Knowledge for Development in Bhutan

Messages of Japanese Volunteers from the Ground

JOCV Program in Bhutan: Celebrating 30 years of friendship

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Contents

Foreword

It is already 30 years since the first Japanese volunteer was dispatched to Bhutan in 1988 under the Japan Overseas Cooperation Volunteer (JOCV) Program. As of December 2018, 432 volunteers have had a chance to serve Bhutan as a JOCV in addition to 147 senior volunteers. Some senior volunteers have returned to Bhutan after they once stayed as a JOCV member before. There are constantly 30 to 40 JICA volunteers working in the country. Combining the Senior Volunteer Program, the JOCV Program is also referred to as JICA Volunteer Program.

Prior to this auspicious year of 30th anniversary, I discussed with my staff how we could celebrate it. They suggested that we publish a compilation of papers written by the JICA volunteers, insisting that we were blessed with the volunteers who had been making a remarkable performance at their workplace and had also got enough capacity to write their experience in English. I liked their suggestion, as I had long been thinking that the lack of documentation is one of the critical shortcomings of the Japanese development cooperation.

Their practices at the ground level mean a lot to create development impacts and learn implications and lessons from their activities. Many volunteers have created impact on the programs and activities of their duty stations. In some cases, the Japanese volunteers have played an essential role in developing guidelines, manuals and other deliverables for Bhutan. But in general, the Japanese are not good at English writing and their knowledge and experience remain implicit. Therefore, the ideas on development have long been dominated by the western development partners.

This book is a compilation of field reports of eight JICA volunteers. The readers could find a number of implications on the directions that Bhutan could take on the thematic areas like HPE (health and physical education), marketing, architecture, technical and vocational education and training (TVET), GIS application, etc. Each of the topics may seem to be a minor issue to the government and major development partners who always talk about macro-level agenda. But still I strongly believe and insist herewith that the macro-level development is the accumulation of such minor progresses.

I would also like to commend the braveness of the eight volunteers who overcome their inertia and made it happen. It is easy to stay in the status quo and not to try for a new activity which causes additional burden. Lack of experience in English writing might have been a big psychological hazard for them. It is worth noting that they did it while I was not so successful in encouraging even my own staff inside the JICA Bhutan Office to do the same.

But at the same time, I believe that the contributors will get the credit as well. Each chapter is a good document for the volunteer to have his activities better understood and remembered by the readers. It is also a proof of their competence in writing skills and could be referred to in their resumes. In their quest for future careers in international development, two-years as a JICA volunteer is just the beginning. No matter where they go, in Japan or in other countries, their contribution to this book could be a strong advantage.

I would also like to emphasize herewith that behind these eight brave writers, there are a great number of untold stories of the other volunteers. Once they arrive in the host country, they have to submit the progress reports five times during their two-year assignment. Although they are written in Japanese, they are open to public viewing and you can access them. I have read all their progress reports in advance for the last three years, and found that they were full of implications, good practices and lessons learned. This reporting exercise offers the volunteers a good opportunity to review and document their activities. Their reports are a great knowledge asset for us to brush up our program implementation.

Taking the opportunity of this publication, I have also written a chapter. I started my career in JICA as a resource mobilization officer for the JOCV Program and worked very closely with the then JICA volunteers in three countries in South Asia. In my 25-year career as a JICA staff, I have had very strong affinity to this program and participated in the multi-disciplinary research project on the JOCV Program initiated by the JICA Research Institute in the early 2010s. My chapter is based on the findings in the project, and I hope it will help you to better understand the JOCV/JICA Volunteer Program.

Finally I would like to express my deepest gratitude to all the host agencies of the Royal Government of Bhutan for kindly giving us a chance to work together through the JICA Volunteer Program. I hope that the program will continue in the decades to come and function as a vehicle to strengthen the bilateral relationship between Bhutan and Japan at the people-to-people level.

Tashi Delek.

Koji Yamada

Chief Representative

A Study on the implementation of UNDOKAI in Bhutan:

Katsho Lower Secondary School's case

Seigo Fujiwara

Abstract

In Bhutan, Health and Physical Education (HPE) is still not accepted as an important subject and is often confused with sports. This paper aims at two things - first to clarify the difference between HPE and sports from previous research and the Japanese government guidelines for teaching HPE. HPE is a part of education and sports is a means of education. HPE is a subject aiming at cultivating an appropriate attitude towards leading a pleasant and happy life for students. The second examines whether Undokai, a traditional HPE festival in Japan, contributes to the spread of HPE in Bhutan. Japan International Cooperation Agency (JICA) volunteers conducted Undokai at Katsho Lower Secondary School in Haa in October 2017 and got feedback from JICA volunteers and Bhutanese teachers respectively. As a result, Undokai was a great opportunity for participants and audience to understand Undokai and its importance for HPE. The teachers felt that Undokai can show the value of HPE. JICA volunteers conducted Undokai for six times in various places. By continuing to conduct Undokai, it is expected that HPE in Bhutan will change gradually and HPE will be accepted as an essential subject in schools in Bhutan.

Introduction

Diseases caused by children's lack of exercise have become more serious in recent years in Bhutan. According to Biddle et al (2010), modernization has changed the lifestyle of children into a more sedentary one, similar to adults, which causes illness. There is now increasing bipolarization of frequency of physical activity in childhood and adolescence. This is now a major problem in Japan and will be seen in Bhutan as well. Therefore, maintaining exercise time for children is important. Improvement of HPE in schools gives children the opportunity to exercise and cultivate essential abilities such as

cooperation with others and self-respect in their future lives. JICA volunteers are requested by schools in various dzongkhags to start HPE. A Diploma in Physical Education & Sports Coaching (DPESC) also commenced from 2014 at the Paro College of Education.

The Royal Education Council (REC) revised the HPE curriculum in 2016. It was decided that the new curriculum would be carried out from Classes pre primary (PP) to III from 2018 and classes IV to VI from 2019. In addition, a workshop on teaching practice for teachers was held in the west and east of Bhutan during the summer and winter holidays of 2017 and 2018.

The Department of Youth and Sports (DYS) established a National Strategic Framework for School Sports and Physical Activities (NSFSSPA) to promote HPE and Sports in schools. The goal is to foster a lifelong healthy lifestyle. Ten targets and respective deadlines were set to achieve it. For instance, all primary schools will implement HPE by 2018 and secondary schools by 2020, and all schools will have qualified HPE teachers and School Sports Instructors (SSI) by 2023.

HPE reforms in Bhutan are progressing. However, HPE and Sports are often confused. Wangchuk (2013) mentions that 58.79% of teachers (71.43% for principals and vice principals) responded that the SSI should teach HPE in the absence of HPE teacher in schools. Likewise, Wangchuk (2013) mentions that before DPESC was established at Paro College of Education, only 55.36% of teachers in charge of HPE had received training for guiding HPE. In other words, about half of teachers are not trained in HPE. HPE is still not accepted as an important subject.

From the above, dissemination of the importance of HPE is an important task in Bhutan. Moreover, it is necessary for JICA volunteers to take up this task seriously.

This paper focuses on Undokai as one of the HPE development promotion measures in Bhutan. Undokai is a school HPE festival that is traditionally conducted at elementary schools in Japan. It had been conducted in five schools in Bhutan since 2016. It is meaningful to examine the significance of conducting Undokai in Bhutan and to investigate how it functions at schools and how Bhutanese teachers engage with it.

This paper first describes the differences between HPE and sports and then the relationships between HPE and Undokai and the significance of conducting it in Bhutan. Lastly, it provides information on conducting Undokai at Katsho Lower Secondary School (Katsho LSS) and recommends conducting Undokai from the results of the questionnaire given to Bhutanese teachers.

1) Differences between HPE and Sports

When we speak of HPE, what kind of education would you create? Many people would say sports, that is, ball games such as football and baseball and athletics such as long jumps and hurdles. Does this equate HPE to sports? Will HPE and sports be handled synonymously? Or is there a clear difference?

According to the Japanese government guidelines for teaching HPE in elementary school, the goal of HPE is to help pupils — through proper exercise experience and understanding of health and safety, by considering physical and mental aspects in an integrated manner — develop basic qualities and the abilities to participate in enjoyable physical activity throughout their lives, maintain and improve their health and fitness and cultivate an appropriate attitude towards leading a pleasant and happy life. The final goal of HPE is to cultivate an appropriate attitude towards leading a pleasant and happy life and to achieve this, develop basic qualities and abilities to participate in enjoyable physical activity throughout their lives.

On the other hand, what is sports? According to Oxford dictionary, sports is an activity involving physical exertion and skill in which an individual or team competes against another or others for entertainment. What are the elements that make up sports?

Kusaka (1999) used the words of B. Gillet and states as follows. B. Gillet cites three essential elements of sports: Play, Competition, and Violent physical activity. First of all, sports contain elements of play. Play is a free activity that entertain people by their enjoyment. It has a unique rule different from everyday life, and is a kind of fiction world shared only by the participants. Second, sports have elements of competition. Competition is a parallel effort that the self and opponents develop over their competence towards certain goals. Moreover, the purpose of competition is different from struggle. It is to show off the excellence of competence and sports companion is a play community. Therefore, we must respect the opponents. Third, sports have elements of violent physical activity. In order to obtain self-fulfillment and a sense of accomplishment, a certain whole body exercise is done. Therefore, the degree of driving and suffering in that process is greatly related to victory and defeat.

The definition of sports is broad and there are many elements. Therefore, it cannot be simplified completely.

From the above, HPE is a part of education and it is considered that sport is a means of education. In other words, HPE is part of education and sports, a means to realize the functions that HPE has in education. HPE is a subject

aiming at attaining the goal of cultivation of an appropriate attitude towards leading a pleasant and happy life using various body movements including sports.

The Japanese government guidelines for teaching HPE in elementary school, revised in 2008, states HPE as a means to "develop basic qualities and the abilities to participate in an enjoyable physical activity throughout their lives." From this point, the position of HPE as foundation for rich sports life became clearer. In other words, HPE is the foundation that supports lifelong sports, and it can be said that HPE and sports cannot be unconditionally separated. Moreover, Suga (2012) states that when experiencing weak consciousness in exercise in HPE class, students feel an inferiority complex in the athletic ability of the sports, and they cannot help feeling distance to sports. HPE is also required to fulfill the mission to make children acquire positive attitudes toward sports.

2) Influence of Undokai on HPE

A) Relationship between HPE and Undokai in Japan

School education in Japan aims to realize desirable collective activities and experimental activities, especially through special activities. Undokai is positioned as a school event in special activities and is one of HPE events. The objective of HPE event is written as follows in the Japanese government guidelines in elementary school: "Deepen student's understanding of healthy development of mind and body and maintenance and promotion of health and so on, to contribute to deepening understanding of safe behavior, disciplined group behavior, fostering attitudes that are familiar with exercise, fostering sense of responsibility and solidarity, improving physical fitness activities should be done."

Fujii and Mori (2017) who conducted a survey of the attitude of students to Undokai states that most students are fond of grasping Undokai favorably, and they feel a sense of working collectively. Moreover, Akada (2014) who conducted field survey of Undokai states that Undokai, as indicated by the Japanese government guideline is to foster attitudes that are familiar with exercise, sense of responsibility and solidarity, improve physical fitness, foster rich humanity and society in the practical activities by the same grade or different age grade.

There are many similar to the goals of the Japanese government guidelines for teaching HPE as mentioned above. It is possible to capture Undokai as a school event on the extension line of HPE. Moreover, in Japanese elementary schools1, it is common to see HPE classes for Undokai and practice even after school. With Undokai approaches, there are schools that increase the

number of HPE classes. The significance of taking a lot of time to practice for Undokai is nothing but a valuable opportunity for students to foster their rich humanity and society. HPE is a place to cultivate its foundation.

B) Significance of Conducting Undokai in Bhutan

Since last year, JICA volunteers continued to conduct Undokai in various parts of the country. The organizing schools were Kidheykhar Central School in Mongar, Trashigang Middle Secondary School, Ranjung Central School in Trashigang, Jigme Sherabling Central School in Trashigang and Phobjikha Central School in Wangduepodrang. In Bhutan where HPE is still not well accepted, Undokai had become a way to show the importance of HPE and the opportunity for students, teachers and the community to gain knowledge of HPE.

From the history that HPE was selected as a formal subject in 2000, it is thought that many parents have not experienced HPE classes during their childhood. Moreover, Bhutan is a country where the community is highly visible, and the community and the school are closely related. Therefore, it is considered that conducting Undokai involving the community to share the value of HPE is optimal in Bhutan.

Conducting Undokai will ensure exercise time for students. Wangchuk (2013) who conducted a survey on HPE awareness for teachers found 39% responded saying that a single period of 45 minutes per week is not adequate to teach HPE classes. In addition, DYS declared "All schools engage students in School Physical Activity (SPA) for a minimum of 120 minutes in a week by 2018" as one of 10 targets to achieve the target of fostering lifelong healthy lifestyle, which is the goal of NSFSSPA. This means that each school will give students HPE class and opportunity for School Sports Program (SSP) for 120 minutes or more per week by 2018. In other words, each school should actively work to secure the exercise time of students. It is considered that Undokai will be able to play a role in securing the exercise time in Bhutan.

Furthermore, I think that fostering counterpart (CP) is key to establishing Undokai. Since last year, JICA volunteers had conducted Undokai at respective school. By acquiring knowledge and practical skills about Undokai by each CP, it becomes possible for them to organize Undokai as resource persons after JICA volunteers return to Japan.

3) Implementing Undokai at Katsho LSS

In October 2017, Undokai was conducted at Katsho LSS. This chapter describes the details of this Undokai and presents a review of it from the perspective of JICA Volunteer and Bhutanese teachers.

A) Objectives

The Undokai was organised with the following objectives:

(1) To provide students, teachers and community an opportunity to know about HPE and its importance.

(2) To provide students, teachers and community an opportunity to deepen their interests and understanding of HPE and exercise.

(3) For CPs, Undokai will be an opportunity to cultivate the ability as a resource person in conducting Undokai at respective school by conducting preparation and management of Undokai with JICA volunteers.

B) Participants

a) JICA volunteers and CPs
Changangkha Middle Secondary School
Ms. Miyo Ito (JICA volunteer)

Dechencholing HSS
Mr. Koya Higa (JICA volunteer)

Gongthung Middle Secondary School
Mr. Shin Kozato (JICA volunteer)

Katsho Lower Secondary School
Mr. Seigo Fujiwara (JICA volunteer), Mrs. Phub Zam (CP)

Kidheykhar Central School:
Mr. Shuhei Nishida (JICA volunteer), Mr. Sonam Tobgay (CP)

Lango Middle Secondary School
Mr. Yuya Aoki (JICA volunteer)

Phobjikha Central School
Ms. Yuri Yoshizumi (JICA volunteer), Mr. Yeshi Gyeltshen (CP)

Zhemgang Central School
Ms. Kanae Aida (JICA volunteer), Mr. Teshi Wangchuk (CP)

Paro College of Education
Mr. Yasunori Mori (JICA volunteer)

Chundu AFPS
Ms. Rie Yamamoto (JICA volunteer)

b) Katsho LSS
481 students, 40 teachers

c) Bhutan JICA Office
Mr. Koji Yamada (Chief)
Mr. Kota Wakabayashi (Representative)
Mrs. Yayoi Iwazaki (Volunteer Coordinator)
Mrs. Tshering Palden (National Staff)

C) Slogan

We conducted Undokai with the following slogans.

(1) COME TOGETHER
Students should cooperate with their teammates.

(2) ALL FOR ONE, ONE FOR ALL
Don't be selfish. Students do their best for others and others do their best for students.

(3) NO LIMIT
Don't give up. Students should do their best every time.

D) Concept of participation

(1) Students to participate as a three-member team.

(2) Students to get points according to the position they get in each event, which will be added to the team score, regardless of whether it is a group event or individual event. Finally, the team with the highest score will be the winner.

(3) Headbands of team colors were distributed to all participants. They will keep the headbands during the Undokai and return it when it is over.

(4) Score system
For group event: 1st 30 points / 2nd 20 points / 3rd 10 points

For individual event: 1st 3 points / 2nd 2 points / 3rd 1 point

(5) Manner prize will be given to the house according the following criteria.
How students cooperate while playing.
How students behave while watching.
How students cheer up their teammates.

E) Program

It was difficult to select events, as students and teachers of Katsho LSS were experiencing Undokai for the first time. Finally, we decided on an event that satisfies three conditions (See Table I). The three conditions were - The events frequently adopted in Undokai in Japan, events in which the result of student's practice is visible and events that doesn not require expesnive tools.

In this Undokai, we adopted some events requiring long-term practice such as Set Gymnastics of Class II and So-ran Bushi, a Japanese traditional dance for Class VII and VIII. This was to let students learn the importance of cooperation and caring for their friends and feel a sense of accomplishment. It was also aimed at the objective of Undokai as special activity in Japanese government guidelines in elementary school, "Achieving safe behavior and disciplined group behavior, cultivation of responsibility and sense of solidarity". Moreover, Kobayashi (2015) who conducted a survey of the state of Undokai as a school event focusing on the dilution of human relations in contemporary Japan states that experienced Undokai with many group events in childhood, gave students a sense of accomplishment, responsibility, solidarity, and belongingness by uniting themselves into one goal in groups. It is considered that Set Gymnastics and So-ran Bushi are events that let students feel the real pleasure of Undokai.

