ་ཆ་ཡོད།

འོག་ལས་མར་ ཞིབ་འཚོལ་གྲུབ་འབྲས་ཀྱི་ཡན་ལག་དོན་ཚན་རེ་རེ་བཞིན་ལུ་ གྲངས་འབྲེལ་དང་ཁྱངས་བཅད་ གནད་སྡུད་དཔྱད་ཀྱི་གྲུབ་འབྲས་ཚུ་གཅིག་ཁང་ ཅེ་མར་གྲངས་འབྲེལ་དང་ཤུལ་ལས་ ཁྱངས་བཅད་སྤྱི་བཀོད་དེ་ གཅིག་གིས་གཅིག་ལུ་རྒྱབ་སྐྱོར་སྤྲེ་བྱེས་ཡོད་པ་ཨིན།

༡) སློབ་ཕྲུག་གིས་བདག་གཞན་དུས་གསུམ་གྱི་སྤྱོང་ཚན་འདི་ ཁག་ཆེཤ་སྤེ་ཅ་ཚོ་ཡོད་མེད།

འདི་ཞིབ་འཚོལ་ལུ་ དྲི་རྟམ་ ༣ བཀོད་ཡོད་མི་ཚུ་ (Likert's scale, five points) མཁས་མཚོག་ལེགས་གྲུབ་ཀྱི་ འཛལ་ཚད་ཁྱད་ཆོས་ལྟ་ལྟན་ནང་ལུ་ དབྱེ་ཞིབ་འབད་ལྷཤད་དེ་ དབུས་ཚད་ mean འདི་ ୧.୧ ལས་ལྷག་སྟེ་འདུག་ དེ་ལས་ གནས་ཚད་ཁྱད་པར་ std. deviation འདི་ ·୬ ནང་ལུ་འདུག།

དྲི་རྟམ་དང་པ་ བདག་གཞན་དུས་གསུམ་གྱི་སྤྱོང་ཚན་འདི་ ཁག་ཆེཤ་ཞིན་སྤེ་སླབ་མི་ དེའི་ཚད་ཡོངས་བསྡོམས་ལས་ ༢༣༠ བརྒྱ་ཆ་ལས་ ୮୮% འདུག། དྲི་རྟམ་གཉིས་པ་ ཨན་ཐོག་ཡོད་པ་སྤེ་སླབ་མི་ དེའི་ཚད་ཡོངས་བསྡོམས་ལས་ ༢༢୮ བརྒྱ་ཆ་ལས་ ୮୨% འདུག། དྲི་རྟམ་གསུམ་པ་ ལྷབ་ཀི་ལུ་སྤྱོད་བ་ ཡོད་པ་སྤེ་སླབ་མི་ དེའི་ཚད་ཡོངས་བསྡོམས་ལས་ ༢༢༢ བརྒྱ་ཆ་ལས་ ୮୬% འདུག། གྲངས་འབྲེལ་

ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ནང་ལུ་དཀའ་དཔལ་མིན་འདུག

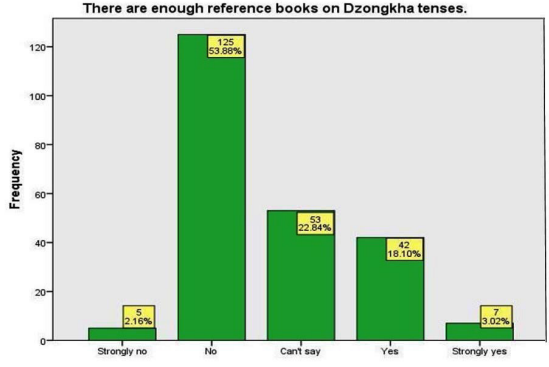
དེ་བཟུམ་སྦེ་ ཁྲངས་བཅན་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ཡང་ དག་པ་ཅིག་བཀོད་པ་ཅིན། ཏེ་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༡༢ གིས་ “ཨན་ཐོགས་སྒོམ་ར་འདུག” ཏེ་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༡༢། གིས་ “སྒོང་ཚན་འདི་གིས་ཨན་ཐོགས་འདུག” ཏེ་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༡༤ གིས་ “རྩོང་ཁ་ཡར་རྒྱས་ཀྱི་ དོན་ལས་ དུས་གསུམ་འདི་དགོས་འདུག” དེ་འབདཝ་ལས་ གྲུབ་འབྲས་འདི་ལུ་བལྟཔ་དང་ སྒོག་ཐུག་ཚུ་ གིས་ བདག་གཞན་དུས་གསུམ་གྱི་སྒྲོངཚན་འདི་ ཁག་ཆེཔ་སྦེ་ཏ་གོ་སྐྱེ་ཡོདཔ་ལས་ དཀའ་དཔལ་མིན་འདུག

༢) མཐོ་ཆས་དང་མཐུན་རྐྱེན།

འདི་གི་འོག་ལུ་ དེ་རྣམ་ ༥ བཀོད་ཡོད་མི་ཚུ་ (Likert’s scale, five points) མཁས་མཆོག་ལེགཱ་ཀྱཱདྱི་གི་ འཛལ་ཚད་ཁྱད་ཆོས་ལྟ་ལྟན་ནང་ལུ་ དབྱེ་ཞིབ་འབད་ལྟཔ་དང་ དབྱས་ཚད་ mean འདི་ ༣.༣ ལས་ ༣.༥ གི་བར་ན་འདུག དེ་ལས་ གནས་ཚད་ཁྱད་པར་ std. deviation འདི་ .ཞ ལས་ ༡.୦୦ གི་བར་ན་འདུག

དྲི་རྣམ་ ༡ པ་ དཔེ་དེབ་ལངམ་ཡོད་མེད་ཀྱི་གྲུབ་འབྲས་ནང་ལུ་ གྲངས་འབྲེལ་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་དང་འཁྲིལ་བ་ཅིན་ མཐོ་རིམ་སློབ་གྲྭ་ ༣ ཚ་རྒྱལ་ལུ་ ཆུབ་རྟེན་དཔེ་དེབ་ཚུ་ ལངམ་མེད་པའི་ དཀའ་དཔལ་སྒོམ་སྦེ་ར་ཡོདཔ་སྦེ་འདུག། ཁ་གསལ་ བཅད་ཁྲམ་ཨང་ ༡ ནང་ལུ་གཟིགས།

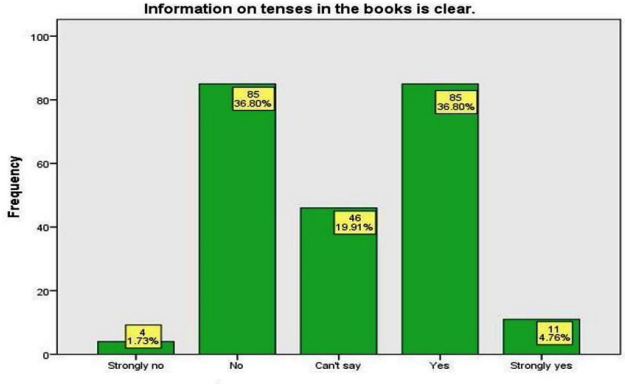
ཁྲངས་བཅན་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ཡང་ རྟགས་མཐུན་མས། ཁྲངས་བཅན་གྱི་དཔེ་དཀ་པ་ཅིག་ བཀོད་པ་ཅིན་ ཏེ་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༡༡ གིས་ “དཔེ་དེབ་ལངམ་སྒེ་བཙུགས་གནང་པ་ཅིན་ བཀའ་དྲི་ཆེནི་མས།” ཏེ་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༡༢ ཀྱིས་ “ཀ་གོཔ་འཛམ་ནིའེ་དོན་ལས་ དཔེ་དེབ་ལངམ་དགོཔ་འདུག” ཏེ་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༡༢ ཀྱིས་ “དུས་གསུམ་དང་འབྲེལ་བའི་དཔེ་དེབ་ཚུ་ ཁག་ཆེཔ་ལས་སྐྱབ་དགོཔ་འདུག” ཏེ་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༡༤ གིས་ “དུས་གསུམ་ཀྱི་དཔེ་དེབ་མངམ་ཡོད་པ་ཅེན་ སྤྱང་བ་མངམ་ཐོབ་ནི་མས།”



བཅད་ཁྲམ་ཨང་ ༡ : ཆུབ་རྟེན་དཔེ་དེབ་ ལངམ་སྒེ་ཡོད་མེད་ལུ་ བརྟག་ཞིབ་བཙུངདོ་ཡོདཔ།

དེ་རྣམ་ ༢ ཡ་ དེའི་དེབ་ཚུ་ནང་ལུ་ བྱ་ཚིག་གི་སྐོར་ལས་ཉིང་སངས་སངས་སྦེ་བྱིས་ཏེ་ ཡོད་མེད་ལུ་ གྲངས་འབེལ་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ནང་ལུ་ ཉིང་སངས་ས་མེད་པའི་དཀའ་དལ་ཡོད་པ་སྦེ་མཐོང་ཅི། ཁ་གསལ་ བཅད་ཁྲམ་ཚང་ ༢ ཡ་ནང་ལུ་གཟིགས།

