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Teaching Genetic Basis of Evolution through Protein-mediated Mechanism: Inquiry-based Approach.

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Abstract

High school students leave school often with little or no understanding of the genetic basis of evolution. To ensure better understanding, it is viable to tailor the lesson that connects gene mutation with evolution through the protein-mediated mechanism. Therefore, an inquiry-based instructional design was contrived to enhance students' conceptual understanding of the genetic basis of evolution. The instructional design was implemented to fifty-six (n=56) grade eleven students majoring in biology or biology and mathematics. Data collected via the conceptual test and interview protocol were analysed via sample t-test and thematic coding technique respectively. The result shows that students' score in posttest is higher than pretest with the statistical significance of $p < .05$. The result also shows that students have developed a coherent understanding of the genetic basis of evolution. The findings on the whole surmise that the instructional design is effective in enhancing students' conceptual understanding of the genetic basis of evolution. The issues that need urgent attention are also discussed.

Keywords: Gene mutation, protein-mediated mechanism, genetic basis of evolution, 5E learning model.

Introduction

Evolution is a unifying theory of biological science. Dobzhansky (1973) outlines that "nothing in biology makes sense except in the light of evolution" (p. 152). Today, the underlying principles of evolution are increasingly applied to solve a multitude of real-world problems in medicine, agriculture, conservation biology, and green technology (Sickel & Firedrichsen, 2013). Therefore, in contemporary biology education, evolutionary theory is espoused as the indispensable scientific domain that everyone needs to

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understand (Rice, Oslon, & Colbert, 2014; Sickel & Firedrichsen, 2013). It is offered as one of the core components of biology education both in schools and colleges (Passmore, Stewart, & Zoellner, 2005; Sickel & Firedrichsen, 2013). In the international arena, mutation and its corresponding effects upon phenotypes, or the evolutionary changes, are offered to high school students (Dougherty, 2009; Dougherty, Pleasants, Solow, Wong, & Zhang, 2011; Duncan, Rogat & Yarden, 2009). In the Bhutanese educational context, it is featured across all stages of the secondary school biology curriculum (Dorji & Sriwattanarothai, 2015; Ministry of Education, 2012).

Conversely, students leave school often with a shallow understanding of the genetic basis of evolution (Robson & Burns, 2011; Yamanoi et al., 2012). Although, students enter the classroom with the idea of evolution, they fail to appreciate the molecular changes occurring at the genetic level (Staub, 2002). Reports from research indicate that this happens as a result of classroom instruction that features the concepts of evolution and the molecular changes in a compartmentalized manner (Dauer, Momsen, Speth, Makohon-Moree, &Long, 2013; Robson & Burns, 2011; White, Heidemann, & Smith, 2013; Yamanoi and Sakura, 2010; Yamanoi et al., 2012). This corresponds to Kalinowski, Leonard, and Andrews (2010) who state, "evolution and genetics are two of the most important ideas in biology but are difficult to understand when studied alone" (p. 95). Therefore, researchers who incorporate the genetic basis of evolution suggest weaving the classroom instruction in evolution in connection with the molecular changes.

Theoretical Underpinning

In the remark of Kalinowski et al. (2010), "nothing in evolution makes sense except in the light of DNA" (p. 87). In essence, mutation or molecular changes that take place in deoxyribonucleic acid (DNA) sequence must be taken as part and parcel of instruction in evolutionary change (Eterovic & Santos, 2013; Kalinowski et al., 2006; Offner, 2013; Speth et al., 2014; White et al., 2013; Yamanoi & Iwasaki, 2015; Yamanoi et al., 2012). The lesson in evolution must be tailored in a manner that connects genetic or molecular events (White et al., 2013). The coherent understanding of evolution is built only in the lessons that capture the essence of molecular events (White et al., 2013) or that "incorporate the examples of DNA sequences into lectures on natural selection" in evolution (Kalinowski et al., 2010, p. 95). Therefore, Offner (2013) suggest that "in the broadest sense, genetics should be taught

hand-in-hand with evolution" (p. 614).

More importantly, the current literature in genetics education increasingly focuses on the biological role of proteins. The biological role of proteins is placed as the centrality in teaching any forms of genetic phenomena including evolution (Dorji & Sriwattanarothai, 2015; Duncan, 2007, 2009; Duncan, Freidenreich, Chinn, & Bausch, 2011; Duncan, Rogat, & Yarden, 2009; Duncan & Reiser, 2007; Duncan & Tseng, 2011; Thörne & Gericke, 2014). This is because any genetic event including mutation tends to affect the amino acid sequence of structural proteins and enzymes, which in turn renders an impact upon the corresponding biological organisations (Kalinowski et al., 2010). In the heuristic statement of Duncan and Tseng (2011), "genes code for proteins" and "proteins as central" (p. 24). They espouse that "proteins as the central players in the molecular mechanisms that link genes to their observable effects" is the cornerstone of instruction on genetic phenomena (p. 24). Therefore, researchers who take on genetic phenomena suggest to inform the learners that "genes are informational and contain instructions for making proteins". "proteins have many different functions in our cells, and proteins are the mechanism that links genotype (genetic makeup) and phenotype (traits)" (Duncan et al., 2011, p. 151). According to Roberts, Hagedon, Dillenburg, Patrick and Herman (2005) and Robic (2010), the classroom instructions that articulate the linkage of mutation with evolution must be featured through structural and functional aspects of proteins.

All in all, taking into account the theoretical underpinning, an inquiry-based instructional design was contrived to enhance students' conceptual understanding of the genetic basis of evolution. The instructional design was driven by the statement that "nothing in DNA makes sense except in the light of protein". The statement is founded on the principle that any molecular event that renders a change in phenotype is brought by the mechanistic events of protein molecules. The instructional design was implemented with the research questions:

i) Is the instructional design effective in enhancing students' conceptual understanding of the genetic basis of evolution?

ii) To what extent does the instructional design enhance students' conceptual understanding of the genetic basis of evolution?

Materials and Methods

This is mixed-method research design based on one-group with a pre and posttest data collection method. It was carried out in one of the higher secondary schools in Bhutan. The study involved fifty-six (*N*=56) Grade 11 students majoring in biology or biology cum mathematics. Students were streamed into this study based on their prior knowledge in genetics. They had lesson(s) on DNA sequence, gene expression, and mutation.

The instructional design was implemented for approximately sixty minutes. The instructional design contained three learning goals. Students were expected to build up an understanding that: (i) change in a gene specify change in the amino acid sequence, (ii) change in the amino acid sequence affects an overall structure protein that in turn constrain its function, and (iii) proteins with new function characterize new phenotype or trait. The instructional design was an improved version of the learning unit contrived by Dorji and Sriwattanarothai (2015). However, this study was founded on the premise to feature the biological role(s) of protein in mediating genetic effects. The activities were driven by Biological Science Curriculum Studies (BSCS) 5E learning model as:

Engagement

Students manipulate syntax of the phrase "THE CAT SAW THE DOG" by either replacing, removing, or adding new letters and observe the corresponding semantic meaning. For example, if a student delete letter T from word CAT, the new phrase would then be read as "THE CA SAW THE DOG". Correspondingly, student would find the syntax meaningless or unfamiliar subject CA. Concordantly, if a student replace letter C by B in the word CAT, then the new syntax would be read as "THE BAT SAW THE DOG. In this case, student would find BAT as the subject of the syntax.

Exploration and Explanation-I

The teacher introduces the learning objectives and learning materials. The teacher poses the guiding question: How is mutation responsible for evolution? The activity starts with the operation of the mutation source board (MSB) (Figure 1). MSB contains the position wheel (left) and outcome wheel (right). It creates random mutations based on the resting position of the arrows placed over wheels after the rotation. The DNA sequence (Table 1) is a hypothetical gene that regulate the call of the crickets. It contains nitrogenouse bases numbered 1 to 4 as the mutation sites. For example, In Figure 1, the position and outcome wheel contain arrows resting in the third quadrant and the sector with minus sign respectively.That means the nitrogenous base numbered 3 in the DNA sequence will undergo deletion mutation
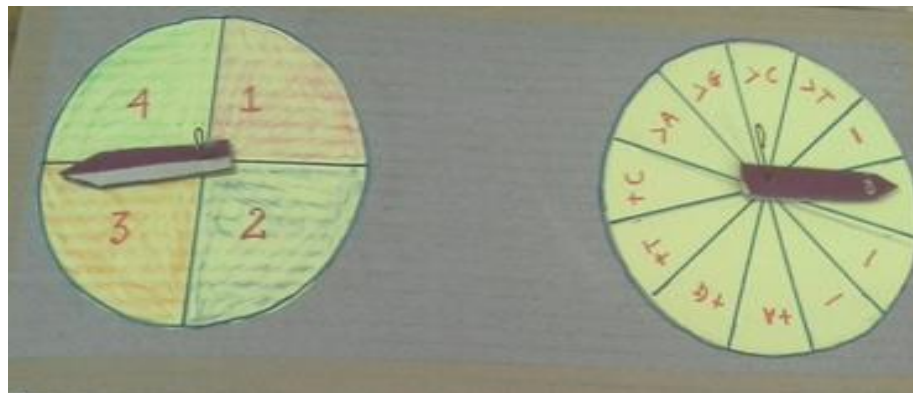
Figure 1. Mutation source board (MSB) with position wheel (left) and outcome wheel (right).

Table 1

Normal DNA Sequence (12bp) that Controls the Call of the Crickets

	1			**2**			**3**			**4**	
A	**T**	**G**	**T**	**C**	**T**	**G**	**A**	**A**	**T**	**G**	**C**

Exploration and Explanation-II

Students link a gene with the call of the crickets via 3-D protein modeling. The 3-D model of the protein is built by translating normal DNA sequence into mRNA followed by transcription into the linear peptide. Each amino acid in the peptide is represented by a flexible wire of different colors fastened by the naked ends. The linear polypeptide is folded into 3-D configuration with the help of thin copper wire (represent side chain) coiled around the flexible wire in accord to the directives of the database. The 3-D motif of the protein is then linked with the normal call of the crickets.

Using MSB, students create several numbers of the mutant gene. In the same manner, students build corresponding 3-D motifs of proteins and link with the calls of the cricket using the database. Students record the activity in the worksheet and develop a conceptual model for the evolution of silent cricket in the predatory environment.

Figure 2. Students modeling 3-D motifs of protein.

Elaboration

Students develop a conceptual framework for the evolution of malaria resistant people in Africa.

Evaluation

The teacher evaluates students' conceptual understanding of the genetic basis of evolution. Data were collected via a conceptual test and a structured interview protocol. The test contained ten multiple-choice and one open-ended question, while the protocol contained three open-ended questions. Three Bhutanese biology teachers validated the instruments. The conceptual test was piloted in one of the higher secondary schools. The difficulty index and the discrimination index of the test items were 0.38 to 0.75 and 0.38 to 0.78 respectively. The internal consistency of the test item was 0.72.

The pretest and posttest were administered for a period of twenty-five minutes each, while face to face interviews with eight participants was carried out after the posttest for sixty minutes approximately. The multiple-choice questions were scored 1 for correct response and 0 for the wrong response. The data collected via multiple-choice questions were analysed by computing inferential t statics, while the responses to an open-ended question were analysed based on the coding scheme designed by Duncan and Tseng (2011). The data collected via interviews were analysed based on Braun and Clarke's (2006) thematic coding technique.

Results and Discussion

Conception in Conceptual test

Students' scores in the pre-posttest were computed to see the normality of the observed data. The Shapiro-Wilk test of normality revealed that the students' pre-post test scores are normally distributed with p-value 0.082. With the observed score normally

distributed, a paired-sample *t*-test was carried out to determine the statistical significance of students' conceptual understanding. The results are shown as:

Table 2

Paired Sample t-test

Test	N	Mean ± SD	*T*	df	Sig. (2-tailed)
Pretest	56	1.92 ±1.25			
			27.8	55	0.000
Posttest	56	13.68 ±3.17			

Table 2 shows that students' mean scores in pretest and posttest are 1.92 ±1.25 (out of 18) and 13.69 ± 3.17 (out of 18) respectively with *p*-value 0.000. This means that students' mean score in the posttest (13.68 ±3.17) is higher than the pretest (1.92 ± 1.25) with the statistical significance of $p < 0.05$. Therefore, this finding implies that students have gained conceptual knowledge as a result of the intervention.

Students' responses to the open-ended question revealed their conceptual understanding in four categories shown in Table 3.

Table 3

Students' View of Genetic Basis of Evolution

Response Categories	Pretest (%)	Posttest (%)
i. *Mutation in gene cause evolution*: The deformed/ wrong /malfunctioned gene leads to evolution	5%	2%
ii. *Mutation in protein cause evolution*: Mentions evolution due to changes to a protein's structure and/or function but does not mention genes as the	1 %	8%

cause of the change

	1%	13%

iii. *The mutation in the gene causes a change in the protein*: Relate a change of the genetic information to a change at the protein level

iv. *The mutation in the gene causes a change in the protein and the corresponding phenotype*: Relate a change of the genetic information to a change at the protein level and phenotype level leading to speciation   0%   77%

Before the intervention, the majority of the students had a deterministic view of gene mutation. They had the view that gene mutation dictates the evolution of new species. This indicates that they did not have the idea of "genes code for proteins" and "proteins are central" (Duncan & Tseng, 2011, p. 24) and change in genetic information abet change the amino acid sequence of the protein and the corresponding biological organization. Such a view is problematic presuming gene mutation as the cause of evolution directly impede the need to explain the mediating role of protein in the ensuing character. According to Duncan and Reiser (2007), the deterministic nature of gene mutation "hinders students' ability to construct causal mechanistic explanations of how the genetic information brings about physical effects (feature or trait). This results in truncated explanations that link the gene directly to the observable outcome without providing the mediating mechanisms" (p. 947). Therefore, students' understanding of evolution due to mutation via protein-mediated mechanism was shallow.

After the intervention, the majority of the students (98%) had their view centered on the biological role of protein. Of the total, at least 77% had a better understanding of how mutation supports evolution via the protein-mediated mechanism. Although, their views were holistic, however, there was little attention paid to the effect of the mutation on the biochemical details of proteins and the corresponding biological organizations. This makes their view still truncated and fluid. Students need to understand that "changes to the genetic instructions affect the structure and chemical properties of proteins and ultimately the protein's ability to carry out its function" or "genetic mutation might affect the protein's

three-dimensional structure and hence it is function, and … these changes will, in turn, affect the functioning of the cell" (Duncan et al., 2009, pp. 666−669). In the meanwhile, there was a group of students who also had their view focused on the biological role of protein. However, their responses did not show the connection between the protein's functionality with either mutation (8%) or evolution (13%).

Conception in Interview

The interviews ascertained students' conception in three thematic areas shown below.

Table 4: *Students' View of Genetic Basis of Evolution* (*n=8*)

Themes	Interviewees
i. *Proteins are central molecules*- Relate protein as central molecule	8
ii. *The mutation in the gene causes a change in the protein's biochemical properties which in turn alter the phenotype*: Relate a mutation with phenotype via biochemical properties of protein	8
iv. *The mutation in the gene causes a change in the protein's biochemical properties which in turn alter the phenotype. Variants with a new phenotype are acted upon by external forces like natural selection*- Relate a mutation with phenotype via biochemical properties of the protein. Individuals with varied phenotype are acted upon by environmental factors like natural selection	7

In the interviews, all the participants had their view focused on the biological role of protein. All the interviewees stated that "*protein plays an important role… proteins link*

genes and phenotypes … change in the amino acid sequence change the structure of the protein and this brings change in its function". These statements correspond to the big idea that "proteins have many different functions in our cells, and proteins are the mechanism that links genotype (genetic makeup) and phenotype (traits)" (Duncan et al., 2011, p. 151). In essence, it indicates that the students have recognised protein as the central molecule that mediates the genetic effect. This understanding is so essential that it creates the basis to reason any forms of genetic phenomena including evolution. Therefore, Duncan and Tseng (2011) posit that understanding "proteins-as-central plays a role in reasoning by suggesting the involvement of proteins in molecular mechanisms. It sets the stage for the construction of genetic explanations that posit proteins as the central players in the molecular mechanisms that link genes to their observable effects" (p.24).