Table 1. Program

No	Time	Event	Participant
1	8:50~	Opening	All
2	9:10~	30m Race	Class PP
3	9:25~	30m Hurdle Race	Class 1
4	9:40~	Typhoon Relay	Class 5/6
5	10:00~	Relay ①	Class 4
6	10:20~	Tag of War	Class 7/8, Teachers, Parents
7	10:40~	Refreshment Time	All
8	10:55~	Ball Toss	Class PP/1/2, Class 3/5, Teachers
9	11:15~	So-ran Bushi	Class 7/8
10	11:30~	Relay ②	Class 6/Teachers
11	11:50~	Obstacle Race	Class 3/4
12	12:10~	Set Gymnastics	Class 2
13	12:25~	Representative relay	Class 2-8/teachers
14	12:45~	Closing	All

F) Role of teachers

JICA volunteers conducted Undokai at each assigned school for 5 times, however it was never conducted in Haa. Therefore, teachers of Katsho LSS did not know about Undokai.

In order to encourage teachers to understand Undokai, CP and I gave a presentation. We introduced Undokai as HPE Festival. Moreover, we emphasized that Undokai is necessary for Katsho LSS because of benefits such as what students could learn, what kind of abilities students could acquire, and how Katsho LSS could benefit by doing it.

We conducted a meeting a week before Undokai and explained the work distribution of each teacher as Table 2.

Table 2. Work distribution of teachers

Work	Role
Announcement (MC)	Announce about event, progress of event, calling students for next event and other required.
Music	Play music.
Line Coordinator	Gather students and make them line up in front of football goalpost before event begins.
Materials	Prepare materials for event and clear them.
Starter	Start the event with whistle.
Judge	Observe goal and judge position.
Goal	Keep goal tape.
Escort	Escort students who finished their turn to their own team color position.
Record	Record their order and inform it to the SCORE.
Score	Count the score and write down to scoreboard after every event.
First-aid	Take care of students who gets wound.
Camera	Take photo.
Controler	Control students.

G) Photos of the day

I focused on people who participated in Undokai and refrained from subjective commentary on the author as much as possible. I would like you to capture the real image of Undokai by looking at photographs. There are photographs of students, teachers, and JICA volunteers.

Students



Teachers



JICA volunteers


Unfortunately, there were no photographs of community people. I guess about hundred people came to witness the Undokai. It seems like they were enjoying Undokai and cheering up their kids. In addition, they participated in a Tug of War. I felt that we should increase the number of events so that community people could participate from next year.

H) Review

We received feedback from JICA volunteers and teachers to make use of this Undokai to conduct it continuously. I took description method for JICA volunteers and questionnaire method for teachers. The results are as follows.

a) From the perspective of JICA Volunteers

We got merits and Demerits of this Undokai from JICA volunteers.

Merit

(1) There were some events that teachers and community people could participate. By participating, they could learn about the importance of HPE.

(2) Not only students but teachers and community people also enjoyed Undokai. It was a great opportunity for them to deepen their interests and understanding of HPE.

(3) For JICA volunteers, through the preparation and management of Undokai, they noticed the educational value of it. Moreover, they thought that it is important to cooperate to disseminate HPE in Bhutan as a HPE group.

(4) For CPs, they acquired ability to organize Undokai as a resource person at each assignment school.

(5) For students, they acquired disciplined group behavior, responsibility and sense of solidarity because many events were group events, especially in events requiring long-term practices such as Set Gymnastics and So-ran Bushi.

(6) Whole program progressed on time because of cooperation among students, teachers and JICA volunteers.

Demerit

(1) Information sharing

Since there was insufficient information sharing with JICA volunteers, CPs and teachers, various confusions occurred before the Undokai. In order to progress smoothly, detailed information sharing in advance is indispensable.

(2) Division of roles

Although overlapping with information sharing, the division of roles did not work well. There were no teachers in the place needed. There were some teachers who were not working. For JICA volunteers, we decided the role the day before Undokai and there were scenes where each of them was being pressed with sudden response. It is necessary to announce the division of roles to all of them in advance to grasp their work properly.

(3) Manners in the waiting area

The appearance of eating snacks, using cell phones and not supporting teammates were seen in the waiting area. Lack of inadequate teachers was a major factor. It is necessary to thoroughly enforce manner of the waiting area and arrange teachers.

(4) Garbage disposal

A lot of garbage was scattered on the ground after Undokai despite having installed garbage bins in four places. It is necessary to explain to students, teachers and community people in advance about garbage disposal.

(5) Rehearsal

Confusion occurred when arranging students in line according to the name list. It is necessary to practice arranging students in advance using rehearsal and other opportunities.

b) From the perspective of teachers (Questionnaire)

We made seperate questionnaire created for teachers as Table 3 and got 24 respondents.

Table 3. Questionnaire for teachers

Feedback Form for Undokai (21/10, 2017)

1. Information about the participant

1) Name of the participant
Name

2) Present Position and Current Duties

School	
Teaching Subject	

2. Review of the workshop program "Undokai**"**

1) How did you feel that participants (teachers & students) enjoyed UNDOKAI?
☐: ~60% they enjoyed ☐: 60~80% they enjoyed ☐: 80%~ they enjoyed

2) Which class should we make plan for Undokai?
☐: ClassPP-6 ☐: ClassPP-8 ☐: ClassPP-10 ☐: ClassPP-12

3) Do you think that all school can prepare for Undokai without JICA volunteer?
☐: Difficult ☐: Little Difficult ☐: Possible

4) What do you think of the appropriateness of the Undokai activities for each class?
☐: Difficult ☐: Little difficult ☐: Appropriate ☐: Little easy ☐: Easy

5) Do you want to hold Undokai next year?
☐: Yes (We should do.) ☐: Yes ☐: No

6) Do you think Undokai can show HPE values?
☐: Yes ☐: No

7) Do you feel that students understood our slogans?
Undokai slogans ☐: Come together ☐: One for all, all for one ☐: No limit

3. Please give us frankly any suggestion or advice, please mention here.

Thank you very much for your kind cooperation.

The results and considerations are as follows.

(1) How did you feel that participants (teachers & students) enjoyed Undokai?
60% they enjoyed → 0 person
60-80% they enjoyed → 1 person

80% they enjoyed → 23 persons
23 out of 24 teachers responded "80%~ they enjoyed". It is considered that recognizing Undokai as a fun event for children has begun to appear among teachers.

(2) Which class should we make plan for Undokai?
Class PP-6 → 5 persons
Class PP-8 → 10 persons
Class PP-10 → 4 persons
Class PP-12 → 5 persons

"Class PP-8" was the most frequent answer. This seems to be because Katsho LSS is a school where students of Class PP to 8 attend. However, as overall responses were scattered, it is considered that teachers are aware that Undokai can be conducted at school where any grade attend.

(3) Do you think that all school can prepare for Undokai without JICA volunteer?
Difficult → 6 persons
Little Difficult → 8 persons
Possible → 10 persons

Overall responses were scattered. However, as 14 out of 24 teachers responded "Difficult" and "Little Difficult", it is considered that JICA volunteer's cooperation is necessary even in the future when Undokai will be conducted at Katsho LSS.

(4) What do you think of the appropriateness of the Undokai activities for each class?
Difficult → 0 person
Little Difficult → 2 persons
Appropriate → 19 persons
Little easy → 0 person
Easy → 3 persons

19 out of 24 teachers responded "Appropriate". It is considered that each event of this Undokai were suitable for each grades.

(5) Do you want to hold Undokai next year?
Yes (We should do.) 18 persons
Yes → 6 persons
No → 0 person
All teachers responded "Yes (We should do)" and "Yes". It is considered that teacher are positive for continuing to conduct Undokai at Katsho LSS next year.

(6) Do you think Undokai can show HPE values?
Yes → 24 persons
No → 0 person

All teachers responded "Yes". It is considered that Undokai is suitable as one of school event that show the value of HPE.

(7) Do you feel that students understood our slogans?
Come together → 1 person
One for all, all for one → 18 persons
No limit → 5 persons

18 out of 24 teachers responded "One for all, all for one". It is considered that the appearance of students cooperating with their teammates and struggled for one person and for other friends was the most impressive scene for teachers.

Conclusion

Students had practiced for more than two months before the Undokai. Practice continued until the day before Undokai, especially Set Gymnastics of Class II and So-ran Bushi of Class VII and VIII.

On the day, I witnessed tremendous power of the students. The best performance they had practiced was done in front of about 600 people. It could not be done without the sense of responsibility, solidarity, consciousness to cooperate with friends and unity.

Moreover, in other events, many people could see the desperate efforts of each student and the appearance that they cooperated with their teammates. This can be seen from the fact that all teachers sympathized with the word "One for all, all for one" in the questionnaire for teachers.

I was convinced that Undokai showed the importance of HPE to students, teachers and the community. Moreover, Undokai was an opportunity to deepen their interests and understanding of HPE. I felt that continuing to conduct Undokai in Bhutan is indispensable for promoting HPE.

HPE is part of education and sports is a means of education. HPE must be a subject aiming at cultivating appropriate attitude towards leading a pleasant and happy life. JICA volunteers must accept the current situation that HPE is still not accepted as an important subject in Bhutan and must work hard to disseminate it. Undokai will definitely take charge of that. We are hoping that Undokai will continue in various places in Bhutan and that HPE will spread.

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Significance and methodology of creating grid square GIS statistical data in Bhutan

Kazuyuki Neki

Abstract

It is highly and urgently recommended to maintain accurate GIS statistical data given its importance in sustainable development planning in the wake of widening disparities and inequalities in health, education, exposure to disasters, income and unemployment; addressing new social challenges arising from rapid development and urbanization.

The objective of this paper is to confirm the significance of creating grid square GIS statistical data by using existing statistical data, for example past or predicted flood hazard maps showing areas which had been or could be inundated, the Bhutan census survey and so on. Further, this aims to consider and suggest its methodology. As a result of this study, the significance of creating the grid square system statistical data has been confirmed.The methodology has been examined in comparison with each feature, advantage and difficulty. Moreover, we show the possibility of the specific sizes of grid squares can be adaptable to administrative boundaries in Bhutan by using a statistical method.

Consequently, we conclude that Bhutan should adopt the World Grid Square system suggested by Aki-Hiro Sato et al which can be extended to all over the world, rather than Bhutanese government creating or keep using their own GIS statistical data system and coordinate system. This has advantages in terms of cost efficiency and future cooperation with other countries. Moreover, adopting this system means that the Bhutan will head for adopting GGRF in the future, and will enable the country to share fundamental GIS data in order to cooperate with other countries and agencies in terms of measurement for global issues including climate change.

Keywords; *GIS; GGRF; grid square statistics; standardization; Bhutan census*

Introduction

In recent years, GIS is becoming more relevant with development of computer technologies in the fields of water resource management, disaster risk management, sustainable development planning and so on in Bhutan and all over the world. The objective of this paper is to confirm the significance of creating grid square GIS statistical data by using existing and newly produced statistical data, for example past or predicted flood hazard maps showing areas which had been or could be inundated, the Bhutan census survey and so on. Furthermore, this aims to consider and suggest its methodology.

It is said that the grid square system was developed as one of the analytical methodologies of geography, adopted to map in the army of the United Kingdom as British Grid System in 1919. In 1929 J.G. Granö, a Finnish geographer, published a research paper on regional analysis of natural and social phenomena by using grid squares, which are sized to 1 km^2. After the publication, the grid square system has been used as a major methodology for analysing spatial transition and density in geographic study. Nowadays, the grid square system has been used in not only geographic study area in terms of spatially distributed condition and transaction analysis, but also in agriculture, urban and transportation planning, and so on.

The main reason why the demand of small area data (grid square system data) surged is attributed to the rapid change in social and economic life, for example, over-population in large cities caused by drastic economic growth. This led regional disparities even in smaller regions than states, cities and villages. In Japan, most of municipalities have experienced municipal amalgamations thus changing its sizes since 1953 when the Law for Promoting Municipal Mergers was put into force. Thereupon, smaller regional recognition of the current social and economic and future prospects has been necessary for market investigations and rational management by the private and public sectors.

In addition, in 2015, the United Nations General Assembly adopted the UN resolution on Global Geodetic Reference Frame (GGRF) for Sustainable Development that was led by the Republic of Fiji. The UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) recognized, since its inception, the growing demand for more precise positioning services, the economic importance of a global geodetic reference frame and the need to improve the global cooperation within geodesy. UN-GGIM states, "The Global Geodetic Reference Frame (GGRF) is a generic term describing the framework which allows users to precisely determine and express locations on the Earth, as well as to quantify changes of the Earth in space and time. Most areas of science and society at large depend on being able to determine positions at a high level of precision". Therefore, we also

focus on being in line with the global standard in terms of a GIS statistical data format.

2. Significance and advantages of creating Grid Square data

2.1 Definition of Grid Square System

The grid square system is one of geospatial data modules and can be used as a decision making tool, which stores a variety of statistical data such as demographical data (e.g. population), topographical data (e.g. elevation), meteorological and so on, with geographical information (longitude and latitude), inside small areas called grid squares. This grid square system is a uniformed area divided into the same interval by longitude and latitude without any gap on the earth. Furthermore, each cell has identification code to be immediately recognized where it locates and combine it to other statistical data created by the grid square system.

2.2 Significance of creating grid square system data

The grid square system has the following advantages;

i. Grid cells is easy to integrate with other statistical data, which are uniform and are of the same grid cell size, in GIS software (e.g. overlay analysis)

ii. Grid cells can treat sensitive privacy information data (e.g. asset value and the number of disabled) as impersonal statistical data in a certain area.

iii. Grid cells will be never affected by administrative boundaries and other boundaries, and can be assembled to form areas/regions reflecting a specific purpose and study area (e.g. villages without any address systems, communities, water catchments and flood prone areas) by the smallest grid cells.

iv. Besides, grid cells are time-invariant and thus easy to compare data chronologically unlike other tabular statistical data, which change with time elapse, and easy to update information.

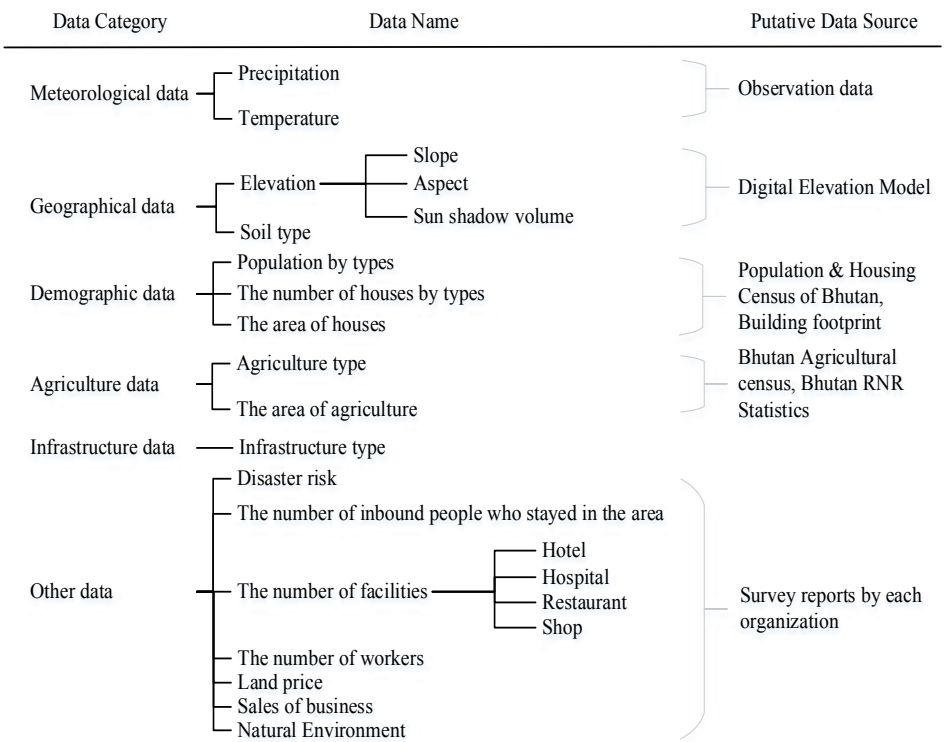
Original census data (e.g. Bhutan census) includes a variety of significant data such as number of households, details of family members of each building which are very useful information for planning in public and private sectors. Nevertheless, these data were never disclosed except for the total of administrative areas due to comprehending privacy information of respondents. Especially for this issue, the advantage ii) can work effectively.

The GIS statistical data with all the above features is necessary for analysing small areas or specific areas in public and private sections. Furthermore, the grid square system data can be used for all kinds of overlay analysis and other analysis as well, with complementing data, specifically geographic, meteorological, demographic, agricultural, infrastructural data and so on. Therefore, introducing grid square system data in the country is a means to encourage planning and analysing activities in public and private sectors and to accelerate development.

For instance, in the private sector, the grid square system data can be used for marketing areas, marketing volume and Business Continuous Plan (BCP) in variety of industries including retail, real estate, clinics, hotels and so on. In the public sector, the grid square system can be used for effective infrastructure facilitation planning (improving decision making and accountability) and asset management in urban planning, transportation planning, agricultural planning, disaster management and tourism.

From the existing statistical data of Bhutan, Figure 1 shows data supposed to be converted from existing or future original survey data to the grid square data for the above multiple purposes.

Figure 1 Examples of creating grid square system data in Bhutan



An analyst can use the area of grid squares, which are projected in order to calculate the density of the population, houses and so on. It doesn't matter even if the area of each grid square differs slightly.

An analyst can predict the land price by statistically analysing the relationship between land price of a specific point or area and a land price forming factor including the above grid cell data as variables (e.g. hedonic approach). This can be used for analysing how much a new construction or development in an area will affect the land price.

3. Methodology of creating grid square system data

3.1 Current situation about GIS statistical data in Bhutan

In recent years, the Bhutanese government has taken the step to maintain GIS data in a website, Bhutan Geo Spatial Portal operated by National Land Commission, Centre for GIS Coordination. The website provides information about national level data (e.g. location of hydrological stations and road network of Bhutan). There are data which can be provided at the Dzongkhag (an administrative and judicial district in Bhutan) or Gewog (a group of villages in Bhutan) level (e.g. administrative boundary and population) in GIS software format. To obtain these data, an application to an organization that manages the data is required in most cases.