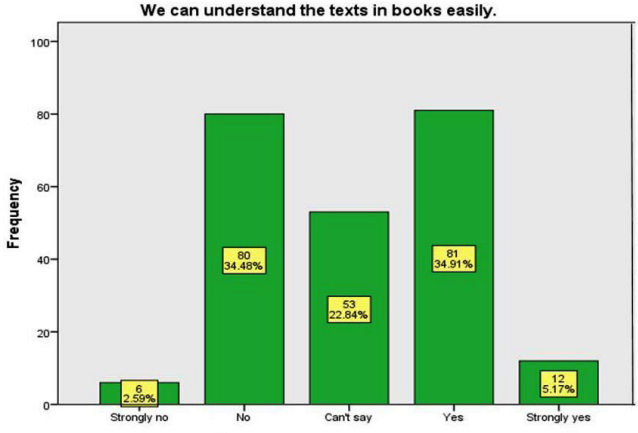
ཁྱངས་བཙུན་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ནང་ལུ་ཡང་ ཆོས་སྐད་དང་རྩོད་ཁའི་ཡིག་ཆཡོད་མི་ཚུ་ནང་ལུ་ འཛོལ་བ་དང་མཐོ་འཐོམས་སིག་སི་ ལེ་ཤ་ཡོད་པ་སྦེ་མཐོང་ཅི། དེའི་ཚད་ཚུ་གིས་སྟབས་མི་དེའི་ དགེ་པ་ཅིག་བགོད་པ་ཅིན། དེ་ཅ་དེས་ལན་གསང་བའི་ཚང་ ༡༡ གིས་ ཡིག་སྟེབ་སོ་སོ་ཡོད་པ་ལས་ ལུ་ཁག་འདུག་ དེ་ཅ་དེས་ལན་གསང་བའི་ཚང་ ༡༨༤ ཐྱིས་ “ཡིག་སྟེབ་དང་སྟེབ་སྦྱོང་མ་འདྲཔ་ཡོད་པ་ལས་ ཀ་གོ་ནི་ལུ་ལུ་ཁག་འདུག” དེ་ཅ་དེས་ལན་གསང་བའི་ཚང་ ༡༩ གིས་ “དུས་གསུམ་གྱི་དེའི་དེབ་ལེ་ཤ་ཡོད་རུང་ གཅིག་གིས་གཅིག་ལུ་སྒྲིག་མ་ཚུགས་པའི་དཀའ་དལ་འདུག” དེ་ཅ་དེས་ལན་གསང་བའི་ཚང་ ༡༩༡ གིས་ “དགོངས་པ་ལེ་ཤ་ཡོད་པ་ལས་ ངའཅས་མགུ་འཐོམས་མས།”



བཅད་ཁྲམ་ཚང་ ༢ ： རྒྱབ་རྟེན་དེའི་དེབ་ནང་གི་གནས་ཚུལ་ཚུ་ ཁགས་ལ་ཡོད་མེད་ལུ་ བརྟག་ཞིབ་བཙུད་དོན།

དེ་རྣམ་ ༣ ཡ་ སོབ་ཚུགས་པའི་དེའི་དེབ་ཚུ་ལྷག་ལྷ་བའི་སྐབས་ལུ་ ཏ་ཚོ་ཚུགས་པས་ཟེར་མི་འདི་ལུ་ གྲངས་འབེལ་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ནང་ལུ་ དཀའ་དལ་ཡོད་པ་སྦེ་འདུག། ཁ་གསལ་ བཅད་ཁྲམ་ཚང་ ༣ ཡ་ནང་ལུ་གཟིགས།

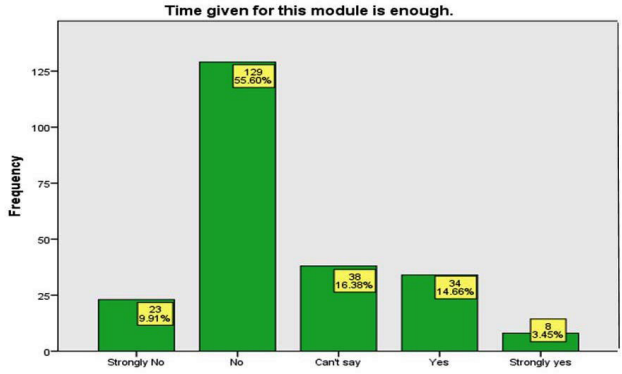
ཁྱངས་བཙུན་ཞིབ་འཚོལ་གྱི་གྲབ་འབྲས་ནང་ལུ་ཡང་ ཆོས་སྐད་དང་རྩོད་ཁའི་ཡིག་ཆཡོད་མི་ཚུ་ནང་ལུ་ འཛོལ་བ་དང་གདམ་ཁ་ དེ་ལས་འབྲི་སྟོལ་མ་འདྲཔ་ལེ་ཤ་ཡོད་པ་སྦེ་མཐོང་ཅི། དེའང་ན་ དེ་ཅ་དེས་ལན་གསང་བའི་ཚང་ ༡༣༥ གིས་ “དུས་གསུམ་གྱི་སྟོང་ཚན་ཚུ་ ལྷག་པའི་སྐབས་ དེའི་དེབ་ཚུ་མངའ་ཡོན་ཆོས་ར་ ཆོས་སྐད་ནང་ཡོད་ལས་ དཀའ་དལ་འདུག།”



བཅད་ཁམ་ཚང་ ༣ ： རྒྱབ་རྟེན་དཔེ་དེབ་ཀྱི་ནང་དོན་ཚུ་ ཤ་གོཔ་འཛམ་ཇོང་ཡོད་མེད་ལུ་ བརྟག་ཞིབ་བཀྲད་དོན།

དེ་རྐམ་ ཅ་ ཨད་གཱ་གཞན་དུས་གསུམ་འདི་ལྟབ་པའི་སྐབས་ལུ་ སྤྲོང་ཚན་འདི་གི་དོན་ལུ་ འཛོབ་དོ་ཡོད་པའི་དུས་ཚོད་འདི་གིས་ལང་མས་ཟེར་མི་འདི་ལུ་ གྲངས་འབྲེལ་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ནང་ལུ་ མཐོ་རིམ་སྤྲོབ་གྲྭ་གསུམ་ཚ་ནང་ལུ་ མ་ལང་པར་འདུག། དཔྱོ་ཐོབ་དོ་ཡོད་པའི་དུས་ཚོད་འདི་གིས་ལང་མ་ ཚུགས་པའི་དཀའ་དལ་འདུག། ཁ་གསལ་ བཅད་ཁམ་ཚང་ ཅ་ པ་ནང་ལུ་གཟིགས།

ཁྲངས་བཙུན་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ཡང་དེ་དང་འདྲ་བས། དཔེ་དག་པ་ཅིག་ནུ་ལུ་བཀོད་པ་ཅིན་ དྲི་བ་དྲིས་ལན་གསང་བའི་ཚང་ ༡༢ ཀྱིས་ “སྤྲོབ་དུས་གཅིག་ནང་ལུ་ ཀ་གོ་ཚུགས་པར་ལྟ་ཁག་འདུག” དྲི་བ་དྲིས་ལན་གསང་བའི་ཚང་ ༩༨ གིས་ “དུས་གསུམ་འདི་ སྤྲོབ་དུས་གཅིག་ནང་ལུ་ཨེན་པར་ ལེ་ཤ་སྟེ་བཟོ་བ་ཅིན་ཤེས་ནི་མས།” དྲི་བ་དྲིས་ལན་གསང་བའི་ཚང་ ༡༥༩ གིས་ “དུས་གསུམ་གྱི་སྤྲོང་ཚན་འདི་ ཀ་གོ་ནིའི་དོན་ལས་ སྤྲོབ་དུས་གཅིས་དེ་ཅིག་དགོས་ནི་མས།” དྲི་བ་དྲིས་ལན་གསང་བའི་ཚང་ ༣༡ ཀྱིས་ “བྱ་ཚོགས་ཚུ་ ལྟ་ཁག་ཡོད་པ་ལས་ དུས་ཚོད་ལངམ་དགོས་འདུག” དྲི་བ་དྲིས་ལན་གསང་བའི་ཚང་ ༡༣༤ ཀྱིས་ “ལོ་ངོ་བཞིའི་རིང་ལུ་ སྤྲོང་ཚན་གཅིག་ཨེན་པར་ གཅིས་དགོས་འདུག།”