Holistically, all the interviewees had the view of how mutation ensue speciation via the protein-mediated mechanism. One of the interviewees explicated that *"change in the DNA sequence alters the amino acid sequence of protein … this brings change in the structure of the protein which in turn alters its functionality … protein with different properties alters the biochemical nature of the cells, tissues, and character"*. This response implies sophisticated understanding-changes to the genetic instructions and their biological consequences at the molecular and cellular levels. At some point, they even delved into some of the molecular properties of proteins such as interactions and side chains. A similar result was also observed by Bednarski, Elgin, and Pakrasi (2005) in their study on inquiry web-lab design. However, their study has gone far into the level of residues and intermolecular interactions which is not the case with this study.

The interviewees managed to link protein-mediated mechanism with evolution. The majority had the conception that the individuals with variation in phenotypes are acted upon by external forces. One of the interviewees opined that "*individuals with new phenotypes get screened by natural forces … ones that are selected by nature survive and produce their line of descendants … emergence of silent cricket is one example ... these happen due to protein molecule"*. All in all, these statements indicate that students have developed a robust understanding of the genetic basis of evolution with a central focus on the biological role of protein.

Conclusions

This study ascertained the effectiveness of the inquiry-based instructional design in enhancing students' conceptual understanding of the genetic basis of evolution. Students' mean score in the posttest was higher than the pretest with the statistical significance of $p <$ .05. Moreover, students' subjective responses implied their coherent understanding of the molecular and cellular mechanisms mediate the genetic effect. On the whole, it was found out that the instructional design per se is effective in enhancing students' conceptual understanding of the genetic basis of evolution.

Limitations

The instructional design can be adapted by high school teachers to illustrate the genetic phenomena including evolution. However, one must be careful that, if the following aspects are not informed, the instructional design would instead invite misconceptions. Therefore, students must be informed that the:

1) mutation generated by MSB is far from being real.

2) processes involved in modeling 3-D protein moiety and connecting the same with calls of the cricket is just a representative idea.

3) 12 base pair DNA sequence is nothing more than an example. Genetic mutation happens in a long DNA sequence.

4) mutation sites numbered 1 to 4 are just imaginary and do not represent reality.

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Constructivist Learning Environment: Bhutanese pre-service teachers' perspectives.

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Abstract

This article reports a study which examined Bhutanese pre-service teachers' understanding of the constructivist learning environment at university level, focusing on its six key dimensions of "Critical Voice, Student Cohesiveness, Tutor Support, Shared Control, Student Negotiation, and Personal Relevance." It was also aimed at validating two popularly known learning environment instruments called the What Is Happening In this Class (WIHIC) and the Constructivist Learning Environment Survey (CLES) in Bhutanese contexts. The study employed a survey design using the Constructivist Learning Environment Survey Questionnaire (CLESQ) as its data collection tool. The research sample (n = 778) consisted of pre-service teachers from across different program-types and program-levels, and was selected using simple random sampling technique.

Findings of the study revealed that Bhutanese prospective teachers perceived the constructivist learning environment somewhat favorably, but indicates their lack of proper understanding of it as the mean across the six CLESQ scales ranges between 3 and 4. There also seems to be statistically significant difference in their perceptions of it pertaining to program-type and program-level. However, the validation of the What Is Happening In this Class (WIHIC) and the Constructivist Learning Environment Survey (CLES) reveals its applicability to the given Bhutanese sample. Thus, the study is significant in understanding how Bhutanese prospective teachers perceive the constructivist learning environment, because the way they perceive their classroom environment has several implications on their future professional practice and learning.

Study Background and Objectives

Classroom learning environment based on constructivist principles has been found to have the potential to improve the educational outcomes for students (Lea, et al. 2003, in Gijbels, Watering,

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Dochy & Bossche, 2006). A constructivist classroom environment is typically different from a traditional classroom, in the sense that it encompasses various instructional approaches and models, which cater to varied learning styles and differing backgrounds of students (Beswick, 2008). Sharma and Chawla (2014) argue that the constructivist learning environments support "collaborative construction of knowledge through social negotiation, not competition among learners for recognition." Further, it is argued that the constructivist approaches to teaching and learning mathematics include more collaborative student activities with an increased emphasis on the communication (NCTM, 2000, in Curriculum and Professional Support Division [CASPD], 2008).

However, as teacher educators for the last many years the researchers found it difficult to draw their preservice teachers' interest towards constructivist learning which involves group works, collaborative activities, problem-solving, independent research and critical thinking. Many of the student teachers usually like to have traditional course of instruction, that is, their tutors doing most of the things in the process of their learning. Many a times, if their tutors or lecturers do not solve mathematical problems or explain concepts at the first instance in the class, they consider them not teaching. Similarly, many field teachers also seem to experience difficulty while engaging their students using those activity-based teaching strategies prescribed in the curriculum. To this effect, the researchers considered the current study as urgently needed for understanding the extent of the prospective teachers' perceptions of constructivist learning environment, which in turn would significantly influence their future professional practices.

The current study was intended for dual purposes:

i). to provide an insight into Bhutanese preservice teachers' perspectives of the nature of 'constructivist learning environment' capturing six key aspects of "Critical Voice, Student Cohesiveness, Tutor Support, Shared Control, Student Negotiation, and Personal Relevance"(Taylor, et al., 1997).

ii). to validate the two most popular learning environment instruments called 'What Is Happening In this Class' (WIHIC) by Aldridge, Fraser an Huang (1999) and the Constructivist Learning Environment Survey (CLES) by Taylor et al (1997) in Bhutanese classroom contexts.

To the best of researchers' knowledge so far, little study has been conducted in the field of classroom learning environment in Bhutanese educational contexts. Hence, the study provides the baseline data for the future studies, and it would theoretically underpin the significance of constructivist learning environments in Bhutanese contexts. It would create awareness among Bhutanese teachers, students and other professionals regarding the constructivist learning environments. It is also significant from the perspective of prospective teachers as well, as it will affect their future teaching practice in terms of understanding of the nature of the constructivist teaching-learning process, and providing insights into the scope, opportunities and challenges of constructivist learning in Bhutanese classrooms.

Literature Review

Constructivism is a learning theory that is student-centred, since in which the emphasis is on students as active learners (Gijbels & Loyens, 2009), and can be viewed as a learning approach, which defends that students subjectively construct, interpret and reorganize their knowledge (Windschitl, 1999, in Cirik, Colak & Kaya, 2015). Christie (2005, in Amineh & Asl, 2015) views constructivism as a learning theory in which learning is both an active process and a personal representation of the world. Thus, the theory of constructivism can be considered as the best way to promote self-guided learning and involves the learner in his or her process of learning (Chawla & Sharma, 2014).

Moos (1974, in Ebrahimi, 2013, p.167) classified human environments into three basic types of dimensions: 'relationship' dimensions, 'personal development' dimensions and 'system maintenance and change' dimensions. *Relationship* dimensions identify the nature and intensity of personal relationships within the environment and assess the extent to which people are involved in the environment, and support and help each other. *Personal Development* dimensions assess basic directions along which personal growth and self-enhancement tend to occur. *System Maintenance and System Change* dimensions involve the extent to which the environment is orderly and clear in terms of expectations, and maintains control and is responsive to change. The six scales of the Constructivist Learning Environment Survey Questionnaire (CLESQ) were accordingly derived from these three key dimensions based on the definitions by Taylor, et al. (1997), Koul and Fisher (2006), and Dorman (2008).

- *Personal Relevance:* The extent to which tutors relate the module content to student teachers' out-of-college experiences. (P)

- *Student Negotiation:* The extent to which opportunities exist for student teachers to explain and justify to their newly developing ideas and to listen and reflect on the viability of others' ideas. (S)

- *Shared Control*: The extent to which student teachers are invited to share with the tutor control of the learning environment, including the articulation of their own learning goals, design and management of their learning activities and determining and applying assessment criteria.

- *Critical Voice: The* extent to which a social climate has been established in which student teachers feel that it is legitimate and beneficial to question the tutor's pedagogical plans and methods and to express concerns about any impediments to their learning. (S)

- *Student Cohesiveness*: The extent to which student teachers are supportive of each other, and befriend among themselves. (R)

- *Tutor Support:* The extent to which tutors of various units or modules support their student teachers in terms of academic as well non-academic matters of learning. (R)

Constructivist learning environment has been explained in different ways by different scholars and researchers. According to Chawla and Sharma (2014), the constructivist learning environments are technology-based spaces in which learners explore, experience, construct, converse and reflect on what they are doing so that they learn from their experiences. It is argued that practice of constructivist learning approach entails learners assuming more responsibility and being more active (Koksal, 2009, in Beyhan & Koksal, 2013, p.172). There are four basic characteristics of constructivist learning environments, which must be considered when implementing constructivist instructional strategies: Knowledge shared between teachers and students; teachers and students share authority; the teacher's role is one of a facilitator or guide; and learning groups consist of small numbers of heterogeneous students (Tam, 2000, in Olusegun, 2015). It is also characterized by 'active learners' (Ashton-Hay, 2006), and students establishing learning goals and needs, navigating through and evaluating a variety of potentially relevant resources, generating and testing hypotheses, and so forth (Land & Hannafin (2000, in Bas 2012).

Wilson (1996, in Bas, 2012) claims that the constructivist learning environment is a place where learners may work together and support each other as they use a variety of tools and information resources in their guided pursuit of learning goals and problem-solving activities. In the constructivist learning environment, learners are asked deliberately to take action to create meaning from what they are studying (Bas, 2012). Cvoro (2017) argues that implementing a constructivist learning environment is about getting to know students, growing with them and creating a safe environment that is contributing to their knowledge construction and cultural identity. Le Cornu, Peters and Collins (2003) emphasizing the notion of "ownership of learning" point out that in all the classrooms students should be encouraged to see themselves as part of a team, making a contribution to each other's learning as well as their own. In the constructivist learning environment, learners are expected to acquire new experiences and fit these new experiences into their lives to make sense of the environment (Shelly, Cashman, Gunter & Gunter, 2004, in Luan, Bakar, Mee & Ayub, 2010), and teachers give the students enough time to think about questions and direct students to the appropriate resources to find answers (Ebrahimi, 2013).

Constructivist teaching and learning has also been conceived in different ways by different scholars. According to Hein (2002), constructivist learning may be little more than a tautology, but constructivist teaching involves some questions about pedagogy. He further points out that the constructivist instructor faces complex challenges; how to organize course so that students are engaged and can progress in developing a deeper understanding of materials, simultaneously keeping a course moving and defining a teaching role. Shunk (2000, in Amineh & Asl, 2015) views that social constructivist teaching approaches emphasize reciprocal teaching, peer collaboration, cognitive apprenticeships, problem-based instruction, web quests, anchored instruction, and other methods that involves learning with others. Treagust, Duit and Fraser (1996) add that knowledge is continually constructed through observation, discussion, group works, dialogue, and interrogative questioning in the learning process. According to Fisher and Khine (2006) students' learning is based on their interactions with their environment, so it is important to create a learning environment to support constructivist learning. Mathematics learning in Bhutanese classrooms is characterized by interactions between the learner and the teacher, learning tasks, and peers (Tshewang, 2015). Puacharearn (2004) argue that the constructivist classroom is a child-centered classroom in which the past experience of the students is respected, and student

experiences and student knowledge guide instruction. He further noted that the teacher acts a facilitator, guiding students through experiences, helping students refine their thinking, and providing students with opportunities to construct meaning out of their experiences. According to Komulainen and Natsheh (2008), constructivist theorists generally advocate that learners must construct their own knowledge based on their conceptions and skills to solve problems presented by the environment.

Although the literature in the field of constructivist learning environments has been abound in and around the world, starting from the USA as far as South-East Asia, which proves that the 21st century teaching-learning process must incline towards the constructivist learning. However, there are only a few studies carried out in Bhutanese contexts, and the literature on the constructivist learning environment in particular is scanty so that the current study is justified.

Methodology

The study employed a survey design for data collection with the questionnaire as the research tools based on the positivist and methodological framework (Cohen, Manion & Morrison, 2000). This is mainly because it was useful in gathering views of a large population of pre-service teachers in Bhutan, and within a particular point in time.

Participants

The research was undertaken at one of the education colleges in Bhutan, which currently offers various educational training programs of B.Ed (Primary), B.Ed (Secondary), B.Ed (Dzongkha), Pg.DE (Dzongkha), and Diploma in Sports Administration and Coaching. The sample for the study involved a total of 780 pre-service teachers, comprising of both male and female from different program-levels, and program-types. The simple random sampling strategy was used to select the participants for the survey.

Data Collection and Instrumentation

The abridged version of the Constructivist Learning Environment Survey ([CLES] by Taylor et al. (1997) and the What Is Happening In this Class (WIHIC) by Aldridge, Fraser and Huang (1999) was used as the research instrument. However, the original items of these two instruments were modified in order to suit the context of the study and was renamed as the Constructivist Learning Environment Survey Questionnaire (CLESQ). It included six scales of Critical Voice, Student

Cohesiveness, Tutor Support, Shared Control, Personal Relevance and Student Negotiation. Thus, the data was gathered by administering the CLESQ to a sample of Bhutanese preservice teachers (n=780) across different program levels and program types. However, the instrument was administered only once because the study was constrained by the limited timeframe.

Data Analysis

The data generated through the CLESQ questionnaire were analyzed and interpreted using statistical tools of both the descriptive statistics and inferential statistics, supported by SPSS Software. Hence, in order to explore student teachers' perceptions of their learning environment descriptive statistics, that is, the mean and standard deviation for each CLES scale was calculated, and accordingly compared the statistic values in terms of gender, program level and program types and drew the conclusion. The significance of the differences in terms of gender, program type, and program level were compared using the F-test and the partial eta squared values for each scale of the CLESQ.

Ethical Considerations

Researchers are ethically obliged to anticipate what will be done in data collection, analysis and reporting, and to explain to those studied why it will be done that way rather than in some other ways (Erickson, 1998). While, Anderson (1998) stressed that, "the responsibility of ethical research ultimately lies in with the individual researcher" (p.17). Furthermore, Cohen, Manion and Morrison (2000) argue that the researchers should not put their subjects at risk of any kind or intimidate them in the process of study. Hence, every ethical issues which might have impact on research subjects, such as respecting participants' individual time, rights, privacy and confidentiality were taken care in the process this study. The research ethical clearance was sought from the college research committee (CRC) and further approval to collect the data for the study was obtained from the respective classroom tutors. Wherever necessary the informed consent was obtained prior to study from the individual participants involved. Thus, to the best of researchers' knowledge, the study was conducted in strict conformity with the research guidelines and standards as prescribed by the research framework of the Royal University of Bhutan (RUB, 2012).

Results of the Study

The data analysis for the study was conducted at three levels: demographic information analysis, factor analysis, and theme-based data analysis. The statistics (mean & standard deviation) for each scale of the CLESQ were calculated to understand the pre-service teachers' perceptions of the nature of constructivist learning environments. In addition, the one-way analysis of variance (F-test), and partial eta$_2$ were included to compare participants' views in terms gender, program type and program level as independent variables.

Demographic Information

Although it was targeted for around 1000 participants, the actual turn around rate of the questionnaire was 780, which accounted for approximately 78% of the total turn around. This is in fact very satisfactory figure. The result of sample size of the study in terms of gender shows that male participants constituted 44.9% (n=349), and the female participants constituted 55.1% (n=428) of the total sample. Hence, the female participants exceeds the male participants by 10.12 % of the total sample size. In terms of program type, the B.Ed Pry program constituted around 63.5% (n=495), B.Ed Dzongkha 23.3% (n=182) and Pg.DE 13.2% (n=103) of the total sample respectively. In terms of program level, the percentage of participants from year I constituted 34.2%, year II 28.3%, year III 14.5% and year IV 22.9% of the total sample respectively. This is also dictated by the enrollment of student teachers in each program level. The percentage of participants from year I is the highest because this is accounted for mainly by Pg.DE program which is only for one year, while other two programs spread over the four years.