However, these data formats are unsuitable to analyse problems in small regions or irregular regions out of the administrative boundary due to the current administrative tabular format of the data. To develop a plan in these specific regions by both of public and private sectors, other tabular formats are demanded.

To cope with these problems, it is necessary to create GIS statistical data that can be adopted to small regions and the irregular regions. Thereupon, we examined that format and methodology of creating data satisfying the requirements. This examination focuses on the whole country and is carried out in two modules by comparing existing GIS statistical data formats and by creating dedicated format for Bhutan.

3.2 Types of methodologies of creating grid square system (existing)

Several types of grid square system data formats have been used in various areas in the world. All the grid square system data formats, which are introduced herein, comprise of grid cells like aggregated pixels, on the premise that GIS statistical data will be treated on computer. We reviewed that overview of these existing formats, and pros and cons.

The grid square system data formats are mainly categorized into 2 types: one sacrifices equality of the area of each grid square so that the longitude and latitude of the grid squares is regularly corresponded, and the other warrants equality of the area of each grid square instead of corresponding of the longitude and latitude. They are representative formats in Japan (JIS X0410) and the United Kingdom (Ordinance Survey National Grid reference system and European grid) respectively.

Aki-Hiro Sato and Hiroe Tsubaki (2015) states that "JIS X0410 is easy to understand due to its corresponding coordinates of longitude and latitude, and areas of each grid cells are approximately equal. In case of targeting the globe, the methodology warranting equality of the area of each grid square has a disadvantage which the distortion of grid squares occurs at a point far away from a project reference point".

In case of installing the existing grid square system format, we consider that JIS X0410 expanded to the globe (hereinafter referred to as the World Grid Square) is suitable to Bhutan. Furthermore, in the future, it seems to be required to correspond to a global trend such as GGRF.

3.3 Dedicated GIS data for Bhutan

In this section, we examine that possibility of creating a Bhutanese original GIS format. This study treats GIS statistical data as a projected format on a plain map because GIS statistical data have been developed on the assumption that GIS data can be used as a projected format. The Bhutanese original GIS format shall be tessellation (tiling), which means a plane filled by plane figures without any gaps in order to cover the area of the whole country. In general, there are only three polygons: an equilateral triangle, a rectangle and a hexagon which can fill in a plane area by using the exactly same polygons. Upon examining tessellation for a Bhutanese original GIS format, from the point of aggregating or segregating areas during analysing data, consequently we can focus on only the three polygons.

The smaller the polygons divide the area of the whole country, the larger the amount of data become. In that case, rectangle only requires two coordinates of diagonally symmetric vertex to describe the polygons. On the other hand, triangle and hexagon requires three and six coordinates respectively. Consequently, we conclude that the suitable polygon for the tessellation is square/rectangle.

The coordinates for describing the rectangles shall be recorded as a geographic coordinate system so that an analyst can use the GIS statistical data on various types of projected coordinate systems: the coordinate format shall be described as longitude and latitude rather than X and Y.

3.4 Conclusion of the currently suitable GIS statistical data for mat in Bhutan

As a result of the examination about the GIS statistical data format in Bhutan, we found that the data format will be similar in both ways. Specifically, for the purpose of cooperating with other countries, as GGRF is important to adopt global standard coordinate system rather than Bhutanese own coordinate system (DRUKREF03 series). From these views, there are clear advantages including ease of creating, ease of use and applicability of other studies about grid square system data when an analyst uses the World Grid Square system data. In section 4 of this paper, we also consider the necessity of improving the World Grid Square system.

3.5 Identification of grid squares and existing statistical data

The example of methodology of creating grid square system data from existing data is shown below. Bhutan census data is taken as an example.

i. Data collection and Geocoding

On the assumption that building footprint data, which can be recognized with a building's address, name or number, are maintained in a study area as if most of Thromdes (a second-level administrative division in Bhutan) do. Then, for example, the number of family from the micro data of the census survey is plotted on the map on the basis of the building footprint data. At this step, the privacy information is not protected thus the grid square system data shall not be disseminated.

ii. Grid square code

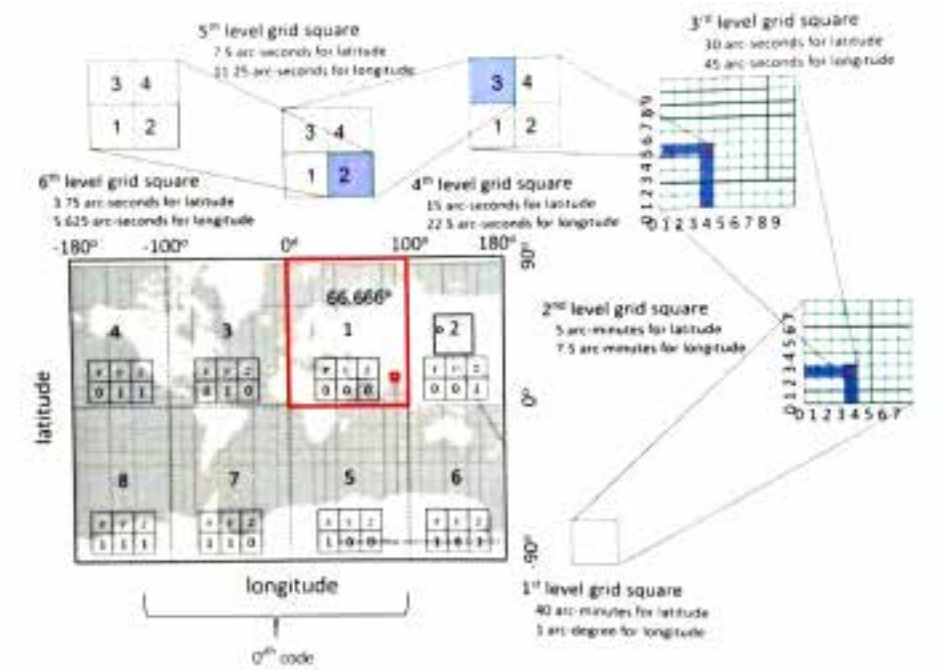
In this step, a digit code (grid square code) to identify the location of a specific grid cell will be added to each grid cell. In the case of using the World Grid Square coding system, the system gives grid square codes by using from 6 digits (1st level) to 13 digits (6th level). The levels of grid squares mean how detail the grid cells are divided. Figure 2 shows a way of defining the grid square codes from 1st level to 6th level, with using equations below. The equations define 0'th codes; the location of Bhutan falls into 1. According to this method, an analyst is easily able to define more detailed grid cells as 7th grid squares (quarter size of 6th grid squares) and more.

1. Variable x=0 if latitude is positive. Otherwise x=1.
2. Variable y=0 if longitude is positive. Otherwise y=1.
3. Variable z=0 for |longitude|<100 <. Otherwise z=1.

Finally, we define 0'th level grid square codes as an equation below.

o=2x+2y+z+1

Figure 2 Definition of world square grid codes



*The figure was based on Research Institute for World Grid Squares (http://www.fttsus.jp/worldgrids/en/top/)

Therefore, the 1st level grid square code can be described by a geographic position (latitude, longitude) as:

$$\textit{grid square code} = \begin{cases} o0Op0u & (p < 10, u < 10) \\ o0p0u & (10 \le p < 100, u < 10) \\ op0u & (p \ge 100, u < 10) \\ o00pu & (p < 10, u \ge 10) \\ o0pu & (10 \le p < 100, u \ge 10) \\ opu & (p \ge 100, u \ge 10) \end{cases}$$

The 3rd level grid square code can be described as:

$$\textit{grid square code} = \begin{cases} o00p0uqvrw & (p < 10, u < 10) \\ o0p0uqvrw & (10 \le p < 100, u < 10) \\ op0uqvrw & (p \ge 100, u < 10) \\ o00puqvrw & (p < 10, u \ge 10) \\ o0puqvrw & (10 \le p < 100, u \ge 10) \\ opuqvrw & (p \ge 100, u \ge 10) \end{cases}$$

Where integers calculated from latitude and longitude as follows:

$$\begin{cases} p = \lfloor (1-2x)latitude \times 60 \div 40 \rfloor \ (p \text{ is two or three digits}), \\ a = \{(1-2x)latitude \times 60 \div 40 - p\} \times 40, \\ q = \lfloor a \div 5 \rfloor \ (q \text{ is one digit}), \\ b = (a \div 5 - q) \times 5, \\ r = \lfloor b \times 60 \div 30 \rfloor \ (r \text{ is one digit}), \\ u = \lfloor (1-2y)longitude - 100x \rfloor \ (u \text{ is one or two digits}), \\ f = (1-2y)longitude - 100x - u, \\ v = \lfloor f \times 60 \div 7.5 \rfloor \ (v \text{ is one digit}), \\ g = (f \times 60 \div 7.5 - v) \times 7.5, \\ w = \lfloor g \times 60 \div 45 \rfloor \ (w \text{ is one digit}) \end{cases}$$

The grid square codes of lower 4th level including lower 7th or more are defined by dividing 4 areas cut at the mid points of the previous level square and by adding the last digit by the order (1 to 4) of Figure 2.

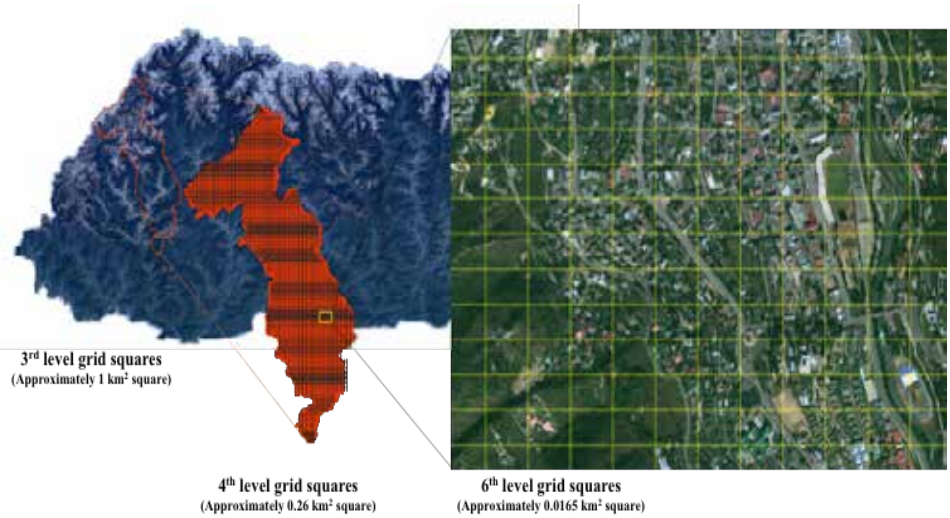
iii. Data aggregation by grid squares and concealment measurement

An analyst aggregates the geocoded data in step i) by the specific level of grid square's codes, thus each grid square stores the statistical data as compiled data with the location of the grid square identified by the grid square code. At this step, the analyst has to care about whether the privacy information is determined or not.

When the privacy information is not able to be protected because there are only few original geocoded data inside the grid square, an analyst has to take a concealment measurement, for example, the analyst changes value of the specific data into 0 in order to protect the privacy information. Moreover, when there are many grid squares, like the above, accuracy of the statistical data becomes lower. Therefore, the deducted value shall be added to an adjacent grid square or an upper level grid square.

Figure 3 shows examples of grid squares created as The World Grid Square system. The whole area of Bhutan is covered by 34,457 of the 3rd level grid, 137,828 of the 4th level grid squares, 551,312 of the 5th level grid squares and 2,205,248 of the 6th level grid squares (approximately 1 km2 square, 0.26 km2 square, 0.0659 km2 square and 0.0165 km2 square, respectively).

Figure 3 Examples of grid squares created as the World Grid Square system



3.6 Adaptability to administrative boundaries in Bhutan

In this section, we consider which sizes of grid squares an analyst should use. Apparently, it depends on a variety of matters such as the size of study areas, data availability and so on. Figure 4 and Figure 5 shows the similarity of the area which is aggregated by grid squares as administrative boundaries, for example the diagram of Thimphu Dzongkhag in the Figure 3, Dzongkhags and Gewogs respectively. The original area of each Dzongkhag and Gewogs is calculated by using shape file data which was downloaded from the Bhutan Geo Spatial Portal website. Both of the areas is calculated on the basis of a global standard coordination system, WGS 1984 UTM Zone 46N (WKID: 32646, Authority: EPSG). The reason why the area of administrative boundaries has been selected is that the area is the most affected factor when data of the real world are converted to grid square system formats.

Overall, from the figures, the multiple correlation coefficient, which is shown as R2 in the figures, tells that there are only slight differences at over 0.991 in Dzongkhags and 0.9938 in Gewogs in the 3rd level grid squares or lower level, whereas it significantly plunges to 0.8801 in Dzhongkhags and 0.631 in Gewogs.

Therefore, a result of this study implicates that an analyst has to use at least 3rd level or lower in order to carry out analysis related to the area of Dzongkhags and Gewogs level. Moreover, each time when smaller areas, for example Thromdes, densely inhabited district (DID) and flood prone areas, is set as study areas, an analyst has to consider the size of grid squares.

Figure 4 Similarity of the area formed by grid squares in Dzongkhags of Bhutan

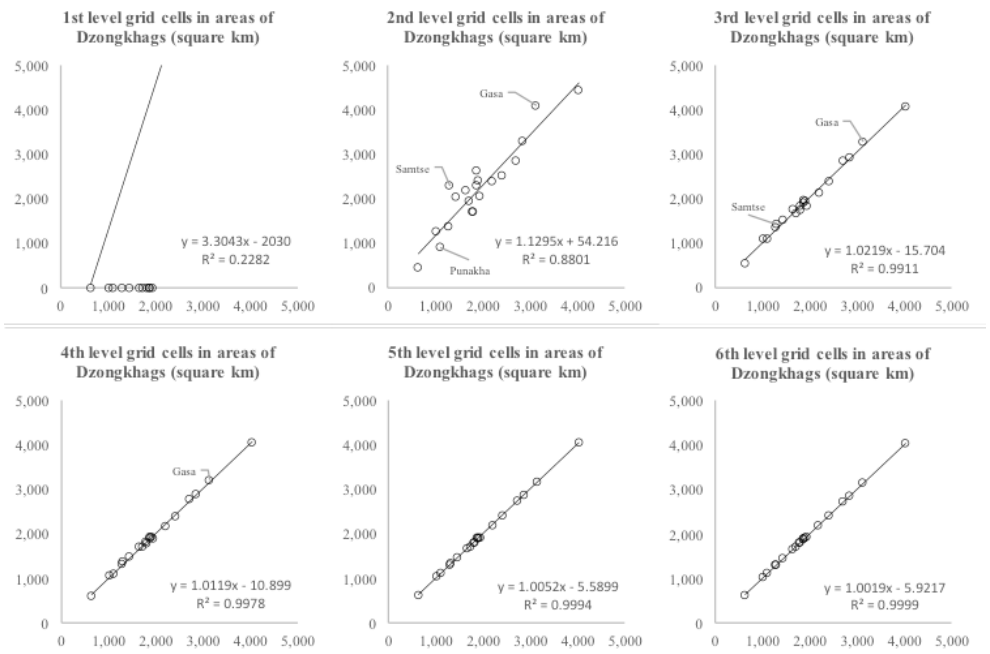
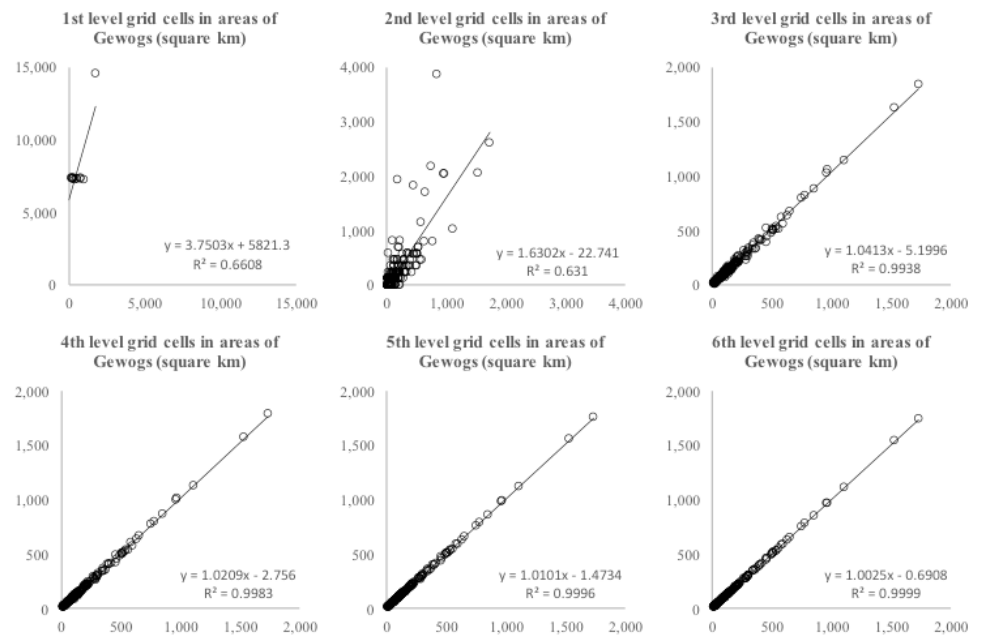


Figure 5 Similarity of the area formed by grid squares in Gewogs of Bhutan



4. Discussion

Upon adopting the World Grid Square system as one of standard formats for GIS statistical data in Bhutan, we have to consider the items below.

i. Size of grid squares

When an analyst uses the GIS statistical data in Bhutan, smaller grid square data might be required because Bhutan is comparatively smaller to Japan that originally created the World Grid Square system. In that case, the analyst has to consider whether the privacy information can be protected even the area of the smaller grid squares.

ii. Unsuitable data in grid square systems and data which should be maintained with grid square system data

Except for the data mentioned in Figure 1 in section 2.2 of this paper, narrow liner or point data such as infrastructure and facilities which require accurate positions (e.g. vector data of roads and meteorological observation centres), shall be continuously maintained.

