Institute
for GNH Studies
iGNHaS

Edited by

Phanchung, S Chitra,
Tshering Choden,
Tshering Om Tamang and
Pema Choezom

ISBN 978-99980-947-0-3

Royal University of Bhutan

REACHING NEW HEIGHTS THROUGH POLICY RESEARCH AND PRACTICE

November 2020

Published by

Institute of Gross National Happiness Studies (iGNHaS)
Department of Research and External Relations
Office of the Vice Chancellor
Royal University of Bhutan
Lower Motithang: Thimphu

The Institute for GNH Studies (iGNHaS) is an institution to serve as a leading forum for debate and deliberations on public policies and development issues in Bhutan in order to enhance the quality of life of the Bhutanese people. iGNHaS engage in research, policy debates and advocacies, publications, conferences, and seminars.

Layout, Design and Production

Norbu Gyeltshen, Department of Research and External Relations, Royal University of Bhutan, Thimphu.

ISBN: 978-99980-947-0-3

Institute
for GNH Studies
iGNHaS

REACHING NEW HEIGHTS THROUGH POLICY RESEARCH AND PRACTICE

Edited by

Phanchung, S Chitra, Tshering Choden,
Tshering Om Tamang and Pema Choezom

November 2020

Citation suggested

Chapter 2:

Yangdon, Karma Utha, Choeda, Sonam Daker and Chenga Dorji (2020). Implications of Promoting Class X Student to Class XI Without a Cut-off Point in Bhutanese Schools: Stakeholders' Perspectives. *In:* Phanchung, S Chitra, Tshering Choden, Tshering Om Tamang and Pema Choezom. *ed. Reaching New Heights Through Policy Research and Practice*, Thimphu, iGHNaS.

Chapter 3:

Tshewang Lhendup, Roshan Chhetri, Cheku Dorji and Namgay Tenzin (2020). Evaluation of In-situ Thermal Performance of School Buildings in Cold Climate of Bhutan and Possible Intervention to Improve Thermal Performance. *In:* Phanchung, S Chitra, Tshering Choden, Tshering Om Tamang and Pema Choezom. *ed*. *Reaching New Heights Through Policy Research and Practice*, Thimphu, iGHNaS.

Chapter 4:

Tshering Lhamo, Kinley Yangdon, Kinley Wangchuk and Thinley Choden (2020). The Impact of Knowledge Management on Organizational Performance: A Case of RUB Colleges. *In*: Phanchung, S Chitra, Tshering Choden, Tshering Om Tamang and Pema Choezom. *ed*. *Reaching New Heights Through Policy Research and Practice*, Thimphu, iGHNaS.

Chapter 5:

Karma Jigyel, Gembo Tshering, Pema Dendhup and Thinley Phuntsho (2020). Investigating Student Teachers', Mentor Teachers' and Supervising Lecturers' Perception of School Practicum Feedback in Bhutan. *In*: Phanchung, S Chitra, Tshering Choden, Tshering Om Tamang and Pema Choezom. *ed*. *Reaching New Heights Through Policy Research and Practice*, Thimphu, iGHNaS.

Courtesy: https://www.hellomagazine.com/royalty/201110086306/king-of-bhutan-too-popular-for-reform-plans/

This book is dedicated to the Great Fourth Druk Gyalpo Jigme Singye Wangchuck, an exemplary monarch and a visionary statesman. During his 34 years reign, through his unwavering commitment to the welfare of the nation and its people, monarchy acquired a new meaning, and our nation progressed towards the modern era with a judicious balance between traditions and modernity.

Being a champion of the philosophy of Gross National Happiness, his selfless service in the interest of the country, emphasized development with values for holistic growth of the nation and its citizens in all spheres. In order to fulfill this vision, the field of education, regarded to be a great social equalizer was given prime importance resulting in significant advancement in the socio-economy of the country.

It is to this revered personality of a sensitive mind and modern outlook that Bhutan will forever remain indebted to, for it was his dream to make education the cornerstone of socio-economic development. This book is a minuscule example of the realizations of His Majesty's vision: An educated populace contributing to knowledge building and creating a knowledge-based society.

This academic achievement is a fruition of His Majesty's grand vision, and we thank you, Your Majesty The Great Fourth, for your inspirational leadership and wisdom!

Acknowledgement

The Royal University of Bhutan (RUB) in order to create an enabling research environment in Bhutan, submitted an operational modality for National Research Fund (NRF) to the Gross National Happiness Commission (GNHC) in October 2016. The 119th *Lhengye Zhungtshog* approved an Interim Secretariat for NRF under RUB until an independent national coordinating agency like the National Council for Research and Innovation is established as enshrined in the Tertiary Education Policy of the Kingdom of Bhutan 2010. RUB would like to acknowledge GNHC for pursuing with the Government. However, while endorsing the Governing Board and Interim Secretariat for NRF, the Government has also observed that the scope of Endowment Fund Guidelines operation was limited and had therefore advised the Ministry of Finance (MoF) to review, revise, and re-submit for *Lhengye Zhungtshog*'s consideration.

Until the Endowment Fund Guidelines was revised by the MoF, the Research Endowment Fund (REF) announced by the Second Parliamentary Government of Bhutan during the Fifth Session could not materialize since the dedicated REF was not released to the Interim Secretariat.

As the 2nd Parliamentary Government was ending its tenure in mid-2018, RUB once again pursued with MoF which finally ensured operationalization of Interim NRF Secretariat. RUB would like to extend our deep appreciation to the 2nd Parliamentary Government for initiating the endowment fund for research and MoF for releasing the dedicated fund to the Interim NRF Secretariat. However, the operational guidelines of the endowment fund required to develop REF specific operational guidelines that took a setback to utilize the fund immediately.

It may be mentioned here that as per the original proposal to the Government, endowment fund is one source to support research in Bhutan. Through the Royal Charter, RUB is authorized is mobilize grants for its financial sustainability. Having invested a year in developing the operational guidelines with a separate agency based Governing Board for management and grant application guidelines for endowment fund, the University initiated to invite grant applications within the colleges and approved to support four projects that were of topical issues.

In this booklet, we are pleased to publish four study reports sponsored by the research endowment fund. The Secretariat of REF would like to acknowledge the

four grant awardees in completing the field studies on time and submitting the report to the Secretariat.

We wish all readers a fruitful reading and hope that all study reports will contribute to new knowledge and assist in framing evidence-based policies and regulations, as and when required.

REF Secretariat
C/o Department of Research and External Relations
Office of the Vice Chancellor
Royal University of Bhutan

Table of Contents

Tables

Figures

CHAPTER 1

INTRODUCTION TO POLICY RESEARCH AND PRACTICE

Chapter 1

Introduction to Policy Research and Practice

Researcher often like to do only disciplinary or to some extent, interdisciplinary investigations. In recent years, there is an increasing visibility of transdisciplinarity as a whole and transdisciplinary inquiry method is gaining recognition for a sustainable world since the scope of disciplinary worldviews are found narrow and limited in scope.

In this book, although all studies were approached from discipline specific view, the focus of the book is pinned to the educational policy and practice. The book approaches the government's decision to change the four decades' of student progression to higher secondary level from a policy review perspective and then deals feasibility of thermal infrastructure development of school building in cold places with policy intervention.

Since the University is keen to generate new information through systematic investigations, the book then describes the importance of knowledge management in the higher education. Finally, the book chapter deals with the feedback of multi-stakeholders and their perception toward the development of a good teacher with sound pedagogical and professional skills practice in the field. This is one typical example of transdisciplinary research work ranging from policy to field implementation with the best management practices. Hence, on these grounds, the book's title "**Reaching New Heights Through Policy Research and Practice**" is suggestive and suitable drawing inspiration from the University goal.

In Chapter 2, the study highlights that the removal of the cut-off point provided an opportunity to complete BCSE examination, reduced school dropouts and youth unemployment, and decreased financial liability to disadvantaged students. However, study revealed complacency of students, teachers' increased workload due to increased class size and sections, overcrowding of classrooms and hostels, inadequate textbooks, compromising student wellbeing and welfare, non-sustainability due to huge financial liability, concern of private schools' sustainability, and limited job opportunity to class XII as some of the pertinent issues inherent in the removal of cut-off. The study recommends series of policy reviews to honor the new initiative of the government. Some of the suggestions are to review and fix cut-off range, assessment of learning resources and facilities, scholarship to students,

reliability of continuous assessment marking practices, sustainability and, strategic plan for new initiatives.

Chapter 3 deals with the thermal performance of the school buildings in cold places since the poor quality of school buildings are directly impacting the performance of the students learning. The study has concluded that there are potential ways of reducing infiltration rate as much as 50% corresponding to almost 50% reduction in heat energy demand by sealing the building element gaps. Further the study has also observed that by adding polystyrene on the ceiling, 25% reduction of heat energy demand can be met. Such study findings need interventions in adapting building design to minimize infiltration rate by using alternative building materials and retrofitting for maximizing heat energy conservation. However, this experiment-based finding recommends long-term retrofitting study since the data were limited to one-month observations only. The study also places the need to conduct experiment during summer months as the current evaluation of thermal performance was done in winter period. Further, there is a need of control room for energy efficiency study to analyze the cost benefit analysis of retrofitting and building element gaps sealing.

The Chapter 4 investigated the current practices of knowledge management amongst the colleges under Royal University of Bhutan and assessed its impact on the organizational performance. The study indicates that the University is mostly practicing explicit method of knowledge management. The study noted that there is more prevalence of knowledge storage, knowledge transfer and better attitude towards knowledge management. However, the study revealed that there are no policies for motivation and opportunities to share within the university. The study clearly indicated that explicit-oriented knowledge management and knowledge transfer have significant impact on organization performance. Yet, it requires the participation of all stakeholders on board in terms of finance, trust and confidence.

Finally, in Chapter 5, the study suggests that teaching practicum unit in educational institution receive feedback in both verbal and written forms from their mentor teachers and supervising lecturers which is a positive indication of nurturing quality teacher graduates. However, the study concludes that the training of mentor teachers and supervising lecturers on how to supervise, effectively communicate and give feedback to student teachers in post lesson conferences is required before placing teacher graduates to the schools.

This book follows a journal article structure and is expected to demystify the perceptions of many readers as it is tackled through disciplinary studies in improving the quality of higher education in Bhutan supported by the Research Endowment Fund.

This calls for reconsideration on the part of government in investing the dedicated fund for research and innovation in Bhutan to the existing interim Secretariat of National Research Fund. Such decision to support research and development either through annual budget or endowment grants by the democratic parliamentary government in Bhutan will build a knowledge-based society with educated human capital resource in all sectors for rapid development in Bhutan.

CHAPTER 2

IMPLICATIONS OF PROMOTING CLASS X STUDENT TO CLASS XI WITHOUT A CUT-OFF POINT IN BHUTANESE SCHOOLS: STAKEHOLDERS' PERSPECTIVES

Yangdon, Karma Utha, Choeda, Sonam Daker
and Chenga Dorji

Chapter 2

Implications of Promoting Class X Student to Class XI Without a Cut-off Point in Bhutanese Schools: Stakeholders' Perspectives

Abstract

The incumbent government of Bhutan, *Druk Nyamrup Tshogpa* waived the previous cut-off point of academic achievement and promoted all Class X students who have secured 35% and above to Class XI starting the 2019 academic session. Concerns regarding the implications of this initiative were raised by different stakeholders. A study on the perceptions of this initiative was carried out. A mixed method, sequential explanatory design was adopted for the study. Quantitative data were gathered from 5904 participants and the qualitative data from 121 participants. Participants included school principals, teachers, parents, students, and officials from the Ministry of Education (MoE) and the Bhutan Council for School Examinations and Assessment (BCSEA). A thematic analysis following descriptive statistical analysis was used for the quantitative data and the qualitative data were analyzed along the same themes. Findings revealed that the removal of the cut-off point provided an opportunity for all Class X pass students to continue their education resulting in reduced school dropouts and youth unemployment. However, the study revealed that students have become complacent in their studies owing to this initiative. The study also highlighted the negative impact of the initiative on assessment, resources and facilities. The financial sustainability of the initiative was a concern that emerged from the study. Some of the recommendations from the study include revising the cut-off point to promote students to Class XI and only providing financial support to the economically disadvantaged students.

Introduction

In the Bhutanese education system, a cut-off point for the selection of students' progression to higher secondary education has been in practice since the late 1970s and the early 1980s. During that time, board examinations took place at Classes V (later at Class VI in the early 1980s), VIII and X. In the early stage of education, there were no continuous assessments and students progressed to the next level based on their performance in the year-end examination and board examination.

The board examination in Class X (with a certain cut-off point declared every year) served as a screening benchmark for students to progress to Class XI since all students could not be accommodated in higher secondary schools. The practice of the cut-off point allowed only students with a certain level of academic attainments to progress to higher level of schooling.

In contradiction to the practice of screening students' progression from Class X to Class XI based on a cut-off point, the incumbent government, *Druk Nyamrup Tshogpa* (DNT), took a landmark decision to waive the cut-off point starting 2019 academic year enabling all Class X pass students to progress to higher secondary education. The Education Minister contended, "… more than 50% of students who pass Class X leave school due to limited support from the state" (Palden, 2018, para.15). It was further asserted that Class X graduates are far too young (in the ages of 15 and 16) to look for employment from social or legal points of view. The decision to discontinue with the cut-off point from 2019 academic year onwards is a major change in the education system of Bhutan. With this initiative, all BCSE graduates of 2018 who had achieved 59.4% and above became eligible for enrolment in government higher secondary schools and students who had scored 35% or less than 59.4% were eligible for enrolment in private schools with a lump-sum government scholarship of Ngultrum 30,000 for day students and Ngultrum 50,000 for boarding students (Rinzin, 2019).

Fullan (2007) contends that any educational change is technically simple but can be socially quite complex because of the "difficulties related to planning and coordinating a multilevel social process involving thousands of people" (p.84). He further adds that for successful accomplishment of the change, all people involved in the change should see "themselves as shareholders with a stake in the success of the system as a whole" (p.303). The aforementioned statements emphasize a need to understand the dynamics of educational change as a "sociopolitical process involving all kinds of individual, classroom, school, local, regional, and national factors at work in interactive ways" (p.9). This implies a requirement for proper planning in initiating any policy change. However, the decision to waive the cut-off point was carried out without any empirical research evidence. Further, the way the change was implemented invited criticism from different corners including private school proprietors (Rinzin, 2019).

Although the removal of the cut-off point for students' progression from Class X to Class XI had been officially announced and the change implemented in the

school system with effect from 2019 academic year, it is still deemed desirable and important to investigate the perspectives of multiple stakeholders such as students, parents, teachers, principals and educationists including planners and policymakers to gather an in-depth understanding of this initiative. Such a study could contribute to research informed educational reforms and policy development.

This is the first study on the perspectives of Bhutanese towards the practice of promoting Class X pass students to Class XI without a cut-off point. The study may make theoretical contribution to the body of knowledge on the topic. The findings from the study may provide insights into the implications of the removal of cut-off point. The findings may also provide a background or baseline data for further studies on the topic. All in all, the findings of this study are anticipated to provide an empirical base for policy advice concerning the removal of the cut-off point to the Ministry of Education and other relevant stakeholders.

Methodology

A mixed method design was adopted for the study. A mixed method research involves the collection of both quantitative and qualitative data, and has gained popularity because the isolated use of either qualitative or quantitative approach fails to adequately address complex problems (Creswell, 2018). Of the different types of mixed methods, a sequential explanatory design was adopted for the study. The characteristic of sequential explanatory design is that the collection and analysis of quantitative data is followed by the collection and analysis of qualitative data (Creswell, 2018). An advantage of this design consists lies in its two-phase structure and the link to emergent approaches, where the second phase can be designed as an outcome of the first phase (Creswell & Clark, 2011).

The sequential explanatory design employed in the present study consist of two distinct phases: quantitative followed by qualitative. Quantitative data were collected and analyzed followed by the collection and analysis of qualitative data. Analysis of the qualitative data was followed by a discussion of the findings from both quantitative and qualitative data analysis. The first phase quantitative results guided the selection of the sample and interview questions for the second phase qualitative investigation. Quantitative data were gathered using a survey questionnaire and qualitative data were collected through semi-structured interview, focus group interview and descriptive qualitative responses (participants wrote answers to the interview questions). Both quantitative and qualitative methods used for this study are described in the following sections.

Survey Instrument

The aim of the survey was to gather objective data on the respondents' perceptions and opinions, concerning the removal of the cut-off point for Class X students. A survey was chosen as it is a useful data collection tool that is capable of collecting a substantial amount of quantifiable data for a number of variables at a given time (Neuman, 2003; Punch, 2001). The survey instrument for each stakeholder consisted of demographic information, Likert-type items and an open-ended question. The items of the survey were expressed on a six-point Likert-type scale with the categories labelled left to right as Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, and Strongly Agree. Some of the items in the survey questionnaire were relevant only for certain groups of participants. This was indicated by a blank space in the quantitative data analysis table. To validate the questions, a pilot test was conducted. The printed survey questionnaires were sent to the participants by post and received by the same mode. The principal in each school helped conduct the survey. Before administering the survey, consent was sought from all participants and confidentiality and anonymity were assured.

Prior to the development of the survey questionnaire, literatures available on the removal of the cut-off point were studied. Informal discussions with teacher educators, private school proprietor, education officials and parents were also conducted. Based on the information gathered, survey questions were designed and categorized into the following themes: Opportunity, Teaching and Learning, Assessment, Resources and Facilities, Management, Narrowing the Gap and Sustainability.

Interview

Semi-structured interviews were conducted with the principals, parents, and MoE and BCSEA officials. The use of semi-structured interview offered "sufficient flexibility to approach the respondents differently while still attending to the same areas of data collection" (Noor, 2008, p. 1604). Additionally, the semi-structured interviews allowed the interviewee to develop ideas and cover a wider range of issues (Denscombe, 2010). The use of semi-structured interviews also offered the flexibility to use pre-set questions as well as ask questions that arose from the conversation. Spontaneous replies were also generated by posing clarifying questions, which helped in eliciting both planned and unplanned responses that aided in gathering richer and more informative data. The use of semi-structured interviews, therefore, allowed for in-depth exploration of the research question.

Focus group discussions were conducted with the students, teachers and MoE officials. The focus group interviews helped elicit a comprehensive and detailed information about the participants' perceptions, thoughts and feelings on the removal of the cut-off point. Moreover, the technique aided in ascertaining not only what the participants thought but also why they thought the way they did about the removal of the cut-off point (Barbour, 2008). The interaction and the group processes assisted the group members in exploring and clarifying their points of views which "tends to be less accessible in an individual interview" (Liamputtong, 2013, p.75). Descriptive qualitative responses were gathered from Principals, teachers and students. This method of data collection enabled the collection of more carefully crafted data as the interviewees had the opportunity to reflect and edit their responses.

Prior to semi-structured interviews, focus group discussions and descriptive qualitative responses, consent was sought from all participants. Consent was also sought to audio record the interviews. The audio recording helped to "secure an accurate account of the conversations and avoid losing data since not everything can be written down during an interview" (Noor, 2008, p. 1604). The recording also helped in generating a verbatim transcript of the interview and eliminating bias. The participants were ensured that confidentiality and anonymity will be maintained. The interview questions were framed following the analysis of the quantitative data to get deeper insights into each theme of the survey. There were few common questions for all groups of participants, however, some questions were specific to each group of participants.

Sampling

The survey and interview participants (Principals, teachers and students) were from middle and higher schools across different regions of the country to ensure a good representation. The schools included both government and private, spread across urban and semi-urban locations, as identified in the 2015 Annual Education Statistics of Bhutan (MoE, 2015).

In addition, there were parents, MoE officials and BCSEA officials who participated in this research study. A total of 5904 participants responded to the survey and 121 interviewees participated in the interviews. Purposeful sampling was used for both the survey and the interviews. This sampling strategy helped identify and select participants who provided insights into the study. The details of the survey participants are provided in Figure 1 and the interview participants in Table 1.

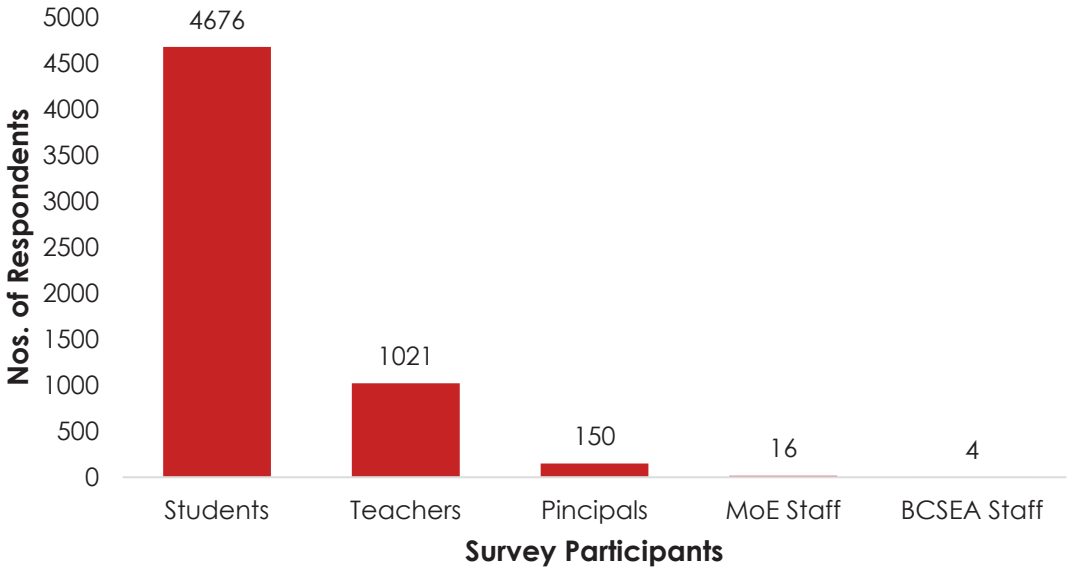


Figure 1. Details of Survey Participants

Note. Student participants were from Classes IX, X, XI and XII. 48.8% of the participants were from Class X and the rest were from Classes IX (14.7%), XI (25.9%) and XII (10.2%). The remaining 0.3 % accounts for the missing values.

Table 1. Profile of Participants for Interviews

Number of Focus Group Discussion			Individual Interviews				Descriptive Qualitative Response		
S	T	M	PR	PA	M	B	T	PR	S
18	9	1	12	38	2	1	12	3	24

[S=Students; T=Teachers; M= Ministry of Education and REC; PR= Principals; PA= Parents; B = BCSEA]

For each of the 12 schools, two students' focus group interviews (one each for Class X and Class XI) were conducted. For the descriptive qualitative responses, participants included 4 individual teachers, one principal and 8 students from the three schools. The participants for the teacher focus group interviews and the descriptive qualitative responses were teachers handling Class X. Similarly, the parent participants were those whose children were in Class X. The focus group interviews with the participants allowed for an in-depth discussion of the interview questions. The individual interviews aided in gathering specific opinions from specific informants. Similarly, the descriptive qualitative responses enabled the collection of

more carefully crafted data as the interviewees had the opportunity to reflect and edit their responses.

Data Analysis

Analysis of quantitative data involved studying the survey responses and analyzing the data across seven themes: Opportunity, Teaching and Learning, Assessment, Resources and Facilities, Management, Narrowing the Gap and Sustainability. Separate numeric codes were assigned to the data for each participant. The data were then entered into the Statistical Package for Social Sciences (SPSS 22). Data screening, missing value analysis and recoding for some categorical items across the survey questionnaires were carried out. The coded data was then analyzed using descriptive statistics through measure of mean. The mean was used to analyze participants' ratings. Participants' ratings on the frequency were grouped into six distinct levels employing Best and Kahn's criteria (1988). Best and Kahn (1998) suggest that each grouping needs to maintain an interval width of 1.0. For clarity, the mean scores of the frequency were interpreted in terms of the ranking as reflected in Table 2. The ranking of the mean range is classified according to the range of mean scores that indicate the frequency of occurrence.

Table 2. Likert scale converted to numerical mean

Sl. No	Mean Range	Rank
1	0.01 -1.00	Strongly disagree
2	1.01-2.00	Disagree
3	2.01-3.00	Somewhat disagree
4	3.01-4.00	Somewhat agree
5	4.01-5.00	Agree
6	5.01-6.00	Strongly agree

Qualitative data were analyzed across the survey themes and an emergent theme: Revision of Cut-off Point. To ease coding and analysis, verbatim transcription of both the questions and the responses provided by the interviewees were carried out. The transcript of each participant was maintained in a separate word file. Each transcript was read and reread several times and relevant extracts for the different themes were colour coded and entered for each theme. The extracts were reviewed to determine whether they were related to the theme. In the process, some extracts that did not fit the theme were deleted. The extracts were then finalized. To maintain anonymity of the participants, the following pseudonyms were used: FG -focus

group, S – students, T – teacher, PR – Principal, PA - parents, M - officials from the Ministry of Education including REC officials and B - officials from BCSEA. For qualitative descriptive responses, '0' was added right after the letter. For example, for student 9, the code used is S09.