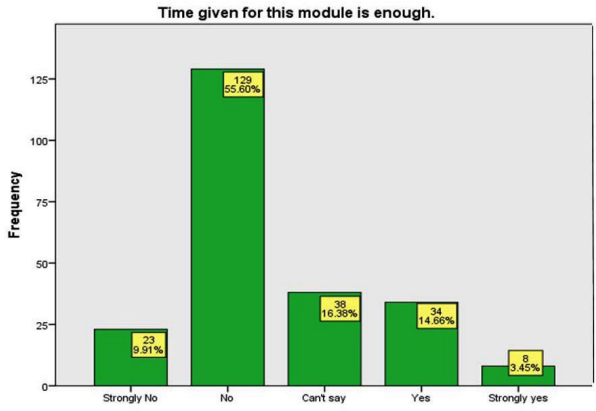
བཅད་ཁྲམ་ཨང་ ༩ ： སློབ་ཚན་འདིའི་དོན་ལུ་ ཐོབ་ཡོད་པའི་དུས་ཡུན་ ལངས་སྤེ་ཡོད་མེད་ལུ་ བརྟག་ཞིབ་བཙུད་དོན།

༣) སློབ་སྟོན་དང་འབྲེལ་བའི་དཔའ་བལ།

འདི་གི་འོག་ལུ་ ཏི་རྣམ་ ༣ བཀོད་ཡོད་མི་ཚུ་ (Likert's scale, five points) མཐས་མཆོག་ལེགཀ་ཀྱནྡི་གི་ འཛལ་ཚད་ཁྲད་ཆོས་ལྟ་ལྟན་ནང་ལུ་ དབྱེ་ཞིབ་འབད་ལྟཔ་དང་ དབྱས་ཚད་ mean འདི་ ༢.୭ ལས་ ༣.༢ གི་བར་ན་འདུག དེ་ལས་ གནས་ཚད་ཁྲད་པར་ std. deviation འདི་ ༡.༡ ལས་ ༡.༣ གི་བར་ན་འདུག

ཏི་རྣམ་ ༡ པ་ དུས་གསུམ་འདི་སློབ་དཔོན་གྱིས་སྟོན་པའི་སྐབས་ཁ་ཏོ་མི་ཚུགས་པས་ཟེར་མི་འདི་ལུ་ཡང་ གྲངས་འབྲེལ་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ནང་ལུ་ དཔའ་བལ་མཐོང་ཅི། ཁ་གསལ་ བཅད་ཁྲམ་ཨང་ ༤ པ་ནང་ལུ་གཟིགས།

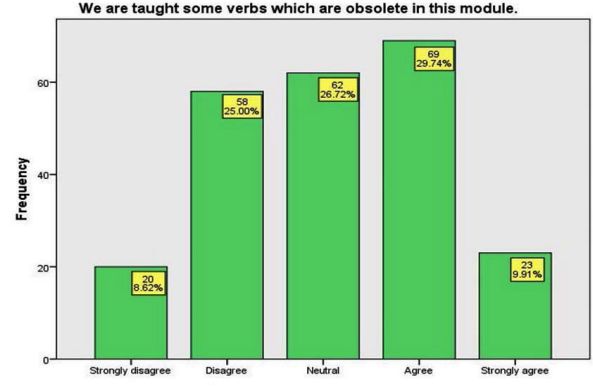
ཁྲང་བཅན་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ཡང་ འབྲ་བས། དཔེ་དག་པ་ཅིག་བཀོད་པ་ཅིན་ ཏི་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༢୮ གིས་ “དུས་གསུམ་སྟོན་མི་མཐས་མཆོག་དགོཔ་འདུག” ཏི་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༩༣ གྱིས་ “དུས་གསུམ་སྟོན་མི་ སློབ་དཔོན་འདི་ཉམས་མྱོང་ཅན་ མེན་པ་ཅིན་གོ་བ་རྟོགས་ནི་ལུ་ལུ་ཁག་འདུག” ཏི་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༥༣ གྱིས་ “སློབ་སྟོན་པ་འདི་ ཆོས་སྐད་རྒྱངས་ཅིག་མེན་པར་ ཆོས་སྐད་དང་རྩོད་ཁ་གཉིས་ཆར་ཐོགས་ཆ་ཚང་ཐོགས་ཆག་མེད་པར་དགོཔ་འདུག”



བཅད་ཁྲམ་ཨང་ ༤ ： སྒྲིང་ཚན་འདི་ སློབ་སྟོན་འབད་བའི་སྐབས་ལུ་ ས་གཏེ་སྦེ་གོ་དོ་གཏ་ བརྟག་ཞིབ་བཙུད་དོན།

དེ་རྟམ་ ༢ ཡ་ ལག་ལེན་འཐབ་དགོཔ་སྒོམ་མེད་པའི་བྱ་ཚིག་ཚུ་ ལྷག་དགོཔ་འཐོན་མས་ཟེར་མི་ འདི་ལུ་ཡང་ གྲངས་འབྲེལ་ཞིབ་ཚོལ་གྱི་གྲུབ་འབྲས་དང་འཁྱིལ་བ་ཅིན་ དཀའ་ངལ་འདུག། ཁ་གསལ་ བཅད་ཁྲམ་ཨང་ ༥ ཡ་ནང་ལུ་གཟིགས།

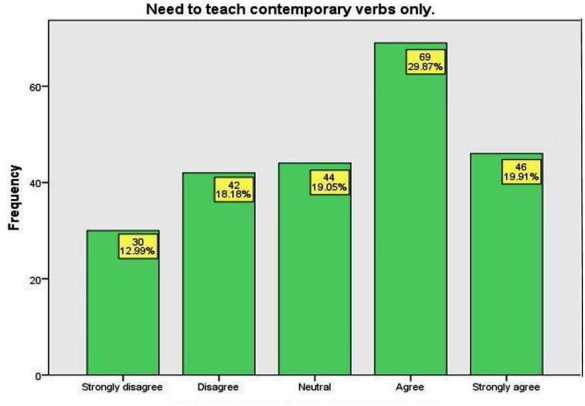
ཁྱངས་བཙན་ཞིབ་ཚོལ་གྱི་གནད་སྡུད་གྲུབ་འབྲས་དང་འཁྱིལ་རྟང་ བདེན་པ་འདུག དཔེར་ན་ དེ་བ་ དེས་ལན་གསང་བའི་ཨང་ ༡༠༠ གིས་ “ལག་ལེན་འཐབ་ནི་མེད་པའི་བྱ་ཚིག་ལེ་ཤ་ར་ཡོད་པ་ལས་ དུས་ གསུམ་ལྷག་ནི་ལུ་སྦྱོ་བ་ཞན་བཙུགཔ་མས་ལགས།”



བཅད་ཁྲམ་ཨང་ ༥ ： སྒྲིང་ཚན་འདི་ནང་ལུ་ ལག་ལེན་འཐབ་དགོཔ་ལེ་ཤ་མེད་པའི་བྱ་ཚིག་ཚུ་ ལྷག་ དགོཔ་ཐོན་ཏེ་ཡོད་མེད་ བརྟག་ཞིབ་བཙུད་དོན།

དེ་རྣམ་ ༣ ཡ་ དུས་རྒྱུན་ལག་ལེན་འཐབ་དགོཔ་ཡོད་པའི་བྱ་ཚིག་ཚུ་ རྒྱངས་ཅན་མི་འདི་ལུ་ཡང་ གྲངས་འབྲེལ་ཞིབ་འཚོལ་གྱི་སྤྱད་འབྲས་ནང་ལུ་ ལྷག་ད་དཀའ་ངལ་མཐོངཡི། མཐོ་རིམ་སློབ་གྲྭ་གསུམ་ཆ་རང་གི་ཉོར་ལས་ ཀ་ལམ་འཇུ་མཉམ་འདུག། ཁ་གསལ་ བཅད་ཁྲམ་ཨང་ ༧ ཡ་ནང་ལུ་གཟིགས།

ཁྱངས་བཅན་ཞིབ་འཚོལ་གྱི་སྤྱད་འབྲས་དང་བསྟུན་ད་ མཐོ་རིམ་སློབ་གྲྭ་ལ་ལུ་ནང་ལུ་ ཆོས་སྐད་ཀྱི་དུས་གསུམ་མ་གཏོགས་ རྩོད་ཁའི་དུས་གསུམ་འདི་སྟོན་ནི་མེད་པ་ལས་ རྩོད་ཁའི་དུས་གསུམ་ཡང་སྟོན་དགོཔ་སྦེ་ཤེན་མས། དཔེ་དག་པ་ཅིག་ནུ་ལུ་བཀོད་པ་ཅིན། དེ་བ་དེས་ལན་གསང་བའི་ཨང་ ༡༡ ཀྱིས་ “ལྷབ་དཀོས་སྐད་ནང་ལུ་ལྷབ་ འཛིམ་རྩོལ་ཞིབ་ནང་ལུ་ འཛི་ནི་ལུ་ལུ་ཁག་གཏང་དོ།” དེ་བ་དེས་ལན་གསང་བའི་ཨང་ ༤༩ གིས “ཆོས་སྐད་ནང་རྒྱབ་ཅིག་མེན་པར་ རྩོད་ཁ་ནང་ལུ་ཡང་སྟོན་དགོཔ་འདུག” དེ་བ་དེས་ལན་གསང་བའི་ཨང་ ༡༢ ཀྱིས་ “ལེགས་སྩུར་བ་ཚུ་གིས་ ཆོས་སྐད་ནང་ལུ་མེན་པར་ རྩོད་ཁ་ནང་ལུ་ཡང་སྟོན་དགོཔ་འདུག” དེ་བ་དེས་ལན་གསང་བའི་ཨང་ ༤༢ ཀྱིས་ “མཐོ་རིམ་སློབ་གྲྭ་ལས་ཕར་ ཆོས་སྐད་ལུ་གཞི་བཞག་སྟེ་ སྟོན་གནང་ལས་ རྩོད་ཁའི་དུས་གསུམ་ཀྱི་སྐོར་ལས་ཡང་ མཉེན་བསམ་གཏོགཔ་འདུག།”