Principal Component Factor Analysis

Any survey instrument, whether newly developed or well established, has to be reliable and valid for data collection in reference to the sample used. It is necessary to continually review and validate context-specific instruments rather than simply use an instrument 'off the shelf' when conducting classroom learning environment research (Dorman, Aldridge, & Fraser, 2006). Thus, the principal component factor analysis (PCFA) was conducted in order to confirm the psychometric properties of the instrument, CLESQ. In other words, the validity of the instrument was ensured by computing

item factor loadings, and the scale-wise % of variance explained and internal consistency reliability (refer Table 1).

The results of principal component factor analysis (PCFA) with 'varimax rotation' method conducted for the given sample indicates acceptance of the instrument after removal of four items (Item No: 3, 5, 15 & 21). This indicates that 26 out of 30 items in the CLESQ have a factor loading of at least 0.40 and above, meeting the conventionally-accepted minimum value to maintain loadings for each scale as meaningful (Fraser, Aldridge & Adolphe, 2010).

Table 1

Factor loadings, scale-wise % of variance explained & reliability (α)

Items	Factor 1 (CRV)	Factor 2 (SCO)	Factor 3 (TSU)	Factor 4 (SHC)	Factor 5 (STN)	Factor 6 (PER)
Item_06	0.66					
Item_07	0.74					
Item_08	0.72					
Item_09	0.70					
Item_10	0.57					
Item_26		0.59				
Item_27		0.71				
Item_28		0.75				
Item_29		0.68				
Item_30		0.69				
Item_22			0.67			
Item_23			0.65			
Item_24			0.73			
Item_25			0.62			
Item_11				0.70		
Item_12				0.73		
Item_13				0.68		
Item_14				0.73		
Item_16					0.74	
Item_17					0.74	
Item_18					0.71	
Item_19					0.50	
Item_20					0.48	
Item_01						0.76
Item_02						0.40
Item_04						0.79
% of Variance	9.83	9.76	9.41	9.16	8.48	5.54
Reliability (α)	0.78	0.77	0.77	0.76	0.64	0.57

Note: Items which either loaded on more than one factor or less than 0.40 were removed.

Acronyms: CRV: *Critical Voice*; SCO: *Student Cohesiveness*; TSU: *Tutor Support*;

SHC: *Shared Control*; STN: *Student Negotiation*; & PER: *Personal Relevance*

For the final factor structure of the CLESQ, approximately 56.75 % of the variance was accounted for by the six scales, with the percentage of variance explained ranging from 5.54% for the 'Personal Relevance' scale to 9.83% for the 'Critical Voice' scale. Thus, the pattern of factor loadings provided a satisfactory support for the CLESQ structure indicating overlaps in some of its items, which implies that there was a need for modification or removal of some of its items for the given sample.

To ensure how each scale's items support each of them, the Cronbach alpha coefficient was used to estimate the internal consistency reliability (Ching-Tse, 2013, in Tshewang, 2015) of the CLESQ scales. It is based on the average inter-item correlation. Despite of some scholars' belief that the Cronbach alpha value of 0.70 and above to be acceptable, So and Swatman (2010) and Chandra and Fisher (2009) consider its value of 0.60 and above to be acceptable for a scale to be reliable. This coefficient for the six CLESQ scales calculated using the individual means as the unit of analysis ranges from 0.57 for the scale of Personal Relevance to 0.78 for the scale of Critical Voice. It further ensured that the instrument was reliable when used with the given sample, supporting the validity of the instrument.

Overall perceptions of constructivist learning environment

In order to gain an overall student teachers' perspective of the constructivist learning environments in Bhutanese pre-service classrooms, the average inter-item mean and standard deviation for each of the six CLESQ scales were computed. The participants responded to the CLESQ on the basis of five-point Likert frequency scale responses of 'Never' (1), 'Seldom' (2), 'At times' (3), 'Often' (4), and 'Always' (5). A response with a smaller number, say 'Never' (1) indicates the negative perceptions of student teachers about the constructivist learning environment, whereas a response with a larger number, say 'Always' (5), indicates positive perceptions of student teachers about the classroom learning environment. Table 2 presents the mean and standard deviation for the student teacher perceptions of each scale of the CLESQ.

The scale of Student Cohesiveness had the highest mean (M =4.16; SD =0.64) and the scale of Shared Control the lowest mean (M=3.07; SD=0.84) among the six scales. These results indicate that across items in all the scales, participants responded with either 'At times' or 'Often' response. In other words, the mean obtained for each of the CLESQ scales was very close to 4, (with exception to the Shared Control scale) which indicates that the constructivist learning environment was favorably perceived in terms of these scales. However, it also indicates that there is no clear perception of what the constructivist learning environment is among Bhutanese pre-service teachers as the mean value on the four scales was in and around 4 only (refer Table 2).

On the other hand, the value of standard deviation generated for the six CLESQ scales ranges from 0.64 for the Student Cohesiveness scale to 0.84 for the Shared Control scale. This implies that there were few outliers amongst the responses– that is, the participants' responses did not markedly differ from each other.

Table 2

Overall mean and standard deviation for each scale

	N	Mean	Std. Deviation
CRITICAL VOICE (CRV)	780	3.97	0.67
STUDENT COHESIVENESS (SCO)	779	4.16	0.64
TUTOR SUPPORT (TSU)	780	3.85	0.70
SHARED CONTROL(SHC)	779	3.07	0.84
STUDENT NEGOTIATION (STN)	780	4.13	0.77
PERSONAL RELEVANCE (PER)	780	3.48	0.68
Valid N (listwise)	778		

The concept of constructivist learning environment in Bhutanese preservice classrooms was neither positively perceived nor negatively perceived particularly in terms of the scales of Critical Voice (M=3.97; SD=0.67), Tutor Support(M=3.85; SD=0.70), Shared Control (M=3.07; SD=0.84), and Personal Relevance (M=3.48; SD=0.68). These results also indicate that participants' views were inconsistent because the values of standard deviation for each of these scales was computed almost close to 1 ranging from 0.67 for the scale of Critical Voice to 0.84 for the Shared Control.

Gender difference in perceptions of constructivist learning environments

The study compared participants' perceptions of the constructivist learning environment based on gender as an independent variable. The average item mean of the six CLESQ scales for male ranged from 3.18 (SD=0.84) for Shared Control scale to 4.17 (SD=0.65) for Student Cohesiveness scale. The mean of the six CLESQ scales for female ranged from 3.00 (SD=0.83) for Shared Control scale to 4.16 (SD=0.63; 0.83) for Student Cohesiveness and Student Negotiation scales. Thus, the mean across all the scales in terms of gender are clustered little below and above 4 (refer Table 3), suggesting that the majority of participants perceived the constructivist learning environments favorably.

Table 3

Gender difference (F-test & partial Eta2) for each scale

	Male (n=349)		Female (n=428)		Differences		
	Mean	SD	Mean	SD	F	p	η_2
CRV	3.99	0.67	3.96	0.67	0.38	0.54	0.00
SCO	4.17	0.65	4.16	0.63	0.04	0.85	0.00
TSU	3.89	0.68	3.82	0.72	2.26	0.13	0.00
SHC	3.18	0.84	3.00	0.83	12.08	0.00*	0.02
STN	4.09	0.68	4.16	0.83	1.79	0.18	0.00
PER	3.43	0.71	3.52	0.65	3.87	0.05	0.01

*p<0.05 is significant

Acronyms: CRV-*Critical Voice*; SCO-*Student Cohesiveness*; TSU-*Tutor Support*; SHC-*Shared Control*; STN-*Student Negotiation*; & PER-*Personal Relevance*

The ANOVA F-test and partial eta2 results also show that apart from the difference for the Shared Control scale (p<0.05), the mean difference for all other scales is statistically insignificant. This indicates that gender had little impact on student teachers' perceptions of the constructivist learning environment. Thus, the outcomes of the ANOVA F-test and partial eta2 in this study indicated that the magnitude of gender differences was quite small and educationally not significant across those six CLESQ scales.

Program-type difference in perceptions of constructivist learning environments

This study also compared student teachers' perceptions of the constructivist learning environment in respect to three program types: B.Ed (Primary), B.Ed (Dzongkha) and PgDE (Dzongkha). Table 4 presents the results. The mean for B.Ed Pry student teachers' perceptions of constructivist learning environment ranges from 3.00 (SD=0.82) for Shared Control scale to 4.17(SD=0.62) for Student Cohesiveness scale. The mean of B.Ed Dzongkha student teachers' perceptions of constructivist learning environment ranges from 3.39 (SD=0.86) for Shared Control scale to 4.26 (SD=0.66) for Student Cohesiveness scale. The mean for Pg.DE Dzongkha student teachers' perceptions of constructivist learning environment ranges from 3.01 (SD=0.78) for Shared Control scale to 3.98 (SD=0.75) for Student Negotiation scale.

Since the mean value in general ranges from 3 to just above 4 across the six CLESQ scales, it indicates the average perceptions of the constructivist learning environment. There is inconsistency to some extent in their views across all the six scales since the standard deviation is 0.60 and above.

Table 4

Program-type difference (F-test & partial eta$_2$) for each scale

	B.Ed Pry (n=495)		B.Ed Dzo (n=182)		Pg.DE (n=103)		Difference		
	Mean	SD	Mean	SD	Mean	SD	F	p	η$_2$
CRV	3.94	0.65	4.11	0.69	3.31	0.63	5.43	0.01*	0.01
SCO	4.17	0.62	4.26	0.66	3.97	0.67	6.89	0.00*	0.02
TSU	3.79	0.71	3.97	0.67	3.91	0.69	5.15	0.01*	0.01
SHC	3.00	0.82	3.39	0.86	3.01	0.78	18.2	0.00*	0.05
STN	4.16	0.81	4.14	0.66	3.98	0.75	2.16	0.12	0.01
PER	3.51	0.64	3.49	0.78	3.31	0.63	3.50	0.03*	0.01

$p<0.05$ is significant

Note: CRV-*Critical Voice*; SCO-*Student Cohesiveness*; TSU-*Tutor Support*; SHC-   *Shared Control*; STN-*Student Negotiation*; & PER-*Personal Relevance*

To examine the significance of difference between the means of pre-service teachers' perceptions of the constructivist learning environment in terms of program-type, a one-way ANOVA was conducted. The results of ANOVA F-test indicate the significant difference in the

mean of the scales of Critical Voice scale (F=5.43, p<0.05), Student Cohesiveness (F=6.89; p<0.05); Tutor Support (F= 5.15; p<0.05); Shared Control (F=18.2, p<0.05) and Personal Relevance (F=3.50; p<0.05). This reveals that the program type has some influence on participants' perceptions of the constructivist learning environment in Bhutanese pre-service classrooms. However, the partial eta2 value (η_2) across all the six scales was quite small indicating the difference in how they perceived the constructivist learning environment as not so significant.

Program-level Difference in Perceptions of Constructivist Learning Environment

The study also compared the pre-service teachers' perceptions of constructivist learning in terms of program-level (i.e., year 1, year 2, year 3 & year 4). Table 5 provides the results for this comparison. The mean for student teachers' perceptions of the constructivist learning environment for year 1 ranges from 3.00 (SD=0.77) for Student Cohesiveness and Shared Control scales to 4.08 (SD=0.70) for Student Negotiation. The mean of Year 2 ranges from 3.09 (SD=0.79, 0.78) for Student Cohesiveness and Shared Control scales respectively to 4.09 (SD=1.00) for Student Negotiation. The mean for year 3 ranges from 3.14 (SD=0.89) for Student Cohesiveness and Shared Controlled scales to 4.24 (SD=0.70) for Student Negotiation scale. The mean for year 4 ranges from 3.13 (SD=0.96) for Student Cohesiveness and Shared Controlled scales to 4.18 (SD=0.69) for Student Negotiation scale. Thus, the mean value in general ranges from 3.00 to 4.24 indicating that student perceptions are neither too positive nor too favorable.

Table 5

Program-level difference (F-test & partial eta2) for each scale

Scales	Year 1 (n=267)		Year 2 (n=221)		Year 3 (n=113)		Year 4 (n=179)		Differences		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F	p	η_2
CRV	3.88	0.67	3.92	0.63	4.13	0.67	4.08	0.68	5.91	0.00*	0.02
SCO	3.00	0.77	3.09	0.79	3.14	0.88	3.13	0.96	7.58	0.00*	0.01
TSU	3.86	0.72	3.75	0.67	3.95	0.68	3.90	0.72	2.64	0.05*	0.01
SHC	3.00	0.77	3.09	0.78	3.14	0.89	3.13	0.96	1.27	0.28	0.01
STN	4.08	0.70	4.09	1.00	4.24	0.54	4.18	0.65	1.65	0.18	0.01
PER	3.38	0.66	3.41	0.66	3.64	0.65	3.59	0.71	6.34	0.00*	0.02

*p<0.05 is significant

Note: CRV-*Critical Voice*; SCO-*Student Cohesiveness*; TSU-*Tutor Support*; SHC-*Shared Control*;
STN-*Student Negotiation*; & PER-*Personal Relevance*

One-way ANOVA F-test was conducted to compare the significance in mean difference in student teacher perceptions of their constructivist learning environment in terms of program level. Hence, the significant difference in student teachers' perceptions of Critical Voice $F_{(4,778)} = 5.91$, $p < 0.05$), Student Cohesiveness ($F_{(4,778)} = 7.58$, $p < 0.05$), Tutor Support ($F_{(4, 778)} = 2.64$, $p < 0.05$), and Personal Relevance ($F_{(4,778)} = 6.34$, $p < 0.05$) were observed. This indicates that program-level has certain influence on their perceptions of constructivist learning environment. However, the partial eta-squared value (η_2) for across all the six scales was quite small indicating the difference in how they perceived the constructivist learning environment as not so significant.

Discussions and Conclusion

The current study aimed at examining the Bhutanese pre-service teachers' perceptions of the constructivist learning environment, and validating the WIHIC (Aldridge, Fraser & Huang, 1999) and the CLES (Taylor et al. 1997) in Bhutanese educational contexts. Hence, the discussion of results and recommendations from the study presented accordingly.

First, the findings of the study indicate that the two existing learning environment research instruments: the WIHIC by Aldridge, Fraser and Huang (1999) and the CLES by Taylor et al. (1997) were found applicable to the given sample in Bhutanese pre-service classrooms.. This implies that these two instruments can be used further in investigating the classroom learning environments in Bhutanese educational settings. This is because the reliability and validity of these instruments were established through a number of statistical measures that have been reported in numerous contexts.

Second, it also reveals that student teachers perceived the constructivist learning environment somewhat favorably as the mean value across all the six CLESQ scales was calculated in the vicinity to 4, but the standard deviation across the six scales were all close to 1. This is indicative of the fact that there is lack of proper understanding of constructivist learning among Bhutanese prospective teachers, providing opportunities for incorporating constructivist teaching practices in Bhutanese classrooms.

Third, the study also compared participants' perspective of the constructivist learning environments in terms of gender, program-type and program-level. The findings show that in terms of gender there is no statistically significant difference in their perceptions of almost all the scales of the CLESQ, however, their perceptions seem to be inconsistent across the scales. In terms of

both program-type and program-level, the mean difference was statistically significant on the scales of Critical Voice, Student Cohesiveness, Tutor Support, Shared Control, and Personal Relevance. However, the partial eta2 value across the scales was observed quite small indicating that the mean difference of their perceptions is not educationally so significant.

Finally, it underpins that the CLESQ can be an effective tool for assessing a constructivist learning environment in Bhutanese pre-service classrooms, and lays the foundation for future research in classroom learning environment, providing a kind of direction towards improving the classroom teaching-learning process in Bhutanese schools.

The study was constrained by several factors. First, there was no triangulation of data as the data collected was inclusively preservice teacher participants' self-administered survey data. Second, it was also limited by the time frame, which was meant for one year and it was difficult to do justice to proper data collection and analysis. Third, it was constrained by the researchers' teaching workloads, and other job responsibilities. It was ultimately delimited by its sample used, as the lecturer participants could not be included in it. Hence, the findings of this study are not generalizable to more widely beyond the contexts of the study.