Results

This section presents the results generated from the analysis of the quantitative and qualitative data. The "Discussion and Implications" of the study are provided in the next section. The results of the survey and the interview are coalesced and discussed under each of the different themes: Opportunity, Teaching and Learning, Assessment, Resources and Facilities, Management, Narrowing the Gap and Sustainability. The discussion of the emergent theme: Revision of Cut-off Point is also provided in the following section. The discussion of each theme is supported by quotes from the interview and open-ended data. To avoid misinterpretation, syntactical errors accompanying the participants' quotes have not been corrected; hence, the participants' quotes are written verbatim. As reflected in the 'Survey Instrument' section, some items in the survey questionnaire were relevant only for certain groups of participants. Hence, a blank space in the quantitative data analysis tables indicates that the particular question was not asked to that specific group of participants.

Opportunity

As evident in Table 3, the overall analysis of the quantitative data on the theme *Opportunity* reveals that the majority of the participants rated *agree* on the Likert scale. This interprets that the removal of the cut-off point is perceived to have benefits for the students.

Table 3. Mean of participants' response on opportunity

Sl. No	Items	S	T	PR	PA	M	Av.
O1	Upgrades the basic education level to Class XII.	4.37	4.35	4.41	4.38	4.75	4.45
O2	Enables the financially disadvantaged students to continue their education.	4.74	4.87	4.74	4.75	4.88	4.80
O3	Provides opportunities for maturity of students since they get to continue their education till Class XII.	4.96	4.56	4.44	4.43	4.81	4.64
O4	Minimizes students repeating Class X.	4.38	4.38	3.94	4.01		4.18
O5	Motivates students to work hard since they get the opportunity to study at least till Class XII.	4.49					4.49
O6	Increases prospective for job opportunities after Class XII.				3.31		3.31
O7	Affects job opportunities for Class XII graduates due to increased number of students.	5.00					5.00
O8	Provides opportunity to study subjects of one's choice.	4.70					4.70
O9	Provides opportunity to study in school of one's choice.	4.16					4.16
O10	Minimizes youth issues such as substance abuse in the country since majority of them will be in schools.	4.08	4.08	4.70	4.13	4.38	4.27
O11	Optimises the private schools' student enrolment capacity.		4.26	3.91		4.00	4.06
O12	Reduces school dropouts.	4.63	4.63	4.38	4.46	5.13	4.65
O13	Reduces early marriage for girls.		4.46	4.06	4.50	4.50	4.38

[S = Students; T = Teacher; PR = Principals; PA = Parents; M = Ministry of Education]

For Item O1 *Upgrades the basic education level to Class XII*, participants agreed that the initiative of removing Class X cut-off point would help increase the basic education level to Class XII as indicated by the mean value of 4.45. In line with this finding, one common benefit Pincipals identified in the interview was the

opportunity for all students to complete Class XII (PR1, PR7). This opinion was echoed by both teachers and parents. For example, T5 said, "The government has provided opportunities for students to pursue their secondary education and realize their expectations of life by taking the course of their choice." Further, PA8 contended, "A good side [of this initiative] is that there are some students no matter how hard they try, they don't seem to get through. So, for them they get to continue their education." Similarly, 28 students articulated that the initiative supports those students who are hardworking but do not perform well academically to continue their education. One of the officials from MoE indicated a similar opinion: "Doing away with the cut-off point was a good thing for children. At least those who are interested will be able to continue and complete their schooling till Class XII" (FGMA). In addition, in the open-ended comments of the survey, students argued that the low academic achievers would be motivated to continue their study. For instance, S02 stated "With no cut-off point, the student who are not very good in studies do not lose hope as they get to continue their study."

For Item O2 *Enables the financially disadvantaged students to continue their education,* the mean value of 4.8 reveals that the initiative enables financially disadvantaged students to continue their education. Similar benefits were emphasized by participants in the interviews. Sixty students voiced that this initiative has helped students from economically disadvantaged families to continue their studies. Principals and teachers shared the same opinion. For example, according to PR11 and FGT2A, the free scholarship "helps students coming from economically disadvantaged families to continue their education." Further, parents posited that this initiative has benefitted students from poor family backgrounds and those who do not qualify despite their hard work and perseverance (PA1, PA19, PA8). In the open-ended comments, a participant said, "It is a good move of the government for it will reduce financial burden of the parents on their children" (TO14). Further, the benefit as observed by M1 is that "Irrespective of the marks (35%) the students obtain in Class X, they will get an opportunity to go to Class XI helping the students with poor economic background in terms of continuing their study in higher level with government sponsorship."

Pertaining to Item O6 *Increases prospective for job opportunities after Class XII,* parents have rated it *somewhat agree*. However, in the interviews, all participants reported that the number of Class XII graduates seeking employment would increase. For example, students expressed that although a few beneficiaries of this initiative may do well in Class XII, the majority would not be able to progress

onto tertiary education (FGS7, FGS9, FGS10). For those students, the initiative is said to have only short-term benefit. The concern among the students was "What after Class XII?" and "Will the government provide the jobs too?" (FGS6, FGS7, FGS9, FGS17). In connection, PR6 said that there were already a huge number of Class XII graduates looking for jobs. Students were aware of the many university graduates in the market who were still looking for employment (FGS10, FGS14, FGS16). According to FGMA, the majority of "street wanderers are the graduates and not Class XI or XII passed out." Similarly, 15 parents said that with the given number of unemployed youths, the majority of whom are graduates, job opportunity for Class XII graduates is limited. Examples of this perception are evident in the following quotes:

> I don't think we have enough ready-made jobs for the graduates of Class XII since we have many unemployed youths passed out from colleges both within and outside Bhutan. Therefore, I don't feel promoting students to the next higher grade without cut-off point will create job opportunities. (PA9)

> With growing number of students and population and more enrollment of children in the schools, I don't think there is going to be increase in job opportunities because as we know there are many graduates who are still unemployed. When these graduates don't get job and more graduates coming up, where will be the jobs? (PA24)

Correspondingly, PA13 highlighted, "Well, regarding job opportunity, everyone promoted to higher grades will build hope for better white-collar job but the world is competitive. Not everyone completing Class XII will land up in better jobs." Students raised concerns on whether the employers would take in candidates with such low percentage, as they would also want employees with sound academic performance (FGS1, FGS4, FGS6, FGS9, FGS13). However, three parents expressed that the opportunity for students to complete their secondary education owing to no cut-off point will upgrade their qualification and increase the opportunity for jobs as Class XII qualification is better than Class X. For instance, PA3 said, "Since qualification matters, those who have grade XII qualifications will have a better chance for jobs than those with grade X qualification."

For Item 012 *Reduces school dropouts*, the mean value is 4.65, which indicates that participants agreed that the removal of the cut-off point will reduce school dropouts. Further, student's involvement with substance abuse is said to have minimized with a mean value of 4.27. Interview participants expressed similar

views. For instance, FGMB stated “the scholarship helps students to continue and complete their schooling till Class XII and reduce school dropouts.” Another participant in the same focus group said “it was a good initiative by the government since it has reduced school dropouts from Class X who would otherwise have remained idle engaging in unwanted activities in town and being a nuisance to the society” (FGMA). Further, M2 said that with this initiative, the government has been able to help 4002 Class X graduates to continue their studies in 2019 compared to only 2500 in the previous year. Teachers and principals also echoed the voice of other participants. For example, according to FGT8B “some students who could not qualify to Class XI used to get dropped from the school and become drug addicts but now such problems have reduced with removal of cut-off point.” Similarly, Principals reported that the initiative has “reduced school dropouts” (PR1, PR3, PR4, PR5, PR7, PR10, PR11). Students also expressed that there was a reduction in school dropouts compared to the previous years as students now hadt the opportunity to continue their education (FGS1, FGS5, FGS7, FGS8, FGS13, FGS15).

Teaching and Learning

Item wise analysis of different participants for the theme *Teaching and Learning* process is presented in Table 4. Analysis of the quantitative data on the theme reveals that all participants rated *agree* on eight items on the Likert scale and *strongly agree* on one item, which suggests that the overall teaching and learning is affected by this initiative. However, an analysis of Item TL8 shows that the removal of the cut-off point will reduce academic related stress as students will be promoted to Class XI.

Table 4. Mean of participants on teaching and learning

Sl. No	Items	S	T	PR	PA	M	Average
TL1	Compromises quality of teaching and learning due to increased class size	4.32	4.92	4.51	4.63	4.13	4.50
TL2	Increases disruptive behaviour in the classrooms due to increased number of students	4.77	4.77	3.73	4.41	3.63	4.26
TL3	Develops complacency in students resulting in poor study habits	5.11	5.11	5.24	4.88	5.13	5.09
TL4	Affects overall academic performance of the school	4.65	5.12	4.65	4.80		4.81
TL5	Increases challenge of effective classroom management	4.86	4.86				4.86
TL6	Causes difficulties in catering to a wide range of students with differing academic attainments	4.27	4.84	4.27			4.46
TL7	Increases teacher's workload due to increased class size	5.02	5.02	4.35			4.80
TL8	Reduces academic related stress as all students will get promoted to Class XI	4.19	4.19				4.19
TL9	Affects enrollment in vocational institutes after Class X		4.67	4.68		4.50	4.62

[S = Students; T = Teacher; PR = Principals; PA = Parents; M = Ministry of Education]

Analysis of quantitative data shows that all participants rated *agree* for the item *Compromises quality of teaching and learning due to increased class size* with a mean value of 4.5. Analysis of qualitative data indicated that parents expressed concern that this initiative will lead to teachers becoming more relaxed, botherless, less hard working and less professional (PA19, PA13). By the same token, M1 asserted that the initiative will impact the performance of teachers. However, most students communicated that the removal of Class X cut-off point has not affected teachers' teaching (FGS8, FGS9, FGS10, FGS11, FGS13, FGS14, FGS15, FGS16, FG17, S19, S21). They said that in fact, teachers were working hard and taking extra classes. Additionally, all teachers and Principals stated that the initiative has not affected teaching. They stated that teachers do their best and there was no relaxation in terms of their commitment to teaching. For instance, a principal in a private school said that teachers in private schools have become even more motivated with the government sponsorship of Class XI students and they work hard to help low achievers (PR4).

There was a consensus among the participants on the removal of the cut-off point affecting students' learning. All 38 parents voiced that this initiative has impacted their children's learning and that they do not take their studies seriously. Further, parents also expressed that students now say that "they will automatically be promoted to Class XI" (PA6) since they "have a guarantee card to enter Class XI" (PA22). Similarly, 55 students stated that the initiative has adversely affected their learning and that there is a decline in interest in studies among Class X students. Moreover, they articulated that in the previous years, students worked hard especially when they had to sit for board examinations, but it was not the case anymore. There were also reports of students missing a lot of classes and being inattentive in class (FGS1, FGS6, FGS9, FGS17, S11, S15, S17, S19). This voice was echoed by all teachers who said that students do not take their studies seriously anymore. Principals also expressed that students take their studies very lightly for they claim that the government will take care of them (PR1, PR2). Some focus group students reported that continuous assessment especially project, homework, classwork and practical were no longer taken seriously by the students (FGS15, FGS13, FGS1, FGS17) with some students not submitting and others submitting after the due date (FGS15, FGS1). Even in open-ended comments, Principals, teachers and students articulated that the initiative has made students less serious about their studies. They said, "Students have become relaxed and are not concentrating on their studies. Analysis of the data also evidence that *Nyamrup Tshogpa* (the ruling

party) has overshadowed the complete education setting" (T02, PR0ll, S09). It was reported by some students that their friends "do not intentionally work hard because they want to go to private schools by scoring less marks since they will get to enjoy more facilities in the private school" (FGS1, FGS2, FGS5, FGS7, FGS9, FGS11).

On Item TL3 *Develops complacency in students resulting in poor study habits*, all participants rated *strongly agree* with a mean value of 5.09. In the interview, participants reported that students have exhibited a relaxed and complacent attitude towards their studies. Principals have observed that students have become complacent and relaxed and less serious with their studies as they feel they can easily manage to get 35 % (PR2, PR7, PR8, PR9). Teachers expressed difficulties in "getting rid of complacent or relaxed attitude of the students towards learning and that teaching has become challenging since students lack the spirit of hard work and interest" (FGT1, FGT2, FGT3, FGT4, FGT9). Similarly, 60 students revealed that most of their friends do not study knowing that they can avail free scholarship and this attitude is affecting those who are hardworking. Parents also indicated that their children have become complacent after the removal of the cut-off point. For example, PA6 said, "My child has become very complacent. He says the government will automatically promote him to Class XI." M2 reported "Parents have shared their concerns that their children have become complacent and stopped studying as their promotion to Class XI has been guaranteed."

Participants further added that the complacent attitude of the students will affect the quality of education in the country. For example, PA13 said that with the removal of the cut-off point "Students have changed their mindset that hard work is not important and the overall quality of education will be adversely affected." Teachers also expressed the negative impact of students' complacent behaviour on their academic performance and the quality of education in the country (FGT1, FGT4, FGT5, FGT6, FGT9). Along the same line, M1 said that the removal of the cut-off point would "cause students to take their studies less seriously. The culture of working hard in their life would be lost and it will have repercussions for their future." All participants including the students themselves stated that students have now started chanting the mantra "*Tshagay Malang, Druk Nyamrup Tshogpa Yoed*" which translates as "Do not worry! There is *Druk Nyamrup Tshogpa* (the ruling party)." It was shared by all participants that the quality of education will be affected by the complacent nature of the students. This concern was reiterated by Principals, teachers and students in open-ended comments.

Students, teachers and principals have rated *agree* for Item TL7 *Increases teacher's workload due to increased class size* with a mean value of 4.8. In the interview, teachers said that the initiative has increased their workload. This perception is exemplified in the following quote: "This initiative has increased our work load" (FGT8D). Parents with comparable opinion stated that the initiative has "led to increase in sections as well as class size and has led to increase in teacher's workload" (PA13, PA15, PA37). Similarly, Principals also expressed that due to increase in class size, teachers' 'workload on assessment has increased and it has become difficult for them (PR13, PR10). Teachers said that the class size has increased from 30 to 45 to 46 students after the removal of the cut-off point which has increased their workload.

Item TL4 *Affects overall academic performance of the school* was rated *agree* by students, teachers, principals and parents with a mean value of 4.81. Teachers shared that after the removal of the cut-off point, the participant's school had one of the lowest average scores for Class X mid-term examination since only two to three students had passed (FGT8). However, a principal mentioned that "they are being monitored by the system of Performance Management System (PMS) which in fact have been motivating them to work hard to up lift the academic performance of their schools" (PR10).

Assessment

Table 5 indicates that assessment has been affected by the removal of Class X cut-off point. Participants rated *agree* on majority of the items.

Table 5. Mean of participants' response on assessment

Sl. No	Items	S	T	PR	PA	B	Average mean
A1	Affects timely feed-back on students' work due to large class size.		5.06	4.51			4.79
A2	Poses difficulties in practicing forma-tive assessment to assess students' learning.		4.83	4.03			4.43

A3	Provides opportunity to focus on formative assessment than summative assessment.					2.75	2.75
A4	Affects quality of assessment in Class X (BCSE).					4.25	4.25
A5	Impacts centrally organized board examination and assessment for Class XII in terms of resources.					3.75	3.75
A6	Impacts centrally organized board examination and assessment for Class XII in terms of time.					4.75	4.75
A7	Increases cost in the conduct of BHSEC due to increased number of students progressing to higher secondary education.					5.25	5.25
A8	Affects the value placed on board examination for screening students.	4.34	5.00	4.70	4.65		4.67

[S = Students; T = Teacher; PR = Principals; PA = Parents; B = BCSEA]

Participants have rated *agree* for Item A1 *Affects timely feedback on students' work due to large class size* with a mean value of 4.79. In the interview, a parent said that teachers may not get to see everybody's homework and assessment and they may find it difficult to assess these tasks on time (PA3). Principals (PR9, PR10, PR13, PR15) and teachers (FGT2, FGT3, FGT5, FGT7, FGT8, FGT9) expressed

that due to increase in class size, assessment has become a challenge for teachers because they cannot assess every student's classwork and homework on time. Correspondingly, M1 also pointed out that teachers may not be able to carry out assessment as desired by the Ministry of Education and the curriculum owing to increase in number of students.

Item A8 *Affects the value placed on board examination for screening students* with a mean value of 4.67 indicates that participants *agreed* that the value placed on board exam would be affected. Interview with some participants indicated that it was easy to score 35% due to continuous assessment (CA) component and hence students do not take the board exams seriously (FGMA, B1). This was supported by FGMB, who said, "even academically low performing students would get 15 out of 20 in CA" which will help achieve the 35% overall marks. The participant said that this will affect the importance accorded to board examination. In the open-ended comment, a participant mentioned that "students will feel easy and optimistic of securing 35% very easily as 20% of CA lies in the hands of subject teachers and they will not place importance on board examination" (PRO9). A student stated that teachers in the school give high marks in continuous assessment which would have negative impact on the value of board examination (S30). Teachers and students affirmed that with the removal of the cut-off point, students have not valued the importance of board examination. For example, students expressed that before the removal of the cut-off point, students were said to work hard especially when they had to sit for board examination but it was not the case anymore (FGS5, FGS6, FGS9). In one school, it was mentioned that during the trial examination for Class X, which was to be conduced the following day, some students were not studying (FGS6I) and were seen playing on the "eve of examination" (FGT1). Students demonstrated such negligent attitude as they said that it was easy to score 35% to be promoted to Class XI.

Resources and Facilities

Item analysis of different participants on *Resources and Facilities* reveals that all participants rated *agree* on most of the items, which indicate that resources and facilities have been affected by the initiative of removing the cut-off point.

Table 6. Mean of participants' response on resources and facilities

Sl. No	Items	S	T	PR	PA	M	Average
RF1	Affects availability of enough text books due to increased number of students.	4.64	4.64	3.92	4.20	3.56	4.19
RF2	Affects access to library resources due to increased number of students.	4.23	4.23	3.59			4.02
RF3	Affects adequacy of ICT facilities due to increased number of students.	4.54	4.54	3.81			4.30
RF4	Affects adequacy to laboratory resources due to increased number of students.	4.5	4.5	3.84			4.28
RF5	Leads to crowded classroom due to increased enrollment.	4.57	4.95	4.57	4.69		4.70
RF6	Leads to inadequate subject teachers due to increased number of students.		4.89	4.11		4.06	4.35
RF7	Leads to overcrowded hostel due to increased student admission.	4.67	5.07	4.89	4.70		4.83
RF8	Affects provisions of facilities such as water due to increased number of students.				4.13	3.25	3.69
RF9	Affects provision of games and sports facilities due to increased number of students.			3.57	4.04	3.44	3.68
RF10	Affects opportunity for participation in literary activities as everyone cannot be given equal opportunities.	4.31	4.31	3.81	4.22		4.16
RF11	Affects opportunity for participation in games and sports as everyone cannot be given equal opportunities.	4.19	4.19	3.57	4.15	3.19	3.86

[S = Students; T = Teacher; PR = Principals; PA = Parents; M = Ministry of Education]

One of the challenges reported by the participants both in the interview and the survey on the removal of the cut-off point was on the different aspects of resources and facilities. One aspect of resources and facilities that was impacted

was hostels and classrooms. Survey participants agreed that the removal of the cut-off point will lead to overcrowding in classrooms and hostels (RF5 & RF7) as evident in Table 6. Similar opinions were shared in the interview. For example, PA18 said, "This initiative has led to overcrowded classrooms, inadequate teaching learning materials and higher burden on teachers." A Principal in the open-ended comment mentioned, "When there is increase in the enrolment in Class XI, government should expand the facilities to accommodate students so that there is no congestion in the hostels" (PR02). Teachers and students also stated that the initiative has resulted in overcrowded hostels and classrooms. For instance, FGT1A said, "Classrooms and hostels are very crowded. Students have to share the beds. Last year we had 400 number of students staying in the hostels and this year it crossed 700." Similarly, FGS1 shared that "The number of sections this year has increased. Last year there were only four sections but this year we have 6 sections. This has led to crowded classroom. The hostels are also packed."

Another impact of the initiative was on the sufficiency of textbooks. Both students and teachers *agreed* that the removal of the cut-off point affected *the availability of enough textbooks due to increased number of students* (Item RF1), which shows that there is negative impact on the availability of textbooks. This finding is corroborated by the results from the interviews. For example, PR1 stated, "Especially with the textbooks, there was some problem…we had to arrange from other school. Children had to share the books…so there was lot of chaos in the beginning of the academic year." Teachers and students also said that increase in student number has led to shortage of textbooks (FGT2, FGT3, FGT9, FGT13, FGS6, FGS9, FGS11, FGS13).

Analysis of the quantitative data indicates that teachers, principals and officials from MoE *agreed* to Item RF6 *Leads to inadequate subject teachers, due to increased number of students,* with a mean value of 4.35. In the interview, principals, teachers and students also identified teacher shortage as a challenge because of the increased number of students in the class (PR2, PR6, FGT3, FGT4, FGS1, FGS3, FGS5).

Management

Analysis of the items on *Management* is shown in Table 7. The Item M1 *Affects management of programmes related to student wellbeing and welfare* and *Restricts school authority in school admission since MoE allocated student placement* (Item M2) are rated on the *agree* side of the Likert scale.

Table 7. Mean of participants' response on management

Sl. No	Items	T	PR	PA	M	Average
M1	Affects management of programmes related to student wellbeing and welfare	4.77	4.19	4.28		4.41
M2	Restricts school authority in school admission since MoE allocated student placement†	4.77	4.41			4.59
M3	Increases requirements for professional development for higher secondary teachers, due to increased number of higher secondary students				3.63	3.63

[T = Teacher; PR = Principals; PA = Parents; M = Ministry of Education]

Analysis of Item M1 *Affects management of programmes related to student wellbeing and welfare* reveals challenges for the management. In the interview, school Principals indicated management problems due to the increased number of students who had to be accommodated within the limited facilities. Moreover, they expressed that increasing the sections within the existing infrastructure was difficult and placed strain on management. PR7 said that the increased number of students caused management problems as it led to increase in expenditure such as electric bills and mess management bills. Interestingly, one of the school Principals shared a very different experience:

> There was no major problem in the management as the policy was implemented for the first time. But in 2020, the number of students will double and then there will be a major problem to accommodate them. For now, the placement directives for students to government and private schools are provided by the Ministry of Education which lessens the management. (PR3)

Similar to PR3, a private school principal said that there were no management problems since they had adequate infrastructure (PR5). PR5 saw this initiative as a good opportunity for private schools to prove their potential especially through the government supported scholarships provided to their schools. Specifically, this Principal stated:

> It has given opportunity to work hard. So, this initiative has really benefited this school. Even though the government has laid down conditions for us with regard to managing Class XI students' academic performance, we are managing and working hard it is not a big thing. (PR5)

To avoid management problems, PR9 suggested the government to conduct prior study of the implications of the policy and provide advance directives for preparation and implementation.

Narrowing the Gap

Quantitative analysis of the items on *Narrowing the Gap* in Table 8 reveals a positive impact of the initiative in narrowing the gap of the education level and reduction in the financial liability for children's education. However, for *Equality in the provision of education* and *Narrowing the gap between the rich and the poor*, the mean values are 3.98 and 3.97 which is *somewhat agree* on the Likert scale.

Table 8. Mean of participants' response on narrowing the gap

Sl. No	Items	S	T	PR	PA	M	Average
NG1	Narrows the gap of education level in the country	4.25	4.25	4.03	4.14	4.31	4.20
NG2	Brings equality in the provision of education	4.04	4.04	3.53	3.73	4.56	3.98
NG3	Narrows the gaps between the rich and the poor	4.60	3.86	3.29	4.12	3.88	3.95
NG4	Reduces financial liability for children's higher secondary education	4.63			4.63		4.63

[S = Students; T = Teacher; PR = Principals; PA = Parents; M = Ministry of Education]

As shown in Table 8, the mean value for Item NG1 *Narrowing the gap of educational level* is 4.2, which indicates that participants *agreed* that the initiative will narrow the gap of educational level. Item NG4 *Reduces financial liability for children's higher secondary education*, is rated *agree* with a mean value of 4.63, implying that the participants *agreed* the initiative will reduce financial liability for children's higher secondary education. In the interview, M1 shared that the initiative will narrow the education level gap because the government provided support for students' higher secondary education. Further, M2 expressed that "In the past year, there were 2500 students left out from private school owing to no financial capability of the parents to pay." Parents voiced that the removal of the cut-off has reduced their worry of having to pay for their children's education (PR1, PR5, PR7).