Data recorded as a pair of locations, such as origin-destination survey data, are unsuitable to a grid square system data format. Specifically, in terms of analysing travel behaviours, too small area data become hard to collect and analyse rather than suitable to describe in-depth behaviours. Trying to maintain these kinds of origin-destination data as grid square systems, a surveyor has to consider the size of grid squares.

iii. National uniformed coordinate system

Currently, Bhutanese government has adopted and generated GIS data on Bhutanese own coordinate system based on Bhutanese datum, DRUKREF 03 (Bhutan National Geodetic Datum), which technically uses the same datum of WGS84 (World Geodetic System 1984. Thus the effect of the change of datum from DRUKREF 03 to WGS84 might be relatively small in practice even if Bhutanese government adopt WGS84 with complying with GGRF.

5. Conclusion

In this paper, the significance of creating the grid square system statistical data has been confirmed. The methodology has been examined as divided into two modules, which are currently used in developed countries such as United States, European countries and Japan, in comparison with each feature, advantage and difficulty. Furthermore, effectiveness of creating grid square system data is expected to contribute to sustainable development in a country which has been currently under developing and reconstructing because of the flexibility of the grid square system making country borders seamless.

Consequently, we suggest Bhutan to adopt the existing format, the World Grid Square system suggested by Aki-Hiro Sato et al which can be extended to all over the world, rather than Bhutanese government creating or using their own GIS statistical data system and coordinate system in terms of cost efficiency and future cooperation with other countries. Moreover, adopting this would mean that Bhutan will head for adopting GGRF in the future, and will enable the country to share fundamental GIS data to cooperate with other countries and agencies in terms of measurement for global issues including Climate Change.

This paper has also shown the preferable methodology to convert existing statistical data, such as Bhutan census and Agriculture census of Bhutan, to the grid square system data, with further necessary data and features to improve analysing and planning in private and public sectors in Bhutan.

However, it will be necessary to conduct further study to attempt creating grid square system data in a sample region of Bhutan, and to clarify the advantages, disadvantages and difficulties of the grid square system in order to evaluate and improve the grid square system. Regarding the study, it is proposed to conduct project evaluation trial in flood intervention works in some areas of Bhutan. It should also consider defining a way of creating grid square system data which will not deprive anonymity on the basis of actual data.

Acknowledgement

We thanked Associate prof. Aki-Hiro Sato of Kyoto University for his unwavering support in explaining the in-depth significance and methodology of the World Grid Square system data.

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Status of HPE in Bhutan and proposals for improving HPE lesson

Aiming at improving self-evaluation ability through rubric evaluation

Yasunori Mori

Introduction

Health and Physical Education (HPE) is a farily new concept in Bhutan. HPE was implemented as a subject from 2000. Bhutan's HPE is developing. Non-Communicable (non-infectious disease) is a big problem in Bhutan, Ministry of health (2015). Citizens who are at risk of it makes about half of Bhutan. In addition, due to modernization, lifestyle of children are also changing without any physical activity. It is said that changing to a sedentary lifestyle has become a cause of illness (Biddle et al, 2010).

Therefore, to create a habit of being in good health for a lifetime, HPE improvement in the quality of education is expected. On the other hand, according to the Ministry of Education (2014), the shortage of HPE teachers at elementary school is a problem, and according to a survey by Wangchuk (2013), 55.36% of teachers who have received training for HPE guidance and about half of the teachers were not trained in HPE guidance.

As mentioned above, there are problems related to HPE in Bhutan. In 2015 Bhutan government established a HPE and sports coaching diploma course at Paro College of Education to train professionals of HPE teachers and sports coaching. In addition, The HPE Curriculum Book Activity Guide was revised in 2017.

There are few researches on Bhutan's HPE. Research on Bhutan's physical education and practice until 2000 (Kezang Sherab, 2001), surveyed the impact of the curriculum for HPE revised in 2009 (Wangchuk, 2013), investigated the consciousness and experience of HPE teachers in Bhutan (John E Haynes et al, 2016). But In recent years, there has been no survey about the trend of

HPE in Bhutan. In this research, in order to approach the trend of Bhutan HPE in recent years, it will focus on Paro College of Education primary school teacher training course, Health Physical Education / Sports Coaching Diploma Course and HPE National Curriculum. In addition, I will describe the improvement of the self-evaluation ability through the rubric evaluation which attracts attention in world class evaluation. I would like to propose improving the quality of HPE teachers. I think that it will lead to the quality improvement by taking up the actual condition of HPE while attention is paid to further qualitative improvement of HPE. Therefore, consider the following three questions and study.

1. What is the current status of HPE system?
2. What teacher training is being conducted at the Paro College of Education's primary school teacher training course and the HPE / sports coaching diploma course?
3. How can you use rubric evaluation to improve the quality of teachers for HPE?

The structure of this paper is as follows: In Section 1, the HPE curriculum system in Bhutan is reviewed and the issues listed. In section 2, the details and issues of teacher training course which are related to HPE in Bhutan are clarified. In Section 3, recommendations for improvement of self-evaluation ability related to HPE through rubric evaluation are made. In the last section, the actual conditions of HPE in Bhutan are mentioned and recommendations for qualitative improvement of HPE in Bhutan are made.

1. Features and issues of HPE system

In this section, we will list the features and challenges of the HPE curriculum system.

For understanding the whole education of Bhutan, you need to read the Bhutan Education Blueprint 2014-2024. This time, I focused on the HPE system of Bhutan and paid attention to three important materials to know the system. The first one is HPE curriculum framework. The second one is the HPE Curriculum Activity Guide (HPECAG). The third is the National Strategic Framework for School Sports and Physical Activity (NSFSSPA).

In Bhutan, curriculum framework exists in each subject. Classes are conducted at school according to the standard of the framework. Even in HPE, classes are implemented according to the framework standards from 2009. However, after that, the content of the HPE framework was revised. Therefore, its

effectiveness is low in modern times. Indeed, it is the HPECAG revised in 2017 that shows the standard instead of the framework.

The following sections describe the features and tasks of the HPECAG and the NSFSSPA that support the system of Bhutan health education and physical education.

1) Characteristics of Bhutan HPE Activity Guide (Royal Education Council 2017)

This activity guide is published by the Royal Education Council (REC). It corresponds to the lower organization of Ministry of Education (MoE). In this guide, the curriculum of HPE department and actual teaching examples and methods of evaluation are covered.

It is said that there are two forms of the composition of the physical education curriculum, "sports event type" and "thematic type." The content composition of the sports event type constitutes exercise events and sports activity groups. For example, it tells how to kick a ball and teaches how to pass a basketball. Meanwhile, there is a tendency towards exclaimed sports event type in foreign curriculum in physical education. It recognizes the role of physical education and meaning of it in the lifelong sports society. The contents of the physical education curriculum composition has also changed and there is a shift to the content structure of the thematic type which forms the contents of the curriculum centering on a subject and value (Kang et al 2007, Japanese Physical Education Pedagogy Participation 2011, Okaide 2002.). The thematic type of teaching, for example, is a movement to kick a ball to master how to kick things and to move a ball to throw things. It is not guidance carried out through sports. Countries that organize the content of the Physical Education curriculum in sports event types are Japan, UK, Finland, Singapore, etc. Countries like South Korea, the United States, Canada, Australia etc. (Kang et al 2007) adopt the thematic type content structure.

In the Vision of the National Curriculum of Bhutan Health Physical Education course, “Fostering excellence and empowering students to be healthy, active and happy citizens” is regarded as the role of the HPE. In that curriculum, there are five Anchor Standards. The objectives of the HPE and the school sports program are set up to achieve the goal of the HPE and the school sports program. In Bhutan’s HPE, the activity to be performed within class hours is defined as Health Physical Education Department. Activities to be done outside the class hours are considered school sports programs. Refer Table 1. Anchor standards are the gauge standards for determining behavioral standards for HPE and school sports programs. Its contents are to - earn

sports, exercise, health and social literacy, acquire sports skills and athletic skills, be able to perform physical activity, acquire and practice human life rescue methods.

Regarding the number of classes in the Activity Guide, refer to Table 2. The annual physical education time is about 30 hours, and the activity guide is structured so that activities of those times can be performed in each grade. The total number of classes in each grade is 20 to 30. Refer to the activity book of Example 1 and the composition example of the contents. The title of the activity, the explanation of the activity, the aim of the lesson, the guidance example, the preparation · Field setting · Flow of activities (warming up, exercise and cooling down) · Variation · Looking back on words etc. The classes of Health Physical Education Department established by Ministry of Education of Bhutan are to do from class PP to class 6. Also in the Activity Book, classes from class PP to class 6 are posted.

In addition, it is also important to understand (1) MPA: Movement and Physical Activity, (2) PID: Personal and Interpersonal Development and (3) HHL: Health and Health Lifestyle Healthy Lifestyle). Each class example is listed in the Activity Book, and evaluation criteria for evaluating the activities of 1, 2, and 3 are also posted.

In addition, this book is structured so that you can learn about Lesson planning, teaching style and Fundamental Movement Skills.

Example 1. Activity book, composition example of content

Activity 4.2: Lying scorpion, Activity Book Class 6, Time required: 45 minutes

'Lying Scorpion' is an activity where children perform the activity using the self assessment checklist. They lie on the playfield in prone position like a scorpion. This activity makes the children stretch and improve a range of movement in the main body and extremities involving various muscles and joints. The range of movement is developed through individualised flexibility activity that involves adduction and abduction; extension and flexion.

This activity is useful in developing flexibility, muscle strength and balance, vital in the performing better in any physical activities. It helps children to develop body balance and enhances safety while the body is in motion.

Learning objectives

By the end of the lesson, the child will be able to:Teaching cues- Uniformity.- Hamstring muscles.- Groin.- Prone.

1. ***name at least three muscles involved in stretching.***
2. ***perform adduction and abduction static stretching.***
3. ***follow the order of instruction to carry out stretching.***

Teaching cues

·Uniformity

· Hamstring muscles

· Groin

· Prone.

READY

1. **Safe playfield.**

SET

1. **Identify a safe playfield.**

GO

Warming Up (5 minutes)

Children jog freely around the activity area.

Doing

Children lie face down on the safe playfield.

Spread arms sideways and palms facing down.

Keep the chest and upper body on the playfield.

Pick the right leg off the playfield and cross it over left leg far as possible.

Return to the start position and do the same with the left leg.

Continue this activity with counts.

Cooling Down (5 minutes)

Children perform ' Circles in the sky' for the cooling down activity by following the procedure

i. Children march in the playfield by raising their arms over head.

ii. Children pretend they are drawing circles in the sky.

iii. Children keep their arms over head and draw a variety of shapes in the sky.

VARIATION

1. **Carry out the activity by in supine position.**

DEBRIEFING

1. **What did you do in this activity?**
2. **How challenging was the activity?**
3. **What are some of the benefits of doing this activity?**
4. **Name the muscles used to perform this activity.**
5. **Tell five daily activities where you use stretching of your body parts.**

HPE standard

Table 1 HPE CURRICULUM ACTIVITY GUIDE

1: A child will perform physical activities using different movement concepts and skills.
2: A child will present various forms of understanding of movement concepts, as well as, apply theories, technique and tactics used in a variety of physical activities.
3: A child will present various forms of understanding and practices to improve physical fitness (health-related and skill-related fitness).
4: A child will apply the knowledge gained from movement experiences to plan and execute personal activities to improve overall physical fitness.
5: A child will participate cooperatively in learning activities with respect for diversity, sense of belongingness and social dynamism.
6: A child will understand and apply fundamental concepts, strategies and practices of good hygiene to promote active and healthy lifestyles.
7: A child will analyze personal nutrition habits and make alterations according to personal needs and resources.
8: A child will understand the effects and implications of various drugs and substances use.
9: A child will understand and apply information related to body growth and development, and reproductive health.

Table 2. Activity Book Number of class examples

	MPA	PID	HHL	Total
Class PP	8	6	6	20
Class 1	10	8	8	26
Class 2	8	8	10	26
Class 3	10	10	10	30
Class 4	8	10	10	28
Class 5	10	10	10	30
Class 6	10	10	10	30

2) Characteristics of National Strategic Framework for School Sports and Physical Activity (NSFSSPA)

This strategy was created by the Department Youth of Sports (DYS)). According to NSFSSPA, Sports and Physical Activities (SPA) consists of HPE activities during class hours, and SSP activities to be conducted outside of class hours. In other words, the combination of HPE and SSP is SPA. It is specified that SPA activities should be allocated at least 120 minutes per week.

For the outlook of SPA up to 2023, please refer to Table 3. As for the activities of SPA, Kosato JV explained in detail in this paper.

Table 3. Guidelines for SPA 10 items

Sl. No.	Targets	Timeline
1	All primary schools (classes PP- VI) implement HPE by 2018 and secondary schools (classes VII-XII) by 2020.	2018 & 2020
2	All schools organize School Sports Program (classes PP – XII).	2018
3	All schools engage students in SPA for a minimum of 120 minutes in a week.	2018
4	All schools are equipped with basic set of facilities and equipment.	2023
5	All schools have qualified HPE teachers and School Sports Instructors.	2023
6	All primary schools implement HPE (PP-VI) and SSP (PP-XII) standards.	2018
7	Fifty percent (50 %) of all national athletes for the National Sports Federations are facilitated through SPA.	2018

8	A proper mechanism developed to bring about better cooperation and collaboration amongst stakeholders.	2016
9	The Games and Sports Division (GSD) is strengthened with qualified and adequate staff.	2018
10	A support, monitoring and evaluation mechanism system is in place.	2017

3) Issues of Bhutan's HPE Activity Guide

HPE classes are held about 180 classes a year, about 45-minute classes once a week and about 30 times a year. Teachers need to think about the composition of only 30 lessons, to achieve the aim, but Gessellschaft Fur Internationale (2013) says "Bhutan's curriculum is too complicated", the content of the curriculum is abstract and difficult to understand. In order to teach after understanding the curriculum when teaching HPE, faculty members need to deepen their understanding about HPE considerably.

A class example is described in the Activity Guide. All these lessons are content that children find difficult to master the athletic skills because the example of the activity is about writing classes only. It is difficult to find continuity in HPE activities from Class PP to Class 6. For example, in order to acquire skills to throw, it is necessary to conduct lessons on technology to be followed continuously. However, it is difficult to continuously master motor skills by only performing one-off HPE activities. The HPE class is to allow children to be familiar with exercise throughout their lives. So the teachers themselves may not be conscious of what kind of skill the child should enhances. The meaning of activities of HPE may be lost. However, because HPE is not necessary a subject for promotion, it is not necessary to evaluates activities. In other words, it means HPE system does not have to be conscious of the skill that the child wishes to enhance. From now on, it will be an issue how to evaluate it.

It must be considerd whether the content of the guidance example of the activity guide is appropriate. In the class example of example 1 discussed in this article, we need warm-up and cooling down time of 10 minutes and a total of 15 minutes for debriefing. Thus the activity has to be achieved in 30 minutes. However, it is difficult to do things for 30 minutes under the content of "scorpion." It is an activity to raise each other's right and left feet as much as possible, so it will be in 5 minutes. This activity will not be valid for elementary school sixth graders. Teachers must think about exercising using the body dynamically for sixth graders. The guidance example is teacher-centered. Despite the fact that it is one of the major goals for children to

voluntarily pursue their activities, the examples do not show how voluntary activities are being promoted. When referring to this activity guide, faculty members have to think how to provide voluntary activities to children.

4) Issues of National Strategic Framework for School Sports and Physical Activity (NSFSSPA)

In order to achieve 120 minutes of sports and physical education activities per week shown in this strategy, it is necessary to implement 75 minutes of SSP in addition to the 45 minutes of HPE within class hours. For activities outside the class, there is no clear provision as to whether the teacher has the time or whether it is run by the school sports instructor (a person who specializes in sports activities at school). If teachers are teaching SSP, it may lead to overworking of faculty members, and making children engage in SSP after classes will be a big problem.

The Ministry of Education has plans to implement HPE in all junior and senior high schools by 2020, but in the actual situation of the Bhutan National curriculum at present, there is no HPE class at the middle and high school level. How to assign HPE classes to junior high schools and high schools will become a big issue.

2. Teacher Training on HPE in Bhutan

Paro College of Education primary School Teacher Training Course(2017)

1) Outline of course

In Bhutan, HPE is supposed to be taught to Class PP - Class 6 students. It is the primary school teacher who deals with these grades. Therefore, in the present situation, primary school teachers are supposed to be HPE teachers. In Bhutan, there are two colleges that train primary school teachers. The curriculum of the primary school teacher training course of the two colleges are same. HPE classes are one module for 2nd grade and 4th grade, respectively. I will investigate its contents in detail.

2) The contents of the lecture

Refer to Table 4 for the content of lecture on HPE. HPE at the second grade in the lower grades (6 to 9 years old), lecture on HPE at the upper grade (9 to 13 years old) in the first term of the fourth grade. Over 15 weeks, 2 hours of lectures and practical skills are held twice a week. Practical lessons are held at the gymnasium and the playground if practical guidance is required.