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Challenges of Implementing Life Skills Education in Schools in Punakha: A Qualitative Research

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Abstract

Considering Life Skills Education (LSE) as an important component of youth education, the Ministry of Education adopted it as a national programme in 2008 (Department of Youth and Sports, 2014). However, due to a dearth of studies, there is little evidence of the status of LSE and the challenges of implementing it in schools. To investigate them, the researchers employed a qualitative research design. The qualitative data were collected from four principals and 16 teachers through semi-structured interviews and essay writing. The key findings revealed that though the schools currently teach LSE, however, it was ineffectively implemented due to various challenges such as time constraint, teachers' lack of knowledge of life skills, inadequate teaching-learning materials, absence of fulltime counsellor, and lack of school-parent partnership. The key recommendations include the Ministry of Education to consider providing necessary supports and instruct school administrators and teachers to explore alternatives that may promote LSE teaching across all levels of schools.

Keywords: Life skills, challenges of implementing LSE, middle secondary school.

Introduction

International community views Life Skills Education (LSE) as an important component of youth education. This could be because life skills develop "psychosocial abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life" (World Health Organization (WHO), 1997, p.1). According to Kalanda (2010), LSE increases knowledge and brings behavioural changes among teachers and students because it caters to both cognitive (Gardner, 2011) and emotional (Goleman, 2013) intelligences. Studies conducted by Dorji and Yangzome (2018) and the Department of Youth and Sports (DYS) (2014) also

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revealed positive impacts of it on students' behavioural changes and overall development respectively. In addition, scholars also claim that the school-based LSE programmes reduce tobacco, alcohol, and other drug-related problems among adolescents (e.g., Botvin, n.d.; Botvin, Baker, Botvin, Filazzola, & Millman, 1984a; Botvin, Dusenbury, Baker, James-Ortiz, & Kerner, 1989; Botvin & Kantor, 2000; Gilchrist, Schinke, Trimble, & Cvetkovich, 1987).

As elsewhere, to develop psychosocial, personal, and interpersonal skills (Munsi & Guha, 2014; Murthy, 2016) through LSE, the Ministry of Education adopted LSE as a national programme in 2008 (DYS, 2014) in all schools across the country. Main reasons for its adoption were to prepare young people for their transition from childhood to adulthood (DYS, 2014; WHO, 1999) and provide youths with essential "knowledge, skills and attitudes" (Bernhardt, Yoruzu, & Medel-Anonuevo, 2014, p. 282) that help them in learning to know, learning to do, learning to live together with others, and learning to put education in the perspective of life-long learning (Delors et al., 1996; Delors, 2013). Moreover, LSE was also found to promote wellbeing of the school as it does the students' positive outlook and socially acceptable behaviours (Battistich & Horn, 1997). In Bhutan, students learn these skills through school-based programmes such as value education, scouting, vocational skills, physical education, career and guidance education, and games and sports (Munsi & Guha, 2014).

However, due to a dearth of studies on challenges of implementing LSE in Bhutan, there is little information on both the status and challenges of implementing LSE in the Bhutanese context. Therefore, this study examined both the status of LSE and explored the barriers to implementing it in Bhutanese context. To do this, the researchers sought to answer the following questions:

1. *What is the status of Life Skills Education (LSE) in Bhutan?*
2. *What are the major obstacles that impede the implementation of Life Skills Education (LSE) in Bhutan?*

Literature Review

Despite numerous positive impacts of LSE on reducing psychosocial and behavioral problems among adolescents, several previous studies conducted in foreign contexts reported difficulties of implementing it in the schools. For example, Botvin (n.d.) reported inadequate resources, teachers'

and administrators' low level of commitment, poor teacher training, low teacher morale, classroom indiscipline, and time insufficiency as major obstacles to LSE. On the other hand, Bernhardt et al. (2014) noted lack of synergy, no proper governmental plans and budget, and non-involvement of youths in policy making in their 15 sample-countries as major issues affecting its implementation. Similarly, Okech and Role (n.d.)'s study conducted at Hill primary school found seven barriers to LSE in the school. These barriers are inadequate LSE teaching time, lack of textbooks for students, poor pedagogical knowledge, teachers' incompetency to teach LSE due to no formal LSE training, lack of students' interest, using scheduled LSE time for teaching examinable academic subjects, and teachers' attitude. In another study, Adhiambo (2013) found several setbacks such as lack of trained personnel, material resources, interest, cooperation among teachers and students, and time for LSE. Other challenges that hampered the implementation of LSE include teachers' academic workload and inadequate teacher training.

In studies conducted in Bhutan and Malawi, Kalanda (2010) and DYS (2014) found several bottlenecks that hindered the implementation of LSE. These hindrances, according to these studies, were shortage of trained-LSE teachers, insufficient teaching-learning materials, infrequent training for majority of teachers, and limited class hours for LSE.

In summary, these available literatures suggest teacher incompetency, time insufficiency, teacher workload, resource scarcity, low profile of LSE as a non-examinable subject, and teacher attitude as barriers to effective implementation of LSE in schools. Therefore, this study examined the status and challenges of implementing LSE in Bhutan from the perspective of teachers and principals in four middle secondary schools in Punakha. The findings from this study would inform what the Ministry of Education should do to improve LSE in schools across the country. Also, they may make policymakers, administrators, and teachers aware of factors that hinder implementation of LSE and create opportunities to promote it in Bhutanese schools.

Methods

This study adopted a qualitative research design, a research method that investigates a phenomenon (Creswell, 2009; Kothari, 2004) without using any quantified information (Strauss & Corbin, 1990). It is "rich and holistic" (Kothari, 2004, p. 5) that offers deep understanding and detailed information (Kothari, 2004) regarding challenges associated with implementation of LSE in schools in Bhutan in this case.

One reason for adopting this design is because it ". . . can be used to obtain the intricate details about phenomena such as feelings, thought processes, and emotions that are difficult to extract or learn about through more convenient conventional research methods" (Strauss & Corbin, 1998, p. 11). Second, it offers a holistic view of a phenomenon (Brink, 1993; Corbetta, 2003; Fraenkel, Wallen, & Hyun, 2012) through the "use of naturally occurring data" (Silverman, 2006, p. 44) and lived experiences of the participants (Sherab, 2009). Finally, as Kothari (2004) notes, the researchers could discover LSE-implementation-related challenges through those who were supposed to teach all ten skills in the selected schools. Therefore, this design obtained detailed information about the challenges the participants face while implementing LSE in their schools by ". . . immersing oneself in a scene and trying to make sense of it" (Tracy, 2013, p.3).

Participants

The participants for this study constituted two groups. The first group comprised 16 teachers (eight males and eight females), four from each participating school, teaching in four middle secondary schools in Punakha. Their work experiences ranged from a year to over 16 years in the schools. Of these participants, only one was a fulltime school counselor while the remaining were regular teachers working in different capacities as scout leaders and health in-charges in addition to teaching their elective subjects.

The second group consisted of four principals, and all of them were males. These participants have been in the leadership positions for at least five years exclusive of their prior teaching experiences as teachers. All four of them had master's degrees in educational management (M. Ed). They were chosen through purposive (Berg, 1989) and snow-balling sampling techniques (Fraenkel, Wallen, & Hyun, 2012). To protect the real identities of the participants, all of them are addressed by fictitious names hereafter.

Instruments

This study employed two data collection tools. The first one was a semi-structured interview, and it composed of two parts. The first part asked the principal-participants' personal information such as leadership experience and their highest qualification. In addition, they were also required to respond to three closed-ended questions which were intended to understand the status, importance, and effectiveness of LSE in the schools. The second part of it consisted of a set of open-ended questions for the semi-structured interviews, and it required them to answer a series of questions during the face-to-face interviews.

The second tool was an essay writing, and it also consisted of two parts. In the first part, all participants were requested to respond to four closed-ended questions. Three of these questions, as in the former tool, were those surrounding the status, importance, and effectiveness of LSE while the additional one asked them whether their principals supported LSE in the schools. The second part of it was an open-ended question, and it instructed the teacher-participants to write an essay each on the challenges they faced while teaching LSE in their respective schools.

Data Analysis Procedures and Technique

Qualitative data obtained from both interview transcriptions and essays were analyzed using thematic analysis technique. Thematic analysis, according Braun and Clarke (2006), is an analysis technique that identifies, analyses, and reports themes that appear within a set of data. As the analyses were neither based on pre-existing themes nor count of word occurrences as in summative and directed content analyses approaches respectively (Hsieh & Shannon, 2005), it however adopted their conventional method (See Hsieh & Shannon, 2005) which, as suggested by both Hsieh and Shannon (2005) and Braun and Clarke (2006), derives themes from the text data. In fact, taking advantage of the nonverbal clues from the interviews, the researchers began taking thematic notes during the data collection (Braun & Clarke, 2006). These notes were then used during the text - interview transcriptions and essays - analyses.

To ensure trustworthiness as suggested by Lincoln and Guba (1985) and to either minimise or eliminate biases (Brink, 1993; McDowell & MacLean, 1998), the researchers strictly followed the six phases established by Braun and Clarke (2006) (also see Nowell, Norris, White, & Moules, 2017). To fulfill them, the researchers first read and reread all the interview transcriptions and essays independently to generate and search for their own themes and subthemes. Then, the researchers gathered at a location to review and define the themes they determined. Finally, they produced the report after thorough member-checking and peer-debriefing. In other words, the investigators' findings were triangulated (See Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014) through use of different perspectives and then confirmation of findings (Denzin, 1978).

Findings

Findings of this study are divided into two sections. First section presents the status, importance and effectiveness of LSE in schools in Bhutan while the second section reports the challenges of implementing LSE in Bhutanese schools.

Status, Importance and effectiveness of LSE in schools in Bhutan

The data collection tools administered to both the groups of participants asked three similar questions that required them to confirm the status, importance, and effectiveness of LSE in schools. One additional question that teacher-participants were required to answer was *Does your principal support Life Skills Education in your school?*
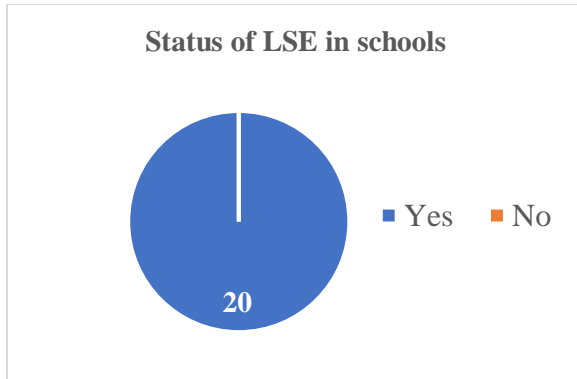

Status of LSE in schools	**Importance of LSE in schools**

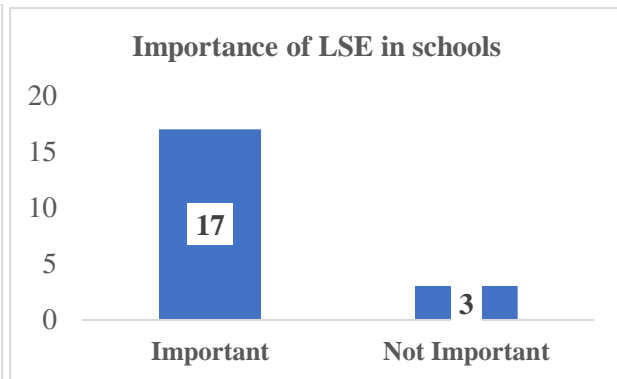*Figure 1:* Status of LSE in schools   *Figure 2*: Importance of LSE in schools

As shown in Figure 1, participants from both groups agreed that their schools teach and practice life skills. All 20 participants agreed to the question *Does your school teach Life Skills Education?* From this it could be concluded that all schools taught LSE as per the directives received from the Ministry of Education. One reason for its successful implementation in the participating schools, as evidenced from Figure 2, was because majority of the participants (n=17) viewed LSE as *important* for both students and teachers. Another reason was that these participants experienced it having ". . . lifelong implications on both their personal and professional lives . . ." (Zangmo, Essay). As 14 of the teacher-participants agreed with *Does your principal support LSE in your school?* (See Figure 4), school leadership could have also influenced the perceptions of the participants in viewing LSE as *important*. However, three participants claimed LSE as *not important* because they felt it was "time consuming" (Yeshi, Personal Interview), and it ". . . affected teaching of content-related subjects such as sciences and history" (Norzang, Personal Interview).
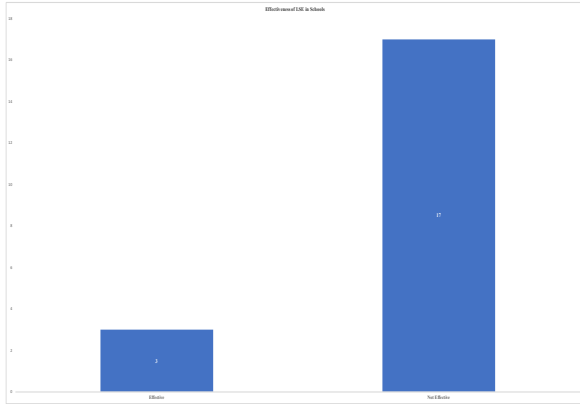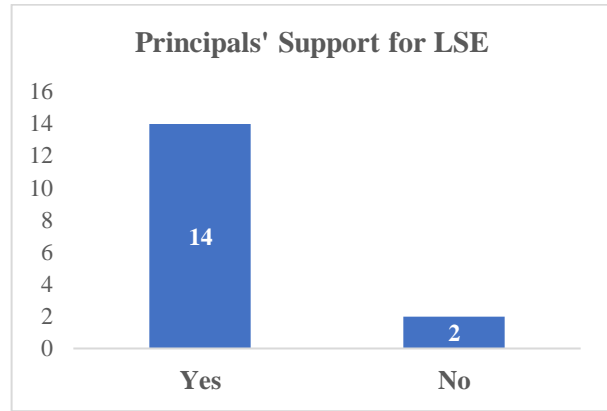
Figure 3: Effectiveness of LSE in schools

Figure 4: Principals' support for LSE

However, as presented in Figure 3, majority of the participants (n=17) agreed that LSE was ineffectively implemented in their schools attributing its ineffectiveness to numerous challenges. These challenges are discussed in the following section.

Challenges of Implementing Life Skills Education in the Schools

Data gathered from two sources revealed numerous challenges that impeded the implementation of LSE in schools. Upon careful examination and then collation of the data gathered from interview transcriptions and essays revealed five main themes. These themes are, 1) time constraint, 2) teachers' lack of knowledge of life skills, 3) inadequate teaching-learning materials, 4) absence of fulltime counselor, and 5) lack of school-parent partnership as detailed below.

Time Constraint

Time constraint is defined as schools' inability to allocate a time for an activity within the timeframe of working hours [between 8.30 am and 4 pm]. Although LSE was viewed positively by almost all the participants, both principals and teachers cited inadequacy of time as the main factor that seemingly affected both preparation and teaching of LSE in classrooms. According to them, it was *time factor* that primarily led to the failure of implementation of LSE in schools. To this, a principal-participant expressed,

> As Bhutanese teachers are heavily bogged down with teaching loads and encumbered with numerous [non-academic] responsibilities, creating an extra class [scheduled timing] for LSE is an additional work often leading to teacher burnout. I, as a principal, cannot force them teach it, can I? Neither the teachers can prepare and teach, nor the students can learn and practise them . . . as they are required to fulfill educational requirements such as completing syllabi, assessing students' works, writing homework . . . projects and assignments, for example. (Dorji, Personal Interview).

This difficulty was further supported by several teachers in their essays. According to Yangdon:

> We do not only teach our subjects. We do lots of other works outside classrooms in the playfields coaching players beyond normal school hours, for instance. Due to this, we miss our regular classes and fail to teach even our subjects, save life skills. (Essay).

Yangdon's view was further echoed by Dhendup for instance,

> . . . we could incorporate the life skills in our academic lessons, but as some syllabi are vast, and we must complete the syllabi in time, I cannot think of investing my time on teaching of life skills. (Essay).

As teachers are multi-tasked, obligated to shoulder numerous job responsibilities as required by Individual Work Plan (IWP) besides teaching, they found difficulties in finding or adjusting time for LSE within the scheduled schooling time.