Survey data reveals that the participants *somewhat agreed* with Item NG2 *Brings equality in the provision of education* with a mean value of 3.98. With a mean value of 3.95, Item NG3 *Narrows the gaps between the rich and the poor*

indicates that the participants *somewhat agreed* that the removal of the cut-off point will narrow the gap between the rich and the poor. However, in the interview PR1and PR7 expressed that "when equal opportunity is given to all the students, there is no narrowing the gap between the rich and the poor. There was no segregation of the students coming from disadvantaged families. The scholarship went to rich families as well." Similarly, PR2 stated that the "same facilities are given without any discrimination which actually might not narrow the gap". FGT2A also said that the "free scholarship provided by the government is a blanket scholarship with the only condition that students who have passed with 35% below the set criteria for admission into government schools benefitting both rich and poor". Another participant added that with this initiative the "rich are becoming richer and the poor are becoming poorer" (FGT1D). Students also echoed the views of the principals and the teachers. According to some students, the gap between the rich and the poor will widen instead of narrowing when the government supports students coming from rich family backgrounds as well (FGS2, FGS10, FGS11, FGS17).

A focus group student recommended that for students of rich parents, the government could ask the parents to pay their children's fees. However, the government could provide full financial support to students coming from economically disadvantaged families (FGS8). Parents and teachers suggested undertaking a study to identify students who require financial support and accordingly provide the support (PA2, PA3, PA4, FGT1, FGT4, FGT5, FGT7). School principals were critical of implementing such policies. For example, according to PR6, the previous government, People's Democratic Party (PDP) could not implement such policies since they knew it was not possible. But with the new government, "they made it a political agenda. I think they are driving it because they cannot lie. So, they would always say in the front that it is narrowing the gap. But their ulterior motive is to win the election". Principals, teachers, students and parents expressed that narrowing the gap would be achieved if support is provided only to the economically underprivileged students.

Sustainability

Quantitative data analysis in Table 9 shows a mean value of 4.91 indicating that participants *agreed* that promoting Class X pass students to Class XI without a cut-off point will not be sustainable.

Table 9. Mean of participants response on sustainability

Sl. No	Item	T	PR	PA	M	B	Average mean
S1	Affects sustainability in long run	4.94	5.35	4.78	5.00	4.50	4.91

[T = Teacher; PR = Principals; PA = Parents; M = Ministry of Education; B= BCSEA]

A comparative study of the mean among various groups of participants on Item S1 *Affects sustainability in the long run* reveals that principals and officials from MoE strongly agreed with a mean value of 5.35 and 5.0 respectively. This was closely followed by teachers and parents. Quantitative data were supported by the interview and open-ended data where all participants reiterated that the initiative will not be sustainable. One of the key reasons cited by the participants was the increased number of students. According to PR7, the earlier practice was that only high performing students (about 40%) were given the opportunity to study in Class XI without any cost. With this initiative, about 90% of the students has to be financially supported either in government or private schools. Other reasons cited for the unsustainability of this initiative were fee payment to private schools, limited space and infrastructure in government schools, expansion of government schools, provision of facilities and teachers' salary.

This initiative was further believed to have implications on the developmental activities of the country. M1 expressed that the government's expenditure has increased, which in turn has led to a reduction of the financial resources of other priority sectors. A similar view was echoed by PR2 who communicated that the government's directive was not to make any purchase from the free amenities budget head. The participant was not sure whether this particular budget will be used in supporting students' scholarship fees. Further, PA37 said:

> I don't know when it comes to how the government will sustain this project but definitely, if we look at it, there is a huge impact on the budget. I have heard that most of the educational purpose projects which are in the pipeline have been cancelled to divert the fund for sponsoring this. So, I am not very sure how far they can sustain or how they will sustain unless they look for resources from elsewhere.

Similarly, qualitative data from open-ended comment and focus group interviews of students also revealed that the initiative of providing scholarships for students will be detrimental to other developmental activities (FGS13, FGS9, FGS11,

FGS12). All participants expressed concern for the country's financial dependency on other countries owing to this initiative. For example, PA10 stated:

> In my opinion, this initiative will have huge negative impacts, both financially and quality wise. Bhutan has limited resources because of which we depend on a lot of foreign aid. Failing to use these aids and resources judiciously we will become more financially dependent on other countries and land up becoming a testing ground in education system.

On a similar note, students expressed concern that this initiative might incur more debt for the country by having to take additional loan from foreign countries (FGS8, FGS8, FGS10, FGS6, FGS14). One particular student shared that "if we borrow too much from others, our country will be under that country" (FGS8D). Another student said:

> As a youth, we are concerned about the future of our country as we know that our country is in a developing stage. We are not so stable financially so spending so much in the private schools, we have to carry some concerns at the back of our mind. (FGS11D)

Further, a student voiced that starting 2023, Bhutan will no longer going to be listed under the least developed countries (LDC) and hence, there will be a decline in foreign support (FGS11B). Another participant stated, "I think the initiative can only last till next year. It is a financial burden on our country" (PA10).

Sustainability issue was also raised from the private schools' perspective. Private school Principals were concerned about the sustainability of their schools if the government does not support sending students to their schools. In PR5's observation, the government has been planning to upgrade most of the middle secondary schools to higher secondary schools to increase the intake of Class XI students in government schools. This in turn will have negative impact on private school in terms of enrolling adequate number of students. This view was echoed by PR7, who stated, "Then I think most of the private schools will remain without students… definitely some of the private schools will have to close down." Similarly, M1 felt that the private schools will not be able to sustain in the long run if the government plans to retain all Class XI students in the government schools. However, M2 said that the sustainability of the private schools should not be left at the cost of low performing students enrolled in private schools. He expressed that "they must pull up their socks and make better investments in terms of teachers and resources so that parents who can afford can send their children in private schools as option."

Participants also highlighted the politically driven nature of the initiative and its unsustainability. This perception is evident in the claim by PA9: “The initiative is politically intelligent; however, its sustainability remains the biggest question.” Student participants also voiced that this initiative will not be there if there is a change in government in the future (FGS11, FGS13, S18, S35). One student expressed that in the coming days the government may realize that the initiative is affecting the students as well as their performance (FGS17D). Another stated “if this initiative continues, it will be a disaster” (S21).

Revision of Cut-off Point

In all 18 focus group interviews with the students, they maintained that there should be a cut-off point to promote Class X pass students to Class XI to encourage them to work hard and uphold the quality of education. Further, they expressed that the cut-off point of 35% was too low, and it would have repercussions on the quality of education. There were mixed views on how much the cut-off point should really be increased to. Fourteen out of 18 focus group students suggested that the cut-off point could be between 50%-60% for both private and government schools. One focus group students (FGS15) suggested the cut-off point to be set at 40% and another two focus groups students (FGS2 and FGS5) recommended to increase the cut-off point but did not specify the exact figure.

All Principals, teachers and parents supported the views of the students on the need for a cut-off point to promote students to Class XI. For example, PR9 said, “There should be a cut-off point of 50%-60 % so that at least students will be prepared and there will be seriousness in their studies.” Similarly, FGT1A articulated, “There should be a cut-off point of about 60% to have the quality of education.” Along the same line, PA1 stated, “The cut-off point should be increased to 50% and above. This may change students’ attitude and may help in aiding them to work harder. I think the general performance would be better.”

Some students (FGS1, FGS11, S21) suggested that the cut-off point should be fixed, and it should not be based on the number of seats available in the schools. For example, a student stated:

> I would suggest to have a uniform cut-off point because if the government keeps uniform cut-off point like 65%, there will be the quality education where everyone aims for that percentage. Sometimes it would go very high and sometimes too low, and we will have fear that the percentage may go high

> and some students get demotivated and lose the charm of studying. So, it would be better if the government keeps the uniform cut-off point. (FGS11D)

Views were also shared on allowing students to choose between private and government schools. This is evident in the following interview extract:

> The option to choose the private school should be given to students and parents and private schools set their own criteria to enroll the students. This would bring competition among the private schools for better education. If private schools perform better than government schools, many affording parents would opt to fund their child privately, which will reduce the financial burden on government. (PA11)

All interviewed participants including students, teachers, parents, principals, and MoE and BCSEA officials expressed that the government should reconsider the set criteria, conduct proper study and work on developing a policy of offering scholarship to the financially disadvantaged students.

Discussion and Implications

This section presents an interpretation and implications of the major findings in relation to the research question from both quantitative and qualitative perspectives. Participants' quotes from interviews, respondents' comments to open-ended item, and the findings of the survey are provided wherever relevant to the discussion. The findings are interpreted in relation to literature and discussion is provided on how they support or contradict these findings.

Reduced School Dropout

One of the findings of this study is that the removal of the cut-off point has led to decrease in school dropouts since the government has provided financial support for students to continue their education. For example, a participant in the interview said, "it was a good initiative by the government since it has reduced school dropouts from Class X who would otherwise have remained idle engaging in unwanted activities in town and being a nuisance to the society" (FGMB). Research shows that one of the reasons for students dropping out of school are lack of financial support. For example, a study carried out in Bhutan by J-F, Gyamtsho, Swabey, & Pullen (2015), observed that one of the main reasons for students dropping out of school was due to lack of money to support schooling/education related expenses often in terms of parents being unable to provide support. The researchers further pointed out that

upon completion of Class X and XII, most students who were not able to qualify for government scholarships due to high percentage of marks requirement were unable to continue their education. This resulted in them taking up jobs or staying at home.

Research indicates the negative impacts of school dropouts on resources, unemployment, drug problems, and juvenile delinquency (Dorji, Kinga, & Frey, 2005). *Kuensel* reported that the youth unemployment rate in 2019 was 11.9%, which was a drop by 3.8% from 15.7% recorded in 2018 (Rinzin, 2020). One of the probable reasons cited for this was that the "majority of the students had continued to study in Class XI, which means entry into higher secondary schools increased in 2019" (Rinzin, 2020, para.9). This figure is also supported by an increase in the number of enrolment of students in Class XI in 2019. As reflected in the Annual Education Statistics, the enrolment figure in Class XI had increased to 11,750 students in 2019 from 8,882 in 2018 (MoE, 2019). It was also reported that "by qualification, those unemployed youths who completed Class X declined to 11.5 % in 2019 from 24.4 % in 2018" (Rinzin, 2020, para.13). Further, the Education Minister's report during the question hour session of the National Assembly stated that all Class X pass students were either absorbed in government or private schools. Majority of the students were enrolled in government schools and the remaining 4000 (out of 4003) were joined private schools with financial support from the government. According to the Minister, the number of students enrolled in private schools in 2019 showed an increase of 212% compared to 2018 (Dorji, 2020).

This finding is significant as it implies that the initiative of waiving the cut-off point has reduced school dropout and brought about a decline in youth unemployment since students had the opportunity to continue their education. The reduction of these issues by extending the opportunity for students to be in school is an investment in the social capital of letting students develop their physical, social, emotional and psychological maturity to face, adapt and navigate the challenges of 21st century life. Moreover, the opportunity for students to be in school for additional years will add to their educational qualification and may also help reduce youth related issues.

Impact on Teaching, Learning and Assessment

Teaching: Quantitative data revealed that the removal of the cut-off point will compromise the quality of teaching. Qualitative data indicated divided opinions. Teachers, principals and most students expressed that teaching is not compromised.

They reported that teachers were working hard. On the contrary, the non-classroom practitioners mainly parents and the officials from MoE expressed that this initiative will impact teaching.

Learning: There was a consensus among teachers, students and parents that the removal of the cut-off point has affected students' learning. For example, parents expressed that students do not take their studies seriously as they will be automatically be promoted to Class XI (PA6) since they have a guarantee card to enter Class XI (PA22). Participants including students themselves have commented that students have become relaxed, are not concentrating on their studies and have become complacent. It has been noted that even hard-working students have been affected by the complacent attitude of their friends. Participants further added that the complacent attitude of the students will affect the quality of education in the country. In line with this finding, Obanya (2003) said that quality of education involves "instilling love for learning" (p.34). If students are not motivated, it would result in them becoming complacent in their studies (Oyedeji, 2017). All participants stated that students have now started chanting the mantra "*Tshagay Malang, Druk Nyamrup Tshogpa Yoed*" which translates as "Do not worry! There is *Druk Nyamrup Tshogpa* (the ruling party). It was also shared that one school had the worst Class X mid-term results in 2019 as only two to three students passed. Similarly, the pass percentage for Class X has declined from 96.63% in 2018 to 93.63% in 2019 (BCSEA, 2019).

Assessment: The finding showed that the removal of the cut-off point has affected assessment practice. Teachers' workload has increased due to increase in number of sections and class size. This has limited the teacher's individual attention and timely feedback to support students' learning. Teachers have shared that the class size has increased from 30 students to 45 to 46 students after the removal of the cut-off point. Bhutan Education Blueprint, 2014-2024 indicates that the Ministry of Education strives to maintain a class size of maximum of 24 students for primary schools and 30 for secondary schools (MoE, 2014). Literature shows that large class sizes increase teachers' workloads, particularly with regards to grading and writing feedback (Sorensen, 2015; Tomei, 2016). This would lead to teachers and schools focusing on quantity rather than quality assessment (Utha, 2015).

Findings on teaching, learning and assessment are notable since they indicate that although teaching was not affected; learning and assessment were affected by the removal of the cut-off point. Though the negative impact on teaching is not observable as the initiative has been in practice for only about a

year, in the long run, there is a high probability that teaching may be compromised when students are complacent and are not serious about their studies. This may demotivate the teachers and they may become complacent too. The negative impact on assessment would lead to teachers and schools compromising the quality of assessment. Besides, those students whose academic performance is weak may not get the required support. The impact on teaching, learning and assessment practice will have repercussions on the overall quality of education in the country as these factors are some of the key components to maintain the quality education.

Impact on Resources and Facilities

The research finding showed that the initiative has led to overcrowded classrooms and hostels especially in government schools due to increase in student intake. Further, it has led to shortage of textbooks and inadequate subject teachers. For example, PA18 said, “This initiative has led to overcrowded classrooms, inadequate teaching learning materials and higher burden on teachers.” A Principal in the open-ended comment expressed that “When there is increase in the enrolment in Class XI, government should expand the facilities to accommodate students so that there is no congestion in the hostels” (PR02). Literature indicates that resources and facilities in the school must be considered as an equally active contributor in education process of the students (Limon, 2016; Schneider, 2003; Sheu & Ijaiya, 2016). Moreover, literature highlights that constraint in resources and facilities will affect the quality of teaching and learning. For instance, Limon (2016) contends that from the numerous factors that consistently impact educational performance and achievement of students, inadequacy or lack of school facilities directly impacts the quality of learning acquisition among learners. Similarly, other studies have shown that crowded classroom conditions not only made it difficult for students to concentrate on their lessons, but also impacted the innovative teaching methods the teachers would like to use in the class (Keller, 2003; Rivera-Batiz & Marti, 1995; Sheu & Ijaiya, 2016). It is captured in the Annual Education Statistics, 2018 that “to provide quality education, it is important that facilities in schools are adequate and up to date” (MoE, 2018, p.51).

The findings on resources and facilities show that the removal of the cut-off point has negatively impacted resources and facilities. The implication of this finding is that the introduction of any initiative should be preceded by investment in terms of establishing the required resources and facilities and studying other ground realities

that the initiative would necessitate. This process may help prevent or reduce difficulties and ensure effective implementation of the initiative. Without addressing these barriers, the initiative will pose challenges to the implementers and affect the quality of teaching, learning and assessment, which in turn will negatively impact the quality of education.

Job Prospects

The study's finding on the job prospects showed that students anticipated that all Class XII graduates would not get entry into tertiary education, and many will have to look for employment opportunities that are limited. The reasons attributed by the participants include the increasing number of Class XII graduates and university graduates seeking employment. In 2019, a total of 10,126 passed the Class XII examination as per BCSEA record (BSCEA, 2020). Out of this, about 1880 or 18.6% will be provided scholarship to pursue tertiary education. The colleges of the Royal University of Bhutan will enroll about 1680 students on government scholarship (RUB, 2020). The Department of Adult and Higher Education would provide about 175 undergraduate scholarship (DAHI, 2020) and the Jigme Singye Wangchuck School of Law (JSWSL) would register about 25 students (JSWSL, 2020). Out of the remaining 8246, some may opt to study under private scholarship, but many would have to seek employment. This would be a huge concern for Bhutan as there are already many university graduates seeking for employment. A study carried out by Lhaden (2018) pointed out that many university graduates of Bhutan were having difficulty getting employed. She said that around 67% of university graduates are still looking for employment. Further, she estimated an increase in the working age population by 67% every month in Bhutan.

This finding implies that the country needs to create job opportunities for both university and Class XII graduates. Technical and Vocational Education Training (TVET) which the government is already initiating would help students gain skills that may increase their opportunities for jobs as well as open avenues for self-employment. The introduction of TVET may also help reduce youth unemployment and contribute to the economy and social development of the country by providing the required trained manpower in the development process.

Narrowing the Gap

The survey's finding revealed that participants *somewhat agreed* that the removal of the cut-off point will narrow the gap between the rich and the poor. However,

the interview participants articulated that this initiative will not help narrow the gap between the rich and poor since there was no disparity in the award of scholarship. The current practice is that irrespective of the economic status, students securing 35% and above in BCSE are provided financial support to study in government as well as private schools. Some students expressed that the gap between the rich and the poor will widen instead of narrowing when the government supports students coming from rich family background (FGS11, FGS10, FGS17, FGS2). The participants expressed that narrowing the gap would be achieved if support is only provided to economically disadvantaged students after the identification of such category of students.

The finding on narrowing of the gap between the rich and the poor is ambivalent. This could be because the initiative has only been in practice for only about a year. Though the initiative is aimed at narrowing the gap between the rich and the poor, providing financial support to students of both rich and poor parents may not lead to the fulfilment of this aim. Moreover, it takes away the opportunity for parents who can afford to make an investment in their children's education. It is also desirable to wean off people from being too dependent on the government.

Sustainability

The study's finding revealed that promoting Class X pass students to Class XI without a cut-off point will not be sustainable. Some reasons cited by the participants include: the government now has to bear the scholarship expenses of about 90% of Class X graduates against 40% in earlier practices due to increased number of Class X pass students; payment to private schools; increased expenditure on government schools in terms of resources and facilities, and teachers' salary. The present government has argued that the additional expenses incurred in executing this change should not be seen as additional expenses but an investment in the country's human resource (Rinzin, 2019). However, the concern is that there is no planned budget set for supporting scholarship expenses. This was clear from the Prime Minister's report that stated that the government has no planned budget to support the initiative in the current budget but may secure the funds somehow from somewhere (Rinzin, 2019). Since the scholarship expenses are not budgeted and time may be required to secure the budget, other developmental activities of the country may be compromised. A similar initiative by the previous government, PDP, regarding the establishment of central school indicated that new initiatives may lead to reduced funding for other areas (Jamtsho, 2017). Further, Bhutan has limited

resources to bank on and it may not be in a position to support scholarship expenses if funding is not secured. Hence, it may lead to more borrowing from other countries.

There are also issues concerning the sustainability issue of private schools. With the government trying to accommodate more students in government schools, there is reduced number of students in private schools. For example, it was announced that about 2700 students who passed Class X (2019 cohort) will be sent to private schools in 2020 against the 4000 sent in 2019 (Pem, 2020). This is a huge drop in the student intake which may lead to closure of some of these private schools. This may increase the unemployment rate as many private school employees will be laid off (Seldon, 2019). In addition, accommodating more students in government schools put pressure on the limited infrastructure and resource while leaving he resources and facilities in private schools unused. This kind of initiative will be in contradiction to UNESCO's (2002) statement that sustainable development activities should not have negative impact on others areas of development.

An implication of the findings is that there is a need for the relevant stakeholders to put in place policies and strategies to ensure the sustainability of the initiative. If this process is not taken into consideration, there may be tension between the aim and the outcome of the initiative. If immediate attention and efforts are not made to address the tension, the aims of the initiative may never materialize and the gap between intention and reality may continue to exist.

Reconsideration of Cut-off Point

The finding of the study showed that to improve and maintain the quality of education, there is a need to reconsider the promotion of all Class X pass students with 35% to Class XI. Two suggestions emerged from the findings of the present study. One was to increase the pass percentage or the cut-off point for Class X student to a range of 50% to 60% for both private and government schools. In earlier practice, students had to score close to 60% (59.4% in 2018) to be eligible to progress to Class XI in government schools. Now the progression requirement is just only 35%. Promoting a Class X pass student with 35% marks to Class XI implies that a student needs to achieve only 35% of the learning outcome set for that class. Further, this study revealed that students score high on the Continuous Assessment marks irrespective of their academic performance. Similar finding was also reported by the Special Committee for Education by Rapten et al. (2016). With such practices, opportunities for students to score 35% is quite high. Hence, they may undertake selective study

of the subject topics encouraging complacency and thus compromising students' holistic development.

The significance of this finding is that there is a need to set a certain cut-off point (50% to 60%) for promoting students to Class XI. This will have to take into consideration the minimal learning outcome achievement required to progress to the next higher grade so that the quality of education is not compromised. Without a cut-off point, students may not value hard work, diligence, conscientiousness and perseverance, which are essential skills for their academic as well as personal life. In addition, it is likely that students may not take ownership of their own learning.

Conclusion

This study examined stakeholders' perspective on the implications of promoting Class X student to Class XI without a cut-off point in Bhutanese schools. The study used a mixed method, sequential explanatory design. The participants included school principals, teachers, parents, students, and officials from the Ministry of Education (MoE) and Bhutan Council for School Examination and Assessment (BCSEA). The conclusion and recommendations of the study are presented in the following section.

The removal of the cut-off point has provided an opportunity for all Class X pass students securing 35% and above in BCSE examination to continue their studies either in government or private schools. This has led to a decrease in school dropout and youth unemployment. However, the initiative has led to development of complacency among students towards learning since they only have to secure 35% in Class X board examination which is inclusive of 20% from continuous assessment. This process will have a negative impact on the quality of education as many students will progress to the next higher grade by attaining only 35% of the learning outcome identified for that class. In addition, the increased number of students has resulted in increased sections and class size in most schools. This has impacted the availability of textbooks, and resources and facilities in the schools. Further it has resulted in crowded classrooms and hostels which has hampered effective teaching, learning and assessment practices and classroom and hostel ambience. Besides, the finding also showed that that the initiative will not be sustainable in the long run as it necessitates heavy expenses from the government. Moreover, the sustainability of private schools is also a concern as they rely mostly on the number of students the government sends to their schools. The finding also showed

that there would be limited job opportunities for the students when they graduate from Class XII as there are already a large number of university graduates seeking employment. Based on the findings of the study, the following recommendations are proposed.

- The pass percentage of 35% for promotion of students from Class X to Class XI needs to be reviewed to maintain the quality of education. A cut-off point within a range of 50% to 60% is suggested to encourage students to work hard and value education. This will also help uphold the quality of education. MoE, REC and BCSEA need to collaboratively work on it.
- The Ministry of Education in consultation with respective schools needs to assess the requirement of resources and facilities to be put in place so that teaching, learning and assessment are not compromised.
- There is a perceived need for the government to study the financial or economic status of the parents and provide scholarship to only those students, who really need it, and make the scholarship means tested.
- The Ministry of Education needs to carry out a study on the reliability of continuous assessment marking practices in the schools and accordingly plan a way forward.
- The government in consultation with stakeholders needs to work towards ensuring the sustainability of this initiative through proper planning. In absence of such a measure, the sustainability of the initiative may be at stake.

The study's finding showed that the initiative has benefitted students from financially disadvantaged families but it did not really help to narrow the gap between the rich and the poor. This is because the scholarship were provided to all students irrespective of the socio-economic status of the family. However, no recommendation is made pertaining to this finding, since at the time of this study, the initiative had been implemented only for about a year. To establish a basis for the recommendation, future research is proposed.

Reference

Barbour, R.S. (2008). Focus groups. In I. Bourgeault, R. Dingwell, & R. Vries (Eds.),*The sage handbook of qualitative methods in health research.* London: Sage publications.

Bhutan Council for School Examination and Assessment (BCSEA). (2020*). National pass percentages for 2019 and past years*. Retrieved from http://www .bcsea. bt/main/news_ann/54

Bhutan Council for School Examinations and assessment (BCSEA). (2020). *Pupil performance Report.* School Examination Division, BCSEA. Retrieved from http://www.bcsea.bt/publications/PPR-2020.pdf

Creswell, J. W., & Clark, V., L. P. (2011). *Designing and conducting mixed methods research* (2nd ed.). Thousand Oaks: Sage publications.

Creswell, J. & Creswell, D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches (*5th ed.). Thousand Oaks, CA: Sage Publications.

Denscombe, M. (2010). *The good research guide*. UK: McGraw-Hill Education.

Department of Adult and Higher Education (DAHI). (2020). *Scholarship announcement.* Retrieved from http://www.dahe.gov.bt/images/pdf/ SSSD/ ScholarshipAnnouncement_2020.pdf

Dorji, P. (2020). *Improving and supporting private schools in the country*. Retrieved from http://www.bbs.bt/news/?p=128182

Dorji, L., & Kinga, S. (2005). *Youth in Bhutan: Education, employment, development*. Thimphu: Centre for Bhutan Studies.