Table 4 Content of HPE lecture

HPE in Lower Primary	HPE in Upper Primary
1 Introduction to Health and Physical Education	1 Growth and Development: Continued
2 Factors affecting health	2 Motor Development/Motor Skill Learning:(continued)
3 Physical Fitness 4 Introduction to Fundamental Movement Concepts and Skills	2.1 Principles of motor skill learning
5 Dance and Movement	2.2 Process of learning a motor skill
6 Comprehensive School Health Education	2.3 Changes during the process of learning motor skill
7 First Aid	2.4 Transfer of learning
8 Physical Growth and Development of Children	2.5 Motor skill learning and learning curve
9 Motor Development/Motor Skill Learning	2.6 Knowledge and skills in a variety of sports and games.
10 Methodologies in HPE	3 Understanding Human Body
11 Organization and Management of PE Classes in schools	4 SEPEP (Sports Education in the Physical Education Programme)
12 Planning Health and Physical Education Experiences	4.2 Mini sports
13 Assessment of school children.	4.3 Prevention of injuries
14 SPILL OVER	4.4 Exercise and temperature regulation
15 SPILL OVER	5 Kinesiology
	6 Methodologies in HPE (continued)
	7 Planning Health and Physical Education Experiences in the upper primary
	8 Common Health Concerns
	9 Social Issues and Substance Abuse

3) Issues of lecture

Before HPE course began in Bhutan in 2000, students were not really aware of health, exercise and body structure as a prerequisite to HPE lectures.

Therefore, the lesson places importance on mastering knowledge about HPE. Of the two modules, the HPE plan and practice is done only a week. As a teacher, it is difficult to teach when you get HPE practical class only a week. In the syllabus, practical lessons on health are missing. It can be inferred that it is very difficult to conduct health classes at schools. Also, because there are fewer teachers who specializes in HPE in primary school in Bhutan, there is no opportunity for students to observe what kind of guidance is done in the field. That also makes it difficult for students to learn HPE.

Paro College of Education HPE / Sports Coaching Diploma Course (2016)

1) Purpose of the course

This program is designed to provide opportunities to students with aptitude for sports and coaching. At present in Bhutan, there is a lack of trained HPE teachers and sports coaches. Therefore, it aims to promote health and healthy lifestyle by raising the creation and innovation in the field of modern HPE and sports coaching with the theme of citizen's happiness through the concept of public national well-being. This program not only serves as a broad entrance to the development and dissemination of elite athletes at national level, but also instructs sportsmanship and the value of the country.

Two main objectives are.

1. To develop physical education teachers and coaches who are proficient in teaching and coaching through teaching practice and sport specializations.

2. To inculcate in students, the values, ethos and professionalism expected of Bhutanese educators and sport coaches. (Paro College of Education 2016)

From the above, it can be concluded that in Bhutan the number of high quality HPE teachers and sports coaches are not enough and training is urgently required. In addition, unlike in Japan it is a general practice to conduct club activities after school in Bhutan, which is not unique. There are few opportunities to learn sports professionally, so it seems that there are currently no sports coaches for each specialized field. This program, I can see, is developed to train high-quality health sports teachers and sports coaches.

2) Contents and subjects

The content of the lesson shown in Table 5. 1 is based on 10 hours of learning inside and outside the classroom (Royal University of Bhutan 2015), assuming

1200 hours of learning for the first grade about 2400 hours of learning are required in 2 years.

Regarding educational research, 24 units are set for practical training because of teaching practice, but all other lessons are composed of 12 units of the classes. 15 classes are subject related to HPE and sports coaching and it is understood how this course emphasizes HPE and sports coaching.

In addition, observing the actual teaching, it became clear that lessons are promoted mainly in a certain teaching method in the class. The way of teaching is Teaching Games for Understanding (TGfU). This emphasizes children's understanding of the game rather than repetition of the technical practice, and methodological thinking is conscious of questions and rules making (Okade, 2000). The physical education class based on the tactical approach is "game → question → practice → game "in the flow of development, tactical awareness and performance will be improved (Takahashi 1999) .The teaching method is advanced in this course with the teaching method having the above characteristics in mind. The teaching method is a faculty-led type as shown in the activity book introduced earlier it's not the class style. It is a style to utilize the tactical awareness of children in class.

Table 5. Content of class

	Autumn semester	Spring semester
First year	1. Personal development research Academic skills 2. Health Physical Education and Sports Science Research Introduction to physical education and sports 3. Health Physical Education and Sports Education, Athletics and basic motor skills 4. Health Physical Education and Sports Education, Game principle 5. Health Physical Education and Sports Education, Invasion type game 1 (basketball 1 and football 1)	6. Specialized development research Effective instruction skills 7. Personal development research Dzonka for communication 8. Health Physical Education and Sports Science Research Motor development and human body structure 9. Health Physical Education and Sports Education, Instruction method and strategy (with teaching experience) 10. Health Physical Education and Sports Education Net type game 1 (Badminton 1 and Volleyball 1)

Second Year	11. Personal development research Functional information technology 12. Health Physical Education and Sports Science Research Coaching, sports management 13. Health Physical Education and Sports Science Research Psychological basis of physical education and sports education 14. Health Physical Education and Sports Education Invasion game 2 (sports specialty, soccer 2, basketball 2) 15. Health Physical Education and Sports Education Net Barrier Game 2 (Sports Specialist, Badminton 2, Volleyball 2)	16. Health Physical Education and Sports Science Research Prevention and management of sports injuries 17. Health Physical Education and Sports Education Flexible health and physical education 18. Health Physical Education and Sports Education Sports nutrition 19. Educational research Educational practice

3) Sports activities (competitions, sports day etc.)

A variety of sports activities are conducted at the Paro College of Education, mainly by HPE students / Sports Coaching Diploma Course. Activities like that of club activities in Japan are conducted after school (after 16:30) for each sports tournament. Every student can participate in the club activities. The sports events are soccer, basketball and volleyball. In addition, there are various activities in teh college. There are athletics, soccer, futsal, basketball, volleyball and badminton. The participation in these competitions is free. Students of the Health Physical Education / Sports Coaching Diploma Course will learn how to manage the tournament and hone the skills of the sports.

4) Current status and course of students

In 2017, the first batch graduated and the third batch entered. First batch consisted of 21 people (17 men, 4 women), second batch had 18 people (16 men, 2 women) and the third batch had 23 people (17 men, 6 women). Initially, when they graduated, they were planning to become a HPE teacher or school sports instructor. However, the Ministry of Education made a report to the university that a person without degrees cannot become a teacher. As a result, the choice of career that made use of this program was narrowed down to the school sports instructor or a sports coach. In Bhutan's current situation, the school sports instructor is a civil servant. According to Kuensel (2017), out of the first batch of graduates, 19 graduates sat for the civil servant examination to become school sports instructor, 14 people passed the examination, one who did not take the exam because he had experience work as a sports instructor at

Paro College of Education. The other four did not get jobs.

5) Future prospects

According to Kuensel (2017), after receiving notification from the ministry, even after completing the Health Physical Education / Sports Coaching Diploma Program, students are not given the qualification to work as a specialist in HPE.

This was because the ministry did not recognize the diploma, as a bachelor's degree is required for teachers. Therefore, the Paro College of Education is trying to establish a bachelor degree course in HPE and sports coaching in 2020. Students who have completed a certain level of grades among those who graduated from the diploma course can transfer from the third grade student. Those who graduated from high school are eligible for the examination and become a student of this course. Paro College of Education is preparing for the establishment of the undergraduate course.

2. Recommendations for improving self-evaluation ability through rubric evaluation

1) What is rubric?

A rubric is a description of a level that divides a task into several components and satisfies the evaluation criteria for each element. (Dannelle D. Stevens, 2014). That is, a table describing the constituent elements of "task" as "evaluation viewpoint", setting the "evaluation scale" for it, and describing "evaluation criteria" for each evaluation viewpoint and evaluation scale is a rubric. The components of Rubric are "task", "evaluation scale", "evaluation viewpoint", and "evaluation standard", and they are explained as follows.

- Task: The contents described in the syllabus, what the teacher expects from the student, etc.
- Evaluation scale (achievement level · grading evaluation point): It shows how much the given task was achieved. Clear expression, positive expression is said to be good, the maximum value is five (5 stages.)
- Evaluation viewpoint (concrete skills and knowledge required by the task) Distribute tasks into several evaluation viewpoints (elements). The maximum value is 6 to 7.

Evaluation standard (Specific Feedback Content): The highest level evaluation criteria are described, and where the evaluation drops by one level, it is described where the difference is compared with the highest level. At the lowest level what is to be achieved is emphasized and described.

Two of the significance of using rubrics are considered from the evaluator side and the learner side.

For the evaluator,

1. It is possible to set the evaluation viewpoint and evaluation criteria from the viewpoint of the target of the class
2. Evaluate content that is difficult to evaluate
3. By setting the evaluation viewpoint and evaluation criteria, it is possible to improve the scores of grading evaluations by multiple persons in charge and external examiners
4. It is possible to present evaluation viewpoints and evaluation criteria to students
5. It is possible to make use of evaluation results to lead to improvement of lesson.

For the learner,

1. Understand the evaluation viewpoint and evaluation criteria for the task
2. Learning can be conducted with consciousness of evaluation viewpoint and evaluation criteria
3. There is a possibility to promote learning behavior.

2) Utilization of rubric for learning

Terashima and Hayashi (2006) presented Rubric to students in advance with the aim to improve self-learning ability while integrating learning and evaluation.

This study examines the effect from a questionnaire survey and shows that it affects in recognizing the importance of their own tasks and learning methods and to make the target conscious. This research utilizes Rubric for learning. It is a research aimed at improving the student's self-evaluation ability. In addition, Tokai, Kishi and Kubota (2012) are also studying how to use Rubric and its effects after positioning Rubric as a tool to cultivate an autonomous learning attitude. Specifically, I introduced rubric evaluation and qualitatively examine the results of free description that inquires about impressions and improvements on rubric.

Considering the point that it will make it easier for the teacher to fall into the normative paradigm for unilaterally transferring what he/she intended to a

student (Fujita, 1995) if the evaluation standard are fully presented from the teacher side. That is why Rubric is used for learning. The characteristic of the practice of allowing students to participate in learning evaluation activities in the form of incorporating such rubrics is that evaluation can be done in a naturally integrated manner in the learning process. Through this process, students will be more aware of the extent to which the required results are being achieved and to what extent they are achieved. This is why Rubric is positioned not only as a tool for evaluation but also as a tool to promote transformation of evaluation view (Gipps, 1994).

From the above, it can be seen that using classroom evaluation rubric for improving self-evaluation ability is an effective means to improve the quality of learners' classes in teacher training.

3) Recommendations on the use of rubrics for HPE classes.

In Bhutan, studies using classroom evaluation rubrics for HPE classes have not been conducted. So, for the teachers who lead HPE, the author has created examples of rubrics for health and gym class review. The contents are shown in Tables 6 and 7.

The following methods are given as an example of a method of using rubrics.

"Presentation of evaluation viewpoint ⇒ Example of class ⇒ Discussion about evaluation ⇒⇒ correction of evaluation contents ⇒ implementation of class by learner ⇒ evaluation of class ⇒ discussion about evaluation".

As pointed out by Fujita (1995), if all the viewpoints of evaluation are pushed from the evaluator side, students will not be motivated and it can be assumed that the teaching skills of HPE cannot be acquired efficiently. Therefore, even in the lesson evaluation rubric exemplified this time, I will have to change it through discussion with the learner, so that both the instructor and the learner can come to a consensus and use it.

Table 6 Physical Education evaluation sheet

	physical skill		learing eiviroment			lesson study				lesson skill				
	speech	Facial expression	Start and end	Teaching plan at the time	Learning discipline	Introduction	Instructions	Summary	The evaluation	Teaching materials / teaching materials	advice	Preparation and tidying up	Involvement of students (The higher the age of the students, the more important it is)	Safety aspects
1	You can speak to students	It is not a cheerful look	You are conscious of keeping class start time	You are considering teaching content and time allocation at the time	You can show learning discipline	You are considering introduction	You can issue instructions after stopping activity	It is possible to summarize class contents	You do not evaluate the aims of the lesson.	You can prepare the necessary teaching materials for class	You can advise when the child is in trouble	You have not prepared and cleaned up with the students.	You do not do classes by giving my students the responsibility.	The student was given the risk of injury 6 times or more within the predictable range.
2	You can speak less at a proper speed with less words useless	With a smile you can make a bright and energetic look	You can make your child aware of the start and end times	In order to achieve the aim of this time, you can think about appropriate guidance contents and time allocation for 1 hour	You can clearly indicate the desired learning discipline that classes can receive	Introduction can be devised	After stopping the activity and arranging the listening attitude, you can issue instructions	It is possible to comprehend and summarize the main points of class content	You show the purpose of the class to the students so that they can evaluate.	You can prepare teaching tools to improve learning effect	You can advise on one optimal way (instructional advice)	You can prepare or tidy up with my students.	You are giving some responsibility to some students and doing classes.	The student was given 4-5 times the risk of injury within the predictable range.
3	You do not have a habit of talking, I pay attention while talking, you can talk easily to students	Depending on students's remarks, with abundant expression, sometimes gestures can be attached	You can prepare lessons and begin classes at the start time	You can secure an activity scene according to the actual situation of students, incorporate effective learning methods, and plan one hour teaching content and time allocation	You can follow instruction to follow learning discipline and instruct the class to progress	You can introduce students's motivation and interest	You can give easy instructions with short words	You can reflect on my learning and be able to establish the content of the lesson	You evaluate some students	You can select teaching materials that will deepen your thinking and learning activities	You can advise in the form of inviting you to "try this" (soliciting advice)	You prepare and tidy up with my students.	You are giving responsibility to all the students and conducting classes.	The student was given 1 to 3 risks of injury within a predictable range.
4	While watching the reaction of the child, you can talk like a child can attract	You can intentionally change lively and rich expression by scene and attract students	You can keep the start and end times, you can keep discipline and tact	Depending on the actual condition of the child, you can flexibly change the one-hour learning form and teaching method such as iterative learning, supplemental learning, development learning	Rules such as how to make remarks at the time of presentation and how to listen are clear, learning discipline that develops classes centered on students can be constructed	You can prepare for the introduction related to the core of learning contents at this time, attract attention of students and lead to learning development	It clearly shows the action to be reached, and concrete transmission method can be devised	You can make students aware of their achievements and make learning content language.	You evaluate all students.	You can make the appropriate choice according to the individuality of the class as a whole or individual, you can develop it by devising your own idea and can master it in the class	Give multiple choices and advise you to leave it to the child (optional advice)	The students focused on preparing and cleaning up.	Classes are progressing considering the roles that students themselves can do.	You did not give any risk of injury to students within the predictable range.
	Teacher					Evaluater					Date			

Table 7 Health Education class evaluation sheet

	physical skill		dealing with children		learning enviroment		lesson study						lesson skill			
	speech	Facial expression	Standing position	Praise	Start and end	Learning discipline	Teaching plan at the time	aim	Introduction	Instructions	Summary	The evaluation	Teaching materials / teaching materials	Configuration and time allocation	Desk patrol	Learning form
1	You can speak to students	It is not a cheerful look	You can arrange your appearance and stand firmly on the teaching pole	You can praise students	You are conscious of keeping class start time	You can show learning discipline	You are considering teaching content and time allocation at the time	You can indicate the beginning of the lesson	You are considering introduction	You can issue instructions after stopping activity	It is possible to summarize class contents	You do not evaluate the aims of the lesson.	You can prepare the necessary teaching materials for class	You can think about the flow of lesson	You will not stay in front of the blackboard, You will inspect the desk as appropriate	You can use group learning
2	You can speak less at a proper speed with less words useless	With a smile you can make a bright and energetic look	You can stand at the position (sidelines) where all the students enter the field of view at a glance of the teacher	You can praise students's behavior	You can make your child aware of the start and end times	You can clearly indicate the desired learning discipline that classes can receive	In order to achieve the aim of this time, you can think about appropriate guidance contents and time allocation for 1 hour	Based on the learning content, You can show promising course of appropriate course	Introduction can be devised	After stopping the activity and arranging the listening attitude, you can issue instructions	It is possible to comprehend and summarize the main points of class content	You show the purpose of the class to the students so that they can evaluate.	You can prepare teaching tools to improve learning effect	It can be configured considering the flow of lessons for one hour	Staying in front of the blackboard, if necessary, you can patrol the desk and speak to your child	You can choose between classroom lessons and group learning
3	You do not have a habit of talking, you pay attention while talking, you can talk easily to students	Depending on students's remarks, with abundant expression, sometimes gestures can be attached	You can move horizontally and vertically so that you can see the situation of the child reaction change	You can praise them for specific reasons	You can prepare lessons and begin classes at the start time	You can follow instruction to follow learning discipline and instruct the class to progress	You can secure an activity scene according to the actual situation of students, incorporate effective learning methods, and plan one hour teaching content and time allocation	Based on the actual situation of students, you can show promising course of appropriate course	You can introduce students's motivation and interest	You can give easy instructions with short words	You can reflect on my learning and be able to establish the content of the lesson	You evaluate some students	You can select teaching materials that will deepen your thinking and learning activities	Considering "Introduction → Expansion → Summary", you can configure it with awareness of time allocation	While observing the desk, you can confirm the degree of progress of the work, grasp the problems of individuals and groups and can instruct	In accordance with the content of learning, you can choose different types of learning, such as simultaneous, individual, pair, group, etc., and concentrate on it

4	While watching the reaction of the child, you can talk like a child can attract	You can intentionally change lively and rich expression by scene and attract students	Changing the standing position flexibly according to the scene, students who are not in the field of view can be conscious	Through praise, you can increase the whole group	You can keep the start and end times, you can keep discipline and tact	Rules such as how to make remarks at the time of presentation and how to listen are clear, learning discipline that develops classes centered on students can be constructed	Depending on the actual condition of the child, you can flexibly change the one-hour learning form and teaching method such as iterative learning, supplemental learning, development learning	It is possible to show the purpose for students to actively learn by themselves	You can prepare for the introduction related to the core of learning contents at this time, attract attention of students and lead to learning development	It clearly shows the action to be reached, and concrete transmission method can be devised	You can make students aware of their achievements and make learning content language.	You evaluate all students.	You can make the appropriate choice according to the individuality of the class as a whole or individual, you can develop it by devising your own idea and can master it in the class	It is possible to construct a structure with a rhythm and a tempo	You can grasp exactly what kind of student is, overcome its storm, expand it to the whole, and develop learning activities	In order to make all students participate in learning and understand, various kinds of learning forms can be effectively used
	Teacher						Evaluater						Date			

3. Conclusion

In this paper, three questions from the viewpoint of qualitative improvement of HPE department were presented–

1. What is the current status of HPE system?
2. Teacher training at Paro College of Education primary School Teacher Training Course and HPE / Sports Coaching Diploma Course.
3. How do we use rubric evaluation to improve the quality of teachers for HPE?