Teachers' Lack of Knowledge of Life Skills

Teachers' lack of knowledge of life skills was another factor that seemed to have affected the implementation of LSE in schools. This was primarily because many teachers were neither trained in it during their training periods nor were they provided any short-term training after graduation. As one teacher-participant noted, ". . . I do not know what skills are called life skills . . ." (Karma, essay), some of them were simply unaware of the ten core life skills.

> . . . as many teachers do not have a good knowledge of LSE, they lack proper skills and knowledge to either incorporate them in their daily lessons or teach those skills separately. This is because many teachers are provided no LSE training. If it was to be successfully implemented, every teacher needed a minimum of a week-long training on it by the experts . . .. Unless we know those skills ourselves, we cannot teach them to students even through our academic lessons, can we? (Sangay, Essay).

Similarly, a principal-participant also support it in his interview.

> As teachers are provided a compressed, a bridge course like life skills training through somebody [who attended a national level training] in an hour or so at the school level [School-based Inservice Program], how can they teach it when they do not know what these skills are? Most of them do not learn adequately as they are just verbally told what to do in that session without any practical sessions. (Zangpo, Personal Interview).

All in all, lack of life skills knowledge, and failure to train the rest through trainers were the serious concerns that seemed to have ultimately led to the failure of implementation of LSE in schools.

Inadequate LSE Teaching-Learning Materials

Lack of material resources was another bottleneck for the LSE. This is because the participating schools received little financial support from the government that could not be spent on procuring additional teaching-learning materials such as flipcharts, sellotapes, and chart papers. Still, some teachers stated that, with the little knowledge they learned in the in-school professional development programmes, they purchased these materials themselves to teach life skills in their classes. In this regard, Tshomo penned,

> After attending a week-long life skills workshop, I was passionate to teach and incorporate each skill in my lessons. However, due to no or limited material resources such as flipcharts, marker pens, and reference books, for example, I could not teach them. I even bought materials myself but could not do it as it was costing me dearly. (Essay).

In addition, Dorji also expressed,

> We use all available resources for our academic purposes as examinable subjects require more importance than LSE. Even the available material resources are not enough for teaching subjects, and the school does not have any budget to buy materials for teaching purpose . . .. (Personal Interview).

In other words, inadequate supply of teaching-learning materials was the main reason why those teachers who attended LSE workshops failed to teach it. Moreover, because LSE was a non-examinable subject, the schools have utilized all available resources in teaching examinable subjects.

Absence of Fulltime Counselors

From the four participating schools, only one had a fulltime counselor. Because they are trained, it is usually the counsellors who teach such a subject. Due to this, the participants shared that the schools seriously lacked the ". . . required competence and knowledge . . ." (Yeshi, semi-structured interview) to deliver LSE.

It would be very beneficial if schools have at least two counselors [a male and a female] who could teach life skills during their guidance and counseling classes. This would allow teachers to focus on their teaching

subjects. But, to make it successful, the school also must have enough learning materials . . .. (Norzang, Personal Interview).

Supporting it, a teacher also noted,

Although we have a teacher-counselor, he is not able to fulfill the objectives of teaching LSE as he has to fulfill the required number of teaching periods in his subjects like other teachers. Therefore, I would prefer the schools to have fulltime counselors over teacher-counselors as they are better trained in it, and they can teach it independently through [their] counseling lessons. (Kinley, Essay).

In a nutshell, all the participants from the participating schools emphasized the need of fulltime counselors if the Ministry of Education reconsiders teaching of LSE in schools. This was because the participants felt that they could do more justice to it than teachers as the former are ". . . trained professionals . . . qualified personnel . . ." (Singye, Essay) than the later.

Lack of School-Parent Partnership

Participants confessed the absence of coordination between schools and parents. Therefore, it was believed to be a reason for the failure of implementation of LSE in schools. To this, a principal enunciated:

If the ministry felt the involvement of parents in this endeavour, . . . the LSE would have fulfilled many of its objectives. But due to non-involvement of them, the school alone could not do as planned. Thus, it is seen as a national project *only* on paper. (Dorji, Personal Interview).

In support of the principal, a teacher also expressed the same:

I think parents are equally important in this project as they are the first persons who could actually do miracles regarding life skills at home from the very early age of their children. . . . henceforth, the ministry should explore possibilities of involving parents of urbanite-youths in this nationwide program as these children are seen lacking skills such as empathy and inter-personal relationship, for example, due to growing netizen-ship . . .. (Seldon, Essay).

According to many a participant, parents are the right persons to teach life skills from the very early age of their upbringing as they are the first persons with whom children first come in contact with. Due to this, they suggested a collaboration between the ministry and the parents to ensure the success of LSE.

In summary, the qualitative date obtained from interview transcriptions and essays revealed five themes that posed challenges to the implementation of LSE. It was these challenges which seemingly contributed to the failure of LSE in the Bhutanese schools.

Discussion

This section discusses the findings from the qualitative data acquired from the two data sources, and it is divided into two sections. The first section discusses the status of LSE in schools in Bhutan and the second part presents the challenges of implementing it in Bhutan.

Status of LSE in Schools in Bhutan

As reported by DYS (2014), the qualitative findings of this study also confirmed that the middle secondary schools taught life skills either as an independent subject by fulltime counselors or teacher-counselors, or by other teachers through lessons of their teaching subjects. This was evident in their high regards for LSE, and its positive impacts that they have seen on children's academic performances, disciplinary behaviors, adaptation skills, and psychosocial competencies thus corroborating with the findings of Adams (2010) and Muller (2001). Therefore, the teachers implied that the students be continuously taught all ten core life skills (See WHO, 1997) either as an independent subject or through lessons of other subjects such as sciences, mathematics, and history, for example. However, both groups of participants admitted their failure to implement LSE in Bhutanese schools due to some impediments. These challenges are discussed in the following section.

Challenges of Implementing LSE in Schools in Bhutan

Consistent with the findings of Adiambo (2013), and Okech and Role (n.d.), inadequate time for LSE was a widely expressed impediment in Bhutanese schools. This is because teachers in Bhutan are required to do a lot of non-academic works in addition to their academic responsibilities. In other words, as all teachers are mandated to multitasked with extra-curricular responsibilities such as organizing games and sports, cultural, and literary competitions in the schools, they found themselves "overburdened" to teach non-examinable subjects like LSE. Moreover, as LSE was a non-examinable subject, teachers and schools in Bhutan, as was reported by Zhao (2011), also focused more on examinable subjects as students' academic results determined the schools' annual performance rankings. Another reason could be due to the effects of students' academic results on teachers' performance ratings in their Individual Work Plans (IWPs). Such academic-excellence

obsessions however fulfill only what Ministry of Education (2010) and Powdyel (2014) envision as academic dimension (See Powdyel, 2014), not positive behavioral changes (Dorji & Yangzome, 2018) and social connectivity (Adams, 2010; Muller, 2001).

DYS (2014) and Kalanda (2010) reported lack of trained personnel as a hindrance to the implementation of LSE. Similarly, as Adiambo (2013), and Okech and Role (n.d.) reported lack of teacher competency as major impediment to implementing LSE in schools, this study also found implications of teachers' lack of knowledge and competency to either teach or incorporate life skills in their academic lessons. Due to lack of adequate knowledge and incompetency, LSE in Bhutanese schools appears to have remained "under-prioritized at the implementation stage" (Wright & Lee, 2014, p. 203) resulting in failure to successful implementation of LSE. Hence, it calls for the ministry, schools, or agencies concerned to create opportunities for teachers to participate in life-skills workshops at national, district, or school levels if LSE must be implemented successfully.

Lack of or insufficient material resources was another factor that have hindered the implementation LSE in schools. In other words, as stated by Abobo (2012), Adhiambo (2013) and Botvin (n.d.), the participating schools in Bhutan also did not have enough material resources such as flip charts, marker pens, scissors, and reference books, for example. Such material-resource shortage, according to the participants, never offered scopes to frame activities that were learner-centered. Due to this, the participants complained that they could not even teach life skills through their lessons. Therefore, the participants recommended that the schools be staffed with at least two fulltime counselors who would, then, teach life skills as a subject during the scheduled guidance and counseling classes with whatever resource the schools can provide.

Delors (2013) and Wangchuk and Zangmo (2019) emphasize the importance of families and their roles in children's lives as does Powdyel (2014) underline social and cultural greenery in his book titled *My green school: An outline*. However, the finding of this study revealed a lack of parental role in teaching children skills such as self-awareness, empathy, decision making, and interpersonal relationship either at home or during schooling. Instead, parents appear to be more concerned about their children's cognitive abilities (See Gardner, 2011) not realizing that 80% of children's success depends on other factors such as life skills, not intelligence quotient (Goleman, 2013). Therefore, the principals maintained that teachers alone could not do much about LSE. In other words, they wished the ministry to engage parents alongside teachers so that life skills are

simultaneously taught and practiced at both homes and schools. Thus, they suggested that at least educated parents be provided similar LSE training as did the teachers so that all children are ". . . helped to thrive" (Delors, 2013, p. 321) at schools and in societies. Perhaps, if parent-teacher partnership is built, promoted, and strengthened, not only would the children acquire lifelong skills, but also the schools and communities might see fewer juvenile delinquencies and school dropouts (Wangchuk & Zangmo, 2019), for example.

Conclusion

This research investigated the status of LSE and challenges of implementing LSE in schools in Bhutan. Though the schools in Bhutan currently teach life skills, they however specified five main challenges that deterred the successful implementation of it in schools. These are time constrain, teachers' lack of knowledge of life skills, insufficient teaching-learning materials, absence of trained professionals, and lack of school-parent partnership. These findings not only inform the ministry of education the ground realities, but also assist schools receive professional, financial and material supports from relevant agencies that may support schools implement LSE successfully. Similarly, they may also instruct school administrators and teachers to explore alternatives to teaching LSE considering its positive implications on children's personal, social and professional lives.

Limitations and Recommendations

First, as this study recruited participants working in four middle secondary schools in one district, the findings of it can in no way be representative perceptions of teachers teaching in schools across the country. Therefore, the authors suggest future researchers to recruit a representative sample from across the country to better understand the status and challenges of implementing LSE in schools in Bhutan. Second, as this study adopted qualitative research design, a quantitative study employing a survey questionnaire is recommended. Finally, as it involved only four middle secondary schools, inclusion of all school types, that is primary, secondary, middle and higher, covering maximum districts would give better picture of the status of LSE and the challenges that schools or teachers face while implementing it.

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A SURVEY ON READING TRENDS AND READING COMPETENCY OF BHUTANESE CHILDREN IN PRE-PRIMARY LEVEL

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Abstract

Reading is one of the key ingredients to higher education and happier nation. Today the level of education and intelligence is determined by ones aptitude towards reading. Many of the researchers have revealed that it is only through reading that we can bring about improvement in human intelligence, it has the strength to bring positive impact in the areas like; cognitive, socio-emotional and behavioral pattern. Therefore, reading is essentially the vital part of our life. Therefore, schools and colleges have instituted various programs on reading. The school curriculum places a huge emphasizes on children's reading from the first day of schooling but what has been their level of competence in reading, no studies has been conducted as of now in the Bhutanese Education System. This research attempts to bring out the actual competence level of the students in reading from the classes I-III using running records. The study also looks closely at the various factors that contribute towards poor reading competencies of our children in both rural and urban areas. The data and findings will attempt to authenticate the real reading ability of our students in the pre-primary classes (I-III) and backup the same with factors that are responsible for the result.

Introduction

Reading plays a vital role to develop students' language skills which fosters literacy. Bhutanese children, who learn English as a second language and for whom the medium of instruction is English, are very poor in reading. The Curriculum in English for pre-primary to grade three is framed on the basis of the Standards of Learning to suit the level of the child and focuses on the

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skills of reading, and the student performance is measured by the Standards of reading assessments.

At the kindergarten level, students are engaged in a variety of oral language activities, and certain high frequency words and vocabularies for each class level are prescribed. It is made mandatory for the teachers to high frequency words and conduct language activities to help students develop their understanding of language and enhance their ability to communicate effectively. However, there are several reasons that led to reading disability in children. Firstly, the curriculum as a whole is very vast, and so many other aspects of literacy are to be met within the prescribed instructional hours. Therefore, teachers do not have ample of time to employ all the reading strategies while teaching reading and reading skills to the children. Secondly, teachers do not have much access to reference materials, except basic school textbooks. Moreover, teachers barely have the required time to prepare for the class as there is a constant shortage of school-teachers. A teacher of primary schools teaches a minimum of four subjects which is 34 periods of 55 minutes in a week. A teacher in Bhutan works many more hours than the stipulated time duration in the government policy guidelines. This has been recognized as a major drawback in the system. Thirdly, most of the readers of grade one till grade three are not in Bhutanese context. After encountering the curriculum of English I,II and III most of the core group of English subject specialists curriculum developer of classes PP-IV are foreigners from Canada. So, it is obvious that they framed curriculum based on their context. Therefore, children ended up studying texts that dealt with foreign texts and alien concepts. The kind of activities included in the curriculum is not sufficient to promote reading in children. Moreover, optimum reading time were not allocated as required, only a week of reading period is given to mark the reading week in the first week of September which is not sufficient to boost any of the reading process.

Despite the fact that reading is essential to promote language skills, least importance is given in teaching reading in the Bhutanese classroom leading to poor reading trend amongst students finally ending up producing students with low language and communication competency.

1. Literature Review

The research aimed at factors affecting reading ability that influences language skills outcomes in elementary learners. The approach of the research is to identify the technical factors and other factors contributing to reading disability based on existing research. This was supplemented with an in-depth analysis sample data collection from fifteen different schools, and reading from available articles of effective reading strategies.

According to Booker (2013, cited in Hosp& Howell, 2007), reading is not an easy subject for all students, but it turns out to be even harder for those children with reading difficulty. Many students face specific problems when they are having reading difficulties. Students who are able to identify letter sounds and read basic words in kindergarten and first grade are more likely to do better later on. Reading includes many different components and one of those pieces is phonemic awareness. Phonemic awareness is one component that can truly impact a student's ability to read. According to the investigation, many children with learning difficulties have a reduced capacity of processing phonological information. As a result, it is difficult for them learning to relate the alphabet characters with the sounds of speech (Lyon, in Sensenbaugh,

1996). Besides, Tanczikne (2017) in his paper shares the most recent neuroscience findings show that the children needs a systematic phonological and morphological training to become a good reader. Similar view was shared by Sandoval (2014) Phonological awareness is a determining factor for literacy acquisition.

Studies over the past four decades by psychologists have provided important information on children who have reading difficulty and find it hard to distinguish the spoken word into its component sounds and string together the sounds of a word. Lakeshia Darby Dawkins (2017) found that a child who has strong phonemic awareness uses the ability to segment and blend words while reading and this helps children increase their abilities to decode and comprehend reading texts. Fluency comes when a student recognizes more and more words on sight. As they start recognizing more words there will be fewer errors in their reading. If a student is struggling with decoding, or if she does not have good phonological skills, fluency and comprehension will suffer. The more a child is exposed to reading, the more likely the child is to acquire the requisite skills for reading. Children must learn that words on a page have meaning and that reading is done from left to right and from top to bottom.

English classes III, Curriculum Guide For Teachers(2015) clearly states that a child of class three should be able to read wide range of texts; fiction and non- fiction-independently. Moreover, reading strategies and appropriate reading approaches are included in curriculum. However, teachers were not able to follow all the method prescribes since the teaching time is restricted to covering the syllabus for the examinations. Teachers are not able to spend enough time on reading as they have other aspects of literacy curriculum to be taught within the specified time. In the Bhutanese setting alphabets are taught from class PP itself through various examples and phonological skills. The students who have sound alphabetical principle, "*Have and use background knowledge, knowledge of words, and comprehension strategies to obtain meaning from print.*" They also "*Read fluently and effortlessly, except when they come across unfamiliar text, when they consciously use the alphabetic principle and comprehension strategies to make sense of what they are reading*" (Pg. 5).

Very interestingly, our teachers are not able to provide opportunity to the children to read the books of their choices. According to Pressley and Hilden (2002) that teachers encouraged their learners by providing fascinating texts and this in turn permitted them alternatives in reading and writing and helped learners to set real aims for reading. A very few teachers are willing to purchase books for their children nevertheless, the trend seems to rise as the emphasis on reading has been a national priority for the school going children.