བཅད་ཁྲམ་ཨང་ ༧ : སྤྱོང་ཚན་འདི་ནང་ལུ་ ལག་ལེན་འཐབ་དགོཔ་མང་སུ་ཡོད་པའི་བྱ་ཚིག་ཚུ་ རྒྱངས་ཅན་སྟོན་པ་ཅིན་འོས་འབབ་ཡོད་མེད་ལུ་ བརྟག་ཞིབ་བཙུད་དོན།

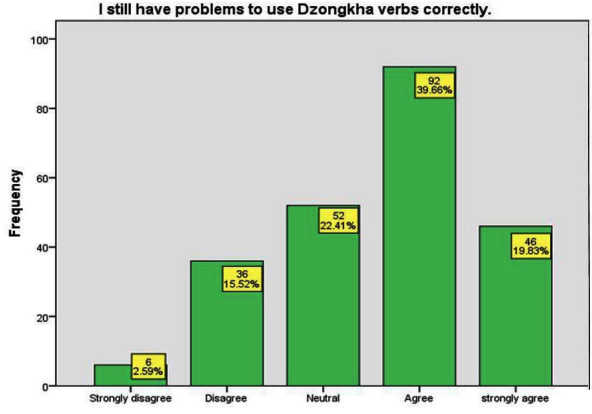
༤) བྱ་ཚིག་ཚུ་དུས་གསུམ་དང་འཁྲིལ་ལག་ལེན་འཐབ་ནི་ལུ་བློ་སྤྱོབས།

འདི་གི་འོག་ལུ་ དེ་རྣམ་ ༡ བཀོད་ཡོད་མི་འདི་ (Likert's scale, five points) མཐས་མཚོག་ལེགཔ་ཀྱཱད་ཀི་ འཛལ་ཚད་ཁྱད་ཚོས་ལྷ་ལྷན་ནང་ལུ་ དབྱེ་ཞིབ་འབད་ལྷག་ད་ དབྱས་ཚད་ mean འདི་ ༣.༤ དང་ གནས་ཚད་ཁྱད་པར་ std. deviation འདི་ ༡.༠ ནང་ལུ་འདུག

དུས་གསུམ་གྱི་སྤྱོང་ཚན་འདི་ ལྷག་ཚར་བའི་ཤུལ་ལུ་ཡང་ བྱ་ཚིག་གི་དུས་གསུམ་ལག་ལེན་ལུ་དཀའ་

དཔལ་ཡོངས་རེའུ་རྣམ་འདི་ལུ་ཡང་ གྲངས་འབྲེལ་ཞིབ་འཚོལ་གྱི་གྲུབ་འབྲས་ལུ་ལྟོས་དུ་ དཀའ་དཔལ་ཡོངས་སྤྱི་འདུག། དེ་ཡང་ སློབ་གྲྭ་གསུམ་ཆ་རང་ནང་ལུ་ ཀ་ལམ་འདྲ་མཉམ་འདུག། ཁ་གསལ་ བཅད་ཁམ་ ༤ ཡ་ནང་ལུ་གཟིགས།

ཁྱངས་བཙུན་ཞིབ་འཚོལ་ནང་ལུ་ལྟོས་དུ་ རྒྱུ་མཚན་ཅིག་ སྟེབ་མ་འདྲཔ་ལེ་ཤ་ཡོད་པ་ལས་ མགུ་འཐེམས་ཏེ་ཕེན་མས། དེའི་དགོ་པ་ཅིག་བཀོད་པ་ཅིན། དེ་བ་དྲིས་ལན་གསང་བའི་ཁང་ ༡༣ ཐྲིས་ “ཡིག་སྟེབ་སོ་སོ་ཡོད་པ་ལས་ ལུ་ཁག་འདུག” དྲི་བ་དྲིས་ལན་གསང་བའི་ཁང་ ༡༨༤ ཐྲིས་ “ཡིག་སྟེབ་དང་ སྟེབ་སྦྱོར་མ་འདྲཔ་ཡོད་པ་ལས་ ཀ་གོ་ནི་ལུ་ལུ་ཁག་འདུག” དྲི་བ་དྲིས་ལན་གསང་བའི་ཁང་ ༡༩ གིས་ “དུས་གསུམ་གྱི་དབེ་དེབ་ལེ་ཤ་ཡོད་རུང་ གཅིག་གིས་གཅིག་ལུ་སྦྱིག་མ་ཚུགས་པའི་དཀའ་དལ་འདུག” དྲི་བ་དྲིས་ལན་གསང་བའི་ཁང་ ༡༩༡ གིས་ “དགོངས་པ་ལེ་ཤ་ཡོད་པ་ལས་ ངའཅས་མགུ་འཐེམས་མས།”



བཅད་ཁམ་ཁང་ ༤ ： སྟོང་ཚན་འདི་ལྟབ་ཚར་རྩང་ ཐུ་ཚོགཱ་ལག་ལེན་ལུ་ དཀའ་དལ་ཡོད་མེད་ བརྟག་ཞིབ་བཙུད་དོན།

གྲོས་བཅད། **(Discussion)**

སློབ་ཕྲུག་ཚུ་གིས་བདག་གཞན་དུས་གསུམ་འདི་ ལྟབ་དགོས་ཁག་ཆེཔ་དང་ ཕན་ཐོགས་ཡོད་པ་སྟེ་གཙོ་ཅི་ཞེ་ན། སྒངས་འབྲེལ་ཐབས་ཤེས་ བརྟག་ཞིབ་ཀྱི་ཐོག་ལས་ གནད་སྡུད་བསྡུ་ལེན་དང་ དཔྱེ་ཞིབ་འབད་དེ་ལྟཔ་དང་ བཅའ་མར་གཏོ་གས་མི་བརྒྱ་ཆ་ལས་ ༥༡ ལྟགཔ་ཅིག་གིས་ར་ ཁག་ཆེཔ་སྟེ་ཅི་ཞེ་སྟེ་ཡོད་པ་སྟེ་ཐོན་ཡི། དེ་བཟུམ་སྟེ་ཁྱངས་བཙན་བཐན་ཤེས་ དེ་བ་དྲིས་འབད་དེ་ལྟཔ་དུ་ལུ་ཡང་ སྟོང་ཚན་འདི་ ཁོང་སློབ་ཕྲུག་ཚུ་གི་ཁྱད་རིག་ནང་ལུ་དགོས་གལ་ཆེཔ་སྟེ། བཤད་ནི་འདུག། དཔེར་དགུ་པ་ ཅིག་བཀོད་པ་ཅིན་ དྲི་བ་དྲིས་ལན་གསང་བའི་ཁང་ ༡༢ ཐྲིས་ “ཕན་ཐོགས་སྟོམ་ར་འདུག” དྲི་བ་དྲིས་ལན་གསང་བའི་ཁང་ ༡༤༣ ཐྲིས་ “སྟོང་ཚན་འདི་གིས་ཕན་ཐོགས་འདུག” དྲི་བ་དྲིས་ལན་གསང་བའི་ཁང་ ༡༤༨ གིས་ “རྩོད་ཁ་ཡར་རྒྱས་ཀྱི་དོན་ལས་ དུས་གསུམ་འདི་དགོས་འདུག” ཞེར་སྨྲས་ཡོད་པ་ལས་

ལེགས་ཤོམ་སྒྲི་ཧ་གོ་སྡེ་འདུག། དེ་འབདཔ་ལས་ སློང་ཚན་གྱི་དམིགས་ཡུལ་དང་ལས་དོན་ཚུ་ སློབ་ཕྲུག་ཚུ་གིས་ལེགས་ཤོམ་སྒྲི་ར་ཧ་གོ་ནུག།