F, J., Gyamtsho, S., Swabey, K., & Pullen, D. (2015). *Capturing the voices of school drop-out in Bhutan.* AARE Conference proceedings, University of Notre Dame, 29 November-3 December.

Fullan, M. (2007). *The new meaning of educational change* (4th ed.). New York: Teachers College Press.

Jamtsho, S. (2017). *Education in Bhutan: Quality and sustainability*. Retrieved from http://drukjournal.bt

Jigme Singye Wangchuck School of Law. (2020). *Selection results for the class of 2025.* Retrieved from https://www.jswla w.bt/2020/03/2 6/s elec tion-results-

for-the-class-of-2025

Keller, B. (2003). Question of teacher turnover sparks research interest. *Education Week, 22*(33), 8.

Lhaden, T. (2018). *Has Bhutan's growth been jobless?* Retrieved from blogs. worldbank.org/endpovertyinsouthasia/has-bhutan-s-growth-been-jobless

Liamputtong, P. (2013*). Qualitative research methods*. Melbourne: Oxford University Press.

Limon, M. R. (2016). The effect of the adequacy of school facilities on students' performance and achievement in technology and livelihood education. *International Journal of Academic Research in Progressive Education and Development*, 5, 1.

Ministry of Education (2014). *Bhutan Education Blue print 2014-2024: Rethinking Education.* Thimphu, Bhutan: Ministry of Education, Royal Government of Bhutan.

Ministry of Education. (2015). *Annual education statistics*. Thimphu: Policy and Planning Division, Ministry of Education.

Ministry of Education. (2018). *Annual education statistics*. Thimphu: Policy and Planning Division.

Ministry of Education. (2019). *Annual education statistics*. Thimphu: Policy and Planning Division.

Neuman, L. W. (2003). *Social research methods: Qualitative and quantitative approaches.* Boston: Allyn & Bacon.

Noor, K. B. M. (2008). Case study: A strategic research methodology. *American Journal of Applied Sciences, 5*(11), 1602-1604.

Obanya, P. A. I. (2003). Quality evaluation of basic education: A comprehensive model. *Nigerian Journal of Educational Research and Evaluation, 4*(1), 87-89.

Oyedeji, S.O. (2017). The effects of students' motivational factors on their attitudes toward mathematics. *International Journal of Evaluation and Research in Education (IJERE),6* (4), 277-287.

Palden, T. (2018). *MoE studying cut-off options for Class X*. Retrieved from https:// kuenselonline.com/moe-studying-cut-off-options-for-class-x/

Pem, S. (2020). *BCSE results out with overall pass percentage of 93.63%*. Retrieved from http://www.bbs.bt/news/?p=127125

Punch, K. (2001). *Introduction to social research: Quantitative and qualitative approaches*. London: Sage Publications.

Rapten, P., Nima., Khandu, S., Dorji, T., Tharchen., Rinzin, J., & Gyeltshen, T. (2016). *A review report on the quality of education. National Council Special Committee for Education.* Retrieved from https://ww w.natio nalcouncil.bt/a ssets/uploads/files/Final%20Education%20Report%20-%202016 Special%20 Committee-18th%20Session.pdf

Rinzin, Y. C. (2019). *15 private schools to enroll students on scholarship.* Retrieved from https://kuenselonline.com/1-private-schools-to-enroll-class-xi-students-on-scholarship/

Rinzin, Y. C. (2019). *Private school owners cry foul.* Retrieved from https://kuenselonline.com/private-school-owners-cry-foul/

Rinzin, Y. C. (2020). *Youth unemployment rate drops to 11.9%*. Retrieved from https://https://kuenselonline.com/youth-unemployment-rate-drops-to-11-9/

Rinzin, Y. C. (2019). *Cut off for Class X is off*. Retrieved from https://kuense lonline.com/cut-off-point-for-class-x-is-off/

Royal University of Bhutan [RUB]. (2020). *Tertiary education programmes for the academic year 2020*. Retrieved from http://www.rub.edubt/index.p hp/en/admission2019/undergraduate/admission-criteria-2019/692-admission-into-tertiary-education-programmes-for-the-academic-year-2020

Schneider, M. (2003). *Linking school facility conditions to teacher satisfaction and success.* Washington, DC: National Clearinghouse for Educational Facilities.

Sheu, A., & Ijaiya, N. (2016). Influence of resources availability on teachers' job performance in early childhood education. *Malaysian Online Journal of Educational Management, 4* (3), 39-49.

Seldon, P. (2019). *21 private schools offer to surrender their schools to the government if all cut-off students are taken in government schools*. Retrieved from https://thebhutanes.bt/21-private-schools-offer-to-surre nder-their-schools-to-the-govt-if-all-cut-off-students-are-taken-in-by-govt-schools/

Sorensen, C. (2015). An examination of the relationship between online class size and instructor performance. *Journal of Educators Online*, *12*(1), 140–159.

Tomei, L. (2006). The impact of online teaching on faculty load: Computing the ideal class size for online courses. *Journal of Technology and Teacher Education, 14* (3), 531–541.

UNESCO. (2002). *Education for sustainability from Rio to Johannesburg: Lessons learnt from a decade of commitment*. Retrieved from https://www.ramsar.org/sites/default/files/documents/library/educationforsustainabilityunesco.pdf

Utha, K. (2015). *Formative assessment practice in Bhutan secondary schools and its impact on quality of education* (Doctoral dissertation). Aalborg University, Denmark.

CHAPTER 3

EVALUATION OF IN-SITU THERMAL PERFORMANCE OF SCHOOL BUILDINGS IN COLD CLIMATE OF BHUTAN AND POSSIBLE INTERVENTION TO IMPROVE THERMAL PERFORMANCE

Tshewang Lhendup, Roshan Chhetri, Cheku Dorji
and Namgay Tenzin

Chapter 3

Evaluation of In-situ Thermal Performance of School Buildings in Cold Climate of Bhutan and Possible Intervention to Improve Thermal Performance

Abstract

A study was carried out to assess the thermal performance of the two school buildings located at Wanakha Central School and Gunitsawa Primary School under Paro Dzongkhag. As a case study, four classrooms (two each at Wanakha and Gunitsawa) were monitored for more than a month. Gaps between the building elements in one of the classrooms were sealed and another was left unsealed. The indoor temperature was measured for more than a month. Analysis of the data revealed that by sealing the building element gaps, the infiltration rate could be reduced by almost 50% corresponding to almost 50% reduction in demand for heating energy demand. To further understand the impact of building insulation and alternative wall materials, several simulations were performed in TRNSYS-17 using the measured building physical parameters. From the simulations, it was found that adding polystyrene on the ceiling could result in up to 25% reduction in demand for heating energy. Further measurements of onsite interventions are required to validate the simulations' results.

Introduction

Buildings are responsible for more than 30% of the total energy consumption globally and 55% of total global electricity demand (IEA, 2018). At least 50% of the energy is used for heating and cooling buildings (Man, Yang, & Wang, 2010). In Bhutan, buildings use about 242,916 tonnes of oil equivalent or nearly 52% of the total thermal demand (DRE, 2015). While the new buildings can be built to be energy efficient, the problem is with the existing building stock. One of the methods to reduce energy consumption of existing buildings stock is by retrofitting the buildings with energy efficiency features (Chinazzo 2014). Using well-insulated ceilings and walls, sealing the gaps between the building elements to make it airtight, and using energy-efficient heating appliances are some of the examples. The last option is unsustainable and not affordable for most building owners/users. As a preliminary

study to understand the feasibility to retrofit and its associated impact, a study was proposed in two schools in Bhutan.

More than 100 out of 575 schools in Bhutan are located in areas with cold regions. At least five months of the academic year fall in the cold period. These schools do not have adequate heating system either in the classrooms or in the hostels and either buy electric rod heaters or do not use heater in some cases. School children are subjected to the extremely cold climate which not only affects their learning in the classroom but also their health condition. For example, more than 240 students in Thimphu, Paro, and Wangdue were reported to be suffering from chilblain which is caused due to prolonged exposure to cold weather (Wangdi, 2017). Some schools resort to conventional electric rod or fin heaters. However, these methods were found to be expensive and not effective as the buildings are not insulated and there is significant heat loss through the gaps in the building elements.

School buildings in Bhutan are commonly constructed of brick-concrete structure. The roofs are mainly made of corrugated iron sheet with no insulation. The windows are made of single glazing with either timber or aluminum frames. The concept of energy efficiency is not incorporated in most of the buildings. A study conducted by Jentsch et al. (2017) found that most buildings in Bhutan have high leakage. Therefore, unless the air leakage is taken care of, no heating system irrespective of the technology would be effective. A similar study by the Department of Renewable Energy found that the heat loss from the building envelope could be between 40 to 70% depending on the type of materials used for construction (DRE, 2015). Based on the above challenges and problems compounded by un-insulated buildings, two issues required to be studied about the school buildings in Bhutan:

- Thermal performance of buildings
- Need for sustainable room heating system

This research therefore assesses the in-situ thermal performance of school buildings in cold climate of Bhutan.

Aim and Objectives

The aim of the research is to determine the thermal performance of school buildings in cold climate of Bhutan. It was conducted to determine the baseline school building heating demand in the cold climate of Bhutan through in-situ thermal performance evaluation and propose possible solutions for both old and new building stock.

Method

The research was implemented in three stages as follows: assessment of building physical parameters, pre-intervention, and post-intervention. In the first stage, building physics properties such as physical dimensions, the current system of heating if any (and associated cost of heating), infiltration, local weather, U-value of the materials were determined. This was followed by the estimation of the heating demand of the two school buildings through simulation. In the second stage, gaps between the building elements such as windows, doors, walls, ceilings, and roofs were sealed using locally available materials. In the third stage, blower door test was performed to measure the infiltration rate post-intervention. Re-simulations pf the two school buildings were conducted to determine thermal performance. Figure 2 illustrates the method used to implement this research project.

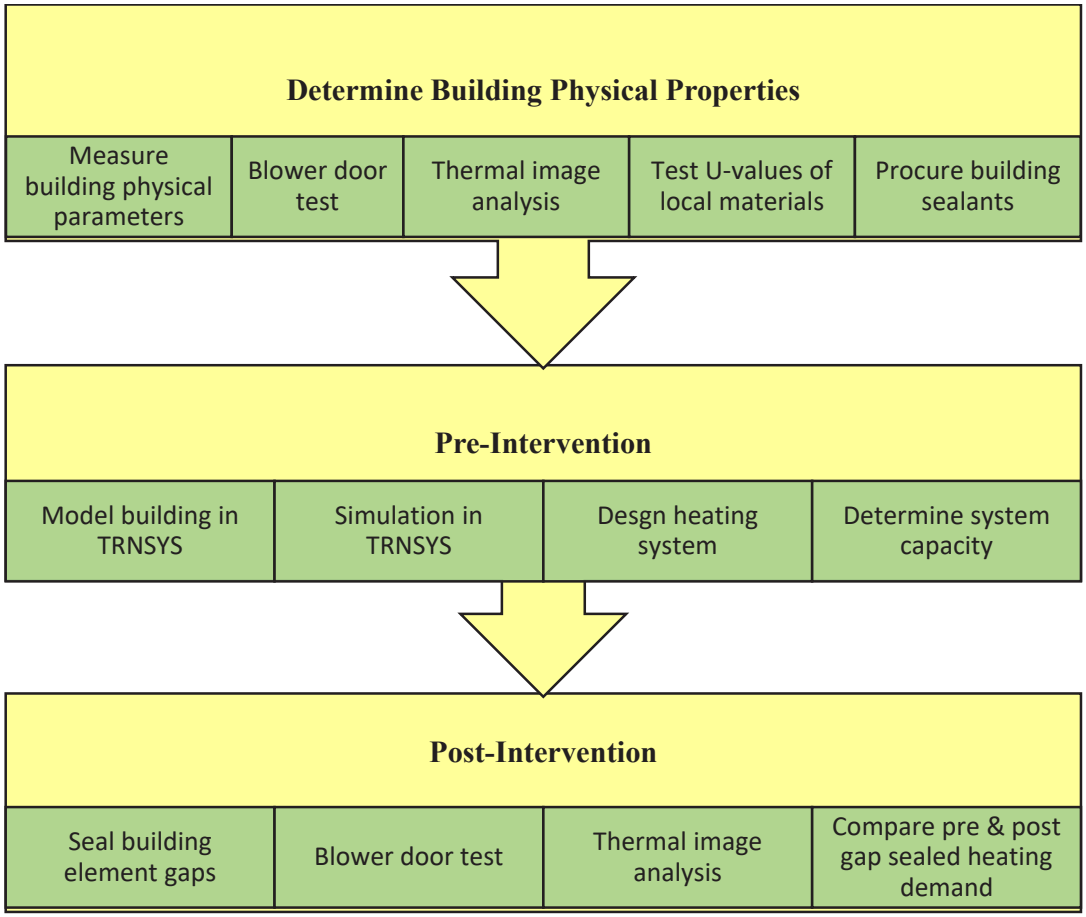


Figure 2. Schematic illustration of research method

Experimental Set-Up

Weather station

A portable weather station was installed at Wanakha as shown in Figure 3 and Figure 4. Parameters such as solar radiation, ambient temperature, humidity, rainfall, wind speed, and wind direction were recorded during the study period. These parameters are used as inputs for the simulation model of the buildings.

Figure 3. Installation of portable weather station by researchers

Figure 4. Installed weather station at Wanakha Central School for data observations

Thermal Transmittance (U-value Measurement)

Heating energy required in a building not only depends on the building's physical parameters and weather but also on the thermal properties of the materials used. The thermal transmittance of the materials which is defined as U-value is one of the most important parameters that affect heat transfer through building walls. As both the buildings at Wanakha and Gunitsawa are constructed the same type of materials, i.e. brick masonry, the U-value was measured only at Wanakha. To measure the U-value, gSKIN® Heat Flux Kit was used as shown in Figure 5 to Figure 7. The same value obtained from measurement at Wanakha was used for simulation at Gunitsawa.

Figure 5. U-value measurement kit

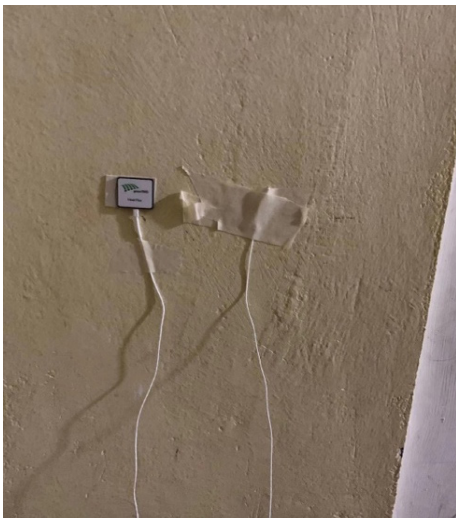


Figure 6. U-value sensor fixed on wall

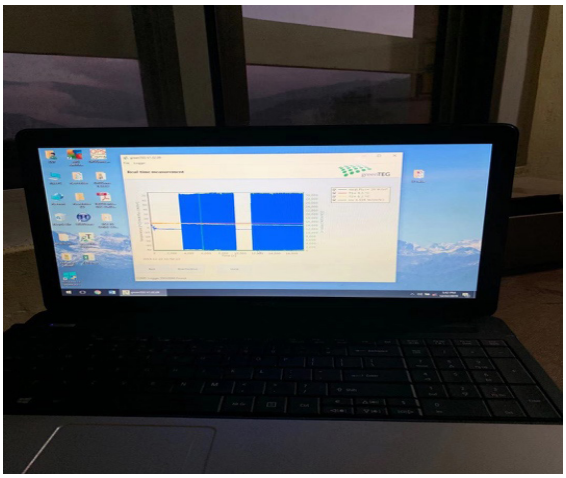
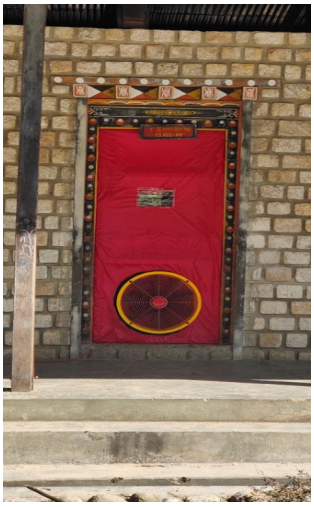


Figure 7. U-value software demonstration

Blower Door Test

Infiltration is the unintentional flow of air into the buildings. It indicates airtightness of buildings and can be measured through a blower door test. Several rounds of blower door tests were performed to determine the airtightness of the buildings before and after sealing the gaps of the building element (Figure 8 A, 8B and 8C).

8A



8B

8C

Figure 8A-8C. Blower door test set up in study site at Wanakha school

System Model

The building was modeled in TRNSYS17 (Figure 9) using the physical parameters measured on-site. The heating demand of the building depends on several factors such as heat transmittance, infiltration, orientation of the building, number of occupants and its behaviors, ambient weather conditions, thermal mass of the buildings, and appliances used. The following features were considered in the model:

- The actual orientation of the building was determined
- Heat transmittance (U-value was measured)
- Infiltration was determined by blower door test
- A total of 34 occupants in classroom
- Classes start at 8 am and end at 4 pm five days a week
- Heating is required throughout the academic session

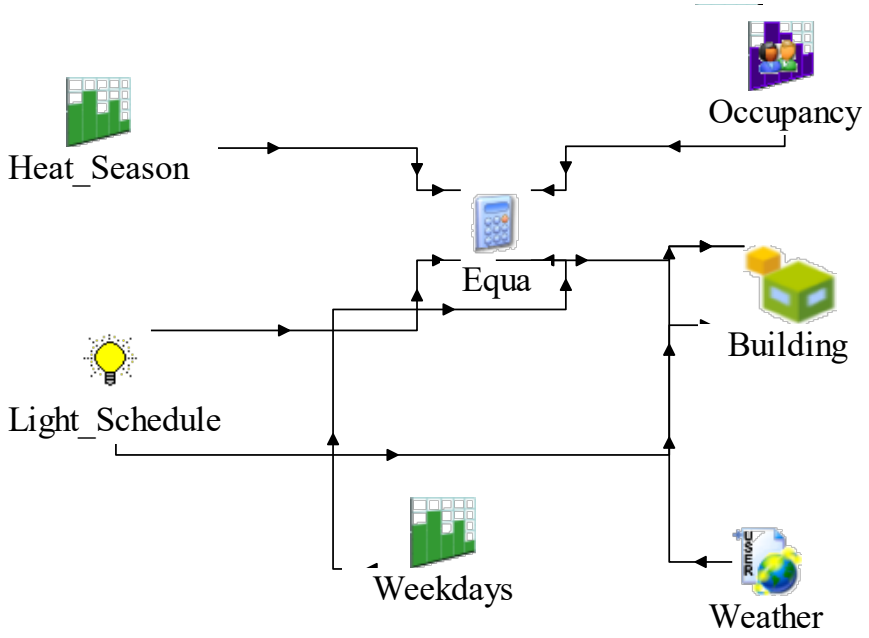


Figure 9. TRNSYS model

Results and Discussion

The transient simulation software, TRNSYS was used to evaluate the thermal performance of the buildings. It is a simulation software with a modular approach and is one of the most flexible and commonly used software to evaluate the thermal performance of buildings (Klein et al., 2017).

Study Site

Two schools, Wanakha Central School and Gunitsawa Primary School in Paro were selected as sites for the case study. Both the schools are located at an altitude of more than 2800 m and are extremely cold in winter. The average annual temperature is below 10°C.

Building Description

Two school buildings were selected for detailed analysis. The first building, Bldg-W is located at Wanakha Central School at an altitude of 2800 m. The second building, Bldg-G is located at Gunitsawa Primary School at an altitude of 2400 m. Bldg-W is a three-storied building and has four classrooms on each floor. Bldg-G is a single-storied building with three classrooms. Bldg-W is constructed with brick masonry,

timber floor, and aluminium window frames. The ceiling is made of 10 mm plywood board. Bldg-G is constructed with brick masonry, timber floor, and timber window frames. The ceiling of Bldg-G is made of 20 mm timber with 125 mm layer of soil. Figure 10 -13 shows the floor plan of the two buildings.

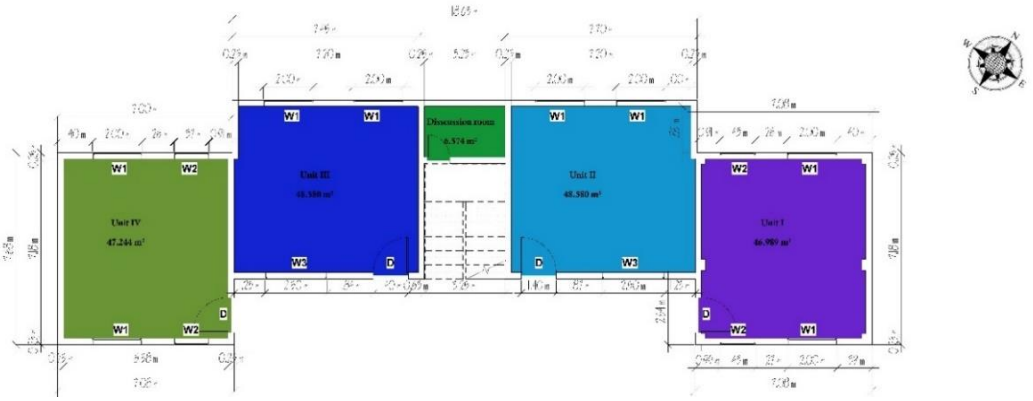


Figure 10. Floor plan of building in Wanakha school

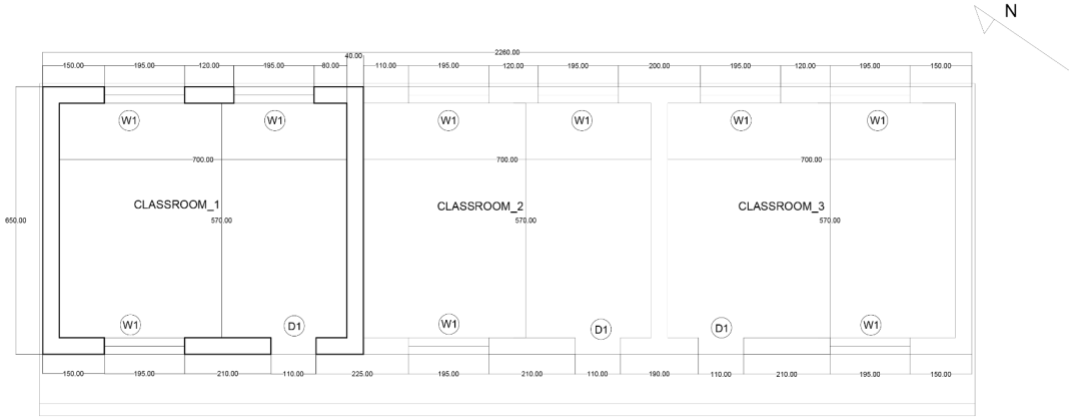


Figure 11. Floor plan of building in Gunitsawa school

Figure 12. Case study building of Wanakha Central School

Figure 13. Case study building of Gunitsawa Primary School

The physical parameters of the building measured on-site are shown in Table 10 & 11 (for one classroom only) for Bldg-W and Bldg-G respectively. Windows at Gunitsawa are made of timber frame with 4mm single glazing whereas windows at Wanakha are made of aluminum frames. Timber frames were found to be tighter and easier to seal the gaps than the aluminum frames.

Table 10. Classroom physical parameters at Wanakha

Zone (Volume in m^3)	Wall type	Area (m^2)	Category	Orientation
145.70	Wall	22.25	External	North-East
	Wall	20.40	External	South-East
	Wall	4.47	External	South-West
	Wall	14.88	Boundary	Unit II
	Wall	20.40	External	South-West
	Door-D	2.94	External	South-west
	Floor	47.25	Adjacent	Library
	Ceiling	47.25	Adjacent	Unit V

Table 11. Classroom physical parameters at Gunitsawa

Zone (Volume in m^3)	Wall type	Area (m^2)	Category	Orientation
119.7	Wall	5.7mx3m=17.1	External	North-West
	Wall	7.8mx3m= 23.4	External	North-East
	Wall	5.7mx3m=17.1	Internal	South-East
	Wall	7.8mx3m= 23.4	External	South-West
	Door-D1	1.1mx2.15m=2.36	External	South-West
	Window- W1	1.95mx1.4m=2.73	External	North-East
	Window- W1	1.95mx1.4m=2.73	External	North-East
	Window- W1	1.95mx1.4m=2.73	External	South-West

Weather

The ambient air temperature of Wanakha and Gunitsawa is shown in Fig.14 for the month of January 2020. From the weather data, it is evident that Gunitsawa is colder than Wanakha and thus could have a relatively higher heating load.