Another study conducted in Britain looked at the impact on reading development in children with unemployed mothers and, although there was large variability between families, they found that there is a minor negative correlation for women with low educational qualifications who are unemployed for the child's first year (Verropoulou& Joshi, 2009). Boys and girls with antisocial behaviors at age nine are predicted to have poorer reading literacy at age fifteen (Sheila, 1994) ;(Maguin, Loeber, &LeMahieu, 1993). Additionally, a study that examined ten year olds and then reassessed them a year later found that independent reading performance does not significantly relate to reading achievement a year later, while reading achievement does lead to greater independent reading performance (Harlaar et al., 2011).

Date Interpretation:

1. **Class One**
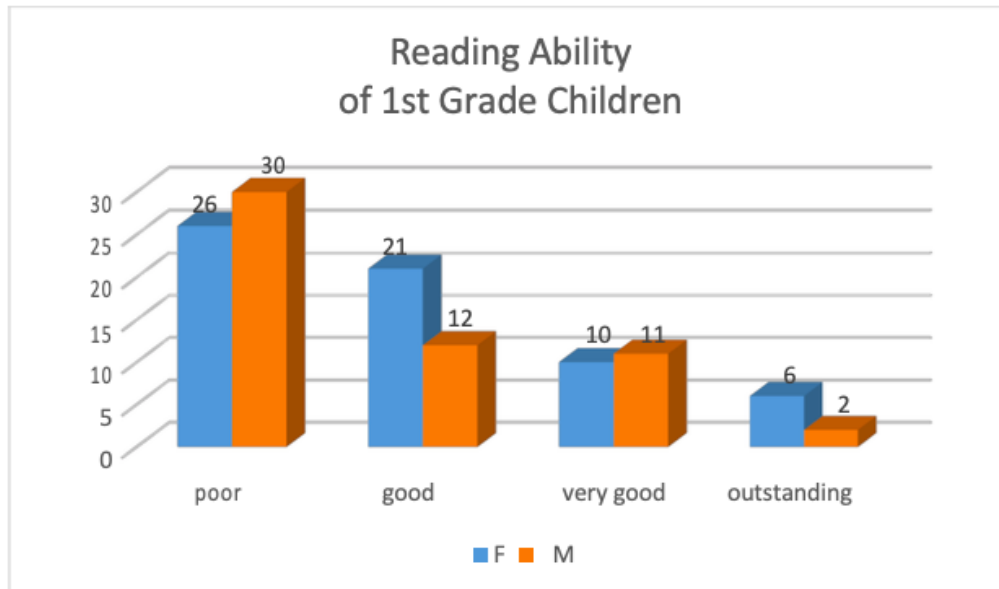
Twelve different school from various areas ranging for the remotest to the schools from the capital city was included in this study. For the purpose of survey and analysis 118 students' reading samples were taken. We can see that 6.7% of the students outstanding readers, 17.7% are very good reader, 27.9% of the students are good reader and 47.4% of the students fall into the category of poor reader. On an average of the reading ability of the class I students is 52.6%. This study reveals that out of 118 students, 56 students are really poor in reading thus, we can conclude that maximum number of students in class I are poor reader.

Besides the data above also reveals that 37 girls and 25 can read the text but on the flip side 30 boys' fall under poor readers' category along with 26 girls. This gives us the view that girls possess slightly better reading abilities than the boys. The reading ability of the class I children is low according to this data as we can see from the children who can read something, most (33) of the fall under the category of good readers not the outstanding or very good reader.

2. Class Two
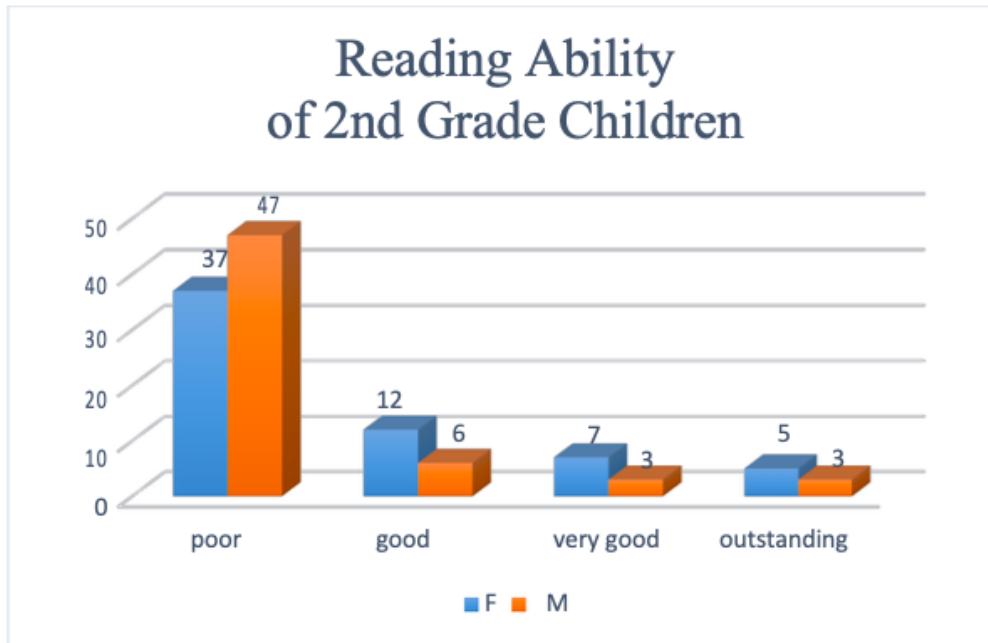
This graph shows the reading ability of the class two students. A total of 120 students from twelve different schools had given the reading test. The graph above shows that 70 % of the students fall in the poor reading category. 36 students (30%) are able to read a given text but the outstanding readers are very less. There are only 8 students (6.6%) who are excellent readers out of 120 samples taken.

In this grade, 20% (24 students) of the girl students can read well. From the male, a total of 12 students (10%) can read well. Poor reader in male out numbers the female. 30.8% of female students and 39.2 % of male students are poor readers. This data says that 70% of our children in class II are not having the required standard of reading ability.

3. Class Three
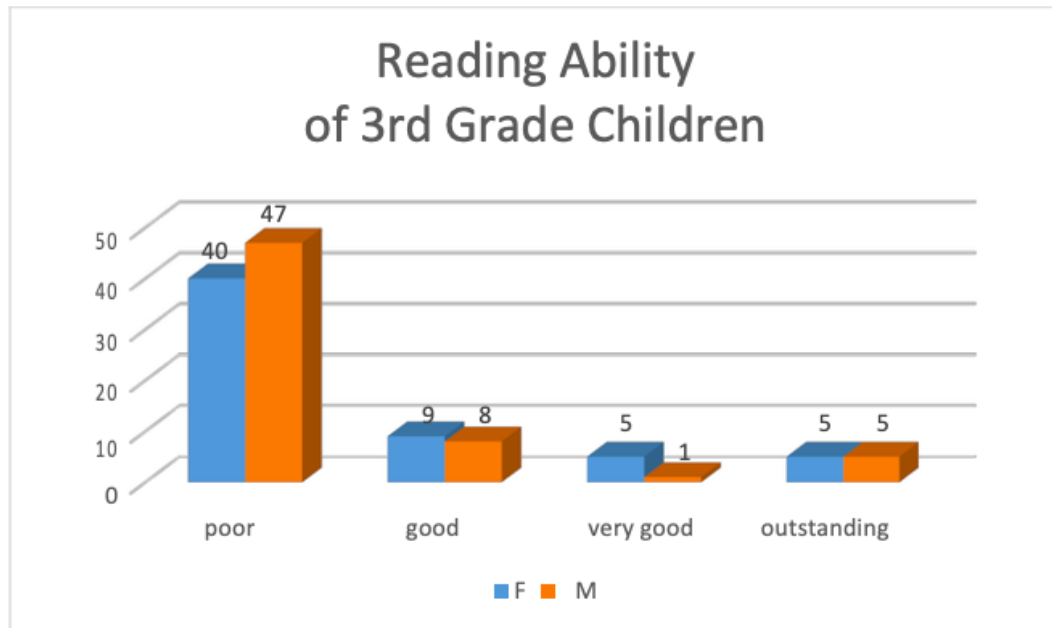
In class three a total of 120 students' reading sample were taken. Out of the total, 10 students were outstanding reader, 6 were very good reader and 17 were good readers. 72.5% (87 students) of the students fall under the category of poor readers.

15.8 % (19 students) of female students can read well and 11.6(14 students) from the male students read well. Comparatively, we can see that there is more number of male children who are losing the race in reading in class III.

Analysis and Interpretations

The data presented by the graph for three different grades reveals a secret long hidden. Many of our parents felt that their children are doing well in reading as they didn't have any strategies to test their kid's reading ability. But this research team has gone a step further to find out the reading ability of our children. It gives us a vivid picture of where our students stand in terms of their reading skills and ability. The data that the team collected represents a wide arena of studies. We have taken samples from two schools in Thimphu (Jigme Losel PS and Zilukha MSS), one school from Paro (Olathang PS), one from Gedu(Gedu HSS), and these are the four schools which represents urban setting. Similarly, the other samples were taken from the remotest schools under Chukha Dzongkhag(Alekha CPS, Kezari CPS, Sinchula PS and Tashilakha PS). Two samples

from semi-urban schools were also taken (Arekha MSS and Darla MSS). The final two from sample schools were the Central Schools;(Kamji C.S and Paktshikha C.S) which can be counted as semi urban places according to the survey record. Variety of data has been taken into consideration for authentic data interpretation. A total of 358 samples were collected. The table below gives us some figures that may be useful to many of our educationalist and parents.

Grade	Standard				Total
	Poor Readers	Good Reader	Very Good Readers	Outstanding Readers	Students Sample
I	56 (47.45%)	23 (19.49%)	21 (17.79%)	8 (6.77%)	118
II	84 (70%)	18 (15%)	10 (8.33%)	8 (6.67%)	120
III	87 (72.5%)	17 (14.16%)	6 (5%)	10 (8.33)	120
Total	227 (63.40%)	58 (16.20%)	37 (10.33%)	26 (7.26%)	358

Reading has been given the highest priority by all the people and the related stakeholders. In our curriculum we have various activities designed to enhance the reading ability of our students nevertheless, the result of the effort seems to be still much below the required standard. According to the running record of the readers, 63.4% of children are poor readers. We may not expect all our students to be outstanding readers but definitely we want to see them become a very good reader. The data above shows that only 10.33% of our students are good readers. The basis of our standard is the running record. The child's individual reading ability seems too less with only 37.6% of the total students. The data above also shows that the students in grade one possess slightly better reading ability in comparison with the other two grades. The students of grade three are really lacking the reading ability with 72.5% of the total students falling under the poor readers' category.

The schools are located at various regions and they have their own stories to share. Teachers and students do not come from the same family background, similarly all the students are not blessed with literate parents, thus upon inquiry to the teachers and students regarding their reading skills and abilities, they shared with us some of the noteworthy facts, which is discussed in details below.

According to the findings from the field, there are four important external factors which are worth considering and discussing it here. Besides, we can also see four main drawbacks in our children which is closely related to competent human resources and efficient curriculum as listed below.

External Factors:

1. Illiterate Parents

2. Long walking distance

3. Family issues

4. No electricity

Specific Flaws

5. Lack of alphabetic principle awareness

6. Lack of phonemic awareness

7. Limited knowledge of vocabulary required

8. Absenteeism of reading culture

The above mentioned factors are drawn from the students and teachers in the formal talk that the research team had in the process of taking the running record of the individual children. These factors are predominant in all the grades across all the three levels as projected below in the form of graph.

External Factors Affecting Children's Reading Ability Grade-I
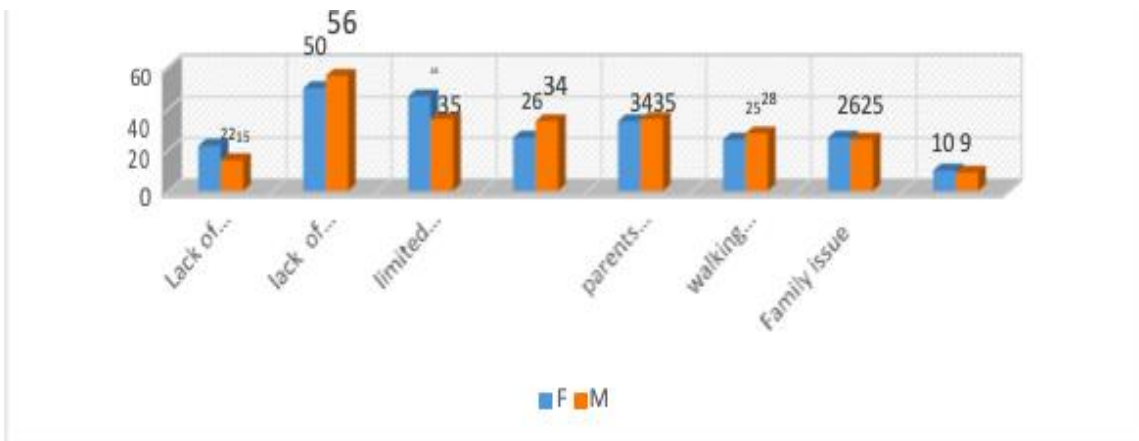
External Factors Hindering Children's Reading Ability Grade-II

External Factors Hindering Children's Reading Ability Grade III
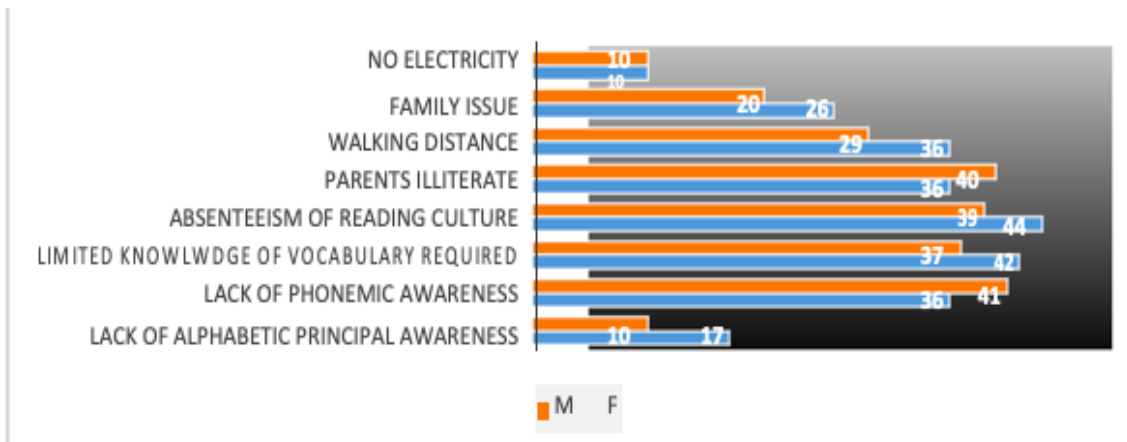
External Factors Hindering Children's Reading Ability
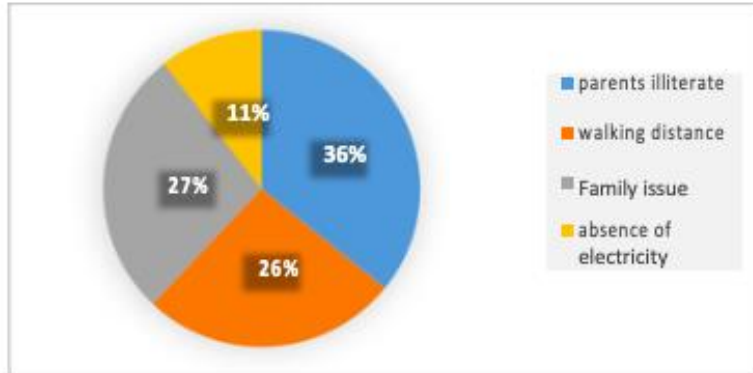
Class: I
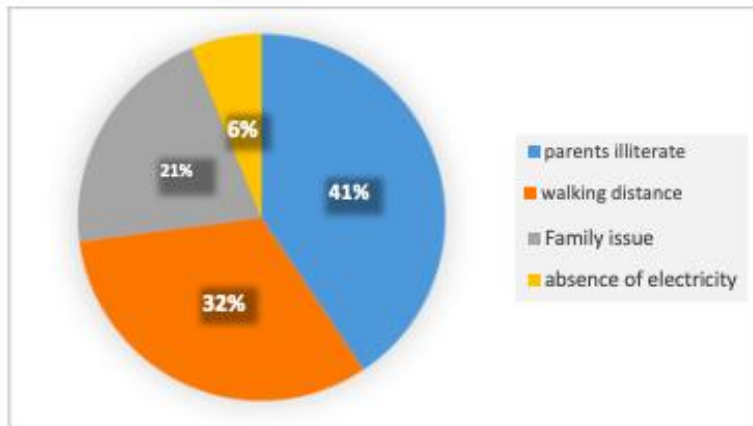
Class : II
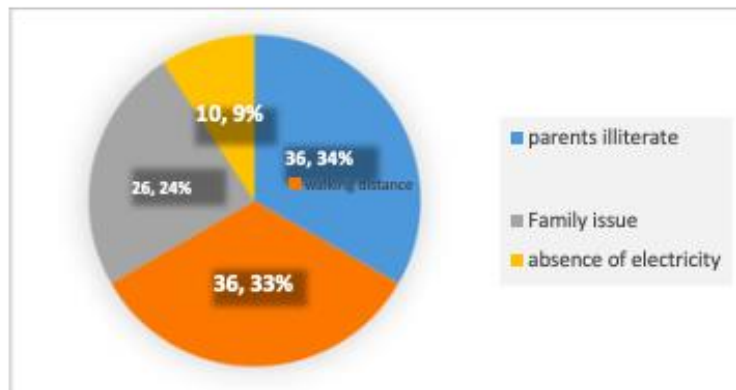
Class: III

1. Illiterate Parents:

Parents, besides teachers have a greater role in educating the children. There are many illiterate parents whose children are enrolled in the school. These parents are not in position to provide help to their children. The teacher may spend around 45-50 minutes in the class with the students which is too less to drill them at individual level therefore, it is the work of the parents to further help them in learning/reading the text. In case of illiterate parents the larger chunk of time is spent by the students in reading and repeating words and phrases in a wrong manner, there won't be anyone to guide them towards the right path. This is one major challenge faced by the students and this is one of the reasons which pulls back the children weakening their reading ability.