གཉིས་པར་ བདག་གཞན་དུས་གསུམ་གྱི་སློང་ཚན་དང་འབྲེལ་བའི་མཐུན་རྐྱེན་ལུ་ དང་པར་གྲངས་འབྲེལ་ཐབས་ཤེས་ཀྱི་ཐོག་ལས་བརྟག་ཞིབ་འབད། དེ་ལས་ཁྲུངས་བཙན་ཐབས་ཤེས་ དྲི་བ་དྲིས་ལེན་འབད་དེ་ལྟཔ་ད་ རྒྱབ་རྟེན་དཔེ་དེབ་ལངམ་སྒྲི་མེད་པའི་དཀའ་ངལ། ཐོབ་ཚུགས་པའི་དཔེ་དེབ་ཚུ་ནང་ལུ་ གནས་ཚུལ་ཚུ་ཧིང་སངས་ས་མེདཔ་དང་ ཧ་གོཔ་ལཱ་ཁག་ཡོད་པའི་དཀའ་ངལ། སློང་ཚན་འདི་ལྷབ་ནིའི་དོན་ལུ་ཐོབ་དོ་ཡོད་པའི་དུས་ཚོད་འདི་གིས་ མ་ལངམ་པའི་དཀའ་ངལ་ཚུ་ ཡོདཔ་སྒྲི་མཐོང་ཅི། དང་པར་རྒྱབ་རྟེན་དཔེ་དེབ་ཀྱི་ཐད་ཁར་ མཐོ་རིམ་སློབ་གྲྭའི་དཔེ་མཛོད་ཚུ་ནང་ལུ་སོང་སྟེ་ལྟཔ་ད་ ལངམ་མེདཔ་ངེས་བདེན་ཨིན་མས། གཉིས་པར་ དུས་གསུམ་གྱི་སྐོར་ལས་བྲིས་ཏེ་ ཡོད་པའི་དཔེ་དེབ་ཚུ་དབྱེ་ཞིབ་འབད་དེ་ལྟ་ད་ལུ་དཀའ་དེ་ཚུ་ཡོདཔ་སྒྲི་མཐོང་ཅི། དེ་ཚུ་ཡང་ གོང་ལུ་རྩོམ་བྲིས་བསྐྱར་ཞིབ་ནང་ལུ་བཀོད་ཡོད་དོ་བཟུམ་ རྫོང་ཁའི་བརྡ་གཞུང་གསར་པ་ (༢༠༠༣) རྫོང་ཁའི་བརྡ་གཞུང་གཞི་རིམ་ བར་རིམ་ གོང་རིམ་ (༢༠༡༠) ཚུ་ནང་ལུ་ དཔེ་དུམ་གྲ་རེ་ལས་བྲིས་ཏེ་མིན་འདུག། དེ་ལས་ སི་ཏུ་ཆོས་ཀྱི་འབྱུང་གནས་ (༡༩༤༧) འཇིགས་མེད་ཆོས་རྒྱལ་ (༢༠༠༩) བར་གཞི་ཕུན་ཚོགས་རྣམ་རྒྱལ་ (༡༩༤༦) ཚུ་ནང་ལུ་ བརྡ་གསར་དང་བརྡ་རྙིང་གེ་ར་སླ་བསྲེས་ཏེ་ཡོདཔ་མ་ཚད་ བྱ་ཚིག་གཅིག་ལུ་ ཡིག་སྡེབ་འབྲི་ཐངས་མ་འདྲཔ་ལེ་ཤ་ར་བྲིས་ཏེ་ཡོདཔ་སྒྲི་མཐོང་ཅི། དེ་འབདཔ་ལས་ དཀའ་ངལ་ཡོདཔ་ཐག་ཆོད་ཨིན་མས། གསུམ་པར་ དུས་ཚོད་ཀྱིས་མ་ལངམ་པའི་དཀའ་ངལ་འདི་ མཐོ་རིམ་སློབ་གྲྭ་ལ་ལུ་ནང་ལུ་ བྱ་ཚིག་གལ་ཅན་རྐྱངམ་ཅིག་མེན་པར་ དཔེ་དེབ་གཅིག་གེ་ར་སྟོན་དོ་ཡོདཔ་དང་། ནང་དོན་ཚུ་ཡང་གེ་ར་སྦྱང་བ་འབད་དེ་ ཡིག་སྡེབ་སེམས་ཁར་བཞག་དགོཔ་ཅང་ཅ་ར་ཨིནམ་ལས་ ནང་དོན་མང་སོངམ་ལས་བརྟེན་ཏེ་འོང་ནི་མས།

སློབ་སྟོན་དང་འབྲེལ་བའི་དཀའ་ངལ་དང་ དུས་གསུམ་གྱི་སློང་ཚན་ལྷབ་ཚར་བའི་ཤུལ་ལུ་ དུས་གསུམ་ལག་ལེན་ལུ་ བློ་སྤོབས་ག་དེ་སྒྲི་འདུག་ག་ གྲངས་འབྲེལ་དང་ཁྲུངས་བཙན་ཐབས་ཤེས་གཉིས་ཀྱི་ཐོག་ལས་དབྱེ་ཞིབ་འབད་དེ་ལྟཔ་ད་ གོང་ལུ་ཞིབ་འཚོལ་གྲུབ་འབྲས་ནང་ལུ་བཀོད་ཡོད་དོ་བཟུམ་ དཀའ་ངལ་ཡོདཔ་སྒྲི་འདུག། དེ་ཡང་ དང་པར་སློབ་སྟོན་འབད་བའི་སྐབས་ལུ་ མཐོ་རིམ་སློབ་གྲྭ་ལ་ལུ་ཅིག་ནང་ལུ་ དུས་གསུམ་འདི་ཆོས་སྐད་ནང་ལུ་རྐྱངམ་ཅིག་སྟོན། ཤུལ་ལས་ ལག་ལེན་འཐབ་དགོཔ་མང་ཤོས་ར་ རྫོང་ཁ་ནང་ལུ་ཨིནམ་ལས་བརྟེན་ཏེ་ཨིནམ་སྒྲི་ ཤེས་རྟོགས་བྱུང་ཡི། དེ་སྒྲི་ཨིན་པའི་ཁྲུངས་ཡང་ དྲི་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༥༣ གྱིས་ "སློབ་སྟོན་པ་འདི་ ཆོས་སྐད་རྐྱངམ་ཅིག་མེན་པར་ ཆོས་སྐད་དང་རྫོང་ཁ་གཉིས་ཆ་ར་ཐོགས་ཆག་མེད་པར་དགོཔ་འདུག" ༡༤ ཀྱིས་ "ལྷབ་ད་ཆོས་སྐད་ནང་ལུ་ལྷབ་ འབྲིཔ་ད་རྫོང་ཁ་ནང་ལུ་འབྲི་ནི་ལུ་ལཱ་ཁག་གཏང་དོ།" དྲི་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༦༩ གིས "ཆོས་སྐད་ནང་རྐྱངམ་ཅིག་མེན་པར་ རྫོང་ཁ་ནང་ལུ་ཡང་སྟོན་དགོཔ་འདུག" དྲི་བ་དྲིས་ལན་གསང་བའི་ཨང་ ༤༣ ཀྱིས་ "ལེགས་སྦྱར་བ་ཚུ་གིས་ ཆོས་སྐད་ནང་ལུ་མེན་པར་ རྫོང་ཁ་ནང་ལུ་ཡང་སྟོན་དགོཔ་འདུག" དེ་སྒྲི་ཨིན་པའི་ཁྲུངས་ཡང་ དངམ་སྟོན་མི་སློབ་དཔོན་ལ་ལུ་ བྱ་ཚིག་ལུ་ཐོས་རྒྱ་དང་ཉམས་མྱོང་ཆུང་བའི་ཁར་ གཉིས་པར་ དུས་རྒྱུན་ལག་ལེན་འཐབ་དགོཔ་མང་སུ་ཡོད་པའི་བྱ་ཚིག་གི་དུས་གསུམ་ཚུ་མེན་པར་ ལག་ལེན་འཐབ་དགོཔ་ཉུང་བའི་བརྡ་རྙིང་ཚུ་སྟོནམ་ལས་བརྟེན་ཏེ་ཨིན་མས། དེ་འབདཔ་ལས་ དུས་གསུམ་གྱི་སློང་ཚན་འདི་ལྷབ་ཚར་རུང་ བྱ་ཚིག་ལག་ལེན་ལུ་ བློ་སྤོབས་མ་ཐོབ་པར་ དཀའ་ངལ་འབྱུང་བཞིན་འདུག

ཞིབ་འཚོལ་གྱི་གྲོས་འཆར། **(Recommendation)**

བདག་གཞན་དུས་གསུམ་གྱི་སྡུང་ཚན་ ལྷག་ནི་ཡོད་པའི་མཐོ་རིམ་སློབ་གྲྭ་ཚུ་ནང་ལུ་ བདག་གཞན་དུས་གསུམ་དང་འབྲེལ་བའི་སློབ་དེབ་དང་ རྒྱབ་རྟེན་དུའེ་དེབ་ཚུ་ ལངམ་སྟེ་ མགོ་སྐྱེབ་འབདཝ་ཚུགས་ཅིན་ སྡུང་ཚན་འདི་ལྷག་ནི་ལུ་ཕན་ཐོགས་སྤྲོམ་ར་འབྱུང་ནི་མས།