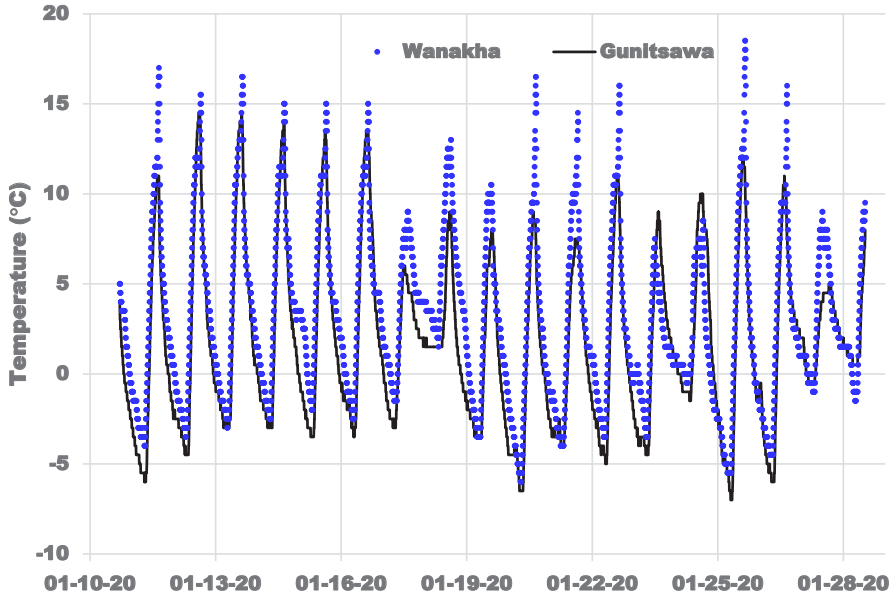


Figure 14. Ambient air temperature of Wanakha and Gunitsawa

Heating Demand

Fig. 15 & 16 shows simulated monthly demand for heating energy of a classroom in Wanakha and Gunitsawa respectively. The heating energy demand of the classroom in Wanakha is 381 MJ/m^2 and that of Gunitsawa is 397 MJ/m^2 of conditioned floor area.

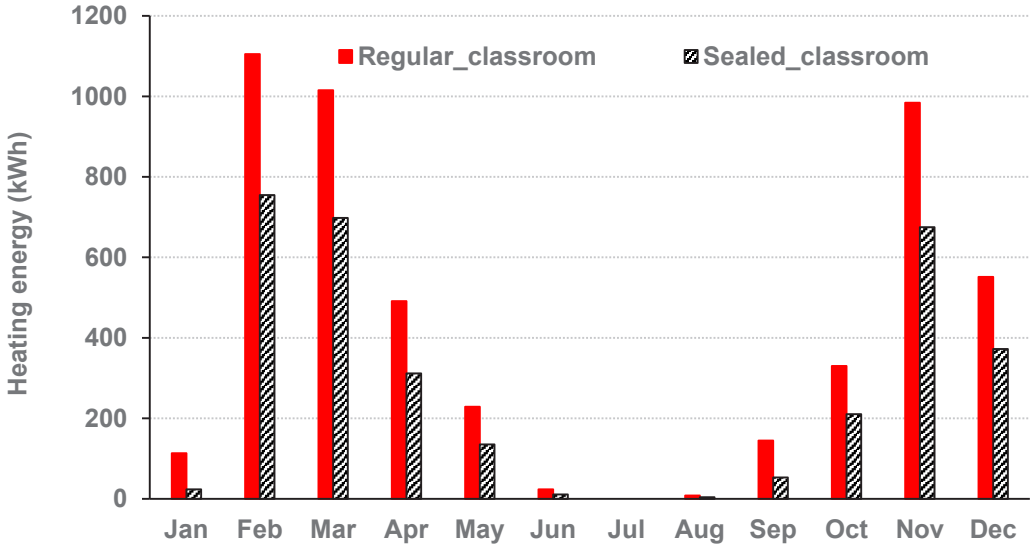


Figure 15. Heating energy demand of a classroom in Wanakha

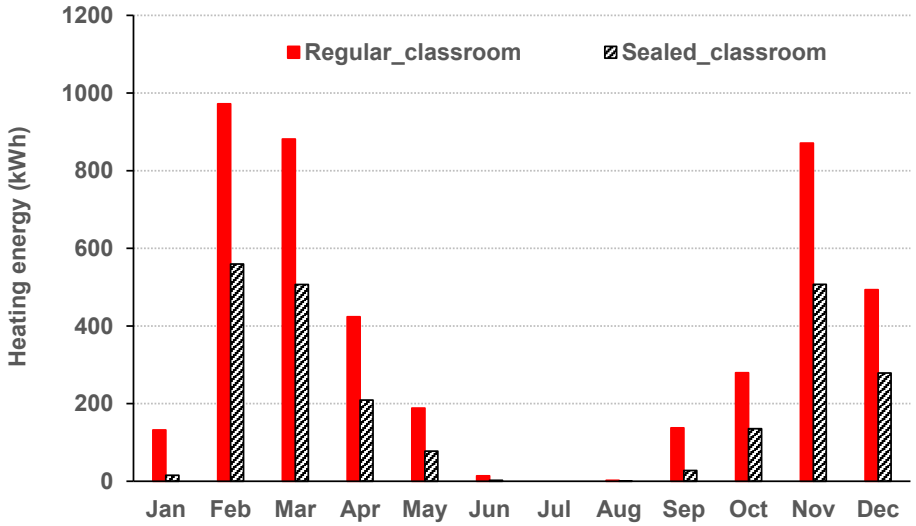


Figure 16. Heat energy demand of a classroom in Gunitsawa

The high demand for heating energy is due to the building being too leaky. Tighter building uses less heating energy than a leaky building. A blower door test was conducted following IS7792 testing procedure. From the tests, average infiltration was found to be 7.81 and 11.82 air change per hour (ACH) at Wanakha and Gunitsawa respectively. An energy-efficient building should have less than 0.5 ACH. This indicates that the two sample school buildings are far from being energy efficient.

To improve the energy efficiency of the buildings, gaps between building elements of sample classrooms were sealed using weather strips and caulks shown in Fig.17. By sealing the building elements gaps, infiltration was found to be 3.66 and 5.76 ACH for Wanakha and Gunitsawa as compared to 7.81 and 11.82 before the sealing of the gaps of the building element. The subsequent simulated demand for heating energy was 248 MJ/m^2 and 209 MJ/m^2 for the conditioned floor area of Wanakha and Gunitsawa respectively. This indicates that by sealing the gaps of the building element, the demand for heating energy could be reduced by up to 45% with predicted net revenue savings of more than Nu 7000/annum.

Fig. 17. Weather strips and caulks

To further validate the impact of sealing the gaps of the building element, the indoor temperature of two classrooms at Wanakha and Gunitsawa was recorded for more than one month. Out of the two classrooms, the gaps of the building element were sealed in one classroom (*Sealed_classroom*) while the other remained without sealing (*Regular_classroom*). Fig.18 & 19 shows ambient, and indoor temperature of the sealed and regular classrooms at Wanakha. By sealing the gaps of the building element, the indoor temperature can be reduced by an average of 2°C. As the demand for heating energy depends on indoor temperature, the energy required for heating will be significantly low.

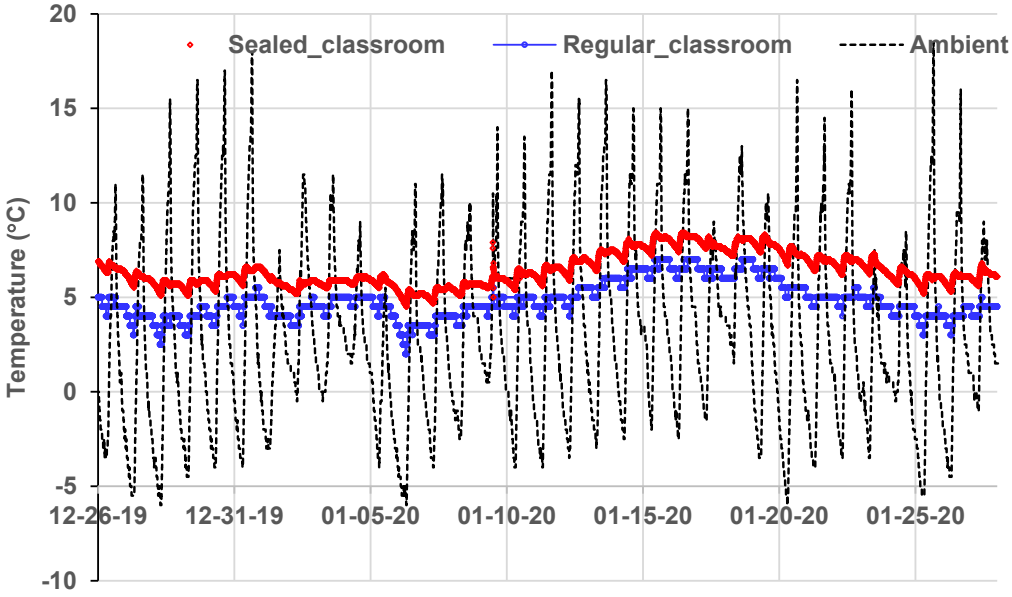


Figure 18. Ambient and room temperature of classroom at Wanakha

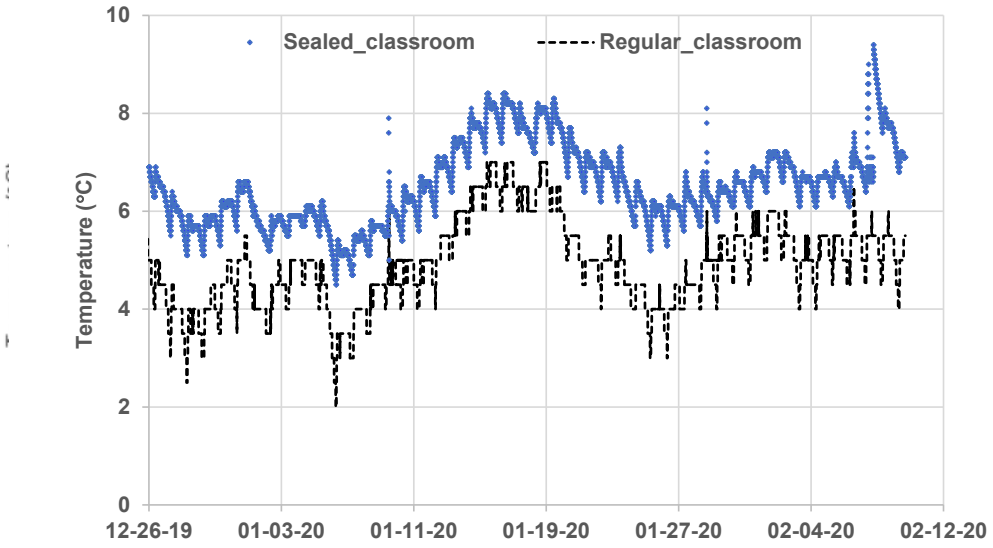


Figure 19. Indoor temperature of sealed and regular classroom at Wanakha

Similarly, Fig.20 & 21 show ambient and indoor temperatures of classrooms at Gunitsawa. As evident from the figures, there is hardly any difference between the sealed and regular classrooms. This may be attributed to two reasons. Firstly, the building is too leaky as indicated by a high infiltration rate (5.76 ACH) even after sealing the gaps of the building element. Secondly the regular classroom was found to be tight even without additional sealing of the gaps as indicated by the near equal infiltration rate of 6 ACH. Thus, there is no or only minimal temperature difference between the sealed and regular classrooms.

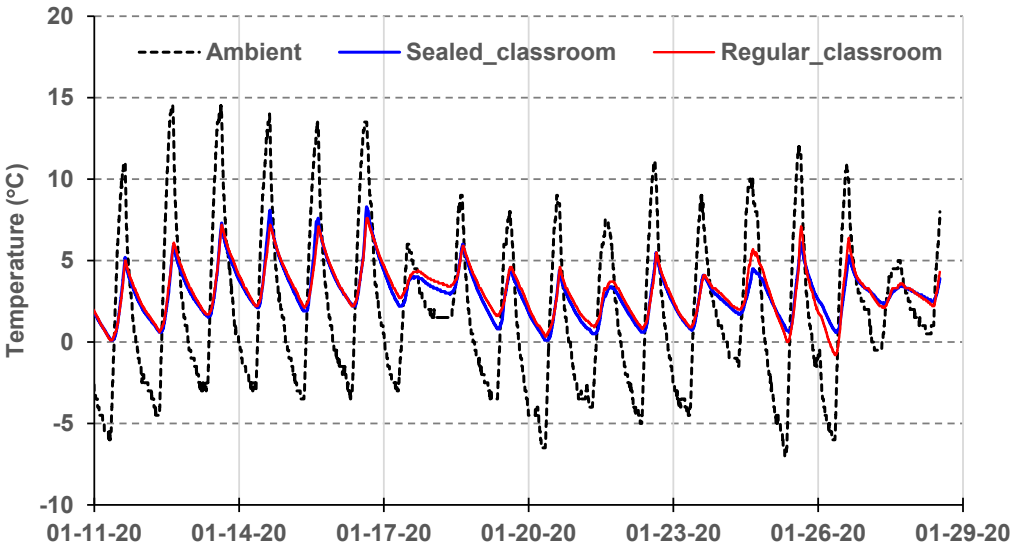


Figure 20. Ambient. and indoor temperature of classroom at Gunitsawa

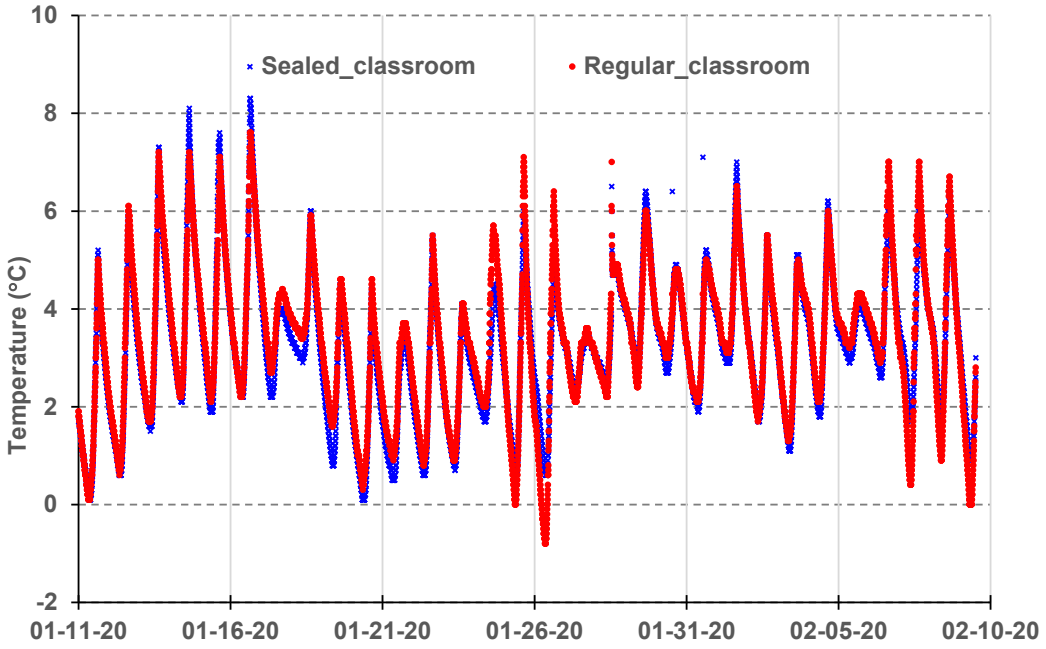


Figure 21. Indoor temperature of sealed and regular classrooms at Gunitsawa

Possible Interventions

Heat loss

Before proposing possible interventions to improve the thermal performance of the buildings, there is a need to understand the principle of heat loss from buildings. Infiltration and uncontrolled heat flow through the walls, ceilings, floors, and gaps between the building elements cause heat loss and thus results in high consumption of high thermal energy. Fig. 22 show the percentage of heat loss from a typical house in winter and Fig. 23 indicates heat gains in summer (Chinazzo, 2014). The walls and roof are responsible for 60% of heat loss in winter. In summer, walls and windows are responsible for 60% of heat gains.

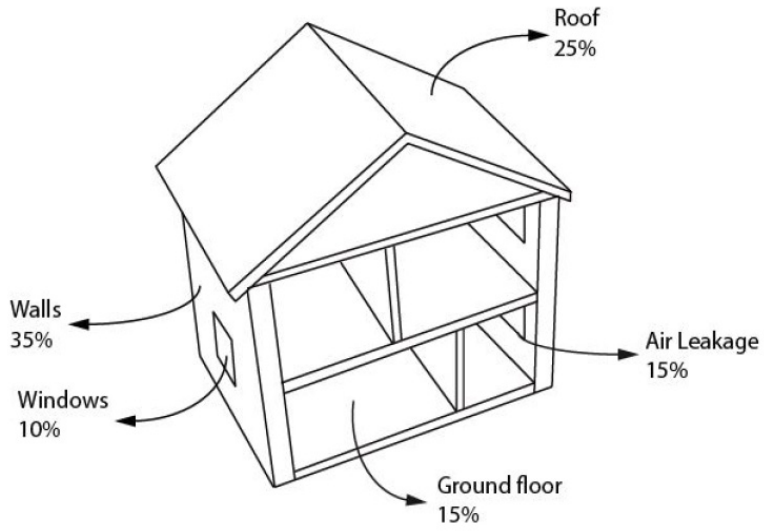


Figure 22. Percentage of heat loss from a house in winter (Chinazzo, 2014)

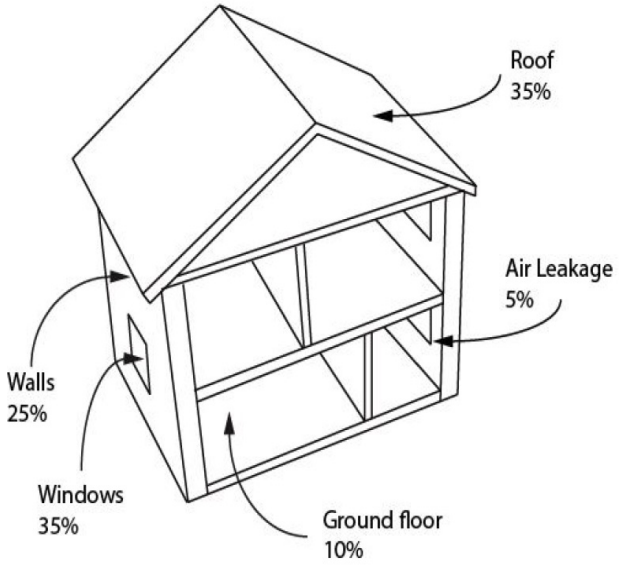


Figure 23. Percentage of heat gain from a house in summer (Chinazzo, 2014)

The above figures indicate that the main areas for intervention are walls and roofs (or ceilings). Thus, the thermal performance of the buildings in cold region can be improved by insulating the walls and ceilings. By adding insulation either on the ceilings or walls, it blocks the heat flux (or heat transfer) between the inside and outside of a thermal zone of a building. Several studies have been conducted in the past on the impact of insulation on demand for heating energy (Bellos, Tzivanidis,

& Antonopoulos, 2016; Kim & Moon, 2009; Lhendup, Lhendup, & Ohgaki, 2019; Lhendup, Ohgaki, Pradhan, & Wangchuk, 2019; Lucero-Álvarez, Rodríguez-Muñoz, & Martín-Domínguez, 2016; Yousefi, Yousefi, & Yousefi, 2015). Thermal insulation prevents heat gain/loss through the building envelopes. Table 12 and Fig.24 show the thermal properties of different materials commonly used in Bhutan.

Table 12. Thermal properties of commonly used construction and insulating materials in Bhutan (Standards, 1995)

Walls	Heat cond. (kJ/h.mK)	Sp. heat cap. (kJ/kgK)	Density (kg/m^3)
Burnt brick	2.92	0.88	1820
Hollow block	1.04	3	500
Concrete block	1.04	1	500
Mud block	2.7	0.88	1731
Stone masonry	1.15	1	500
Mineral wool	0.108	0.92	73.5
Polystyrene	0.126	1.34	16
Saw dust	0.1836	1	188
Coir board	0.1386	7	97
Rice husk	0.1836	1	120

Fig. 24. Locally available insulation materials: coir board, sawdust, and rice husk

Alternative wall materials

Table 13 shows the simulated annual heating energy demand of building for various types of wall materials. The walls of existing school buildings at

Wanakha are made of brick masonry while at Gunitsawa are made of stone masonry. Among the different possible wall materials, the hollow block has the minimum U-value (0.953 W/m^{2}K). Thus, buildings built with hollow block will require least heating energy as evident from Table 14. Compared to the base case, heating energy demand at Wanakha could be reduced by up to 19% by using hollow blocks instead of bricks, while in Gunitsawa, the dmand can be reduced by 12%.

Table 13. Heating energy demand using different wall materials

Wall material	u-Value of wall (W/m^{2}K)	Annual heating energy demand (kWh)	
		Wanakha	Gunitsawa
Brick wall	2.030	3248	2631
Hollow block	0.953	2637	2328
Concrete block	0.953	2691	2441
Stone masonry	1.034	2742	2472
Mud block	1.932	3229	2610

Insulating ceiling

Another method of reducing the demand for heating energy is by adding insulation to the walls and ceilings. Several simulations were performed to determine the demand of heating energy at Wanakha and Gunitsawa by using varying insulation materials. Tables 14 and 15 show the annual heating energy demand of Bldg-W and Bldg-G for different ceiling insulations.

Table 14. Heating energy demand using ceiling insulation at Wanakha

Wall material	Thickness (mm)	U-value of ceiling (W/m^{2}K)	Heating energy demand (kWh)
Plywood	10	4.225	3248
Polystyrene	100	0.323	2387
Mineral wool	100	0.280	2409
Sawdust	100	0.455	2533
Coir board	100	0.353	2616
Rice husk	100	0.455	2490

Table 15. Heating energy demand using ceiling insulation at Gunitsawa

Ceiling insulation	Thickness (mm)	U-value of ceiling (W/m^2K)	Heating energy demand (kWh)
Clay (base case)	125	0.915	2472
Polystyrene	100	0.339	2184
Mineral wool	100	0.274	2172
Sawdust	100	0.439	2227
Coir board	100	0.343	2188
Rice husk	100	0.439	2223

The ceiling of the building at Wanakha is made of 10 mm thick plywood with a total U-value of 4.225 W/m^2K. By adding 10 m thick polystyrene or mineral wool on top of the plywood, the U-value could be reduced from 4.225 to 0.339 and 0.274 W/m^2K. This results up to 26% reduction in demand for heating energy. The ceiling of the building at Gunitsawa is made of two layers, 20 mm timber and 125 mm thick clay. By adding 10 cm polystyrene or mineral wool instead of clay, the annual heating energy required can be reduced by up to 12% (Table 16). Insulation layers can be easily laid on the existing ceilings of Bldg-W and Bldg-G as shown in Fig. 25.

Fig. 25. Laying insulation on the ceiling (Ovo, 2020)

Adding wall insulation

Another method to improve the thermal performance of the buildings is to add insulation to the walls. In the existing buildings, this would be difficult as its walls need to be modified as shown in Fig. 26 which may result in reduction of room size. However, based on the simulation, significant energy savings could be achieved by adding wall insulation. For example, by adding 10 cm of polystyrene or mineral wool in the walls, the demand for heating energy can be reduced by up to 20% at Wanakha and 10% at Gunitsawa (Table 16).

Table 16. Heating energy demand using wall insulation

Wall material	Heating energy demand (kWh)	
	Wanakha	Gunitsawa
Base case (no wall insulation)	3248	2472
Polystyrene	2555	2245
Mineral wool	2542	2233

Figure 26. Modification of wall to insert insulation

Combination of wall and ceiling insulation

Further simulations were performed to analyse the reduction in demand for heating energy by insulating walls and ceiling. Fig.27 shows the heating energy demand of Bldg-W and Bldg-G for different combinations of insulation in the walls and ceiling. Maximum reduction of heating energy of more than 50% was found when both the wall and ceiling were insulated.