It is clear that the curriculum of HPE in Bhutan is "thematic type" which is focusing on specific subject matter and value. The curriculum contents are complicated. In order to deeply understand the contents and to conduct educational practice, it is necessary to deepen the understanding of the curriculum at the stage of teacher training and to actively receive training for HPE courses even for an incumbent teacher.

According to National Strategic Framework for School Sports and Physical Activity, activities undertaken during class hours are divided into HPE, activities conducted outside of class hours into school sports programs, and it is supposed to exercise 120 minutes once a week. How to allocate 120-minute exercise at school is a big task.

The teachers find it difficult to find continuity in HPE activities from Class PP to Class 6. It would be difficult for them to continuously acquire athletic skills by doing one-off HPE activities. The HPE class is to familiarize children with exercise throughout their lives. Teachers themselves will not be conscious of what kind of skill the children are going to develop. The meaning of HPE may be diminished. And HPE is not a necessary subject in advancing. Therefore, it is not necessary to evaluate HPE. You do not have to be conscious of how the teacher evaluates activities. In other words, it is a system that does not need to be conscious of improving children's motor skills. From now on, there is a possibility that evaluating HPE can be a problem.

In Paro College of Education's primary school teacher training course, there are few students with knowledge of HPE. There are many lessons focusing on theory rather than practical lessons. Therefore, there are few opportunities for practiccal classes themselves, and it is estimated that it will be difficult to conduct practical classes when they are working as a teacher. In addition to attending classes to, it will be necessary to conduct more practical lessons of HPE in the class.

Rubric for the assessment of Health Physical Education classes proposed by the author is "Presentation of evaluation perspective ⇒ Example of class ⇒ Discussion on evaluation ⇒ correction of evaluation content ⇒ implementation of class by learner ⇒ evaluation of class ⇒ about evaluation. This is created based on the way of proceeding "Discussion."

I believe that it is necessary for leaders to think with the learner how to go about with the HPE classes. It is because HPE in Bhutan is new. I hope that HPE will develop through dialogue between instructors and learners. The problem is that the authors themselves do not conduct Health Physical Education Class Evaluation Rubric in Bhutan through the above process. While at the Paro College of Education for teaching practice and having evaluated, I would like to nurture people capable of performing high quality HPE classes.

The Ministry of Education sets forth the future goals of HPE. Every primary school by 2018 should have teaching staff and school sports instructors qualified for HPE at all schools by 2023. I feel that these goals are set to make health education and education better. I can predict that the reform will be extremely difficult. However, as mentioned in the beginning, it is thought that HPE will be drawing more attention from now on, as the necessity of qualitative enhancement of education in Bhutan is more emphasized. Through HPE, I hope that the Bhutanese people can make health habits for life.

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Improvement of Bhutanese building's air-tightness and insulation for energy efficiency and CO_2 reduction.

Taro Ohsawa

Abstract

This paper is written with an objective to improve air-tightness and thermal insulation of the openings in Bhutanese buildings. We tried to improve the insulating performance of traditional buildings constructed using the rammed-earth technology rather than RC buildings in urban areas that have been increasing in recent years. The study surveyed the current situation, carried out various simulations, analyzed them, understand the current problems and find out solutions.

"Heat loss" by thermal transmission is the first problem noted by the study. It is mainly caused by the use of poor insulating glass for which we propose solutions. This study also encourages the adaptation of insulation wall.

The second problem is the loss of heat caused by air "infiltration" due to gaps in traditional buildings. Among the list of suggestions, we propose a method to reduce gaps by intruding additional technique in traditional architecture that will improve the heating system of whole building.

Among many suggestions, we focused on the use of "domestic materials", placed importance on techniques that are relatively simple and require a small budget. To make it realistic, we dealt with numerous construction sites. Although the sample of our study and its effect is small, we hope that improvements will be made in large number of buildings rather than having great improvement on few buildings.

Solving those problems is very effective for "energy efficiency" that will contribute greatly to "CO2 reduction" which will significantly contribute to Bhutan's carbon neutral policy.

1. Introduction

There are various architectural designs in Bhutan. Among them, we try to improve the air-tightness and heat insulation of traditional rammed-earth Bhutanese buildings.

Bhutanese architectures are designed considering many regulations such as traditional decoration, restrictions on number of floors, amongst others. Its shape is beautiful with long eaves, aligned windows, religious decorations etc. This design makes our townscape beautiful and uniform. Many people are attracted to traditional Bhutanese architecture including the temples.

However, the internal performance of building is very poor in comparison to its exterior beauty. They are designed not considering air-tightness, heat insulation and thermal environment. As a result, lots of draft wind get through the gaps resulting in loss of heat due to poor insulation, and in the absence of appropriate opening, very minimum sunlight reaches the inside of the house.

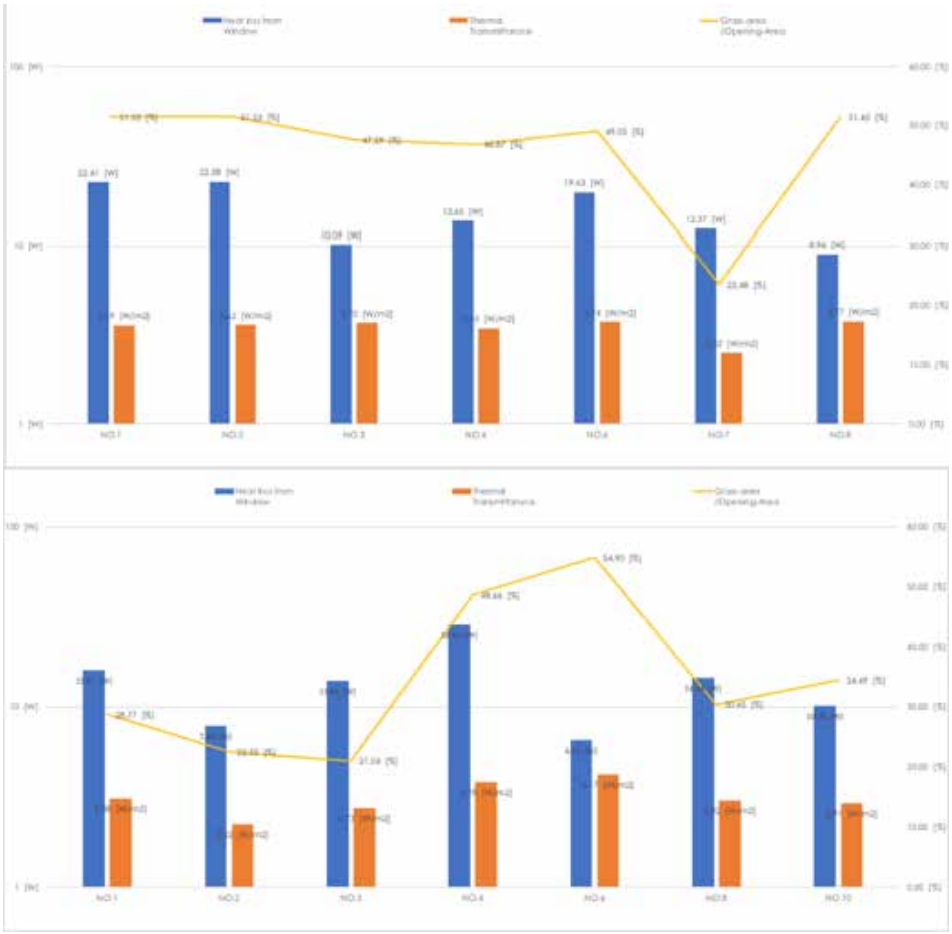
Therefore, we decided to investigate the existing openings of traditional buildings, understand the current situation in more detail, understand the problems and find out solutions.

2. Survey and analysis

We conducted a survey in some of the cold districts of Paro and Haa. We surveyed traditional Bhutanese houses constructed using rammed-earth and checked the shape of the windows. Most of the houses use combined windows of casement and fix window, and the number of storey of window varies from one to three. There were about 10 kinds of openings where we measured the dimensions of each opening. The results are shown below.

We calculated and analyzed many values from the result. It was found that the average thermal transmittance from the opening is a value of 3.0 to 3.5. All houses use 3mm single glass which is a poor insulating material. It is expected to lose lots of heat through this thin glass. Considering the situation, the above figure shows relatively good result. Then it is assumed that the window frame made from wood, a good insulating materials, might have contributed for its performance.

There are drafts in almost all the houses we surveyed. The air-tightness of an opening is very poor. Many clearances were also seen at the junction between the wall and the ceiling, which allows draft wind in. The gap might have occurred due to deformation of the member or poor construction accuracy. It



is suspected that deformation of the member might have caused by the use of unseasoned timber. We have to be careful in selecting the type of wood to be used for the construction of exterior parts. Although wood might be excellent in insulating the heat it might have a property of easily getting deformed. Taking this into consideration, it is important to enhance the performance of wood.

From these investigation results and analysis, we established two hypotheses. One is to replace the member with low thermal resistance materials such as glass with high heat insulation property material. Other hypothesis is to fill the gap to retain heat. By applying these two hypothesis, heat loss from the house can be greatly improved.

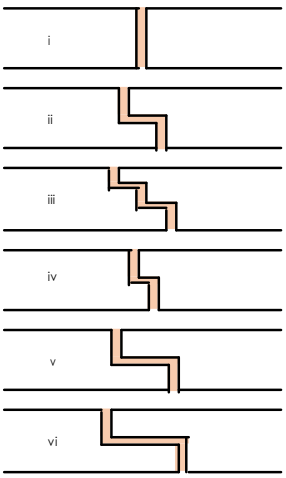
3. Improvement of openings infiltration heat loss by infiltration

First, we consider the problem of infiltration through drafts. The heat loss by infiltration is a serious problem that needs to be resolved. This problem can be solved by various methods that can be both simple and complex.

The first solution is to fill the gap by some members. Among the heat loss due to the infiltration, the ratio from the opening portion exceeds 60%. Closing the gaps in the openings therefore makes it possible to greatly reduce the loss of heat. There are methods like filling the gap with a sealant, stopping the drafts by making the joint part into a complicated shape.

Simulation of infiltration

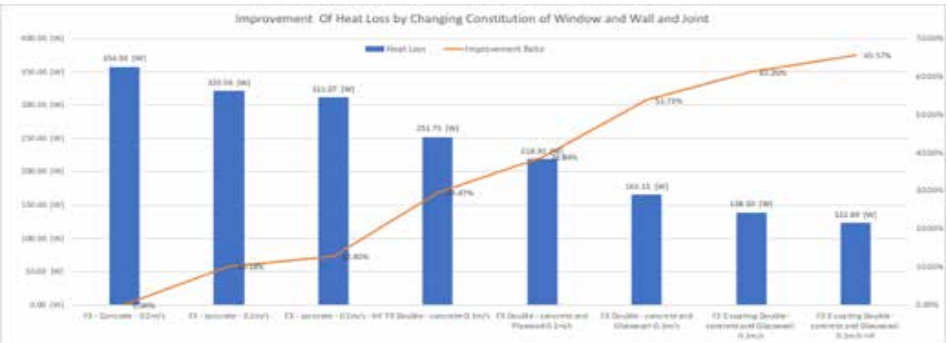
We made models of several joints and calculated the resistance of air flowing, and by using it, we simulated the amount of airflow by changing the shape of joint into complicated one. As a result, it was found that the flow of air becomes slower, as the distance becomes long and number bending increases. Thus, it is possible to reduce the heat loss by processing such joints. However, since shapes are too complicated to make construction difficult, it is important to decide the shape taking into the consideration the ease of construction and reduction of heat loss.



Next, is filling the gap between the sash and the window frame. It is expected that because of a movable part in this area, more gaps appear in this part and more heat is lost. Therefore, it is important to improve the heat loss by filling the gap using members. It is possible to fill the gap by increasing the size of the sash and window frame. However, there is a possibility that open-close system becomes impossible when the member deforms, or it cannot be used due to a construction error. For this reason, construction is carried out with a margin of dimensions. After that, the gaps should be filled with sealing and coking. This is a method of preventing the gap while having a margin of the size of the movable part. Also, because of its elasticity, it can deal with some member deformation.

We measured the gap of the existing window and calculated the average amount of the draft. The amount of draft wind varies depending on the external wind speed and temperature, but this time we assumed it is constant. We then compared the case where sealant was applied under the condition. The results are shown below.

From the simulation results, it is possible to obtain more than 5% improvement compared with the use of sealant. In the simulation, we examined it with the



breeze outside, but it is also possible to obtain an improvement of more than 10% if the gap is larger or the external wind speed is stronger. In addition, the draft wind not only decreases the actual temperature but also decreases the human sensible temperature and increases the discomfort index. Therefore, preventing it will be further improve the interior environment.

Thermal transmission

Heat loss by thermal transmission

Next problem is the heat loss by thermal transmission. Heat inside the room escape through glass and exterior wall decreasing the temperature of the room. All parts require good insulating to prevent the loss of heat energy.

Simulation of improved glass

Since most heat is lost from the glass, first we examined the improvement of the insulating performance of the glass. Currently, we are using 3 mm single float glass in many cases. We simulated thermal transmittance of the opening when changing the thickness of the glass, the setting of the hollow layer, and the addition of the e-coating. The results are shown below.

From this result, it was found that there was no improvement in heat loss even if the thickness of the glass was doubled. It just added weight and cost of a window. On the other hand, when double-glazing glass was used there is 35% or more improvement on the retention of heat. Itwas found that the insulating performance is not affected by the thickness of the glass but is greatly influenced by the presence or absent of hollow layer. Further e-coating gives an additional 15% improvement. All these changes can improve the heat loss by 50%.

Hinge and frame materials

Although it is expensive, based on its effect and technicality we strongly recommend to use double-glazing glass. On the other hand, there are some disadvantages on the use of double glazing glass. It increases the weight of a window. In Bhutanese architecture, window is relatively large, so when we doubled the thickness of a glass it will become considerably heavy. Therefore, when using double glazing glass, it is good to select a good hinge that is appropriate to hold the window frame. Shall the hinge breaks the problem will be bigger than the problem from the loss of the heat. Use of reinforced hinges and keys will enhances the air-tightness of the sash and makes it possible to prevent heat loss due to the infiltration. The window frame becomes susceptible to deform as the load applied to the lower window frame increases. For thist reason, we

Suggested to consider quality of wood to hold the glass frame rather than changing the size of the frame.

Consideration of whole room

Whole room simulation

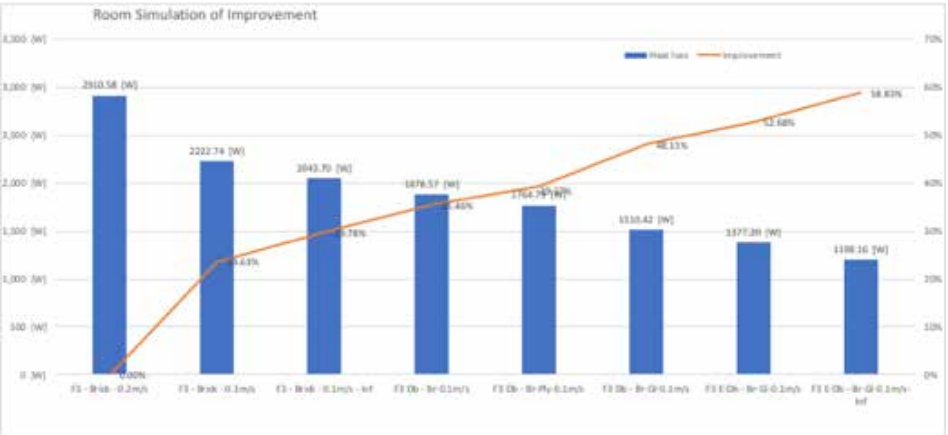
Simulation of Room Energy Efficiency and Electricity Bill

From the earlier simulation results, we simulated that whole room and analyzed the results. There are five traditional openings with fix and casement window in the room that measures 2.4m in height and 34 m^2. We calculated heat loss by changing the situation of window composition of glass and openings, and changing shapes of joint as previous simulation. The results are shown below.

From the results, it is found that there is 35% improvement on energy efficiency by using double glazing glass and window sealant. It is recognized that those two improvements are very effective for retention of heat. We can improve further by using good wall insulation and latest glass technology.

Electricity Bill

We calculated the annual electricity consumption of using a heater in a room. We maintained the room temperature at 18degree Celsius by using an ordinary

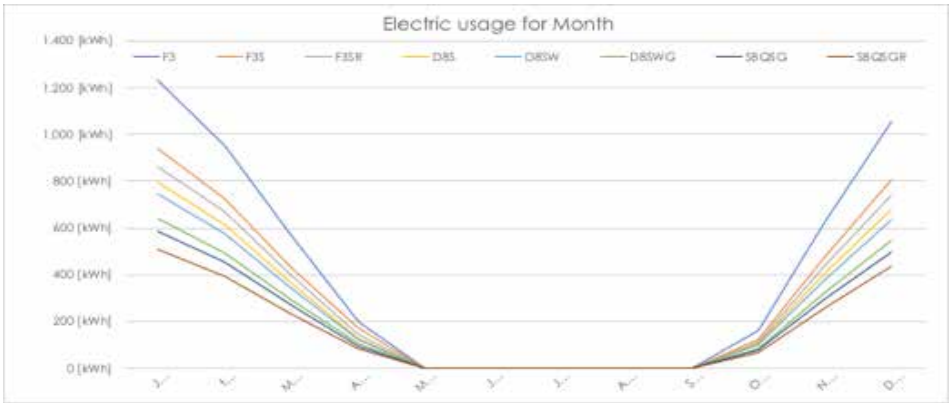


oil heater and calculated the electricity consumption. This simulation is done under Thimphu city's parameter of temperature, wind speed, electricity bill per unit among others. From this calculation, we found that about Nu. 10,000 worth of electricity is consumed annually to maintain a room at 18 degree Celsius or at room temperature.