དུས་གསུམ་གྱི་སྡུང་ཚན་འདིའི་དོན་ལུ་ བྱིན་ཡོད་པའི་དུས་ཚོད་འདི་གིས་ ལངམ་ཚུགས་པས། དེ་འབདཝ་ལས་ སྡུང་ཚན་གྱི་ནང་དོན་ལས་ དུས་རྒྱུན་ལག་ལེན་འཐབ་དགོཔ་ཆེནཡོ་ མེད་པའི་བརྡ་རྟོག་གི་བྱ་ཚིག་ཚུ་མ་སྤྲོན་པར་བཞག་ནི་དང། ཡང་ན་སྡུང་ཚན་གཉིས་ནང་ལུ་བགོ་སྟེ་ བཟོ་ཚུགས་པ་ཅིན་ ལེགས་ཤོམ་འོངནི་མས།

ཚོགས་མཇོ་དང་ དུས་གསུམ་རེའུ་མིག་གི་དུས་དེབ་ཚུ་ནང་ལུ་ འཛོལ་བ་དང་འབྲི་སྒོལ་ཁག་མ་འདྲཝ་ལེ་ཤ་ར་དང་ཉེ་ཡོད་པ་ལས་ སློབ་ཁྲག་ཚུ་མཐུ་འཐོམས། དཔའ་ཞུམ་ཉེ་ལུས་དོ་ཡོད་པ་ལས་ སློབ་སྟོན་པ་ཚུ་གིས་ རྒྱབ་སྐྱོར་ལེགས་ཤོམ་སྤེ་ཁྲིན་ཚུགས་པ་ཅིན་ ཕན་ཐོགས་འོང་ནི་མས།

ཚོས་སྐད་ཀྱི་བྱ་ཚིག་དུས་གསུམ་དུས་དེབ་ཚུ་ནང་ལུ་ ལག་ལེན་འཐབ་དགོཔ་ཆེནམོ་མེད་པའི་ བརྡ་ཉིངལེ་ཤ་བཀོད་དེ་ཡོད་པ་ལས་ དེ་ཚུ་སློབ་ཁྲག་ཚུ་ལུ་ མ་སྟོན་པ་ཅིན་དགེ་མས།

སློབ་གྲྭ་ཁག་གི་སློབ་དེབ་དང་ དུས་དེབ་ཚུ་ནང་ལུ་ བྱ་ཚིག་གི་དུས་གསུམ་འཛོལ་ཉེ་བྱིས་ཡོད་མི་ (དུས་རབ་ཀ་ “བརྒྱབ། རྒྱབ། བརྒྱབས། རྒྱབས་” “ཕེབ། གཡིབ།” “ངཚོ་བཟང་ཡི། ཁོ་སྟོ་བཟང་ཆུག ཤིང་ཀྱེལ།”) ཚུ་ཞུན་དག་དང་ བཅོ་ཁ་རྒྱབ་ཚུགས་པ་ཅིན་ དེ་གིས་དུས་གསུམ་དང་འབྲེལ་བའི་དཀའ་ངལ་བསལ་ནི་ལུ་ ཕན་ཐོགས་འོང་ནི་མས།

ད་སྟོ་ཡོད་པའི་སློབ་གྲྭ་ཁག་གི་སློབ་དེབ་ཚུ་ནང་ལུ་ བྱ་ཚིག་གི་དུས་གསུམ་ལག་ལེན་གྱི་སྡུང་ཡུ་ ཉར་སྡུ་ཅིག་ལས་མིན་འདུག། དེ་འབདཝ་ལས་ སྡུང་ཡུ་མང་སུ་སྟེ་ཁྲིན་ཚུགས་པ་ཅིན་ ཤུལ་ལས་མཐོ་རིམ་སློབ་གྲྭ་ཚུ་ནང་ལུ་སྟོང་པ་ད་ བདག་གཞན་དུས་གསུམ་གྱི་སྡུང་ཚན་ ལྷག་སྡུང་འབདཝ་ནི་ལུ་ཕན་ཐོགས་འབྱུང་ནི་མས།

རྩོ་རིག་སློབ་གྲྭ་ཁག་གི་ལྷ་འཁན་འཛིན་པའི་ལས་སྟེ་དང་ ལས་ཁུངས་ཚུའི་བར་ན་ བྱ་ཚིག་གི་དུས་གསུམ་ལུ་ ཡིག་སྟེབ་སོ་སོ་སྟེ་ འབྲི་སྒོལ་ཡོད་མི་འདི་ གཅིག་མཚུངས་བཟོ་ཚུགས་པ་ཅིན་ སློབ་ཁྲག་ཚུ་ལུ་ བྱ་ཚིག་གི་དུས་གསུམ་ལྷག་སྡུང་དང་འབྲེལ་བའི་དཀའ་ངལ་མར་ཕབ་འབད་ཚུགས་ནི་མས།

མཐོ་རིམ་སློབ་གྲྭ་ལ་ལུ་ནང་ལུ་ ཚོས་སྐད་ཀྱི་དུས་གསུམ་རྩ་ངམ་ཅིག་སྟོན་དོ་ཡོད་མི་འདི་ བསྒྲུབ་བཅོས་འབད་ཞིན་པས་ དཀའ་ངལ་བྱུང་སྟེ་ར་འདུག་ དེ་འབདཔ་ལས་ སློབ་སྟོན་འབད་བའི་སྐབས་ལུ་ སྒྲུབ་མར་སུ་ཁྲིན་པ་ཅིན་དྲག་ནི་མས། ཡང་ན་ བྱ་ཚིག་གི་དུས་གསུམ་འདི་ སྡུང་ཚན་གཉིས་ནང་ལུ་བགོ་ཞིན་མ་ལས་ དུས་རྒྱུན་ལག་ལེན་འཐབ་དགོ་པའི་བྱ་ཚིག་ལུ་ དམིགས་གཏད་འབད་དེ་ སློབ་སྟོན་འབད་ཚུགས་པ་ཅིན་ དྲག་ནི་མས།

ཞིབ་འཚོལ་འདིའི་ཚད་འཛིན། **(Limitation)**

ཞིབ་འཚོལ་འདི་དམིགས་གཏད་གཙོ་བོ་ འབྲུག་རྒྱལ་འཛིན་གཙུག་ལག་སློབ་སྡེའི་འོག་ལུ་ཡོད་པའི་མཐོ་རིམ་སློབ་གྲྭ་ རྫོང་ཁ་དང་ཆོས་སྐད་ཀྱི་བྱ་ཚིག་གི་ དུས་གསུམ་ལྷབ་སྦྱང་གཙོ་བོ་སྟོན་ཏེ་ འབད་སྟོལ་ཡོད་མི་ཚུ་ ནང་ལུ་ འབད་ཡོད་པ་དང་། ངརང་ལེགས་བཤདཔ་ཅིག་ཨིནམ་ལས་ ཞིབ་འཚོལ་འབད་ནི་དང་སློབ་སྟོན་འབད་ནི་གཉིས་གཅིག་ཁར་འབད་དགོཔ་ལས་བརྟེན་ དུས་ཚོད་ལངམ་མ་ཐོབ་མ་ཚད་ མ་དངུལ་ཡང་ལངམ་མེད་པའི་དཀའ་ངལ་ལུ་བརྟེན་ སློབ་གྲྭ་ཁག་ལུ་དམིགས་གཏད་འབད་མ་ཚུགས། ཤུལ་ལས་ དོན་ཚན་འདིའི་ཐོག་ལུ་ཞིབ་འཚོལ་འབད་མི་རེ་ཐོན་པ་ཅིན་ སློབ་གྲྭ་ཁག་ལུ་ དམིགས་གཏད་འབད་ཚུགས་པ་ཅིན་ལེགས་ཤོམ་འོང་ནི་མས།