### 2. Long Walking Distance:

The children in many parts of our country come to school by walking. A few are fortunate to be near the school but many have to walk a long distance to reach to their schools. This is yet another stumbling block in their way of reading. As the children reach home, it gets dark. The home assignment is given the priority and a child who had covered a walking distance of more than an hour cannot concentrate for a longer time in their studies. The children therefore hardly finish their home assignment after which they go to sleep. They never take reading seriously, writing of home assignment gets bigger priority then reading, and ultimately, reading is left just for the class.

3. Family Issues:

Many of the children smile just in the schools and the environment back home is always gloomy. The societies today have been infested by violence and conflict. Every family has a conflict, may it be big or small the atmosphere at home is not always favorable for the children to do any sort of academic work. The parents are not in a welcoming mood at home. Some families are facing the issues of divorce, some cry with the menace of extramarital affairs, still some families are fighting day and night with the issues of drugs and alcohol and majority of the parents have become the slaves of the social medias. Therefore, very few parents spent productive time with their children. The concern of educating the children and cultivation good reading culture is solely left for the teachers in most of the cases.

4. Absence of electricity:

Though not many, still a few far flung places in the country sides are facing the problem due to lack of power supply to their villages. Children still need to sit under the lamps to do their home assignment and other school tasks. This has posed a great difficulty for the children in practicing reading at home. Many a times children come to school even without completing their home assignment, reading becomes a second or third priority in such situations. How can the teachers ever train the children to read better, as reading needs huge time and rigorous practice.

Specific Flaws:

1. Lack of alphabetic principle awareness:

The children are not aware of the alphabets. Children have difficulty in identifying letters like; b and d, j and y, u and v, w and m, p and q. They are not able to recognize the alphabets in this three class levels. The table below projects the overall picture of the children's ability in recognizing alphabets. Out of 118 samples taken, only 68.64% of students in class I have sound ability in recognizing the alphabets and 77.5% in class III. Reading becomes more tedious and burdensome when they lack the alphabetic principal awareness.

Classes	Number of Boys	Number of Girls	Total Students	% of Students who have good alphabetic principle awareness
I	15	22	37/118	68.64%
II	32	27	59/120	50.83%
III	10	17	27/120	77.5%

2. Lack of phonemic awareness:

The most important aspect of good reading in the children is phonemic awareness. The children across all the levels (I-III) have some serious problem with knowing and recognizing the sound. The children can spell a word but cannot blend the sounds and get the correct pronunciations of the word therefore; they escape most of the words while reading. They are just aware of a few high frequency words that they come across in daily classroom learning. Syllable breaking is another herculean task for the children. Whenever the students come across a longer words in the passage, they spell it but fail to pronounce it as they are not familiar with the sounds of the letters, thus children never try to break the syllabus and pronounce the word, rather they just ignore the word and move on. The students with sound phonemic awareness seem to be very low, only 10.16% in class I, 7.5% in class II and 35.83% in class III as shown in the table below.

Class	Number of Boys	Number of Girls	Total Students	% of Students who have good phonemic awareness
I	56	50	106	10.16%
II	54	57	111	7.5%
III	41	36	77	35.83%

3. Limited knowledge of vocabulary required:

The children today do not necessarily possess the required number of vocabulary, which is specified for various levels by the curriculum guide. The number of children who actually possess the required number of vocabulary is much below the expectation. From the table below, it is obvious that 81 students out of 118 in class - I do not possess the required number of vocabularies. Similarly, 75 children out of 120 in class – II are below the actual standard in terms of acquiring the required number of vocabulary. And in class – III, only 34.16% of the students have minimum required vocabulary level. In such scenario, how can we expect our children to read a text fluently, the minimum required standard throughout the level is not met. According to Dennis (2008) a persons who have enough vocabulary can clarify the meaning or reading passages faster than those who should guess the meaning of unfamiliar words according to the clues of context. The use of high frequency words in the pre-primary level is vital in building up their vocabulary, and it was found during the reading test that the children are not able to read those words which were already taught in their classes as high frequency words.

Class	Number of Boys	Number of Girls	Total Students	% of Students who has the minimum required vocabulary level.
I	35	46	81	31.35%
II	33	42	75	37.5%
III	37	42	79	34.16%

4. Absenteeism of reading culture:

Reading culture is a missing trend today. With the invasion of ICT into the lives of the people in Bhutan, reading culture is in a steep decline. Less the half of the student have practice reading, highest being 49.15 % in class –I. The study also reveals that the class two students have comparatively poor reading culture with just 30.83%. The young learners upon informal talk informed the team that they read, write and do most of the school work in the school itself. This shows that the reading which we expect to be a culture supported by parents and teachers fails miserably, and children keep reading as a task confined within the boundaries of the school. Dennis (2008) states that Readers will lose their concentration in understanding a text when there are noises like televisions or radios. This is very much true according to the second hint that student shared with the team. They said that they have easily accessible entertainment sources like mobile phones, televisions and play stations take most of their time and reading always becomes less important as children reach home thus, emphasis on reading is viewed solely as the teachers' task and parents play a negligible role on the same.

Class	Number of Boys	Number of Girls	Total Students	% of students with reading culture
I	34	26	60	49.15%
II	42	41	83	30.83%
III	37	42	79	34.16%

Conclusion

Reading plays a crucial role in the lives of the people, it plays such a large and vital role in our lives that one can hardly imagine living without it. Reading is also exclusively personal and flexible. In this era of internet and ICT revolution, reading still retains its importance as essential skills for learners of any language. For all, it is the most required skill to master in order to ensure success in self learning and development (Anderson, 2000).

This study aimed at finding out the technical and other factors contributing to reading difficulty. It also looked at some of the reading strategies that could be used with elementary learners to promote reading so that they develop the ability to read different books of their level using various strategies and enjoy reading independently. Once these young learners have mastered reading such reading strategies awareness will enhance reading ability.

We conclude that while teaching reading especially to beginners, it is important to maintain consistency. For instance, a teacher should spend 15 to 20 minutes teaching reading every day before starting the lesson. He(s) should ensure that 100% attendance is maintained while learning reading to have effective reading. Emphasis on the teaching of letters must be replaced by the emphasis on the teaching of letter sounds.

Schools generally spend a lot of time and energy in the pre-primary grades laying the foundation for higher studies but nothing significant seems to be achieved when reading is neglected. A nation which reads a lot is the richest nation that reaches the zenith of all spheres of development. The country and its curriculum made several attempts to enhance the development of reading skills and habits. The move is still on and the ripples have not yet touched the pinnacle, the enthusiasm and energy is still there in the teachers and learners but the strategic focus seems to be lost. Instead of emphasizing phonemic awareness to the children, recognition of alphabets has been stressed. A child can spell a word but can't pronounce it, doesn't it hint at the lack of phonemic awareness? For some children, reading comes easily and they move into whole word recognition smoothly. For others, putting these letters together is very difficult. There are several things which may slow down them from applying what they have been taught. The student simply cannot gain meaning from what is read until the student learns to relate the letters of the words in print to a mental picture of what the words mean.

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Situational Analysis of Global Citizenship Education in the Curricula of Bhutan.

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Abstract

As a part of the Preparing Teachers for Global Citizenship Education (GCED) project in Bhutan, the situational analysis study of GCED in the curricula of Bhutan was carried out. This study intends to identify potential curricula contents which could be taught through GCED lens. It is also to understand the readiness of teaching and learning GCED concepts among teachers and students. The findings of this study will provide a strong basis to prepare teachers for GCED in Bhutan. While similar initiative closely aligned to GCED such as Educating for Gross National Happiness is currently implemented, the GCED intends to complement it through curriculum integration.

Three sources of data were identified: curriculum mapping by curriculum developers and teachers with field experiences, teachers' and students' perspectives on GCED concepts. The study found that substantial curricula contents could be taught through GCED lens. Although teachers and students tend to understand the concept of GCED, there are certain gaps that need to be addressed through integration of GCED into the curriculum.

Introduction

As a pre-requisite for preparing teachers for the Global Citizenship Education (GCED) in Bhutan, the situational analysis that focuses on curricula content and students' perspectives was studied. Its main intention was to analyze the gaps in terms of the prevalence of GCED ideas in the current formal curriculum in the three key stages (classes PP to VIII). A similar initiative closely aligned to GCED, Educating for Gross National Happiness is already being implemented in schools. It promotes holistic, contemplative, eco-sensitive, and culturally responsive educational

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approaches that are to be taught and put into practice (Educating for GNH, p.5). However, 'Educating for GNH' is fundamentally the whole-school approach in Bhutan, and it encompasses practices like green school, mindful meditation, critical thinking, etc. In other words, 'Educating for GNH' is embedded in both formal and informal curricula. Therefore, while Educating for GNH is a whole school approach, the GCED intends to complement it through curriculum integration. However, the curriculum mapping was carried out to identify potential contents that could be taught through GCED ideas.

For this purpose, rigorous curriculum mapping was carried out by the curriculum developers and the teachers with current field experience. A thorough curriculum mapping for eight subjects' contents with GCED core competencies was done to identify the optimal entry points within the formal curriculum. Furthermore, perceptions on GCED among teachers and students of the three key stages were studied. This was done to provide the basis for preparing training manual of GCED for teachers.

Conceptual Framework

This study seeks to understand entry points of GCED across formal curricula in three key stages. Therefore, a rigorous curriculum mapping was done to understand the contents which have potential to integrate GCED. Perspectives of teachers and students of five pilot schools were also studied to understand their readiness to teach and learn concepts through integration of GCED into the curriculum. Fig. 1.1 shows the conceptual framework of situational analysis of GCED integration into curriculum across three key stages in Bhutan. Curricula contents across three key stages were mapped with nine core competencies (Fig. 1.1) under three domains (explained below) of GCED.

Despite varied definitions of GCED, its importance is expressed worldwide today. UNESCO (2015a, b) has continually advocated that education should play a vital role amid the increasingly globalized and interconnected world. This implies the call for peace, wellbeing, prosperity and sustainability through education whereby the younger generation grow up with soft skills, and good attitudes for social transformation. The UNESCO (2015b) has come up with the GCED core competencies. Most of the education systems in different countries interpret:

    i)   Definitions in the cognitive domain of the curriculum documents (in both the aims and/or content) which explicitly refer to global systems, structures and processes to global issues;

ii)   Definitions in the attitudinal (or socio-emotional) domain which explicitly refer to multiple identities, distinguishing their local, national and global levels, and that, in dealing with difference and diversity, refer to their intercultural and international level;

iii)   Definitions in the behavioral domain (that is, participation and actions that can be taken individually or collectively) which include or refer to global issues and contexts.
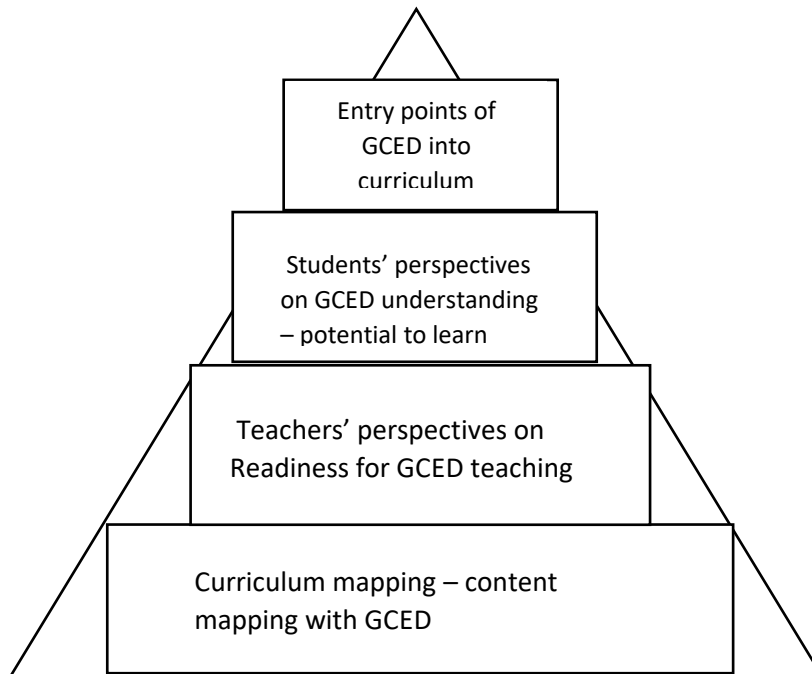
Fig.1.1 Conceptual framework of the study

1= No GCED competency, 2= only Cognitive, 3= only Socio-emotional, 4= Behavioral, 5 = Cognitive & Socio-emotional, 6= Cognitive and Behavioral, 7= Socio-emotional and Behavioral and 8= All domains. Further, each domain has 9 competencies, the code given is 1= empathy, 2=critical thinking/problem solving, 3= communication and collaborate with others, 4 = conflict resolution, 5 = sense and security of identity of self, 6= shared universal values, 7= respect for diversity/inter-cultural understanding, 8= recognition of global issues-inter-connectedness, *9= creative and innovations.

*Table.1.1.9 core competencies of GCED. *Note: 9th core competency was adapted as essential in the Bhutanese context.*

The Study Process

i.   *Curriculum mapping by curriculum developers*

A week-long workshop was spent to carry out a curriculum mapping exercise by the curriculum developers from Royal Education Council (REC), Bhutan. On the first two days, the core GCED project team members presented the concept and the type of language UN agencies use for the Global Citizenship Education today, and discussed the modality to carry out the mapping exercise. This was done to have common understanding of GCED concept and the GCED core competencies before they embark into the curriculum mapping exercise. This was followed by a rigorous curriculum mapping for each subject's content. The curriculum developer found a total of 949 topics from eight subjects, and each topic was mapped with the GCED core competencies under three domains – cognitive, socio-emotional and behavioral. However, the mapping was not intended to find out if the GCED is prevalent in the curriculum. It was rather expected to find out if each subject's topic could be taught through GCED lens. Table 1.2 shows the number of topics taught in each subject currently in three key stages.