This simulation is conducted for a small room. If the same calculation is applied to a whole building, the improvement results would be much better. The initial investment on a building might be high, but it is much cheaper to maintain and save from the efficient use of energy (electricity) by improving the air-tightness and insulating performance of a building. We can save huge amount of money throughout the lifespan of a building. In the long run, saving from the utility bill and maintenance would be much higher compared to the initial investment.

4. Improvement of wall insulation.

Light Brick as wall insulation



We got excellent results from the improvement of an opening. Then our next aim was to improve the insulation performance of wall. Insulation performance of a wall is strongly influence by thermal transmission and reduction of heat loss. When we improve the insulation of a wall we can use heat energy more efficiently.

In general, concrete and red bricks are used to construct wall, which has limited insulation property. Since those bricks are not a good insulating materials, large amount of heat is lost from the wall by thermal transmission. To make the wall less expensive, get the construction materials easily and make the construction easy, we choose light brick for a new wall.

There are many advantages of light brick. First it reduces the weight of a whole building. When the weight of a building is reduced, it reduce force on the building structure such as post and beam at a time of earthquake. It resists the earthquake by reducing the weight.

Insulating performance is the other advantage of light bricks. Thermal conductivity of light brick is 85% lower than concrete wall, 70% lower than red bricks. So, when we use light brick as wall material, it is not necessary to use other insulating materials. Therefore, this will not only reduce the weight of building, but also lower the construction cost of a building and perform better in terms of insulation performance. Light brick is a good wall material.

Simulation of light brick

We simulated the difference in heat loss by changing the wall materials using concrete, red and light bricks. Then, simulation was done by using double glazed glass and light brick at same time. The results are shown below.

It is known from the results that by changing red brick to light brick there is an improvement of 23% in energy efficiency in addition to the 12% improvement

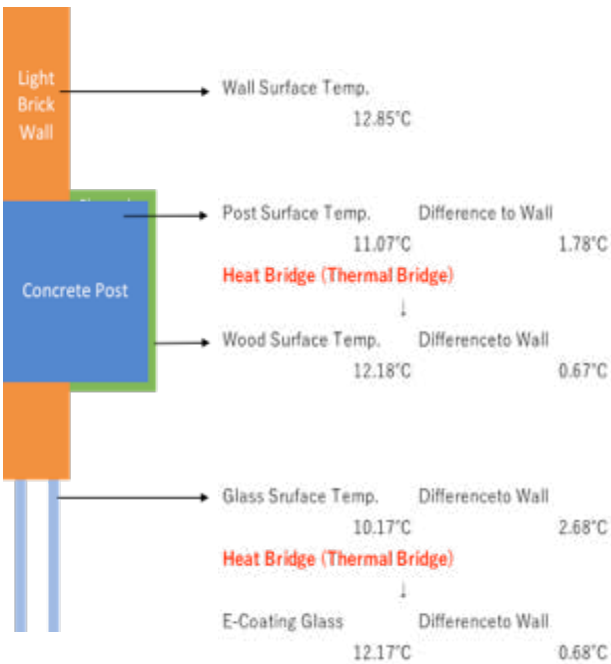
with the use of double glaze glass. Buildings built using the light bricks and double glaze glass is 50% more energy efficient than buildings built using red bricks and single glaze glass. It is clear that light brick is very excellent material for the construction of wall as an insulator.

New problems

Thermal Bridge

We make a building more energy efficient by improving the air-tightness and insulating performance. However, some new problem occured while improving the energy efficiency. First is the absence of thermal bridge. In the absence of air-tightness and insulation, currently lots of heat lost from all parts of the building. If we use double glazing glass and light brick, there will lot of improvement in the performance of the building.

As the post and beam are structural parts of a building we cannot use light bricks and must use reinforced concrete. It will be a thermal bridge. We simulate inside wall's surface temperature under the situation that outside and inside temperature difference is 15^{0}C. At that time, the temperature difference of a wall between inside surface of concrete and light brick wall is 2^{0}C. This difference makes concrete post thermalbridge, and much more thermal energy is lost. To prevent this, we have to cover and wrap this part by insulations. Glass wool and urethane is good insulations, but it is expensive and hard to get in Bhutan. From our simulation, using 12mm plywood is cost efficient, the difference of temperature is reduced to 0.5 and less difference of insulating performance. It not only improves insulating performance of a whole building but also acst as thermal bridges.



Due condensation

Next problem is the formation of due condensation. There are many clearance for draft wind to enter and naturally ventilate the room and lower the humidity. This is a reason for not forming condensation in current Bhutanese houses. But, when we use sealant and develop the accuracy in construction air- tightness inside the room dramatically improved. Room temperature of good air-tight room is maintain by human activity such as breathing, cooking, boiling and heating. So, the possibility of due condensation will increase. From our calculation, it is expected that concrete post and beam and part of glass make it is easy for due condensation. Due condensation helps to improve the insulating performance of a building materials.

5. Our Recommendation

For infiltration

Sealant

Use of sealant improves infiltration. Stop cold draft and retain the ward air inside the room.

Groove joint

Complex joint shape improves air-tightness.

For thermal transmission

Double glazing glass

Double glazing glass dramatically improve insulating performance of openings. It is cheap and involves simple technology, but it is very efficient.

Light Brick

Replace the red brick by light bricks. It has good insulating performance and is more resistant to earthquake damage being lighter than red bricks.

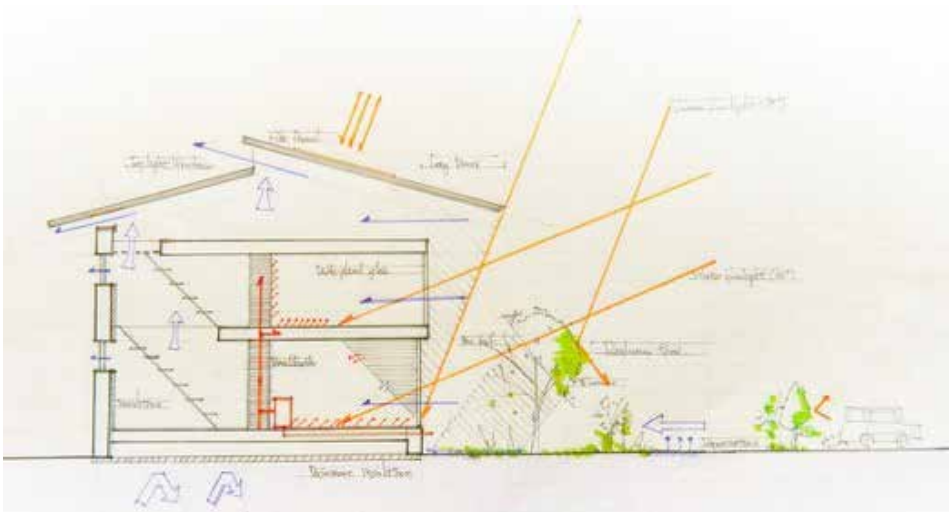
Other recommendation

Construction accuracy

Passive Design

The overall improvement may be achieved not only by using the appropriate raw materials but also by changing the design and planning. We recommend to introduce passive design. Passive design is a design that provides comfortable living without using electrical appliance such as air conditioners. As much as possible we can make good use of natural elements such as sunlight, heat and

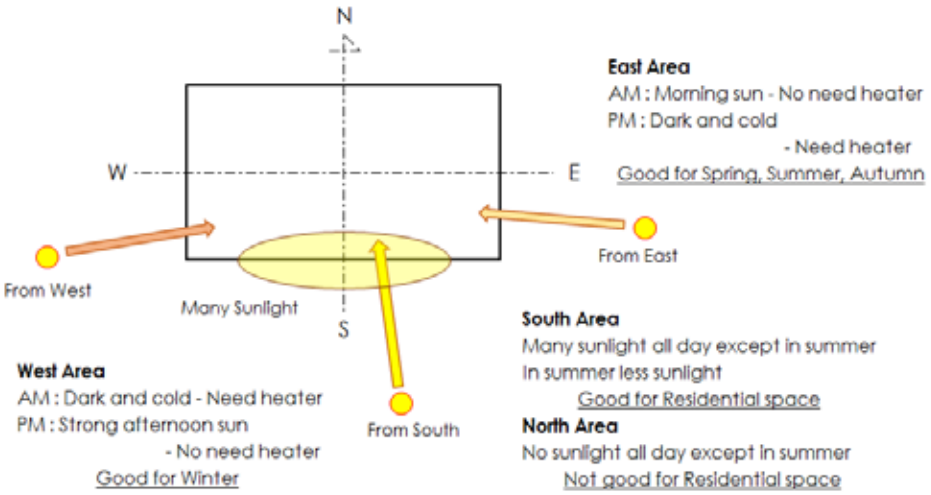
nature of wind. We don't need any budget to change this elements. We just have to change our conscience and mind set.



Bhutan has favourable environment to introduce this design. We need to understand the natural characteristics and design accordingly to utilize natural element such as sunlight, air and wind effectively. Passive design is architectural and can be divided into several elements. Besides the insulation, air-tightness and heat transmission, as described above ventilation, cooling, waste heat, solar radiation shielding, heat collection, heat storage, etc. Air-tightness and heat storage are largely depend on the material, and it is difficult to solve by designing alone. Ventilation and day lighting can be predicted at the design stage. Similarly we can also predict the efficiency of energy before the start of construction.

Passive design is not an innovative technology. It is a very important element for energy saving and reduction of CO2 emission. In Current situation, many buildings and placement plan are designed not considering the day lighting, solar radiation acquisition and ventilation for neighbourhood. Utilizing the light of the sun and using wind from the streets effectively is the basic of architectural design.

Passive design does not need a complex expertise. It is very simple and basic method of planning. There are many latest technologies in architecture, appliance, lighting fixture among many others. Using them effectively is useful for making our living- environment comfortable. Landscaping-architectural design such as plantation and parking may not been studied properly. It is presumed that lack of proper design lead to increase in consumption of energy.



It is important to consider all this aspect while planning to build a building.

Natural energy is very large and great, but controling it is difficult. They have difference day by day and have seasonal characteristics. Tree planting, building layout and landscaping are useful countermeasures for it. Deciduous tree planted south properly can control sunlight and winds, and greens can maintain soil and humidity in good condition, protect our privacy, offset CO2. Landscaping has many roles, so we have to use it effectively.

Conclusion

We surveyed many types of openings, analysed their characteristics, and understand the problems. The amount of the heat loss from the window in particular is remarkable. Therefore, we decided to research and resolve this problem. We made various simulations and studies and proposed some solutions in the previous section. Since the recommendations are not difficult and need not involve state-of-the-art technologies, it is relatively easy to introduce them at all construction sites and regions. It is possible to make the room more comfortable and air-tight by using latest design of window like a resin sash. However, it is expensive and needs drastic technical-changes in structure and joints. Moreover, since it depends on imported materials, there are many problems with delivery on time and price fluctuation. It is difficult to get radical improvements at the same time. So, we focused on improving air-tightness and heat insulation properties by using our local material and simple technology.

Since heat loss is greatly influenced by usage of glass first, we focused on the kind of glass for insulation, We made many hypothesis and verified by simulating. Among them, it is found out that changing glass to double-glazing is much effective than increasing the thickness of the glass. Double glazing may increase the initial cost but it is cost effective in terms of saving from the electricity bill in long run. So we strongly recommend to use the double glazing method.

Secondly, we paid attention on the construction accuracy. From our simulation we found out that heat insulation performance is improved by changing the shape of the window frame and type of glass. This suggestion must be properly implemented in construction sites. The propose improvement has no meaning unless improve in construction accuracy which is one of the biggest challenge in Bhutanese architecture. Today most of the heat infiltration is due to draft winds from gap that occur due to construction defects or use of unseasoned timber. There is no doubt in improving the air-tightness just by improving the construction accuracy and construction materials quality.

For this reason, we must follow proper construction procedure. We have to establish a proper quality control system. Quality can be improved by educating the craftsmenship, increasing the wage of craftsmen, improving the wood seasoning method and introducing the quality control system. At the moment, study on Bhutan's building regulation and permission system is underway. We not only have to know the detail of building structure but also incorporate other natural aspect that improve the living environment of a building. For example, amount of sunlight, ventilation plan, relationship to neighbours and many others. We must improve our architecture from all perspective.

We suggested many improvement based on our simulation. For the existing openings, we suggested to improve on window-frame, joint with groove and sealant. We could have recommend more sophisticated methods, but we choose this method to make it cheap and simple. We hope that our recommendation will spread across the country and help the people to realize its benefits. We should continue to check the implementation of our recommendation and its benefits and continue to explore the new method on trial and error basis.

Lastly I would like to say that Bhutanese architecture is very wonderful and there is a big scope for its growth. With routine maintenance, proper repair and care, traditional Bhutanese houses are used for long period of time. We must take this traditional construction method of rammed earth to the next generation. Unless efforts are made to promote the traditional method modern building technology might take over the traditional method in future.

Therefore, it is important to integrate the new technology with Bhutanese old traditional method to retain the Bhutanese originality, enhance its quality and to promote the Bhutanese architecture. Improvement in architecture will not improve the living environment of people but also save households from the consumption of energy. This will contribute greatly to the Bhutan's policy of Carbon neutral country and the Gross National Happiness.

School Sports Program: Present state, issues and considerations

Shin Kozato

Introduction

Development has changed the lifestyle of Bhutanese children in recent years. Many youth, including school-going children, spend hours watching television, computer and mobile phone screens. Insufficient physical activity among children is associated with adverse health outcomes such as obesity, mental health problems and the risk of acquiring non-communicable diseases (Janssen & LeBlanc, 2010). Nearly half of the population(49%) does not engage in vigorous activity and 6.4% have insufficient activity (MoH, 2015). A research by Naoki Hase, 2014, found out that physical strength of Bhutanese children are weaker compared with Japanese children of the same age when the results of physical fitness test was compared.

Children in Bhutan study from early morning until evening everyday. Also, the priority placed on main subjects such as English and Math prevents children from improving their lack of exercise. However, Health and Physical Education (HPE) has been implemented since 2000 and the Health and Physical Education Curriculum Activity Guide (HPECAG) has been popularly diffused since 2018 by the continued activity of JICA volunteers.

In Bhutan, workshops to foster HPE teachers were held during summer and winter breaks in each Dzongkhag (there are 20 Dzongkhag in Bhutan, called "KEN" in Japanese). According to HPECAG, Sports and Physical Activity (SPA) consists of three main components, which are Movement and Physical Education (MPA), Personal and Interpersonal Development (PID), Health and Healthy Lifestyle (HHL). Furthermore, the HPECA guide is trying to approach the three main components from two angles: activities implemented in HPE class and outside of it.

This study will focus on the School Sports program (SSP). Additionally, the relationship between Undokai (Japanese HPE festival) and SSP is reflected. Further, the study will try to validate the effectiveness of physical training (PT) programs, which is a SSP, to see if they are improving Bhutanese children's physical strength.

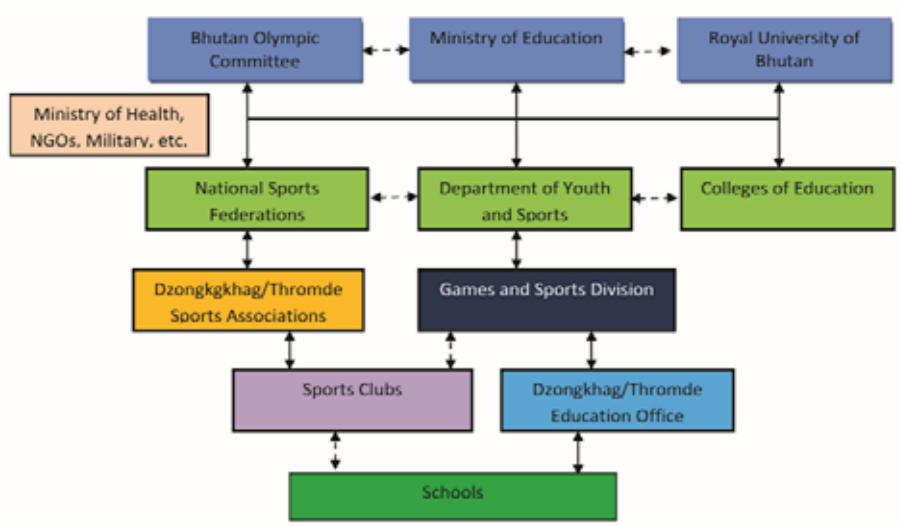
For validation, we looked into the following:

1. What is SSP?
2. The spread of SSP using Japanese Undokai
3. Validation of Physical Training usability based on the model case of morning exercise in Hokkaido prefecture to improve children's health and foster junior leaders of Hokusho University.

The paper, after explaining SPA and SSP, including their current state and problems, will suggest certain changes. In the second part, the paper studies the value of Undokai with practical examples, and also discusses needs, problems and suggestions for the spread of SSP using Japanese Undokai. The third section uses a model case to validate the use of morning exercise in schools. The case study was conducted in Hokusho University and was aimed at improving children's physical strength and fostering leadership.

1) What is SPA?