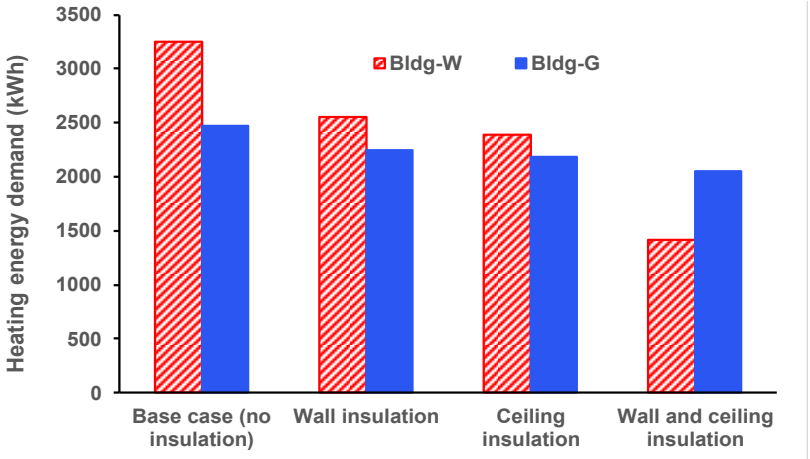


Figure 27. Heating energy demand of Bldg-W and Bldg-G

Conclusion

The study used both in-situ tests and simulations to determine the thermal performance of the two school buildings. From the blower door test of the classrooms, it can be deduced that the sample school buildings are too leaky and far from energy efficient. If the gaps between the building elements are sealed, then the infiltration could be reduced by up to 50% which results in a 50% reduction in demand for heating energy. It was established that by adding a layer of insulation on the ceiling, the annual demand for heating energy could be further reduced up to 25% thereby enhancing the thermal performance of the buildings. As the current results of thermal performance enhancement were based on the simulations, further measurements are required to validate the results. Therefore, the study may be considered as a precursor to conduct more comprehensive tests and measurement by retrofitting the existing buildings.

Limitations and Recommendations

Based on the tests and extensive simulations, the following recommendations are drawn for further study and research as outlined below:

- Given the distance and non-availability of accessories for monitoring instruments, the measurements were limited to over a month only.
- The tests and measurements were conducted only during the winter months. Further tests and measurements are required during the summer months to understand the impacts of interventions in different seasons.
- An existing room may be retrofitted and monitored for over a year to analyze the impact of the energy efficiency retrofitting on thermal energy demand.
- If time and budget permits, there is a need to monitor two rooms, one with energy efficiency features and the other without it for over a few years to analyze the impacts of both in terms of energy efficiency and financial implications.
- Further study and analysis are required before the recommendations can be implemented in sealing building element gaps and retrofitting in the existing buildings.

References

Bellos, E., Tzivanidis, C., & Antonopoulos, K. A. (2016). Comparison of heating and cooling loads of a typical building with TRNSYS and EQUEST. In P. Grammels (Ed.), *Energy, Transportation and Global Warming* (Vol. Green Energy and Technology). US: Springer International Publishing.

Chinazzo, G. (2014). *Refurbishment of existing envelopes in residential buildings: Assessing robust solutions for future climate change.* (Master), Politecnico di Torino,

Department of Renewable Energy (DRE). (2015). *Bhutan building energy efficiency study*. Thimphu: Department of Renewable Energy, Ministry of Economic Affairs, Royal Government of Bhutan

International Energy Agency (IEA). (2018). Energy technology perspectives 2017 - Catalysing energy technology transformations. Retrieved from https://www.iea.org/ buildings/

Jentsch, F. M., Kulle, C., Bode, T., Pauer, T., Osburg, A., Tenzin, . . . Tenzin, K. (2017). Field study of the building physics properties of common building types in the inner himalayan valleys of Bhutan. *Energy for Sustainable Development*(38), 48-66.

Kim, J.-J., & Moon, J. W. (2009). *Impact of insulation on building energy consumption*. Paper presented at the Eleventh International IBPSA Conference, Glasgow, Scotland.

Klein, S., A, Beckman, W. A., Mitchell, J. W., Duffie, J. A., Duffie, N. A., Freeman, T. L., . . . Arias, D. A. (2017). TRNSYS 17 a TRaNsient SYstem simulation program: Solar energy laboratory, University of Wisconsin-Madison.

Lhendup, T., Lhendup, S., & Ohgaki, H. (2019). *Analysis of heating and cooling energy demand of school buildings*. Paper presented at the 7th International Conference on Advances in Energy Research, IIT, Mumbai, India.

Lhendup, T., Ohgaki, H., Pradhan, P., & Wangchuk, T. (2019). Parametric study of heating and cooling energy demand of residential buildings in Bhutan. *International Journal of Structural and Civil Engineering Research, 8*(4), 314-320.

Lucero-Álvarez, J., Rodríguez-Muñoz, N. A., & Martín-Domínguez, I. R. (2016). The Effects of roof and wall Insulation on the energy costs of low income housing in Mexico. *Sustainability, 2016*(8).

Man, Y., Yang, H., & Wang, J. (2010). Study on hybrid ground-coupled heat pump system for airconditioning in hot-weather areas like Hong Kong. *Applied Energy, 87*(9), 2826-2833.

Ovo. (2020). The ultimate guide to roof and loft insulation. Retrieved from https://www.ovoenergy.com/guides/energy-guides/the-ultimate-guide-to-roof-and-loft-insulation.html

Standards, B. o. I. (1995). Handbook on functional requirements of buildings (Other than industrial buildings). In. New Delhi: Kapoor Art Press.

Wangdi, T. (2017, 22 March). Chilblain outbreak in Thimphu, Paro and Wangdue schools. *Kuensel*. Retrieved from http://www.kuenselon line.com/chilblain-outbreak-in-thimphu-paro-and-wangdue-schools/

Yousefi, Y., Yousefi, S., & Yousefi, Y. (2015). *Energy efficiency in educational buildings in Iran: Analysis and Measures*. Paper presented at the International Building Performance Simulation Association, Hyderabad, India.

CHAPTER 4

IMPACT OF KNOWLEDGE MANAGEMENT ON ORGANIZATIONAL PERFORMANCE: A CASE OF RUB COLLEGES

Tshering Lhamo, Kinley Yangdon, Kinley Wangchuk and Thinley Choden

Chapter 4

Impact of Knowledge Management on Organizational Performance: A case of RUB colleges

Abstract

This study investigated the current practices of knowledge management amongst RUB colleges and assessed its impact on organizational performance by adopting a mixed method. Data from 189 respondents from across all nine RUB colleges were gathered using a survey questionnaire and 6 structured interviews were conducted. Analysis of the data indicates that the RUB colleges are mostly practicing explicit method of knowledge management. Further, there is more prevalence of knowledge storage, knowledge transfers and better attitude towards knowledge management amongst RUB colleges' staff. However, motivation and opportunities to share do not exist significantly. The study indicates that explicit-oriented knowledge management and knowledge transfer have significant impact on organizational performance. There is a need for proper policies and systems of knowledge management in RUB colleges to have knowledge management advancement as tertiary educational institutes should take a lead role in the socio-economic development of the country. However, this requires having all the stakeholders on board along with government support in terms of finance as well as trust and confidence.

Introduction

Knowledge encompasses any understanding acquired by way of education, experience and discovery. It could also be the gained understanding based on insight and intuition which guides an individual's decisions and hence one's actions (Kumar & Gupta, 2012). Peter Drucker, the management pioneer, contends that "he only real source of sustainable competitive advantage is knowledge" (1993, p. 7). Similarly, Nonaka (1991, p. 96, as cited in Nicolaidis & Michalopoulos, 2004) argues that 'in an economy where the certainty is uncertainty, the only source of lasting competitive advantage is knowledge.' Thus, resounding the truth in these statements, organizations, around globe, have acknowledged the instrumental role played by knowledge in ensuring sustained competitive edge as knowledge provides value to firms by positioning them to confront and deal with unfamiliar circumstances successfully (Choi, Poon & Davis, 2006).

However, just the mere possession of knowledge does not automatically translate into value or competitive advantage (Biloslavo & Trnavcˇevicˇ, 2007). It calls for a systematic way of managing knowledge through processes of creating, storing, sharing and using knowledge (Kanwal, Nunes & Arif, 2019; Omerzel, Biloslavo & Trnavcevic, 2011). This process is known as knowledge management. A study conducted by Ling confirmed that though the performance of a firm is dependent upon the intellectual resources, knowledge management moderates the organizational performance thus validating the critical role played by knowledge management in enhancing organizational success (Ling, 2013).

The importance of knowledge management has grown to the extent of organisations making huge investment in this function. For instance, the investment of US firms in software for knowledge management was found to be around $73 billion in 2007, which increased by another 16 percent in 2008 (Mills & Smith, 2011). This has resulted in knowledge management software being the software segment with the fastest growth.

Knowledge management becomes even more crucial in the tertiary education sector as this sector is fundamentally responsible for creation and dissemination of knowledge either in the form of research or providing educational services (Kanwal, Nunes & Arif, 2019). Studies have confirmed that effective knowledge management by means of sharing and using knowledge enables higher education institutes (HEI) to be sustainable and innovative (Poonkothai, 2016). Therefore, scholars assert that knowledge management is indispensable if the HEIs are to progress and develop (Areekkuzhiyil, 2016) thereby rendering it necessary to have proper knowledge management infrastructures and strategies in place (Toro & Joshi, 2013).

However, on the contrary, researches have established that the education sector is amongst the last group of organizations to deploy knowledge management ideologies and practices (Brewer & Brewer, 2010). Therefore, this study aimed to understand the current status of knowledge management practices amongst RUB colleges as one of the major players in the Bhutanese tertiary education sector and understand its relationship with organizational performance.

This study first reviews previous literature in the field of knowledge management followed by a brief description of the research methodology deployed. It then moves onto describing the data, analysis and results, and then the discussion. The paper then highlights the limitations of the study, followed by a conclusion.

Literature review

Knowledge has been one of the universal concepts that has drawn the attention of many, beginning from philosophers like Plato and Aristotle to business managers, scholars, researchers and academicians (Bolisani & Bratianu, 2018). Knowledge is vaguely defined as the outcome of knowing. Knowledge refers to any "understanding that a person has gained through education, experience, discovery, intuition and insight or a combination of instincts, ideas, rules and procedures that guide actions and decisions" (Kumar & Gupta, 2012, p. 8).

Organizations cannot simply depend on their physical resources for success; knowledge makes equal contribution, if not more, to organizational success (Mills & Smith, 2011). There is a general consensus that knowledge lies at the heart of any economic development activity and is the major determinant of an economy's well-being (Nicolaidis & Michaopoulos, 2004). Knowledge like any other intangible asset can be deployed to accomplish long-term, strategic goals as it has greater competitive value than physical assets owing to its inherent nature of not being subjected to the "law of diminishing returns" like other physical assets (Bolisani & Bratianu, 2018). In fact, the value of knowledge increases with more usage, sharing and transferring (Kumar & Gupta, 2012).

People normally think of written and codified knowledge like books, manuals, policy documents, databases, patents and so on, when a reference to knowledge is made (Biloslavo & Trnavcevic, 2007). This is just the explicit knowledge (Nicolaidis & Michalopoulos, 2004; Rowley, 2000). Another form of knowledge, tacit knowledge, is entrenched in people's minds. Tacit knowledge is driven by intuition, context, experience, and memories which is difficult to document and transfer (Nicolaidis & Michalopoulos, 2004**)**. Researchers contend that 70 to 80 % of organizational knowledge is tacit knowledge (Kumar & Gupta, 2012). They argue that it is difficult to recognize and measure, and thus, real value can only be obtained only through a systematized approach to managing knowledge like any other asset.

Knowledge management is gaining popularity for its ability to provide enhanced organizational performances and a mechanism to tap on human capital for competitive advantage (Brewer & Brewer, 2010; Rowley, 2000). Hence, the need for knowledge management arises (Kumar & Gupta, 2012). Knowledge management is a process of exploiting and developing knowledge as an asset for an organization to further an organization's goals (Rowley, 2000). "Knowledge

management systems collect all relevant knowledge and experience in the firm and make it available whenever and wherever it is needed to support business processes and management decisions" (Kumar & Gupta, 2012, p.9). In short, KM can be defined as a process of providing access to the right knowledge to the right person at the right time (Biloslavo & Trnavcevic, 2007).

Knowledge management or KM basically gathers relevant knowledge and makes it accessible for those who need it to facilitate decisions and business processes (Kumar & Gupta, 2012). The stakeholders in play could be the employees, customers, business associates or suppliers. KM, thus, stimulates an integrated method of "identifying, capturing, retrieving, sharing, and evaluating enterprises information assets" (Biloslavo & Trnavcevic, 2007).

McKinsey and Co is one of the first movers in the domain of KM. Its initial efforts were bolstered with the creation of databases of its practices in 1987. Despite the challenges and resistances from the employees, it has been able to venture into a new way of learning in the form of a platform called 'Practice Olympics' wherein teams from different regions compete in idea presentation based on the knowledge that they gain from their associations with clients. Ernst & Young is another firm that has embraced KM since 1993 (Rowley, 2000).

Different schools of thought have put forth different approaches to knowledge management. For example, one school of thought have identified two approaches to knowledge management 1) focused on human aspect that is through people-to-people and 2) focused on technological aspect which is through documenting and codifying (Sveiby, 1997 as citied in Ling, 2013). Another school of thought has identified knowledge management as comprising of four distinct steps such as externalization (converting the implicit knowledge to explicit), combination (sharing and combining explicit knowledge through ICT), socialization (implicit knowledge sharing) and internalization (converting explicit knowledge to implicit) (Ling, 2013).

Similarly, Biloslavo & Trnavcevic (2007) advocate that KM involves generating, storing, transferring and using knowledge. They contend that organizations can easily collect explicit knowledge from the people who possess that knowledge and store it in the form of written documents, norms and procedures and the likes. Tacit knowledge can be extracted by organizations only through active engagement of people with knowledge in activities that allow interaction with other employees, observation and working together amongst others (Biloslavo & Trnavcevic, 2007; Kumar & Gupta, 2012).

Therefore, 'generating knowledge' is concerned with assembling individual knowledge and 'storing knowledge' implies depositing that knowledge in computer aided repositories or organizational practices/culture so that it is easy to retrieve and transfer (Biloslavo & Trnavcevic, 2007). The transfer takes place when the knowledge is disseminated and made available (Sohail & Dau, 2009). Finally, value is created from knowledge when people actually integrate that learning to transform work process (Sohail & Dau, 2009) and final outputs thereby bringing about organizational learning (Rowley, 2000).

An examination of existing literature reveals that KM strategies can either be explicit or tacit oriented. Explicit orientation emphasizes codification and reuse of knowledge aided by IT tools while direct transfer of knowledge from one person to another through socialization is central in tacit orientation (Choi, Poon & Davis, 2006). Moreover, to have effective KM systems in place, there are two essential factors namely; knowledge process capabilities which comprises of acquisition, conversion, application and protection and knowledge infrastructure capabilities constituted by technology in place, organizational culture and structure (Mills & Smith, 2011). Studies suggest that both these set of capabilities have positive impact on organizational performance (Mills & Smith, 2011).

Knowledge management and higher education institutions

The tertiary education sector, by virtue of being responsible for creating and distributing knowledge makes it realistic and fair to accredit knowledge management as their core activity (Natek & Lesjak, 2013; Noszkay & Balogh, NA). Further, with HEIs having knowledge as both their input and output, experts believe that KM becomes even more important (Biloslavo & Trnavcevic, 2007; Sohail & Dau, 2009). This growing importance and need for KM is evident from the fact that HEIs in the developed part of the world are provided grants to execute KM practices (Sohail & Dau, 2009).

It is also believed that the soaring demands put on HEIs in the form of industrial pressures, tertiary education going international, lifelong learning, moving from teacher-centric teaching to learner-centric learning, changes in technologies can all be fulfilled with proper KM system in place (Biloslavo & Trnavcevic, 2007). In fact, it is argued that KM systems in the tertiary education setting should actually form a part of a larger quality management system (Sedziuviene & Vveinhardt,

2009) besides using KM as a financial sustainability strategy for HEIs (Pinto-Prieto, Becerra-Ardila & Gomez-Florez, n.d.).

Knowledge, in the tertiary education sector, is generated from various activities in a tertiary education setting such as teaching, assessment, tests & examination, student admission and counselling, research and consultancy and overall management (Dhamdhere, 2015). Thus, KM in a tertiary education setting refers to "a set of practices that help an institution to improve teaching, research and administrative roles and encourage the concerned stakeholders to use and share data and information in decision making" (Kanwal, Nunes & Arif, 2019, p.310). It was, conventionally, viewed as the function of the library department (Kanwal, Nunes & Arif, 2019).

Studies show that the tertiary education sector has been bringing about reforms in the education focusing on lifelong learning to be more adaptable and market focused (Natek & Lesjak, 2013). Specifically, researchers have pointed out that South Asian HEIs are confronted with issues of managing knowledge-based assets. However, these institutions are attempting to formulate policies and urging stakeholders to actively participate to reduce the hurdles and promote KM policies and practices (Dhamdhere, 2015). The HEIs now need to focus on using those as stepping stone to further their development instead of inventing an entirely new model. The primary stakeholders of HEIs should comprehend their role in this knowledge-based era and respond accordingly. It has been recognized that HEIs have to manage knowledge in a consciously and explicitly so as to recognize and be recognized for the intellectual capital value in its service to the society (Rowley, 2000).

KM, Organizational Performance and HEIs

Sohail and Dau (2009) rightly pointed out that KM "is not an end itself, but a means to an end." As per the findings reported by various studies, there exist a positive relation between KM behaviours and organizational performance (e.g., Moorman, 1995; Baker & Sinkula, 2005; Hult et al., 2005; Kirca et al., 2005; Choo et al., 2007 as cited in Fugate, Stank & Mentzer, 2009; Lazarova & Taylor, 2009) because KM supports conversion of intellectual abilities into values (Ling, 2013). Nonetheless, consistency between KM strategies and knowledge infrastructure, organizational culture, structure and process should be ensured to produce, share and use knowledge (Choi, Poon & Davis, 2006).

Successful KM requires more than mere sharing of individual repository of knowledge (Kiessling, Richey, Meng & Dabic, 2009). It requires conscious effort, on the part of the organization, to identify and obtain new knowledge (Drucker, 1993). The new knowledge should result in organizational learning which consequently brings about new product development and innovations (Kiessling, Richey, Meng & Dabic, 2009). According to Vaccaro, Parente and Veloso (2010), rigorous KM practices directly impact organizational performance as the knowledge enables a firm to respond faster to market demands and trends.

Knowledge management allows free/ smooth flow and effectual management of knowledge in an organization. This knowledge becomes the essential input for bringing out improvement in work practices and processes (Mills & Smith, 2011; Sohail & Dau, 2009). Hence, creating and using knowledge is key to the success and sustainability of an organization (Lazarova & Taylor, 2009; Sohail & Dau, 2009). KM builds organizational astuteness by getting the employees to enhance the work processes by sharing and providing access to knowledge. This leads to better work practices, policies and strategies (Kumar & Gupta, 2012; Vaccaro, Parente & Veloso, 2010; Sohail & Dau, 2009).

So far, there has not been agreement amongst the scholars on the way which KM strategy brings about superior organizational performance. While some believe that the strategies should be used as a stand-alone, others assert that a combination is a better choice (Choi, Poon & Davis, 2006; Mills & Smith, 2011). Organizations that want to succeed in KM should view knowledge as another form of asset and put in place principles and norms that support knowledge creation and sharing (Rowley, 2000).

However, studies have confirmed the importance of having a conducive environment for knowledge management to have healthy growth (Omerzel, Biloslavo, & Trnavcevic, 2011). For transfer of knowledge to take place, trust has been found to be the perquisite. In absence of interpersonal trust, the best strategies, systems and policies will be futile (Biloslavo & Trnavcevic, 2007). For KM to be effective and result in higher organizational performance there should be willingness on the part of the individual, support from the organization and technological infrastructure (Sohail & Dau, 2009).

Higher educational institutions (HEIs) in South East Asia are said to be struggling to obtain a competitive advantage to attract talent and government

investment. Therefore, they are promoting KS practice, which provides benefits to them to utilize their knowledge resources in a better way (Al-Kurdi, El-Haddadeh & Eldabi, 2018). KM in HEIs aids in decision-making about development of curriculum, competing for research grants, employing best practices and integrating IT into daily operations (Howell & Annansingh, 2013). This in turn brings about organizational effectiveness and sustained higher organizational performance thereby leading to the development of competitive advantage (Kanwal, Nunes & Arif, 2019).

Proper KM is critical for enhancing the efficiency and quality of both education and research (Biloslavo & Trnavcevic, 2007) and will be able to serve its stakeholders better with the help of systematized KM strategies (Brewer & Brewer, 2010). Experts claim that effectual KM policies and practices can augment the ability of HEIs to participate in economic development process like European Universities which function as employers, sources of technical know-how, and homes for human resource development (Brewer & Brewer, 2010).

Bloom's Taxonomy, which is widely used by education institutions for classification, writing and measurement of students' learning, can be used to strategize KM policies and practices so as to have a well-designed curricula delivered in HEIs because the students' learning objectives are basically the knowledge, skills and abilities that HEI aspire to impart to their students (Brewer & Brewer, 2010).

Methodology

In order to explore the relationship between KM and organizational performance, this study adopted a mixed approach to research; a combination of survey with interview.

Samplings were done at two levels, organizational and individual. At the organizational level, the whole of the population served as the sample. All the nine colleges under RUB were covered. With a confidence level of 95% and 5% margin of error, the sample size was determined to be 217 for a population of over 400 teaching staff of RUB. However, anticipating a low response rate the survey questionnaire was provided to 379 teaching faculty of the nine colleges. The samples were determined based on random sampling method. However, the response rate was exactly 50 percent.

Purposive sampling method was used for the structured interview where all Presidents of the nine colleges were attempted to be covered. However, only six respondents participated in the interview. The interview questions were designed based on the objectives of the study.

The questionnaire consisted of relevant items based on literature review, and the responses were recorded against a five-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. All the constructs were already tested and validated as they were adapted from previous studies. However, slight contextual modifications were made to suit the context. The research instruments used for this study are presented in Annexure 1.

The data gathered from 189 respondents were analyzed using SPSS version 26. Simple descriptive and statistical tests were run to analyze the data. The data gathered through structured interview was analyzed using thematic analysis and constant comparison methods.

Results and Discussions

Sample characteristics

The sample consisted of 189 respondents for the questionnaire-based survey. The highest number of respondents were from Gedu College of Business Studies (GCBS) representing 19.58 percent of the total respondents followed by Jigme Namgyel Engineering College (JNEC) with 14.29 percent. The least number of respondents were from Samtse College of Education (SCE) with only 6.35 percent of the total respondents followed by Gyalposhing College of Information Technology (GCIT) representing only 7.41 percent. The respondents covered all nine colleges and their distribution across gender is presented in Table 17.

Table 17. Survey respondents' distribution across colleges by gender

	Gender		Total	%age
College	Male	Female		
JNEC	23	4	27	14.29
CST	13	3	16	8.47
CLCS	12	1	13	6.88
CNR	16	6	22	11.64
PCE	18	7	25	13.23

SCE	7	5	12	6.35
GCBS	29	8	37	19.58
GCIT	9	5	14	7.41
Sherubtse	16	7	23	12.17
Total	**143**	**46**	**189**	**100**

The respondents were all male for the structured interview and the response rate was 66.67 percent.

Reliability and validity test

Since the survey instrument was adapted from previous studies, the content validity was already established. The reliability of the quantitative instrument was determined by Cronbach's alpha. The reliability score ranges from 0.596 to 0.832. Generally, the reliability should be a minimum of 0.7 in terms of Cronbach's alpha, however, when the constructs are used in combination of other constructs, a Cronbach's alpha of 0.5 or 0.6 is considered acceptable (Ling, 2013). The overall reliability stands at 0.905 for the 28 items. The reliability results are presented in Table 18.

Table 18. Reliability of the survey constructs

Construct	Cronbach's alpha	No. of items
Explicit Oriented	0.711	4
Tacit-Oriented	0.701	4
Knowledge Storage	0.737	3
Knowledge Transfer	0.648	4
Staff Attitude	0.726	2
Motivation to share	0.596	4
Opportunities to share	0.696	2
Organizational Performance	0.832	5
Overall	**0.905**	**28**

Results

On the dimension of 'knowledge storage', which is an enabler for knowledge management, colleges under RUB do practice storage of data. The average mean value for the RUB colleges stands at 3.7937, from which it can be deduced that there is around 76% prevalence of knowledge storage (Table 19). This implies the employees of RUB colleges have the practice of recording their knowledge. Further,

one-way ANOVA test indicates that there is no significant difference in terms of knowledge storage practices amongst RUB colleges at the p>0.05 level for the conditions [F (8, 180) = 0.76, p = 0.638] (Table 20).

Table 19. Comparison of Means on the dimension of knowledge storage

College	Mean	N	Std. Deviation
JNEC	3.6667	27	0.55470
CST	3.8958	16	0.46696
CLCS	3.8205	13	0.35001
CNR	3.7576	22	0.74309
PCE	3.7867	25	0.58436
SCE	3.9167	12	0.35176
GCBS	3.6937	37	0.62053
GCIT	3.8095	14	0.58051
Sherubtse	3.9855	23	0.61528
Total	**3.7937**	**189**	**0.57662**

Table 20. One-way ANOVA Test for Knowledge Storage

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.043	8	0.255	0.76	0.638
Within Groups	60.465	180	0.336		
Total	**62.508**	**188**			

Another enabler for knowledge management is 'Knowledge Transfer'. The mean scores of the colleges on this dimension indicate that employees of the RUB colleges agree that they have the trend of transferring knowledge. However, there are significant difference amongst colleges on this dimension at the p>0.05 level for the conditions [F (8, 180) = 4.676, p=0]. Specifically, the multiple comparison results suggest that Sherubtse, CST, JNEC, SCE and CNR have significantly higher/more knowledge transfer practices as compared to GCBS as presented in Table 21 and 22.