མཇུག་བསྡུ། **(Conclussion)**

ཞིབ་འཚོལ་འདི་གི་གྲུབ་འབྲས་དང་འཁྲིལཝ་ད་ སྤྱིར་བཏང་བྱ་ཚིག་གི་དུས་གསུམ་ཚུ་ ཆོས་དང་རྫོང་ཁ་གཉིས་ཆ་ར་ནང་ལུ་ དུས་གཅིག་གི་བྱ་ཚིག་གི་ཡིག་སྡེབ་ ཁག་ལེ་ཤ་བྲིས་ཏེ་ཡོད་པའི་ཁར་ སློབ་སྟོན་འབད་མི་སློབ་དཔོན་དང་ རྩོམ་འབྲི་འབད་མི་ལས་སྡེ་དང་ལས་ཁུངས་ཚུའི་བར་ནང་ལུ་ཡང་ ཡིག་སྡེབ་གཅིག་ལག་ལེན་འཐབ་ནི་ལུ་ ཁ་འཆམས་མ་ཚུགསཔ་ལས་བརྟེན་ ལྷབ་མི་ཚུ་ལུ་དཀའ་ངལ་འབྱུང་དོ་ཡོདཔ་དང་། ལ་ལུ་གཅིག་ཁར་ ཆོས་སྐད་ཀྱི་བྱ་ཚིག་གི་དུས་གསུམ་རྐྱངམ་ཅིག་མ་གཏོགས་ རྫོང་ཁའི་བྱ་ཚིག་གི་དུས་གསུམ་སྟོན་ནི་མེདཔ་མ་ཚད་ དཔེ་དེབ་དང་དུས་ཡུན་ཡང་ལངམ་སྦེ་མེདཔ་ལས་བརྟེན་ སྟབས་མ་བདེཝ་འཐོན་དོ་ཡོདཔ་སྦེ་མཐོང་ཅི། དེ་འབདཝ་ལས་ འབྲེལ་ཡོད་སློབ་སྟོན་པ་དང་ ལས་འཛིན་ཚུ་གིས་སྟབས་མ་བདེཝ་ཡོད་མི་ཚུ་ སེལ་ཚུགས་པ་ཅིན་ སྤྱིར་རྫོང་ཁ་ཡར་རྒྱས་དང་ ལྷག་པར་དུ་ སློབ་ཕྲུག་ཚུ་གིས་བྱ་ཚིག་གི་དུས་གསུམ་ཚུ་ ལེགས་ཤོམ་སྦེ་ ཤེས་ཚུགས་ནི་ལུ་ཕན་ཐོགས་འོང་ནིའི་གོ་སྐབས་འདུག

བཀའ་དྲིན་དགའ་ཚོར། **(Acknowledgement)**

ཞིབ་འཚོལ་འདི་ནང་ སྤ་རོ་ཤེས་རིག་མཐོ་རིམ་སློབ་གྲྭའི་ཞིབ་འཚོལ་སྒྲིག་འཛིན་ མཁས་དབང་སྐལ་བཟང་ཤེས་རབ་དང་དང་ སྟག་རྩེ་སྐད་ཡིག་དང་ལམ་སྲོལ་མཐོ་རིམ་སློབ་གྲྭའི་གཙུག་ལག་སྒྲིག་འཛིན་མཁས་དབང་ ཚེ་རིང་དོན་གྲུབ་གཉིས་ཀྱིས་ གྲོགས་རམ་དང་རྒྱབ་སྐྱོར་གང་དྲག་མཛད་ཡོད་མི་ལུ་ བཀའ་དྲིན་དགའ་ཚོར་ སྨོན་ཡོད་ཟེར་ཞུ་ནི་དང་། གཞན་ཡང་ ཞིབ་འཚོལ་འབད་བའི་སྐབས་ལུ་ རྒྱབ་སྐྱོར་དང་འབྲེལ་གཏོགས་མཛད་མི་གེ་ར་ལུ་ བཀའ་དྲིན་དགའ་ཚོར་ཡོད།

རྒྱབ་རྟེན་དཔེ་ཐོ། (References)

ཀུན་བཟང་འཕེན་པས། (༢༠༠༤) *རྫོང་ཁའི་ཚིག་མཛོད་ཆེན་མོ།* ཐིམ་ཕུག ཀེ་ཚེམ་ཀྱི་པར་བསྒྲུན་ཁང་།

ཀུངཏྲི་སྐུ་""ཚུ། (༡༩༨༦) *བོད་རྒྱ་ཚིག་མཛོད་ཆེན་མོ།* མི་རིགས་དཔེ་སྐྲུན་ཁང་།

འགོས་པདྨ་རྒྱལ་མཚན། (༢༠༡༡) *སུམ་རྟགས་ཀྱི་རྩ་འགྲེལ་ལ་དཔྱད་པའི་གཏམ་བཏ་སྤྲོད་པའི་གླུབ་མཐའ་གྲེང་བརྗོད་ཆེན་མོ་འཛམ་གླིང་རྒྱུན་གཅིག* རྒྱ་གར་དེ་ཕི་ ཆོས་སྤྱོད་པར་སྐྲུན་ཁང་།

དངུལ་ཆུ་ཡབ་སྲས། (༡༩༩༣) *སུམ་རྟགས་ཀྱི་འགྲེལ་པ་སི་ཏུའེ་ཞལ་ལུང་དང་* *འགག་ལན་ཚངས་པའི་ཐེག་ཀི་སྤུན་རྒྱ།* རྒྱ་གར་ འབྲས་ལྗོངས་ བློ་གྲོང་གཙུག་ལག་གཉེར་མཛོད་འཕྲུལ་པར་ཁང་།

འཇིགས་མེད་ཆོས་རྒྱལ། (༢༠༠༥) *དུས་གསུམ་རྣམ་གཞག་རིག་པའི་དུདས་ཤེལ།* རྫོང་ཁ་སློབ་སྦྱོང་སྒེལ་ཁང་།

བསྟན་འཛིན་དབང་ལྡན། (༢༠༠༣) *བརྡ་དག་ཏུས་གསུམ་ཀྱི་རྣམ་ཝཛཱདྲ།* ཐིམ་ཕུག ཀེ་ཚེམ་ཀྱི་པར་བསྒྲུན་ཁང་།

རྡོ་རྗེ་རྒྱལ་པོ། (༡༩༥༠) *སུམ་རྟགས་ཀྱི་སྐིང་གཅེལ་ལེགས་ཝཛཱདྲ་འདྲེན་པའི་ཚོ་ག།* གྲུང་གོའི་བོད་ཀྱི་ཤེས་རིག་དཔེ་བསྒྲུན་ཁང་།

རྡོ་རྗེ་རྒྱལ་པོ། (༡༩༥༠) *གངས་ཅན་པའི་བརྩ་སྦྱོད་པའི་བསྟན་བཅོས་སུམ་ཅུ་པ་དང་ རྟགས་ཀྱི་འཇུག་པའི་དགོངས་དོན་དཔེར་བརྗོད་རིན་ཆེ་བཏུད།* གྲུང་གོའི་བོད་ཀྱི་ཤེས་རིག་དཔེ་བསྒྲུན་ཁང་།

རྡོ་རྗེ་རྒྱལ་པོ། (༡༩༥༠) *སུམ་རྟགས་ཀྱི་ཏཱ་དྲིས་ལན།* གྲུང་གོའི་བོད་ཀྱི་ཤེས་རིག་དཔེ་སྐྲུན་ཁང་།

རྡོ་རྗེ་རྒྱལ་པོ། (༡༩༥༠) *བོད་ཀྱི་སུམ་རྟགས་ཀྱི་དཀའ་གནད་འགའ་ཞིག་བརྗོད་པ།* གྲུང་གོའི་བོད་ཀྱི་ཤེས་རིག་དཔེ་སྐྲུན་ཁང་།

དཔལ་འབྱོར་དང་རིན་ཆེན་མཁའ་འགྲོ། (༢༠༡༩) སྤུ་རོ་རྩོང་གཤག་གི་མདའ་ཁོངས་ལྟ་ རྩོང་དང་ཉི་ཤུ་གཉིས་ཀྱི་གནས་ཚད་གཅིག་བསྡུར། *རབ་གསལ།* ༡༤ (མེད) ༨༠ - ༡༠༩

བར་གཞི་ཕྱན་ཆོགས་རྣམ་རྒྱལ། (༡༩༨༤) *རྟགས་འཇུག་འགྲེལ་པ་ལེགས་ཝཛཱདྲ་བཅོ་སྦྱངས།* ཁ་ར་ནས་ཞི་ མཐོ་སྨོད་བཀའ་བརྒྱུད་ཉམས་སྐྱོང་ཚོགས་པ།

ཐྲི་ཀུ་དཀར་ཆེན་པབྷ་ (༡༩༥༣) *རྟགས་འཇུག་དཀའ་གནད་གསལ་བའི་མེ་ལོང་གི་འགྲེལ་པ་དོག་པམ་གསལ་གསེལ་ ཀྱི་ཤེ་མིག།* རྒྱ་གར་འབྲས་ལྗོངས་ བློ་གྲོང་གཙུག་ལག་གཉེར་མཛོད་འཕྲུལ་པར་ཁང་།

བློ་བཟང་རྒྱ་མཚོ། (༡༩༨༦) *ཡུལ་གངས་ཅན་པའི་དོག་གཞུང་ཀྱི་མ་ཕྱིར་ཐྱུར་པ་ སུམ་རྟགས་ཀྱི་རྒྱས་ཝཛཱདྲ་ བརྩ་སྦྱོད་དོན་ཚེན་བང་མཛོད།* རྩྭ་སྡེ་ཤེས་རིག་པར་ཁང་།