		Pre-primary	Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII	Total
	Maths	10	10	10	10	18	18	19	20	22	137
	Science	0	0	0	0	54	59	60	39	37	249
	Dzongkha	6	4	4	4	5	5	6	6	6	46
	English	3	3	3	3	6	6	6	6	6	42
Subject	Social studies	0	0	0	0	24	14	18	0	0	56
	History	0	0	0	0	0	0	0	12	14	26
	Values and citizenship Education	10	10	13	13	19	19	18	17	18	137
	Geography	0	0	0	0	0	0	0	107	149	256
Total		29	27	30	30	126	121	127	207	252	949

Table 1.2 Curricula contents across three key stages

ii.   *Curriculum mapping by teachers*

In order to get the perspectives from the teachers, 15 teachers from five pilot schools, who had good field experiences of teaching in the real classroom situations, were invited to carry out the curriculum mapping. Teachers were taken through the GCED concept followed by intensive curriculum mapping. Teachers were briefed to identify topics from each subject that has a potential to equip learners with GCED competencies. It was hoped that teachers' curriculum mapping would provide fresh insights since curriculum developers from the REC do not have continual field experiences of teaching the curriculum.

iii.   *Perception of Teachers on GCED*

A survey questionnaire was administered to 15 teachers from five pilot schools. The survey was designed to understand their knowledge and attitude on GCED. The data was expected to reveal the acceptance and readiness among teachers to integrate GCED into formal curriculum for three key stages. Further, it was premised that their pedagogical understanding of teaching GCED in the Bhutanese schools, would provide a good basis for preparing the training manual of GCED.

iv.   *Perception of students of three key stages on GCED*

A survey questionnaire was conducted for 193 students studying in the three key stages (class PP to VIII) from five pilot schools in Bhutan. The data from this survey was expected to provide insights on how they could relate educating for GNH with the GCED concept. And also, to understand the gaps that could be addressed through integration of GCED into formal curriculum in Bhutan.

Findings and Discussion

The curriculum mapping analysis for three key stages in Bhutan primarily focused on subject matter mapping with GCED core competencies. Eight different subjects across three key stages were mapped to identify entry points for GCED. There were three subjects for key stage one, five for key stage two, and seven subjects for key stage three. The curriculum developers found that out of 949 topics from eight subjects, a total of 791 topics could be very well integrated with GCED. However, it was found that a total of 158 topics might be difficult to teach through GCED lens. Table 1.2 shows the findings of the analysis of curriculum mapping.

	Overall	
Theme	Topics from eight different subjects	**Percent %**
Not possible to integrate GCED	158	16.6
GCED could be integrated	791	83.4
Total	949	100%

Table 1.3

However, teachers found a total of 986 topics from eight different subjects. They also found that relatively all the topics can be taught through GCED concept. The difference in the number of topics found by curriculum developers and teachers are not very significant. Nevertheless,

teachers seem to break down main topics into different sub-topics. Table 1.4 shows the finding of the curriculum mapping done by the teachers;

Subjects	1.	2.	3.	4.	5.	6.	7.	8.	9.	Total
Dzongkha	13	49	44	20	55	23	14	13	15	246
English	21	27	44	27	23	33	19	29	11	234
Maths	12	23	6	12	15	5	3	10	23	109
Science	4	78	69	42	35	8	46	17	17	316
History	2	1	2	4	12	1	1	3	0	26
Geography	1	0	1	1	3	0	0	7	0	13
Social Studies	0	4	4	0	10	5	4	14	1	42
	53	182	170	106	153	75	87	93	67	986

Table 1.4 Curricula contents identified by teachers

Both the curriculum developers and the teachers found that eight different subjects have sufficient topics that can be aligned with the GCED concepts. Although teachers found all the topics could be taught through the GCED lens, they were not very confident how these could be addressed. On the other hand, curriculum developers tend to agree that certain topics (158) from eight different subjects cannot be aligned with the GCED concept. The differences of opinions indicate two important aspects: first, they lack the pedagogical skills to address the GCED competencies for students, and second, teachers with field experiences and curriculum developers differ in the way they treat the subject topics.

Both the curriculum developers and the teachers found that the progression from key stage one to the next key stages in terms of inculcating GCED ideas is identified as a gap that needed to be addressed. The logical progression is defined within the parameter of the GCED learning outcomes. The analysis of major subjects is given as examples. However, these examples indicate almost similar pattern in all other subjects.

In English subject across the three key stages, most of the topics could address GCED competencies under cognitive domain and relatively less in socio-emotional and behavioral domains. However, for key stage one, most topics address cognitive and socio-emotional domains and very less of behavioral domain. Similarly, Social Studies subject for key stage two, socio-emotional and behavioral domains are less represented by its topics, however slightly better representation is observed in the cognitive domain. In contrast, science subject has majority of its topics representing behavioral domain and relatively lesser topics addressing cognitive and

socio-emotion domains. These subjects need to carefully integrate the GCED core competencies (a) knowledge of existing global trends and shared universal values; (b) promotion of skills needed to exercise ones' civic and political rights actively; and (c) internalization of humanistic values and attitudes (Skirbekk, Potančoková and Stonawsk, 2013), and implementation through the holistic approach, in terms of uniformity.

For instance, if the learners go through a lot of learning experiences in cognitive and socio-emotional domains, but not much in behavioral domain, the GCED is unlikely to fulfil its learning outcomes. These domains are the basis of UNESCO's most recent and developed definition of GCED (UNESCO, 2015) as well as the basis of the evaluative framework for civic and citizenship learning results developed by the IEA in its 1999 and 2009 international studies (Schulz et al., 2008; Schulz et al., 2011).

The recent development of Value Education curriculum across the three key stages shows that most of its topics cover behavioral domain, and very little representation is made for cognitive domain competencies and socio-emotional domain. Moreover, in key stage one, only two topics represent competencies three and five under cognitive domain. In contrast, History subject for key stage three represents mostly the cognitive domain. Geography of Bhutan for key stage three has an uneven coverage of GCED competencies: its topics cover only competencies two and three under cognitive, a few topics represent competencies five and seven under socio-emotional and competency three under behavioral domains. The World Geography subject represents GCED competencies more unevenly. This subject topic strongly represents competency two under cognitive domain, a topic each for competencies five and seven under socio-emotional and only one topic for behavioral domain (competency 9). None of the World Geography subject topics covers the socio-emotional domain for class VII and behavioral domain for class VIII level. However, Dzongkha subject across all three key stages seem to represent GCED competencies better than the other subjects. Most of its topics cover all the GCED domains more or less equally, but it is worthwhile to look at how these representations are related to the purpose of GCED in the real classroom situations.

Teachers' perspectives

Around 15 teachers from five pilot schools for the preparing teachers for GCED project met with the core team of the project from 21st – 23rd January, 2019. The consultative meeting aimed to familiarize teacher participants the GCED concepts, share good practices of GCED, and carry out curriculum mapping from key stage one to three on GCED learning domains and competencies.

Descriptive results indicated that teachers' post-test means were higher than the pre-test means. To statistically prove that the post-test means were higher than the pre-test means, t-tests were conducted. Results indicated that the post-test means for all the statements were statistically significant at $p<0.001$. This indicated that teachers' knowledge and attitudes towards GCED competencies became more favorable as a result of the training exercise and the curriculum mapping. Teachers' acceptance and readiness to integrate GCED into curriculum across three key stages was evident.

Students' perspectives

About 193 participants returned the completed survey. The age range of the participants were as follows: 24.34 % of the sample constituted 10 to 12 year old, 54.50% constituted 13 to 15 year old, 19.05 % were 16 to 18 year old, and 2.12% of the sample were more than 19 years old. The sample was almost equally divided in terms of gender. 50% of the participants were female, 49.48% were male, and 0.52% preferred not to disclose their respective gender. 3.66% of the students were studying in class 4, 16.75% of the students were in class 6, 42.93% were in class VII, and 36.65% were studying in class VIII.

The results of the study are grouped into three thematic areas encompassing the cognitive, socio-emotional, and behavioral domains. The descriptive results are as follows.

Table 1.5 Descriptive results for the cognitive domain

		I follow the news to understand about the world around me	I enjoy learning about different cultures	I discuss global issues together with my classmates in small groups during class	I think of myself as citizen of the world
N	Valid	193	193	193	190
	Missing	0	0	0	3
Mean		3.65	4.15	3.52	4.34
Std. Deviation		.946	1.150	1.095	.911
Skewness		-.710	-1.492	-.299	-1.582
Kurtosis		.295	1.511	-.744	2.383
Unfavourable %		12.4	9.8	19.7	5.7
Neutral %		22.8	9.8	26.9	7.8
Favourable %		64.8	80.3	53.4	85

Descriptive results for the cognitive domain of GCED competencies suggest that students' scores are not normally distributed as indicated by the negative skewness values. All four statements in the cognitive domain have negative skewness value, indicating that the scores are clustered more towards strongly disagree, disagree, and neutral. However, the means of all four statements are greater than three, indicating a favorable conceptions regarding the CGED competencies in the cognitive domain. This indicates that the students' who ranked their scores in the positive manner mostly chose strongly agree.

A concern within the cognitive domain of GCED competencies is about the statement (I discuss global issues together with my classmates in small groups during class). This statement has the least mean (M=3.52; SD =1.095) among all the statements. Although the percentage in favour of the statement in 53.4 %, the concern is the cumulative percentage of the unfavourable and the neutral participants. A standard deviation of 1.095 also indicates that students' scores are disbursed mostly in strongly disagree and strongly agree.

Table 1.6: Descriptive results for socio-emotional domain								
	N	Mean	Std. Dev	Skew	Kurt	Favour-able %	Neut-ral %	Unfavo-urable %
I try to understand the reasons of social problems in the news	193	3.69	1.068	-.712	.056	13	23.8	63.2
When I see the poor conditions that some people in the world live under, I feel a responsibility to do something about it	192	4.12	1.074	-1.344	1.368	8.3	13	78.2
I think my behaviour can impact people in other countries	193	2.99	1.177	-.077	-.727	31.6	35.2	33.2
It is important for students to learn that people from other cultures can have different values	192	4.16	1.112	-1.387	1.215	9.8	10.9	78.8
Respecting other culture is something that students should learn as early as possible	193	3.91	1.151	-.955	.136	13	16.6	70.5
I think everyone should be treated equally regardless of races, caste, creed, religion and nationality	193	4.02	1.113	-1.140	.642	10.9	14	75.1
Before criticizing somebody, I try to imagine how I would feel if I were that person	192	3.86	1.070	-.739	.608	9.8	20.7	68.4
I can change my behaviour as per the new situations	193	3.92	.952	-.906	.824	7.3	19.7	73.1
When facing difficult situations with other people, I can think of a way to resolve the situation	192	3.89	.864	-.720	.555	6.7	19.7	73.1

Descriptive results in the socio-emotional domain indicate a fairly positive conceptions regarding the construct. Students appear to think that it is important to learn, respect, and interact with people from different cultures. Also, students appear to be empathizing with others, as well as resolving conflicts. However, data suggest an interesting case. The data suggests that students feel the urge to do something when they come across people living in poor conditions (M= 4.12; SD = 1.074). This may be due to empathy for the others living in destitute conditions and not because of their sense of responsibility to the global community *per se.* Students' scores indicate that they do not think that their behavior can impact the people in other countries (M= 2.99; SD= 1.177). Further, the percentage of responses in the unfavorable (31.6%) and favorable category (33.2%) is almost equal.

Table 1.7 Descriptive results for Behavioral domain

	N	Mean	St. Dev	Skew	Kurt	Favourable %	Neutral %	Favourable %
I can do something about the problems of the world	193	3.54	1.065	-0.612	0.059	13.5	31.1	55.4
Looking after the global environment by doing something good at the local level is important to me	193	4.29	0.865	-1.526	2.973	3.6	9.8	86.5
I learn how to solve conflicts with other people in our classrooms	193	4.19	0.941	-1.455	2.248	6.7	8.3	85.0
I participate in classroom discussions about world events as part of the regular instructions	193	3.64	1.027	-0.681	-0.11	15	21.2	63.8
I learn how to communicate with people from different backgrounds	193	3.61	1.089	-0.717	0.068	14	25.4	60.6
I respect people from other culture as equal human beings	193	4.03	0.951	-1.162	1.547	6.3	15.5	78.2
I treat all people with respect regardless of their cultural background	192	3.86	0.919	-0.494	-0.158	6.7	26.4	66.3
I reduce the energy I use at home (e.g. by turning the heating or air conditioning down by turning off the lights when leaving room) to protect the environment	192	4.05	1.042	-1.114	0.864	7.7	17.1	74.6
I participate in activities that promote equality between men and women	193	3.9	0.982	-1.001	1.029	7.7	19.2	73.1
In our school, we celebrate festivities from other cultures.	190	3.14	1.273	-0.244	-0.997	31.1	23.3	44.0
I am capable of overcoming my difficulties in interacting with people of other countries.	192	3.19	1.105	-0.308	-0.449	23.3	35.8	40.4

The means of all the statements in the behavioral domain indicate a positive trend since all are greater than three. However, as indicated in the socio-emotional domain, there are reasons educators and policy makers have to be concerned regarding students' perceptions of being a global citizen. Within the behavioral domain as well, students' attitudes towards doing something about the problems of the world (M= 3.52; SD=1.065) appear to be unconsolidated. The favorable percentage of the sample is 55.4%, barely one-half of the total student surveyed.

Similarly, some of the pilot schools do not appear to be celebrating festivities from other cultures (M = 3.14; SD = 1.273). The high standard deviation indicate that the scores are mostly clustered around strongly disagree and strongly agree, indicating a divide among the participants. However, the most critical aspect appears to be the percentage of students surveyed. 44% of the participants are in favor, while 33.1% responded unfavorably.

Although, students reported that they learn how to communicate with people from other backgrounds (M = 3.61; SD = 1.089), only 40.4% of the student participants reported being capable of overcoming communication difficulties when interacting with people from other countries (M = 3.19; SD = 1.105). This may be because almost all the pilot schools are in remote locations, where they hardly have any opportunity to interact with native English speakers.

Conclusion and Recommendation

There is scope to integrate GCED into formal curriculum across three key stages. However, inconsistencies in addressing them for most of the subjects is evident. For instance, logical progression of learning GCED needs to carefully studied before it is implemented. Three sources of data, i.e. curriculum mapping, teachers' perspectives and students' understanding and readiness to learn GCED provide a strong basis to implement GCED in the Bhutanese schools. However, the GCED integration into curriculum across three key stages in Bhutan should be viewed as a complementary to Educating for GNH, and other similar programmes in the schools. Therefore, following recommendations are drawn from the findings:

1. Although, there are some discrepancies in the mapping results of the curriculum developers and the teachers, both groups of participants agree that there are potential topics from eight different subject that could be taught and build GCED competencies among students. Hence, a pedagogical training on incorporating GCED competencies in teachers' teaching and learning process is recommended.

2. A training manual 'Preparing Teachers for GCED' could be prepared and validated by the GCED experts for implementation in Bhutanese schools.

3. All subjects' content related to GCED may be characterized in terms of learning dimensions – knowledge, skills and attitudes/behavior. Then learning objectives/ outcomes that are GCED focused (refer to sample table 1.1) should be framed.

4. The UNESCO's definition of GCED domains could be contextualized to the Bhutanese education system. There must be a clear agreement on what domains and competencies must be focused in each key stage. This will enable smooth transition from one key stage to next in terms of GCED focused learning experience. The following table shows the sample:

Table 1.8 Sample framework

Subject/	Topics / content	Key stage	Objectives	Domain /competencies covered	Pedagogical implication
English	Community around us and beyond	Stage I	how the family system is organized at home	Cognitive domain; (1, 2 and 3 competencies)	Chosen as per the context of the content
		Stage II	How the local community is organized	Cognitive and Socio-emotional domains (1, 2 and 3 competencies)	Chosen as per the context of the content
		Stage III	How the local community organization is related to wider world	Cognitive, socio-emotional and behavioural (1, 2 and 3 competencies)	Chosen as per the context of the content
Similar approaches for other subjects could be worked out for implementation					

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