Table 21. Comparison of Means on the dimension of Knowledge Transfer

College	Mean	N	Std. Deviation
JNEC	3.8241	27	0.57099
CST	3.9844	16	0.68598
CLCS	3.4615	13	0.43116
CNR	3.7159	22	0.61864

PCE	3.6600	25	0.71764
SCE	3.8958	12	0.5272
GCBS	3.1757	37	0.65049
GCIT	3.3929	14	0.64087
Sherubtse	3.9348	23	0.68348
Total	**3.6376**	**189**	**0.68046**

Table 22. One way ANOVA Test for Knowledge Transfer

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.978	8	1.872	4.676	0
Within Groups	72.070	180	0.400		
Total	**87.048**	**188**			

On the dimension of 'Staff Attitude' towards knowledge management, the mean score is lower for all the colleges compared to the dimension of 'Knowledge Storage' and 'Knowledge Transfer.' However, the scores indicate an acceptable level of attitude amongst the employees towards knowledge management. The difference amongst RUB colleges with regard to staff attitude towards knowledge management is significantly different at the $p>0.05$ level for the conditions [$F(8,180) = 2.305$, $p=0.022$]. Though the employees of all colleges seem to have a better attitude towards knowledge management than GCBS, multiple comparison tests indicate that only Sherubtse is doing significantly well on this dimension as against GCBS. This can be observed from the multiple comparison table presented inTable 23 and 24.

Table 23. Comparison of Means on the dimension of Staff Attitude

College	Mean	N	Std. Deviation
JNEC	3.5556	27	0.78854
CST	3.4063	16	0.89849
CLCS	3.6154	13	1.02376
CNR	3.6364	22	1.03719
PCE	3.6600	25	0.78687
SCE	3.9167	12	0.92524
GCBS	3.0000	37	0.90523
GCIT	3.5714	14	0.70321
Sherubtse	3.7826	23	0.93937
Total	**3.5132**	**189**	**0.91593**

Table 24. One way ANOVA test for 'Staff Attitude

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.655	8	1.832	2.305	0.022
Within Groups	143.062	180	0.795		
Total	**157.717**	**188**			

The mean score for the colleges is lowest in the front of 'Motivation to Share' knowledge on the part of the employees. The level of motivation is the lowest for JNEC employees with a mean score of 3.1944 only (Table 25). The difference amongst colleges in terms of motivation to share is significant at the $p>0.05$ level for the conditions [$F(8, 180) = 2.32$, $p=0.022$] (Table 26). According to the multiple comparison tests, Sherubtse has significantly higher level of motivation to share knowledge compared to JNEC and GCBS.

Table 25. Comparison of Means on the dimension of 'Motivation to Share'

College	Mean	N	Std. Deviation
JNEC	3.1944	27	0.5815
CST	3.3281	16	0.66281
CLCS	3.3269	13	0.53409
CNR	3.5909	22	0.56456
PCE	3.3300	25	0.53385
SCE	3.5833	12	0.72561
GCBS	3.2027	37	0.65309
GCIT	3.3214	14	0.5041
Sherubtse	3.7391	23	0.61919
Total	**3.3810**	**189**	**0.61862**

Table 26. One way ANOVA test for 'Motivation to Share'

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.724	8	0.840	2.32	0.022
Within Groups	65.223	180	0.362		
Total	**71.946**	**188**			

On average, the colleges under RUB seem to provide platforms and opportunities to its staff for sharing knowledge. SCE has the highest mean score of 4.1667 followed by Sherubtse with 4.0435 on this dimension of 'Opportunities to

Share' knowledge (Table 27). The difference amongst the colleges on the front of opportunities provided to their respective staffs to share knowledge is significant at the p>0.05 level for the conditions [F (8,180) = 6.21, p=0] (Table 28). A closer look at the analysis shows that SCE and Sherubtse provide significantly better/more opportunities for its staff to share knowledge as compared to that of JNEC. Similarly, CST, CNR, SCE and Sherubtse are doing significantly better than GCBS in terms of opportunities provided to its staff for sharing knowledge. Further, opportunities for sharing are significantly better at SCE than JNEC.

Table 27. Comparison of Means on the dimension of 'Opportunities to Share

College	Mean	N	Std. Deviation
JNEC	3.1667	27	0.87706
CST	3.7500	16	0.8165
CLCS	3.4231	13	0.67225
CNR	3.8636	22	0.86164
PCE	3.3800	25	1.0336
SCE	4.1667	12	0.83485
GCBS	2.8919	37	0.74661
GCIT	3.5357	14	0.60333
Sherubtse	4.0435	23	0.70571
Total	**3.4868**	**189**	**0.90276**

Table 28. One-way ANOVA test for 'Opportunities to Share'

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33.140	8	4.143	6.21	0
Within Groups	120.077	180	0.667		
Total	**153.217**	**188**			

Analysis shows that all the RUB colleges have the required KM enablers in place (Table 29). However, one-way ANOVA test result is indicative of significant difference amongst the RUB colleges in terms of the overall KM enablers at the p>0.05 level for the conditions [F (8, 180) = 4.428, p=0] (Table 30). Particularly, SCE, CNR and Sherubtse have significantly better-established enablers in place for KM to take place.

Table 29. Comparison of Means on Overall KM Enablers

College	N	Mean	Std. Dev.	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
JNEC	27	3.5012	0.4485	0.0863	3.3238	3.6787	2.47	4.47
CST	16	3.6833	0.4761	0.1190	3.4296	3.9370	2.80	4.47
CLCS	13	3.5128	0.4167	0.1155	3.2610	3.7646	2.93	4.13
CNR	22	3.7000	0.5208	0.1110	3.4691	3.9309	2.67	4.67
PCE	25	3.5600	0.5351	0.1070	3.3391	3.7809	2.53	4.73
SCE	12	3.8556	0.5430	0.1567	3.5106	4.2005	2.73	4.60
GCBS	37	3.2252	0.4710	0.0773	3.0685	3.382	2.20	4.13
GCIT	14	3.5000	0.4497	0.1201	3.2404	3.7596	2.87	4.67
SC	23	3.8870	0.5255	0.1095	3.6597	4.1142	2.73	4.80
Total	**189**	**3.5637**	**0.5243**	**0.0381**	**3.4884**	**3.6389**	**2.20**	**4.80**

Table 30: One way ANOVA test for Overall KM Enablers

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.498	8	1.062	4.428	0
Within Groups	43.186	180	0.240		
Total	**51.684**	**188**			

In terms of the respective colleges' orientation towards KM, the analysis indicates that colleges use a combination of both explicit-oriented and tacit-oriented KM. However, explicit-orientation seems to be predominant amongst all colleges than tacit-oriented KM. The results of the means are presented in Table 31 and 32

Table 31: Comparison of Means for Explicit-Oriented KM

College	N	Mean	Std. Dev.	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
JNEC	27	3.9074	0.4502	0.0866	3.7293	4.0855	3.00	5.00
CST	16	4.1563	0.4069	0.1017	3.9394	4.3731	3.50	5.00
CLCS	13	3.5962	0.5452	0.1512	3.2667	3.9256	2.75	4.75
CNR	22	3.8750	0.7309	0.1558	3.5509	4.1991	2.00	5.00
PCE	25	3.8200	0.6146	0.1229	3.5663	4.0737	2.50	5.00
SCE	12	3.8750	0.8292	0.2393	3.3482	4.4018	2.00	5.00
GCBS	37	3.4054	0.6571	0.1080	3.1863	3.6245	1.75	4.25
GCIT	14	3.8036	0.5979	0.1598	3.4584	4.1488	3.25	5.00
SC	23	4.0000	0.6699	0.1397	3.7103	4.2897	2.50	5.00
Total	**189**	**3.7950**	**0.6482**	**0.0471**	**3.7020**	**3.8880**	**1.75**	**5.00**

Table 32: Comparison of Means for Tacit-Oriented KM

College	N	Mean	Std. Dev.	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
JNEC	27	3.5093	0.4877	0.0938	3.3163	3.7022	2.50	4.50
CST	16	3.6875	0.6422	0.1605	3.3453	4.0297	2.75	5.00
CLCS	13	3.2885	0.5759	0.1597	2.9404	3.6365	2.50	4.25
CNR	22	3.8523	0.7305	0.1557	3.5284	4.1762	2.00	4.75
PCE	25	3.5400	0.5937	0.1187	3.2949	3.7851	2.00	4.50
SCE	12	3.8750	0.7797	0.2250	3.3796	4.3704	2.25	5.00
GCBS	37	3.1351	0.6603	0.1085	2.9150	3.3553	1.75	4.25
GCIT	14	3.4286	0.6753	0.1804	3.0387	3.8185	2.25	4.75
SC	23	4.0978	0.5727	0.1194	3.8501	4.3455	2.75	5.00
Total	**189**	**3.5688**	**0.6899**	**0.0501**	**3.4698**	**3.6678**	**1.75**	**5.00**

Interestingly, there seems to be a significant difference amongst the colleges on both explicit-oriented and tacit-oriented KM at the $p>0.05$ level for the conditions [$F(8, 180) = 3.172$, $p=0.002$] and $p>0.05$ level for the conditions [$F(8, 180)=5.637$, $p=0$] (Table 33).

Table 33: One way ANOVA test for KM orientation

		Sum of Squares	df	Mean Square	F	Sig.
Explicit-Oriented	Between Groups	9.760	8	1.220	3.172	0.002
	Within Groups	69.233	180	0.385		
	Total	**78.993**	**188**			
Tacit-Oriented	Between Groups	17.927	8	2.241	5.637	0
	Within Groups	71.554	180	0.398		
	Total	**89.481**	**188**			

There is no significant difference on the explicit-oriented KM front amongst other colleges, except for CST and GCBS with CST being significant more explicit-oriented in terms of KM than GCBS as depicted by the homogeneous subset result presented in Table 34.

Table 34: Homogenous subset results for Explicit-Oriented KM

College	N	Subset for alpha = 0.05	
		1	2
GCBS	37	3.4054	
CLCS	13	3.5962	3.5962
GCIT	14	3.8036	3.8036
PCE	25	3.8200	3.8200
CNR	22	3.8750	3.8750
SCE	12	3.8750	3.8750
JNEC	27	3.9074	3.9074
Sherubtse	23	4.0000	4.0000
CST	16		4.1563

Similarly, homogeneous subset result for tacit-oriented KM presented in Table 35 shows that GCBS is significantly less tacit-oriented as opposed to SCE, CNR and Sherubtse. Further, GCIT and CLCS are also significantly less tacit-oriented in terms of their approach to KM as compared to Sherubtse.

Table 35: Homogeneous subset result for Tacit-Oriented KM

College	N	Subset for alpha = 0.05		
		1	2	3
GCBS	37	3.1351		
CLCS	13	3.2885	3.2885	
GCIT	14	3.4286	3.4286	
JNEC	27	3.5093	3.5093	3.5093
PCE	25	3.5400	3.5400	3.5400
CST	16	3.6875	3.6875	3.6875
CNR	22		3.8523	3.8523
SCE	12		3.875	3.875
Sherubtse	23			4.0978

A simple linear regression was run to predict the organizational performance based on KM and a significant regression equation was found [F (7,18) = 10.177, p=.00), with an of 0.282 (Table 36). This indicates that 28.2 percent of the variance in organizational performance is explained by KM. The predicted organizational performance is equal to *0.877+0.18EO+ 0.077TO+ 0.048KS+0.245KT-0.124SA+0.094MS+0.1580S*.

Table 36: Linear Regression of KM on Organizational Performance

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	0.531a	0.282	0.255	0.59658		
a Predictors: (Constant), Opportunity to Share, Knowledge Storage, Explicit-Oriented, Motivation to Share, Knowledge Transfer, Staff Attitude, Tacit-Oriented						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	25.353	7	3.622	10.177	.000b
	Residual	64.418	181	0.356		
	Total	89.772	188			
a Dependent Variable: Organizational Performance						
b Predictors: (Constant), Opportunity to Share, Knowledge Storage, Explicit-Oriented, Motivation to Share, Knowledge Transfer, Staff Attitude, Tacit-Oriented						

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.877	0.370		2.372	0.019
	Explicit-Oriented	0.192	0.085	0.180	2.263	0.025
	Tacit-Oriented	0.077	0.092	0.077	0.838	0.403
	Knowledge Storage	0.057	0.084	0.048	0.678	0.499
	Knowledge Transfer	0.249	0.083	0.245	2.992	0.003
	Staff Attitude	-0.094	0.066	-0.124	-1.414	0.159
	Motivation to Share	0.105	0.090	0.094	1.174	0.242
	Opportunity to Share	0.121	0.068	0.158	1.770	0.078
a Dependent Variable: Organizational Performance						

The coefficient table shows that only explicit-oriented and knowledge transfer significantly impact the organizational performance. This implies that a unit change in explicit-oriented and knowledge transfer will increase the organizational performance by 0.18 and 0.245 units respectively.

Holistically, none of the KM constructs had a score of 4 or more (Table 37). As per the five-point Likert scale that the study used, the mean scores of all the KM constructs are in the neutral category. While explicit-oriented, tacit-oriented, knowledge storage, knowledge transfer and staff attitude have a score slightly leaning towards the agreement, motivation to share and opportunity to share were more geared towards disagreement.

Table 37: Overall mean scores for KM constructs

	N	Minimum	Maximum	Mean	Std. Deviation
Explicit-Oriented	189	1.75	5.00	3.7950	0.6482
Tacit-Oriented	189	1.75	5.00	3.5688	0.6899
Knowledge Storage	189	2.00	5.00	3.7937	0.5766
Knowledge Transfer	189	1.75	5.00	3.6376	0.6805
Staff Attitude	189	1.00	5.00	3.5132	0.9159
Motivation to Share	189	1.50	5.00	3.3810	0.6186
Opportunity to Share	189	1.00	5.00	3.4868	0.9027

Discussions

The results show that only explicit orientation towards KM and knowledge transfer was significantly related to organizational performance whereas tacit orientation, knowledge storage, staff attitude, motivation to share and opportunities to share did not have any significant effect on the organizational performance. This aligns with findings reported by Keskin (2005) who confirmed that explicit-oriented KM strategy has higher impact on organizational performance than tacit-oriented KM strategy. Similarly, studies have shown positive relationship between knowledge transfer and organizational performance (Mills & Smith, 2011).

Since tacit knowledge is embedded within a person, by nature, it is logical that the propensity to be tacit-oriented is lower. Further researchers argue that just the mere generation and storage of data will neither result in higher organizational performance nor a source of competitive advantage (Kumar & Gupta, 2012). Unless the knowledge is put to use, the value cannot be derived. Hence, the findings of this study correspond with previous studies.

Though positive attitude towards knowledge sharing is fundamental for KM to function effectively (Sohail & Dau, 2009), motivation to share and staff attitude towards sharing did not have any significant impact on organizational performance, in this study. This is very consistent with what prior studies have established. Researchers have found that most of the faculty members carry an individualistic view of knowledge and see it as private possession. Knowledge besides being a source of power, also serves as a point of differentiation and thus is not readily shared by faculty members (Biloslavo & Trnavcevic, 2007).

However, on the hindsight, lower motivation and attitude towards sharing can also be attributed to a lack of clear KM policies, as stated by one of the interviewees. One of the interviewees stated, “at present, there is no policy document that deals specifically with knowledge management in tertiary education institutions in Bhutan.” Further, the lack of trust and confidence in the academic work by the bureaucracy as pointed out by the interview respondents could be another attributing factor.

Limitations

Like any other studies, this study is also subjected to prospects of biasness in responses as the individual emotional feelings towards the organization may hinder objective evaluation of the organization. Increasing the sample size from each of the institutions, especially those with lower responses will be helpful. Further, inclusion of perspective of non-academic staff may also provide improved insight to better understand the organizational practices. Further, the structured nature of the interview did not allow an opening to draw more information from the respondents as there was no room for further probing.

Conclusion and recommendations

In view of the benefits that knowledge provides to an organization, in the form of better performance and sustained competitive advantage, organizations around the world are attempting and investing to develop a systematic way of tapping onto the knowledge available in the organization through KM. Tertiary education sector is no exception. However, RUB colleges are still at the infancy stage of KM with no proper system and policy in place as agreed by all interviewees. All the colleges are predominantly oriented towards explicit approach to KM. Further, the enablers for KM are yet to gain momentum.

Literature recommends that since everyone in the organization hosts a pool of knowledge, KM can be integrated into the jobs of the employees. Likewise, interviewees for this study also expressed the need to imbed KM activities as a part of organizational culture. Thus, there is a need to formulate policies that allows integration of academic and administrative KM strategies effectively through sharing and managing of knowledge (Kanwal, Nunes & Arif, 2019).

Studies confirm that faculties of HEIs in the South Asian region avail more knowledge acquisition opportunities and are open to sharing knowledge. Further they

have been found to be influenced by HRM practices in terms of sharing knowledge, thus, integrating KM into HRM strategies and policies will be a viable option for RUB (Iqbal, 2016). This is captured very well by one of interviewees who said, "it is very much desirable to have a holistic knowledge management policy at the national level where knowledge and its core function is defined as per the Bhutanese values system embedded in our rich wisdom traditions."

However, equally important is also the government's support for HEIs as non-profit organizations (Kanwal, Nunes & Arif, 2019). In the same vein, one interviewee rightly pointed out, "…. with insufficient budget that seriously undermines the quality of research….". Providing platforms for people to share and disseminate knowledge was recommended by the interview respondents. This could be done by building network of the stakeholders in the tertiary education sector along with seeking IT interventions to enhance KM activities (Pudashine & Rana, 2011). Similar views were also shared by the interview respondents stating that involving "law makers, policy makers and administrators can promote the value of data-driven decision-making processes". IT aided KM approaches, especially in the context of tertiary education enables better and easier storage and transfer of knowledge between the primary stakeholders like students and staff (Bhusry & Ranjan, 2011). These strategies could be used to build on the already existing practices to boost KM practices of RUB colleges.

References

Al-Kurdi, El-Haddadeh, R. & Eldabi, T. (2018). Knowledge sharing in higher education institutions: A systematic review. *Journal of Enterprise Information Management 31*(2), 226–246.

Areekkuzhiyil, S. (2016). Impact of organisational factors on the knowledge sharing practice of teachers working in higher education sector. *Online Submission 4*(8), 23–33.

Bhusry, M. & Ranjan, J. (2011). Implementing knowledge management in higher educational institutions in India: A conceptual framework. International Journal of Computer Applications, 29(1), 34–46.

Biloslavo, R. & Trnavcevic, A. (2007). Knowledge management audit in a higher educational institution: A case study. *Knowledge and Process Management, 14*(4), 275–286.

Bolisani, E. & Bratianu, C. (2018). Emergent knowledge strategies: Strategic thinking in knowledge management. *Cham: Springer International Publishing*. 1-22. doi: 10.1007/978-3-319-60656_1

Brewer, P. D., & Brewer, K. L. (2010). Knowledge management, human resource management, and higher education: A theoretical model. *Journal of Education For Business, 85(6)*, 330–335. DOI: 10.1080/08832 321003604 938

Choi, B., Poon, S.K. & Davis, J.G. (2008). Effects of knowledge management strategy on organizational performance: A complementarity theory-based approach. *The International Journal of Management Science, 36*(2008), 235–251.

Davenport, T.H., DeLong, D.W. & Beers, M.C. (1998). Successful knowledge management projects. *Sloan Management Review, 39(*2), 43-57.

Dhamdhere, N.S. (2015). Importance of knowledge management in the higher educational institutes. *Turkish Online Journal of Distance Education, 16*(1), 162–183.

Drucker P. 1993. *Post Capitalist Society*. Harper-Business: New York.

Fugate, B.S., Stank, T.P. & Mentzer, J.T. (2009). Linking improved knowledge management to operational and organizational performance. *Journal of Operations Management, 27*(2009), 247–264.

Howell, K.E. & Annansingh, F. (2013). Knowledge genera- tion and sharing in UK universities: A tale of two cul-tures?. *International Journal of Information Management, 33*(1), 32–39.

Iqbal, S. (2016). Employees' perception regarding the role of specific HRM practices in knowledge intensive firms. International Journal of Social Sciences and Management, 3(4), 246–255.

Kanwal, S., Nunes, M.B. & Arif, M. (2019). Knowledge management practice in South Asian higher education institutions. *International Federation of Library Associations and Institutions, 45*(4), 309–321.

Keskin, H. (2005). The relationships between explicit and tacit oriented KM strategy, and firm performance. *Journal of American Academy of Business*, *7*(1), 169–75.

Kiessling, T.S., Richey, G.R., Meng, J. & Dabic, M. (2009). Exploring knowledge management to organizational performance outcomes in a transitional economy. *Journal of World Business, 44*(2009), 421–433.

Kumar, S. & Gupta, S. (2012). Role of Knowledge Management Systems (KMS) in Multinational Organization: An Overview. *International Journal of Advanced Research in Computer Science and Software Engineering, 2*(10), 8-16.

Lazarova, M. & Taylor, S. (2009).Boundaryless Careers, Social Capital, and Knowledge Management:Implications for Organizational Performance *Journal of Organizational Behavior*, 30(1), 119-139.

Ling, Y. H. (2013). The influence of intellectual capital on organizational performance—Knowledge management as moderator. *Asia Pacific Journal of Management, 30*, 937–964.

Mills, A.M. & Smith, T.A. (2011). Knowledge management and organizational performance: a decomposed view. *Journal Of Knowledge Management, 15*(1), 156-171. DOI: 10.1108/13673271111108756

Natek, S., & Lesjak, D. (2013). Improving knowledge management by integrating HEI process and data models. *Journal of Computer Information Systems*, 81-86.

Nicolaidis, C.S. & Michalopoulos, G. (2004). A knowledge management perspective of business education. *Education, industry and the knowing–doing gap*, *2004*(April), 101-110.

Noszkay, H. E., & Balogh, A. (NA). Knowledge mangement - A new role of universities. *International Journal of Management Cases*, 131-136.

Omerzel, D. G., Biloslavo, R., & Trnavcevic, A. (2011). Knowledge management and organisational culture in higher education institutions. *Journal for East European Management Studies*(2), 111-139.

Pinto-Prieto, L.-P., Becerra-Ardila, L.-E., & Gómez- Florez, L. C. (NA). Knowledge Management Systems for Sustainable Financial Management Institutions of Higher Education Public: Principles of a Framework for Incorporation. *International Conference on Intellectual Capital, Knowledge Management & Organizational Learning,* 200-207.

Poonkothai, R. (2016). Knowledge management as an important tool in library management. *International Journal of Information Technology and Library Science, 5*(1), 9–14.

Pudashine, K. & Rana, V.K. (2011). Design and implemen- tation of sustainable educational network using knowl- edge management in Nepal. In: Internet (AH-ICI) second Asian Himalayas international conference. Kathmandu, Nepal, 4–6 November 2011, 1–4, Kathmandu, IEEE. Available at: http:// ieeexplore.ieee.org/ document/6113944/

Rowley, J. (2000). Is higher education ready for knowledge management?. *The International Journal of Educational Management, 14*(7), 325-333.

Sedziuviene, N. & Vveinhardt, J. (2009). The Paradigm of Knowledge Management in Higher Educational Institutions. *Engineering Economics,* 5, 79-90.

Sohail, M.S. & Dau, S. (2009). Knowledge sharing in higher education institutions: Perspectives from Malaysia. *The journal of information and knowledge management systems, 39*(2), 125-142.

Toro, U. & Joshi, M.J. (2013) A review of literature on knowledge management using ICT in higher education. *International Journal of Computer Technology and Applications, 4*(1), 62–67.

Vaccaro, A., Parente, R. & Veloso, F.M. (2010). Knowledge Management Tools, Inter-Organizational Relationships, Innovation and Firm Performance. *Technological Forecasting & Social Change, 77*(2010), 1076–1089.

CHAPTER 5

INVESTIGATING STUDENT TEACHERS', MENTOR TEACHERS' AND SUPERVISING LECTURERS' PERCEPTION OF SCHOOL PRACTICUM FEEDBACK IN BHUTAN

Karma Jigyel, Gembo Tshering, Pema Dendhup and Thinley Phuntsho

Chapter 5

Investigating Student Teachers', Mentor Teachers' and Supervising Lecturers' Perception of School Practicum Feedback in Bhutan

Abstract

This study explored student teachers', mentor teachers', and supervising lecturers' perception of feedback provided during the semester-long teaching practicum in public schools of Bhutan. The investigation involved second year student teachers (n=210) of Paro College of Education (PCE), mentor teachers (n=25) of public schools in the western part of Bhutan and supervising lecturers (n=5) of PCE. A mixed-methods approach, which included a six-point Likert scale survey, focus group interviews and semi-structured interviews, was administered in the study. Findings revealed that student teachers received both verbal and written feedback from mentor teachers and supervising lecturers. Similarly, all respondents perceived both verbal and written feedback as effective in school practicum. However, the student teachers were unsatisfied with the support received from their mentor teachers indicating a need for training of mentorship for mentor teachers and supervising lecturers. Interestingly, both mentor teachers and supervising lecturers reported their reluctance in providing negative[1] feedback to student teachers and contrastingly the student teachers expected negative feedback from mentor teachers and supervising lecturers. Finally, this study offers pedagogical implications and recommendations concerning feedback during teaching practicum for student teachers, mentor teachers and supervising lecturers.