བློ་བཟང་སྨོན་ལམ། (২০৭০) *སྨོན་ལམ་ཚིག་མངོ་ད།*

དབྱངས་ཅན་གྲུབ་པའི་རྡོ་རྗེ། (১৮৮২) *རྟགས་འདྲུག་དཀའ་གནད་གསལ་བའི་མེ་ཏོང་།* རྒྱ་གར་འབྲས་ལྗོངས་ བློ་གྲོང་གཙུག་ལག་གཉེར་འཕྲུལ་པར་ཁང་།

ཆེ་དབང་བསོད་ནམས། (১৮৮২) *དུས་གསུམ་རབ་གསལ་འོད་སྣང་གསལ་བ།* རྒྱ་གར་མ་ཡེ་སོང་ སྤྲ་འགྲུབ་ མཐོ་སློབ་མདོ་སྡེགས་རིག་པའི་འབྱུང་གནས་གྲོང་པར་ཁང་།

རྩོང་ཁ་གོང་འཕེལ་ལྷ་ཆོགས། (২০১২) *རྩོང་ཁའི་བརྡ་གཞུང་སྐད་བའི་སྒྲོན་མེ།* ཐིམ་ཕུ་ རྩེམ་པ་པོ།

རྩོང་ཁ་གོང་འཕེལ་ལྷ་ཆོགས། (২০১১) *རྩོང་ཁའི་དུས་གསུམ་རབ་གསལ།* ཐིམ་ཕུ་ རྩེམ་པ་པོ།

རྩོང་ཁ་གོང་འཕེལ་ལྷ་ཆོགས། (২০১০) *རྩོང་ཁའི་བརྡ་གཞུང་གཞི་རིམ།* ཐིམ་ཕུ་ རྩེམ་པ་པོ།

རྩོང་ཁ་གོང་འཕེལ་ལྷ་ཆོགས། (২০১০) *རྩོང་ཁའི་བརྡ་གཞུང་བརྡ་རིམ།* ཐིམ་ཕུ་ རྩེམ་པ་པོ།

རྩོང་ཁ་གོང་འཕེལ་ལྷ་ཆོགས། (২০১০) *རྩོང་ཁའི་བརྡ་གཞུང་ཚོ་དཔེ།* ཐིམ་ཕུ་ རྩེམ་པ་པོ།

རྩོང་ཁ་གོང་འཕེལ་ལྷ་ཆོགས། (২০০২) *རྩོང་ཁའི་བརྡ་གཞུང་གསར་པ།* ཐིམ་ཕུ་ རྩེམ་པ་པོ།

ཐོན་མི་སཉྫ་ཀ། (১৮২৩) *ཡུང་སྐྱོན་པ་རྟགས་ཀྱི་འདྲུག་པ།* རྒྱ་གར་རྟ་རབས་ས་ལ་ རྟ་ས་བོད་གཞུང་ཨེས་རིག་ དཔར་ཁང་།

སི་ཀུ་ཆོས་ཀྱི་འབྱུང་གནས། (১৮২৩) *ཡུལ་གངས་ཅན་པའི་བརྡ་ཡང་ཀ་པར་སྐྱོང་བའི་བསྟན་བཅོས་ཀྱི་ཆེ་ཐག་ སྡེ་ཚུ་པ་དང་། རྟགས་ཀྱི་འདྲུག་པའི་གཞུང་གི་རྣམ་པར་ཕཊ་པ་ཨ་ཁ་ཡི་མཐའ་ཀྱུ་ཏི་གཟེར་མཛེས།* རྒྱ་གར་རྟ་རབས་ས་ལ་ རྟ་ས་བོད་གཞུང་ཨེས་རིག་དཔར་ཁང་།

RABSEL – the CERD Educational Journal
Guidelines for Manuscript

RABSEL – the CERD educational journal

The CERD *Educational Journal* is published twice a year in spring and autumn by the Centre for Educational Research and Development, Paro College of Education, Royal University of Bhutan. The Journal welcomes contributors which promote the exchange of ideas and rational discourse between practicing educators, researchers, planners, administrators, educational thinkers and practitioners, learners and policy makers from Bhutan and abroad. To this end the Journal publishes articles on empirical and theoretical studies, research reports, commentaries and scholarly reviews that attempt a systematic analysis or synthesis of educational processes and systems from different viewpoints and approaches.

Notes for Contributors

Manuscripts are considered for publication with the understanding that they are original material and have not been submitted elsewhere for publication. Submission of a paper to a professional journal is considered to be a definite indication of the author's commitment to publish in that journal. A paper submitted to this journal while it is under review by another journal is regarded as unacceptable. Submitting an already published manuscript is considered to be unethical. The author should consult the Editor if he or she has any questions to whether or not the paper is suitable for publication.

Editorial Procedures

The CERD Educational Journal is a research journal. All papers considered appropriate for this journal are reviewed anonymously by at least two reviewers. The review process usually takes one to two months. Papers are accepted for publication subject to nonsubstantive, stylistic editing. The Editor-in-Chief reserves the right to make any necessary minor changes in the papers, or request the author to do so, or reject the paper submitted. A copy of the edited paper along with the first proofs will be sent to the author for proofreading. They should be corrected and returned to the Editor within *10* days. Once the final version of the paper has been accepted, authors are requested not to make further changes to the text.

MANUSCRIPT SUBMISSION GUIDELINES:

The CERD *Educational Journal* is a multidisciplinary publication presenting research and scholarly reviews related to education. Guidelines specified herein were prepared for the convenience of authors, reviewers and publishers.

Types of articles

Three types of manuscripts are appropriate for submission to CERD journal (a) Reports of empirical research, (b) Scholarly reviews (c) Project reports

Reports of empirical research

Reports of empirical research are descriptions of research studies. These studies must have clear and important implications for education and/or research. CERD considers research representing diverse methodologies, including group design, single-subject research, case study etc. The major criteria for publication are quality of design, implementation, and writing, as well as importance to the field.

Scholarly Review

Scholarly papers take the form of essays that represent well-developed arguments on philosophical, theoretical, or practical problems in the field of education. They are not required to adhere to an empirical research design (i.e., methods, data collection, and data analysis). Instead scholarly papers pose analytical or conceptual frameworks.

Scholarly papers should contain as many of the following as are applicable, preferably in this order: (1) objectives or purposes of the inquiry; (2) the philosophical, theoretical, or practical argument; (3) literature, sources, or evidence to support the argument/analysis; (4) conclusions and implications of the argument; and (5) significance of the argument

Project reports

These articles will be shorter and more preliminary reports about interesting educational projects (innovative courses, learning communities, etc.). Several of these reports could be published in each issue. The focus of a project report is on the progress or outcomes of an academic innovation that addresses issues in education.

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Manuscript preparation guidelines

1. Manuscripts are accepted both in English and Dzongkha (National Language).
2. Authors should follow the guidelines in the Publication Manual of the American Psychological Association (APA, 6th Edition) as a primary reference.
3. The length of the manuscript should not exceed 5000 words excluding the title page, abstracts, tables and figures, references, and

biographical information.

4. Manuscripts should be prepared in the following order: title page (including Acknowledgements as well as Funding and grant-awarding agencies); abstract; keywords; main text; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figure caption(s) (as a list).
5. The abstract of 150-250 words are required for the manuscripts submitted. The manuscript should also have about 3 to 6 keywords.
6. The manuscript should include the author's names, institutional affiliations, mailing addresses, email addresses, telephone and fax numbers on the cover/title page (page separate from the body).
7. The manuscripts should be submitted along with a short biographical note. The biographical note should not exceed 150 words.
8. All pages should be numbered appropriately in the bottom right corner.
9. The use of Endnote and footnote is not encouraged. However, where the use of endnotes is necessary for the manuscript, the effort should be to minimize their number. Endnotes should be placed at the end of the paper immediately before the list of references.
10. The Editorial Board reserves the right to reject a manuscript without substantive reasons, if it does not fulfill the manuscript guidelines as specified.

Tables and Figures

11. All tables and figures must be numbered in the order by Arabic numerals in which they appear in the manuscript (e.g. Table 1, Table 2). In multi-part tables, each part should be labeled (e.g. Table 1 (a), Table 1 (b)).
12. The caption should be provided for each table, figure or symbols. All the figures and tables must be included in the text. The photographs or graphics are also considered as figures.
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1. The manuscript should be sent as an e-mail attachment to the Editor in Chief or the Production Editor of the journal at cerd.pce@rub.edu.bt / rameshthapa.pce@rub.edu.bt

2. All manuscript submissions should be in a Word "doc" file or in a Word-compatible file with top, bottom, left and right margins set to one inch, and Times New Roman 12 point font.

Editorial correspondence

Any inquiries related to RABSEL-the CERD Educational Journal, including manuscripts for submission, should be addressed to: the Dean Research and Industrial Linkages (Dr. Kezang Sherab), Editor in Chief at kezangsherab.pce@rub.edu.bt or Ramesh Thapa, Production Editor at rameshthapa.pce@rub.edu.bt