Introduction

Al Sohbani (2012) emphasizes five main factors are crucial for effective practicum supervision namely – personal attributes, system requirements, pedagogical knowledge, modeling, and feedback. Each factor has its significance in helping student teachers improve their pedagogical skills. Thus, this study is centered on one of the most important factors, which is feedback. School practicum feedback is

[1] Negative feedback in this study refers to corrective comments that are constructive in nature about teaching and learning.

considered a highly important, influential and central component in helping student teachers 'learn to teach' in teacher education programmes (Al Sohbani, 2012; Martinez, 2016; Akcan & Tatar, 2010). Similarly, the practicum is viewed as critical to the development of student teachers because it is their first hands-on experience with teaching (Al Sohbani, 2012).

Effective teaching practicum feedbacks both in written and verbal forms allow dialogue between student teachers and their mentors, student teachers and their supervising lecturers and promote thinking and reflection skills in student teachers and consolidate their pedagogical skills. Effective practicum feedback should focus on the task and the associated learning outcomes and inform student teachers whether they are on the right track. Student teachers often depend on their mentors' and supervising lecturers' feedback to help them to improve their pedagogical and personal skills. However, student teachers seem to be sometimes dissatisfied from student teachers with the feedback they received and the way it is given. Therefore, the importance of providing effective feedback was considered for this study to investigate on student teachers', mentors' and supervising lecturers' views.

Further, the Ministry of Education (MoE) in Bhutan strives to provide quality education to all students across the country. One aspect of the quality of education depends on preparing good graduate teachers with sound pedagogical and professional skills. Teacher training programmes are crucial for developing student teachers' pedagogical skills (Al Sohbani, 2012). Similarly, the colleges of education aim to provide student teachers with opportunities to practice skills and strategies in a real classroom situation and develop professional attitudes and qualities expected in a novice teacher. However, these programmes are currently limited to two institutions across the country, Paro College of Education in the west and Samtse College of Education in the south.

This study investigated student teachers', mentor teachers' and supervising lecturers' perceptions about the practicum feedback, and their satisfaction with practicum feedback. The significance of the present study derives its magnitude from the fact that the results would help student teachers, mentor teachers and supervising lecturers improve their school-based practicum in general. Further, the dearth of literature in the Bhutanese context on school practicum feedback motivated this study. In addition, owing to student teachers' commitments and involvement in the practicum which is linked to their level of satisfaction and motivation (Ferrier-

Kerr, 2009), this study explored the kind of feedback they receive, the problems encountered with their practicum feedback and how these problems could be addressed and improved by seeking answers to the following questions:

I. What kind of feedback does student teacher receive in their practicum?

II. What type of practicum feedback is more effective, verbal or written?

III. What are the student teachers', mentor teachers' and supervising lecturers' perceptions of feedback on the practicum?

IV. How satisfied are student teachers with the feedback provided by the mentor teachers and supervising lecturers?

Method

A concurrent triangulation mixed methods design involving a survey questionnaire as the main data collection tool, focus group and semi-structured interviews was employed to gather the student teachers, mentor teachers and supervising lecturers views. A set of two survey questionnaires was designed – one for student teachers and another for mentor teachers and supervising lecturers. Both the survey questionnaires sought the participants agreement and disagreement on a 6-point Likert scale and some open-ended items. The items examined various aspects of student teachers' perceptions of feedback and the way they receive it from their mentor teachers and supervising lecturers and their level of satisfaction with the practicum feedback received. Similarly, survey items meant for the mentor teachers and supervising lecturers examined their perceptions of feedback on the practicum. Semi-structured interviews for both the groups were intended to generate data that could answer and reinforce other open-ended research questions collected by survey questionnaires.

Participants

A total of 250 (120 male and 130 female) second year student teachers and postgraduate diploma students placed in 20 public schools of five districts in western Bhutan who underwent practicum participated in the survey. Three groups of 4 to 6 student teachers for different programmes namely Bachelor of Education (Primary), Bachelor of Education (Dzongkha) and Postgraduate Diploma in Education (Dzongkha) were randomly asked to volunteer for the focus group interview. Further, the mentor teachers (n=25) and supervising lecturers (n=5) underwent the same

survey questionnaire and face-to-face semi-structured interviews. The interviews, both focus group and semi-structured lasted for thirty-five to forty minutes.

Data Analysis

The Statistical Package for the Social Science (SPSS) version 22 was used in analyzing the data using descriptive statistics. Similarly, the verbatim transcribed interview data were analyzed using manual thematic coding namely, thematic analysis ‘‘a method for identifying, analysing, and reporting patterns (themes) within the data” (Braun & Clarke, 2006, p.79). Further, Braun and Clarke (2006) assert that “it minimally organises and describes your data set in (rich) detail’’ (p.79).

Results and Discussions

Perceptions of student teachers

Theme 1: Forms of feedback (written or verbal)

Either forms of feedback, written or verbal help learners to confirm the intended learning outcomes of engaging in meaningful teaching practicum. Similarly, it enables them to assess their practice, identify next steps and motivates them to progress. Thus, the feedback whether written or verbal has positive implications in making teaching practicum meaningful and productive.

> In responding to the forms of feedback provided by mentor teachers and supervising lecturers, the focus group interviews indicated that most student teachers received both written and verbal forms of feedback.
>
> In giving us the feedback, the mentor teachers and the supervising lecturers provide us with both verbal and written feedback. This is because when we do teaching they fill up a form and they write their view and comments at the bottom of the form. They tell us what is ok and not ok looking at our teaching, and in preparing teaching-learning materials too. (ST4)[2]

Similarly, it has been further substantiated by the survey respondents, the student teachers (83%) that they receive both forms of feedback. It is emphasized that both verbal and written feedback needs to be made available which covers both positive and negative aspects of teaching practicum informing student teachers what they have or have not done and offered a list of ways to change behaviour and practices (Black, Harrison, Marshal & William, 2002).

[2] ST4 is an acronym of Student Teacher 4 to address anonymity.

Theme 2: Effectiveness

In the focus group discussions, most of the groups representing different programmes noted that receiving both forms of feedback was effective and beneficial:

> Like what my two friends said, both the feedbacks are required. First, the written feedback is required so that we do not forget. Then the written feedback if not explained and the verbal feedback if not noted, the written feedback once we erase it we do not get the opportunity to look at it. Therefore, if the feedback is interpreted in verbal form, then it is beneficial. (ST2)

Correspondingly, in the survey response, majority of student teachers (93%) confirmed both forms of feedback as useful and effective in improving their classroom teaching. This finding is consistent with a study conducted among first year student teachers teaching practicum in New Zealand confirming both verbal and written feedback as effective models of feedback provided the feedback is specific in its focus and involves a mixture of written and verbal (White, 2008).

Theme 3: Peer mentoring

The current study revealed that some form of peer mentoring existed between the student teachers that proved beneficial.

For example,

> Now if we are to get feedback from our friends, the friend will have to observe our lesson in the classroom. Before there was feedback form for the friends to fill in but starting this year we are not allowed to do that. But in my experience, I think it is very important for our friends to observe and provide feedback…. Once we finish the lesson observation, we talk about the weaknesses and strengths in our teaching and provide honest and frank feedback. (ST1)

Besides, the survey item 'Feedback from peers are useful and has helped me reflect' confirmed that majority of student teachers (88%) deemed peer mentoring being beneficial. This finding is in agreement with a study by Dang (2003) where peer mentoring during practicum for pre-service teachers revealed qualitative development in their teaching identities, reducing burnout and stress with feeling of support and sharing responsibility for the workload with each other (Nguyen & Hudson, 2012; Walsh & Elmslie, 2005).

However, it was also discussed that they were not allowed to practice peer mentoring as per the college's directives. For example, ST5 said "I did once.

However, before going on TP, my programme leader said that I should avoid peer mentoring. Anyway, peer mentoring helps if it is allowed." Interestingly some findings (McCarthy & Youens, 2005; Nguyen, 2013) recommended the potential value of formalizing peer mentoring during teaching practicum in which student teachers can learn and support each other allowing them to express themselves without fear of being judged by their mentor teachers and supervising lecturers.

Theme 4: Applying feedback

In applying the feedback, most of the student teachers reported that they were well aware of their mentor teacher and supervising lecturer's feedback provided during the conferences and ensured that they incorporated in the next session:

> … we reflect on the feedbacks provided by the teachers both the negative and positive. Before I go to the classroom I remember what my AT told me about my body position in the classroom, problem with spelling how to make sure it is correct and so on. So when I am home after the class I reflect on them and in this way I practice. (ST2)

Literatures suggest that student engagement, interest and learning are particularly enhanced when the feedback is concrete and compressive (Ali & Al-Adawi, 2013; Gürsoy, 2013) because student teachers are focused, they identify their own knowledge and skills and take appropriate action, see and acknowledge gaps in their own learning and seek appropriate advice and support.

Similarly, the study also highlighted that few student teachers sought support from other teachers besides the mentor teachers in the schools when they were not clear about the feedback provided by the mentor teachers:

> One thing that I did was after the negative comment that I get, if my teaching strategy was not appropriate for the students, then I used to ask one of the other experienced teacher…. who was really experienced one, I use to go and ask him and then he used to give me a lot of better ideas to teach so the thing I did was like I would ask other teachers for help. (ST8)

This finding may be attributed to either lack of support from the mentor teacher or shortcomings / incompetency of the mentor teacher. Therefore, this finding corroborates that mentor teachers appointed in the schools should be trained and experienced professionals to provide authentic, experiential learning opportunities through modeling.

Theme 5: Satisfaction

Most of the student teachers reported that they were not satisfied with the way mentor teachers provided them with feedback. Similarly, it was also reported that mentor teachers do not observe their lessons and have implications in writing their analysis report of the taught lesson.

> Similar to what the friends said, but mentors come to observe our lessons when they feel like. They do not come observe our lessons regularly, because of which we miss important feedback. I feel very sad when this happens. Sometimes mentors do not observe our lessons because of which we are not able to write analyses reports. (ST10)

In line with the current finding, Hobson, Ashby, Malderez and Tomlinson (2009) reported that some mentor teachers have failed to provide sufficient support for student teachers, which corroborates with the existence of variation in the nature and quality of mentoring support. Further, it is argued that mentors and supervisors' roles should be as coaches, mentors, and facilitators who should always be willing to help and be available to student teachers (Ali, & Al-Adawi, 2013; Ferrier-Kerr, 2009). In addition, Gürsoy (2013) argued that frequent observations and feedback in both verbal and written form have immense benefits for student teachers.

On the other hand, it was highlighted that as compared to the support received from the mentors, student teachers were satisfied with supervising lecturers' detailed feedback, which provided them much support in preparing their lessons. This finding may be explained by the fact that supervising lecturers are experienced in classroom observation and providing feedback. For example, ST10 said:

> As compared to my mentor, when I showed it to my SL, she gave different comments on improving my skills of teaching more. My mentor usually says little things and SL say many things. So I think that the mentor was not really giving full support, when compared to SL. So whenever SL observed, they used to write a lots of feedback on how we could improve and by one by one they use to give notes.

Theme 6: Expectations

In sharing their expectations, interestingly some student teachers reported that though they expected negative feedbacks from the mentors and supervising lecturers, they provided them with positive feedback only:

> I feel that mentors and supervisors should give short and to-the-point feedback instead of giving a long, difficult-to-follow feedback. Also, instead of giving mostly positive feedback, mentors or supervisors should give negative feedback with ways to improve the mistakes. This will help us learn and improve.

This finding aligns with a similar previous study by White (2008) who emphasized both verbal and written feedback be provided, and that each should cover positives and negatives. Further, it is argued that mentors and supervisors should communicate individually what students teachers have or have not done and to offer a list of ways to change the student teachers classroom behaviour and teaching practices.

Perceptions of mentors and supervising lecturers

Theme 1: Forms of feedback

It was reported that most mentors and supervising lecturers used both forms of feedback, written and verbal in communicating with the student teachers:

> Both written and verbal based on their lesson plan and real teaching performance in the classroom. I use both verbal and written, as they cannot substitute one another.

This finding has been further substantiated by survey responses with all the mentors and supervising lecturers (71% Strongly Agree and 29% Agree) emphasizing student teachers be provided with both verbal and written feedback. A similar study by Ali and Al-Adawi (2013) emphasized the use of both forms of feedback by almost all mentors and supervisors for their student teachers.

Theme 2: Effectiveness

The perceptions on effectiveness of the forms of feedback varied betweenr mentors and supervising lecturers. It was evident that mentors emphasized mixed perspectives in reporting either of the forms of feedback or both forms of feedback as effective in supporting student teachers teaching practicum. It was discussed by some mentors that written feedback was effective as it served as a future record for the student teachers:

> Written feedback is an essential tool in mentoring a student teacher. Written which is in print form serves as evidence document validating that the lesson observation /mentoring cycle has really taken place. (MT1)[3]

A similar study Ali and Al-Adawi, 2013 confirmed that written feedback was much more effective because the student teachers can "refer to it in the future and they can reflect on it" (p.29). Some mentors who viewed verbal feedback as effective discussed that student teachers were able to comprehend verbal feedbacks much easily and lots of information could be made available in a short time. For example, MT2 shared, 'verbal feedback is more preferred because of clarity and exhaustiveness.'

> Contrastingly, all supervising lecturers emphasized both forms of feedback as effective: Seemingly both forms: written and verbal feedback are important since both serve different purposes. Written is good for record keeping and evidence but verbal also helps trainees to improve their skills. (SL5)[4]

In light of the above response, it could be argued that both types of feedback are important and they are complementary and mutually inclusive, supporting each other.

Theme 3: Challenges in providing feedback

Interestingly, most of the mentors and supervising lecturers expressed 'hesitations' as one of the challenges in providing negative feedback and doubt over acceptance from the student teachers. For example, MT8 said, 'Feeling of awkwardness when it comes to providing the same feedback everyday. Difficulty putting the feedback across to some extent as it takes up dealing with emotions.' Similarly, SL3 reported his reservations of feeling a 'bit awkward to talk about the trainee's weak points'. It is argued that the role of mentor or supervisor is seen as a highly complex and demanding one given the fact that it encompasses advisor, encourager, observer, role model, supporter and giver of feedback (Ali & Al-Adawi, 2013; Moody, 2009). Further, Caires, Almeida and Vieira (2012) asserts the "affective-relational components of the supervisor-student teacher relationship" (p. 165) as a recent focus in terms of supporting supervisory relationships, effective communication, and conflicts, to name a few.

[3] MT1 is an acronym of Mentor Teacher 1 to address anonymity.
[4] SL5 is an acronym of Supervising Lecturer 5 to address anonymity.

Theme 4: Practices of mentor teachers and supervising lecturers

Majority of the mentor teachers emphasized the need for training on how to mentor student teachers and using lesson observation forms. This finding may be explained by the fact that some of the mentors were newly appointed or did not receive training on mentorship as indicated:

> If the mentors are provided with training for how to observe student teachers and use the lesson observation form, then it will benefit in giving critical feedback. Similarly, if every year I am given the responsibility of mentor I will be able to give many good feedbacks. (MT6)

In addition, it was also stressed that some of the observation forms were difficult to use and interpret. For example, MT13 said, "some of the observations forms are confusing and difficult to use." The response to a survey item that expressed the need for improvement of the current practice of practicum feedback further confirms the qualitative evidence with 57% of mentor teachers agreeing while the rest were neutral.

Interestingly, few supervising lecturers emphasized that the preceding supervising lecturers did not use a standard assessment forms provided by the teaching practice unit. Further, it was also highlighted that few supervising lecturers did not do proper observation and follow up on whether student teachers addressed the identified gaps as per the feedbacks provided in the preceding round of supervision:

> Feedback should be given on each and every TP component like lesson plans, journals, and reflections in front of the students. There must be proper follow up on the comments provided for first round of teaching practicum supervision. All the supervisor must follow proper procedure or the common rubrics prepared by the teaching practice unit for uniformity and validity of the teaching practice assessment. (SL3)

In light of the views expressed above for practices of mentor teachers and supervising lecturers, it is argued that effective feedback provided to student teachers are dependent on the knowledge and experience of these mentor teachers and supervising lecturers. Studies (Akcan & Tatar, 2010; Orland, 2001) have also strongly concluded that learning to become a mentor is a continuous process and does not emerge naturally from being a good teacher and therefore there is a need for more preparation for supervision. Further, it is much emphasized that teachers

who have been trained provided a more enriching and stable practicum experience, more specific feedback and a more positive affective experiences for student teachers (Guyton & McIntyre, 1990). Additionally, Guyton and McIntyre (1990) argued that, when mentor teachers are better prepared for their supervisory roles, student teachers develop more positive attitudes towards teaching.

Conclusions and Recommendations

To conclude, the findings of the current study suggest that majority of the student teachers received both verbal and written forms of feedback from their mentor teachers and supervising lecturers. Similarly, the majority of student teachers, mentor teachers and supervising lecturers perceived that providing both verbal and written feedback as effective in meaningful teaching practicum. The study also revealed peer mentoring as beneficial for student teachers. However, a considerable number of student teachers expressed their concerns about inadequate support provided by their mentor teachers in terms of providing critical feedback. The reluctance in reporting negative feedback to student teachers by mentor teachers and supervising lecturers was another concern as highlighted. Conversely, student teachers awaited negative feedback from their mentor teachers and supervising lecturers.

Recommendations from this study for Teaching Practicum Unit at Paro College of Education are particularly concerned with training of mentor teachers and training supervising lecturers on supervision, communication and feedback to student teachers in post lesson conferences. Training on interviewing techniques may also be explored too. It is also recommended to reconsider that the contents of the lesson observation forms and evaluation forms to be reconsidered by making it user friendly with familiarizing the forms to mentor teachers. The possibilities of making peer mentoring formal may be explored given benefits as expressed by the student teachers. Collaboration and understanding between the preceding supervising lecturers and visiting supervising lecturers need to be emphasized so that there is smooth transition and awareness of what needs to be considered in the field during the student teachers teaching practicum. Finally, with the new system of teaching practicum in place, it is timely that the Teaching Practice Unit at Paro College of Education should take into consideration these recommendations and align them with the new system so as to immensely improve the practice of giving feedback and in general the teaching practicum.

References

Akcan, S. & Tatar, S. (2010). An investigation of the nature of feedbackgiven to pre-service English teachers during their practice teaching experience, *Teacher Development: An International Journal of Teachers' Professional Development*, *14*(2), 153-172. DOI:10.1080/ 13664530.2010.494495

Al Sohbani, Y. A. (2012). Prospective EFL teachers' perception of the teaching practice experience at AUST. *Arab World English Journal*, *3*(4), 195-213. Retrieved from http://www.awej.org

Ali, H.I.H. & Al-Adawi, H. A. (2013). Providing Effective Feedback to EFL Student Teachers. *Canadian Centre of Science and Education*, *3*(3), 21-35. Retrieved from http://search. proquest.com /docview/1442970962? accountid=135687

Black P., Harrison C., Lee, C., Marshall B., & Wiliam D. (2002). *Working inside the black box: Assessment for learning in the classroom*. London: King's College.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

Caires, S., Almeida, L., & Vieira, D. (2012) Becoming a teacher: Student teachers' experiences and perceptions about teaching practice, *European Journal of Teacher Education*, *3*(52), 163-178, DOI: 10.1080/02619768.2011.643395

Dang, T. K. A. (2013). Identity in activity: Examining teacher professional identity formation in the paired-placement of student teachers. *Teaching and Teacher Education*, *30*, 47-59. doi: http://dx.doi.org/10.1016/j.tate.2012.10.006

Ferrier-Kerr, J. (2009). Establishing professional relationship in practicum settings. *Journal of Teaching and Teacher Education*, *25*, 790-797. http://dx.doi.org/10.1016/j.tate.2009.01.001

Gürsoy, E. (2013). Improving practicum for a better teaching. *Procedia-Social and Behavioural Sciences*, *93*, 420-425.

Guyton, E., & McIntyre, D.J. (1990). Student teaching and school experiences. In W.R. Houston, M. Haberman, & J. Sikula (Eds.) *Handbook of Research on Teacher Education* (pp. 514–34). New York: Macmillan.

Hobson, A. J., Ashby, P., Malderez, A., & Tomlinson, P. D. (2009). Mentoring beginning teachers: what we know and what we don't. *Teaching and Teacher Education*, *25*(1), 207-216. http://dx.doi.org/10.1016/j.tate .2008.09.001

Martinez, A. J. (2016). What type of feedback do student teachers expect from their school mentors during practicum experience? The case of Spanish EFL student teachers. *Australian Journal of Teacher Education*, *41*(5), 36-51 Retrieved from http://ro.ecu.edu.au/ajte/vol 41/iss5/3

McCarthy, S., & Youens, B. (2005). Strategies used by science student teachers for subject knowledge development: A focus on peer support. *Research in Science & Technological Education*, *23*(2), 149 - 162.

Moody, J. (2009). Key elements in a positive practicum: Insights from Australian post-primary pre-service teachers. *Irish Educational Studies Journal*, *28*(8),155-175. http://dx.doi.org/10.1080/03323310902884219

Nguyen, H. T. (2013). Peer mentoring: A way forward for supporting pre-service EFL teachers psychosocially during the practicum. *Australian Journal of Teacher Education*, *38*(7). 31-44. http://dx.doi.org/10.14221/ ajte.2013v38n7 .3

Orland, L. 2001. Reading a mentoring situation: One aspect of learning to mentor. *Teaching and Teacher Education 17*(1), 75–88.

Walsh, K., & Elmslie, L. (2005). Practicum pairs: An alternative for first field experience in early childhood teacher education. *Asia-Pacific Journal of Teacher Education, 33*(1), 5-21. doi: 10.1080/1359866052000341098

White, S. (2008). Investigating effective feedback practices for pre-service teacher education students on practicum. *Journal of Teacher Education*,*18*(4),299311. http://dx.doi.org/10.1080/1047621070168751

Editors

Phanchung is Director of Research and External Relations at the Office of the Vice Chancellor, Royal University of Bhutan.

S. Chitra is Assistant Professor at Yonphula Centenary College, Royal University of Bhutan.

Tshering Choden is Chief of External Relations Division under Department of Research and External Relations, Royal University of Bhutan.

Tshering Om Tamang is Associate Lecturer at the College of Language and Culture Studies, Royal University of Bhutan.

Pema Choezom is Associate Lecturer at the College of Science and Technology, Royal University of Bhutan.

ABOUT THE AUTHORS

Implications of Promoting Class X Student to Class XI Without a Cut-off Point in Bhutanese Schools: Stakeholders' Perspectives

Yangdon is Lecturer at Samtse College of Education, Royal University of Bhutan
Karma Utha is Assistant Professor at Samtse College of Education, Royal University of Bhutan
Choeda is Lecturer at Samtse College of Education, Royal University of Bhutan
Sonam Daker is Assistant Proffessor at Samtse College of Education, Royal University of Bhutan
Chenga Dorji is Lecturer at Samtse College of Education, Royal University of Bhutan

Evaluation of In-situ Thermal Performance of School Buildings in Cold Climate of Bhutan and Possible Intervention to Improve Thermal Performance

Tshewang Lhendup is Assistant Professor at the College of Science and Technology, Royal University of Bhutan
Roshan Chhetri is Assistant Professor at the College of Science and Technology, Royal University of Bhutan
Cheku Dorji is Lecturer at the College of Science and Technology, Royal University of Bhutan
Namgay Tenzin is Lecturer at the College of Science and Technology, Royal University of Bhutan

Impact of Knowledge Management on Organizational Performance: A case of RUB colleges

Tshering Lhamo is Lecturer at the Gedu College of Business Studies, Royal University of Bhutan
Kinley Yangdon is Associate Lecturer at the Gedu College of Business Studies, Royal University of Bhutan
Kinley Wangchuk is Lecturer at the Gedu College of Business Studies, Royal University of Bhutan
Thinley Choden is Associate Lecturer at the Gedu College of Business Studies, Royal University of Bhutan

Investigating Student Teachers', Mentor Teachers' and Supervising Lecturers' Perception of School Practicum Feedback in Bhutan

Karma Jigyel is Lecturer at the Paro College of Education, Royal University of Bhutan
Gembo Tshering is Lecturer at the Paro College of Education, Royal University of Bhutan
Pema Dendhup is Assistant Professor at the Paro College of Education, Royal University of Bhutan
Thinley Phuntsho is Lecturer at the Paro College of Education, Royal University of Bhutan