Picture 1. Organizational Linkage in the Development and Delivery of Sports and Physical Activities in Bhutan



According to the HPECA guide, SPA consists of SSP and HPE.HPE consists of three main components - Movement and Physical Education (MPA), Personal and Interpersonal Development(PID), and Health and Healthy Lifestyle (HHL).

a) The vision, mission and target.

1. The vision of the National Strategic Framework for School Sports and Physical Activity is to enrich teaching-learning and foster a lifelong healthy lifestyle.

2. The mission is to engage all children in regular HPE and SSP to promote healthy lifestyles, instill values, and enhance skills and talents.

3. The target sets out in this strategic framework are based on the decisions and feedback of the Core Committee workshops and meetings conducted amongst national stakeholders.

As stated in the vision and mission, it is understood that SPA aims to engage all students in regular HPE and SSP to foster a lifelong healthy lifestyle. Following is the plan for SPA as presented by DYS.

b) The plan for SPA, presented by DYS set some targets.

The main objectives of SPA are to engage all children in regular HPE and SSP to foster a lifelong healthy lifestyle. Based on the objectives, the plan established a 10-item checklist of SPA indicators.

Sl. No.	Targets	Timeline
1	All primary schools (classes PP- VI) implement HPE by 2018 and secondary schools (classes VII- XII) by 2020.	2018 & 2020
2	All schools organize School Sports Program (classes PP – XII).	2018
3	All schools engage students in SPA for a minimum of 120 minutes in a week.	2018
4	All schools are equipped with basic set of facilities and equipment.	2023
5	All schools have qualified HPE teachers and School Sports Instructors.	2023
6	All primary schools implement HPE (PP-VI) and SSP (PP-XII) standards.	2018
7	Fifty percent (50 %) of all national athletes for the National Sports Federations are facilitated through SPA.	2018
8	A proper mechanism developed to bring about better cooperation and collaboration amongst stakeholders.	2016
9	The Games and Sports Division (GSD) is strengthened with qualified and adequate staff.	2018
10	A support, monitoring and evaluation mechanism system is in place.	2017

Picture 2. 10 items of SPA indicator

The items were prepared in collaboration with stakeholders.DYS is building/ adjusting an organization of relevant agencies and a cooperative system to implement the above checklist.

The following points are part of the collaboration, which has been implemented or will be implemented.

1.Implementation of HPE program.

2. Placement of JICA HPE volunteers.

3. Training of HPE teachers on the revised HPE curriculum.(Summer and winter breaks, 2017).

4. Study tour for leaders.

5. National Physical Fitness Test (PFT).

SPA is based on the following rules.

1. It is enjoyable, safe and diverse to accommodate all abilities and gender.

2. Every child has access to SPA commensurate to their development.

3. Promote good character, ethics, moral and national values.

4. Facilities and equipment are safe and of high quality.

5. SPA service providers are qualified and skilled.

6. SPA promotes participation for lifelong healthy lifestyle.

7. Resources are shared and used effectively and efficiently.

8. Monitoring evaluation of the programs are professionally carried out on time.

2) What is SSP (School Sports Program)?

SSP are activities outside school time. According to HPECA guide, time allocation of HPE and SSP is a minimum of 120 minutes per week. It means HPE and SSP make up SPA.The SSP is coordinated by the Games and Sports Division under the DYS and sets the following four goals for fostering youth.

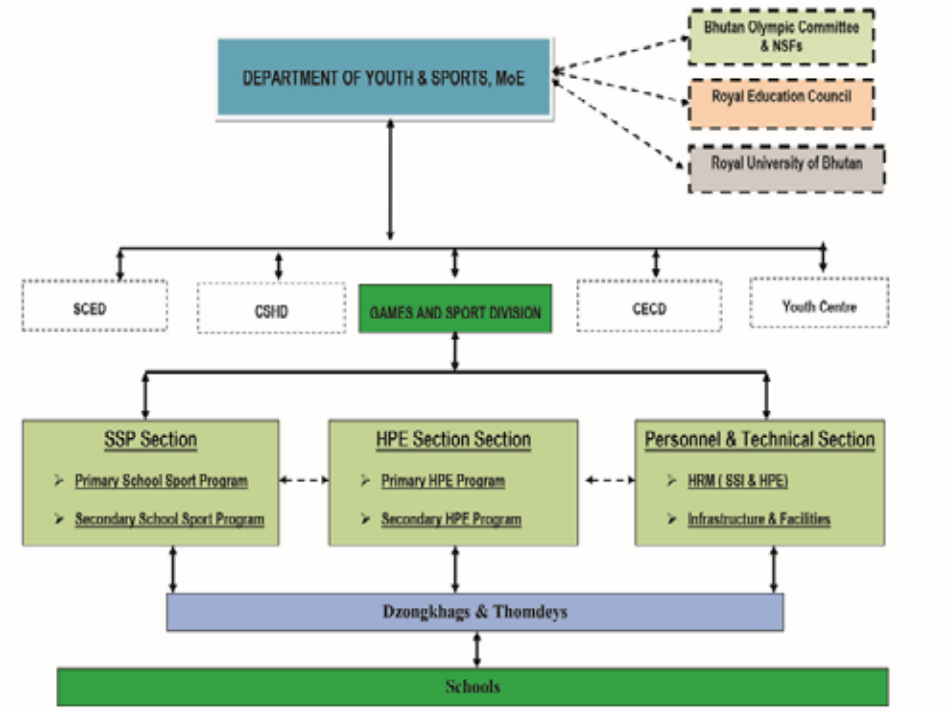
- Foster healthy lifestyles, instill good values and enhance life skills

- Promote mass participation of children in sports and physical activities

- Promote traditional Bhutanese and contemporary sports

- Explore latent talent and encourage youth to pursue excellence in sports

Picture 3. Proposed Schematic Organogram for the Games and Sports Division



A) The present state of SSP

SSP has been implemented concurrently with HPE in each school since 2000. HPE is assigned as school hours once a week. After school, sports programs such as school events and other activities are assigned as SSP. SSP is implemented by the school sports instructor (SSI). However, the DYS revealed disparities in terms of adequacy of sports facilities, shortage of HPE teachers, instructors and lack of coordination among the stakeholders. For instance, schools across the country have different timings allocated for sports and physical activities.(Assessment Study on the School Sports Instructors 24th July, 2013.)Especially, there are schools focusing on academics rather than emotional and other life skills education. These schools do not implement SSP properly.

For this reason, GSD, DYS and MoE published an outline - NSFSSPA to clarify the contents. Now, SSP is implemented by school teachers based on NSFSSPA.

B) Problems

There are two main problems with SSP in Bhutan.The first is with the total time of participation in SSP.

According to the HPECA guide, schools should develop a policy that requires all students to attend HPE classes and participate in organized SSP for a minimum of 120 minutes a week. HPE's class duration is 40 to 45 minutes in each school.Calculating simply, SSP is assigned 75 minutes to 80 minutes per week. However, there are many schools which do not implement this properly. There are two reasons.

The first is that students concentrate on studies in the early morning and after school because schools and students attach more weightage to academics. Another difficulty is that students from class pre-primary to class 3 do not participate in order to get enough sleep time because PT programs (one aspect of SSP which can be implemented regularly)are often scheduled in the early morning (in order to focus more on academics, as mentioned above).

Day-scholars come to school from their house and cannot participate because of the early morning timing. Consequently, schools in the capital city, Thimphu, do not implement morning exercise because those schools do not have boarding students.

The second problem is limited participation.There are limited participations because more than half of SSP events are not open for full participation. Furthermore, there is a tendency toward triumphalism - opportunities to participate in school events are given to students who are good at sports. School students of Bhutan (class Pre-primary to class 10) are divided into groups which are called Houses or Departments. It is similar to the teams of Japanese Undokai. At the time of sports events, the participants are selected from each group. One student can participate in up to two items as a rule.There are examples of annual sports events below. Conducting and managing annual sports events throughout the year is the responsibility of SSIs acting under DYS.

a) House Matches

House matches are competitions including various kinds of sports in every school throughout the year.

There is a total of seven sports such as basketball, football, volleyball, badminton, table tennis, chess and dego (a Bhutanese traditional game). These sports are implemented throughout the year as competitions among the houses.

The games are open to selected students from each house.

b) Sports Day

It is planned and managed in each school by the SSI. For this reason, the contents differ every year. It is similar to a combination of Japanese Undokai and athletics.The games are open to selected students from each house.

c) Marathon

It is held once a year. The distance is different depending on the grade.The marathon is open to all students.

d) Physical Training program

The program is present in some schools only and the number of days and time differ from school to school. The program is open to boarding students from class 3 and above.

e) Athletics

It is held once a year in each Dzongkhag. It consists of running, throwing and jumping competitions similar to Japanese athletics.The competition is open to selected students from each school.

f) Sports Meet

It is a sports festival held once a year for each grade in each Dzongkhag.There is a total of 6 sports: basketball, football, volleyball, badminton, table tennis and chess. The meets open to selected students from each grade.

* Primary level: Class Pre-Primary ~ Class 6

* B level:Class 7 and Class 8

* A level: Class 9 ~ Class 12

As mentioned above, different kinds of school events are held throughout the year. However, more than half of school events are not open for full participation. Students who are good at sports are selected, rather than those who are interested. In addition, there is a low possibility that lower-class students will be selected because higher-class students with high abilities are selected for all the games except chess.

For this reason, there is a big problem of limited opportunities for students who are not good or dislike sports. They do not get the opportunity to improve, so the problem becomes severe. GSD promotes mass participation of children in sports and physical activities and explores latent talent and encourage youth to pursue excellence in sports in the four goals of SSP, but there is still room for improvement.

C) Suggestions

It is necessary to give opportunities to students to improve their physical and mental abilities. At present, there are not many events, which calls for full participation in a year. The existing system must re-examine to promote mass

participation of children in sports and physical activities, explore latent talent and encourage youth to pursue excellence in sports as stated by GSD in the four goals of SSP. It is desirable to reform by adding modifications to better meet the goals or by creating something new.

The following two suggestions are made.

1. To use Saturday afternoon or change study time to an SSP activity once a week.
2. To hold Undokai

1. Discussion of the suggestions for improving SSP.

1. To use Saturday afternoon or change the study time to an SSP activity once a week.

Schools in Bhutan have classes six days a week, Sundays are holidays. However, because school finishes early on Saturday, it is the best time to implement SSP activity. In addition, boarder students are not allowed to go out of the school without permission on holidays including Saturday and Sunday. Therefore, it is possible and relatively easy to use the time for SSP. It is possible to use the time effectively for students who have too much free time on those days.

2. Holding Undokai. The spread of SSP using Japanese Undokai.

2. The spread of SSP using Japanese Undokai

In the first section, it is suggested to hold Undokai for SSP. The second section discusses the spread of SSP using Japanese Undokai based on the suggestion of holding Undokai. This section will discuss (1)about meaning of Undokai, (2)practical examples and necessity, and lastly (3)problems and suggestions

(1) Meaning of Undokai

In the Japanese guidelines for the HPE curriculum, it is said that Undokai (health and safety physical education event) is to deepen the understanding of development of a healthy mind and body, maintenance and improvement of health, to master safe working procedures and disciplined collective action, to create a foundation of understanding of behavior, to foster responsibility and solidarity, and to conduct activities for the improvement of physical fitness.

It is important to give enough opportunities to all students and to create an understanding of the benefits to reach the goal. But as stated earlier, many SSP events are not for full participation. As suggested by DYS, Undokai is a wonderful physical education event to involve not only students and teachers, but also the community. Holding Undokai in Bhutan must suit local needs.

(2) Practical examples and necessity

1) Practical examples

JICA volunteers working in Bhutan have held Undokai in their schools. So far, more than 9 schools, 5 in eastern Bhutan, 1 in the central region, and 3 western schools have successfully and continuously conducted Undokai. That has become a platform to help Bhutanese know more about HPE and to show the importance of SSP by involving students, teachers and the local community. Undokai is not just an event for exercise, but also has great educational value. It is an opportunity to increase the understanding between a community and a school. Students have a chance to show their improvement both inside and outside of school.

It is not easy to hold Undokai because there are not enough facilities and equipment in Bhutan. However, it is not difficult for teachers and students to cooperate and prepare with each other to make Undokai an opportunity to show students, teachers and community know the value of HPE and its importance.

2) Necessity

As mentioned earlier, the number of participants who can join sports events, which are responsible for more than half of SSP, is limited. In present Japan, Undokai is practiced in HPE as school events. It is not possible to ensure enough time to practice because HPE class is only once a week in Bhutan. Furthermore, if HPE classes are spent on the practice of items for Undokai, then it would be difficult to implement usual HPE classes.

For this reason, SSP and HPE are more effective if Undokai is treated as one of SSP. The reason to recommend Undokai over sports events is because there is the tendency of triumphalism. Undokai with the tendency to foster cooperation is needed.

3)Problems and suggestions

Presently, Undokai is implemented on the initiative of JICA volunteer. The main problem is the shortage of Bhutanese who have knowledge of Undokai. Bhutanese who have experienced Undokai in Bhutan are limited. It is desirable to hold Undokai continuously in places where it has been implemented by ensuring that Japanese and Bhutanese work together with the intervention of JICA volunteers. To involve as many people as possible, it is necessary to try and share the value of Undokai, the difference of present sports events from Undokai, and to transfer technical knowledge.

However, at this phase, there is no established habit of full participation, so it is easy to anticipate that students who have an aversion to playing sports, especially senior girls, will not actively join.

For this reason, it is suggested for full-participation. The following is a concrete example about meaning of full-participation in the Undokai

Concrete example

As an example, it is assumed that students are divided into 3 teams. The points are given not only to the top 2 teams, but even to the lowest team. In the case above, first is awarded 3 points, second 2, and third 1 point. If the lowest team is not awarded a point, some may choose not to participate in items because there is no point for being present. However, by scoring in the way mentioned above, at least 1 point is given even for the lowest position. Consequently, it increases participation and motivation.

3. Validation of Physical Training based on the model case of morning exercise aimed to improve children of Hokkaido prefecture, Japan's physical strength and foster junior leaders of Hokusho University.

The third section explains and validates the usability of Physical Training, citing the research and literature of Study on Improvement of Physical Fitness at Elementary Students in Ebetsu City 10 - Practice of Morning Exercises at A Elementary School (Tadashi Takeda, Naomi Mashiyama, Shin-ichi Omiya, Shieko hareyama, Kosuke Yamamoto, Yui Ishii. 2014) published in the Bulletin of Hokusho University school of Lifelong Sport.

1. Explanation of validation of Physical Training of usability based on the model case of morning exercise which is aimed to improve children of Hokkaido Prefecture, Japan's physical strength and foster junior leaders of Hokusho University.

HokushoUniversity is carrying out morning exercise in consideration of the decreased strength of children in Hokkaido. My school is also carrying out morning exercise to improve children's physical strength.

For this reason, it is helpful to focus on the study because the state of Bhutanese students is similar to the students in Hokusho University's case.

1) Background of the research

a) The state of children in Hokkaido

The state of children in Hokkaido was that boy's and girl's total points of physical strength were materially less than the national average and were on a declining trend compared with previous years.

Moreover, the ratio of schools implementing the new Japanese physical fitness in Hokkaido, except for the require grades, was low comparted with the national average. For these reasons, Hokusho University is trying to implement the morning exercise program to improve children's physical strength and aiming to foster enjoyment of exercisee in Hokusho University's neighborhood. Cooperating with the municipal board of education, a school was selected for practical investigation research with respect to increasing student's physical strength.

2) Subject of research, execution number and objectives.

a) Subject of research and execution number

In the past 3 years, among students from class 4 to 6 who voluntarily joined the morning exercise, 6 students from class 4, 8 from class 5, and 3 students from class 6, were appointed as junior leaders. At a different school, school B, in the same region and of similiar size (total number of students, HEISEI 25 1st May) two students from class 1 were selcted as a control group.

b)Objectives of the research

The morning exercise program aimed to teach children the fun of exercise by focusing on activities to move their body and to increase children's physical strength and reinforce exercise habits in children's lives. At the same time, it aims to foster a zest for living by using exercise to foster communication ability. In addition, fostering of leadership is one goal for junior leaders in the different age grades. Concreate goals are the 3 following points.

1. Fostering of children who like exercise and playing

   To promote a feeling that "to sweat is feeling good," and "to exercise is fun".To establish ahabit of exercise and to adapt exercise into children's life styles.

2. Acquisition of fundamental and basically exercise, improvement physical strength

   To improve basic motor skills and physical strength needed to play various kinds of exercise and sports through the experience of fundamental movement centering on running, throwing and jumping.

3. Fostering of communication ability which are three goals in implementing morning exercise.

   To improve communication ability by sharing time and place for exercise, moving the body following instructions, and competing or cooperating

with friends. Especially, Junior leaders demonstrate leadership and improve communication ability in the different developmental age groups.

3) Exercise program and its implementation

a)Implementation of exercise program

Meeting from 8:05 am to 8:25 am, for a total of 33 times. 10 to 15 college students in teacher training are in charge of the exercise.The main roles are giving advice and helping junior leaders, giving support for class 1, acting as a role model and saying something during the activity.

b) Implementation of exercise program

Hokusho University brought up the 5 following exercises as practical program to approach - Fostering of children who like exercise and playing, Acquisition of fundamental and basically exercise, improvement physical strength, Fostering of communication ability which are three goals in implementing morning exercise.

1. Running exercises (ex.) : [kyodai fruits basket] [iroiroiro jyanken dash] [guruguru relay][kozakana oni]
2. Throwing exercises (ex.) : [shippotuki ball nage][wanage catch] [matoate][fruits catch]
3. Jumping exercises (ex.) : [ken]ken[pa][kangaroo no ensoku][nametobi jyanken][wanimukatte jump]
4. Support exercises (ex.) : [osero game][basya][esa atume][nuno kuguri]
5. Multiple exercises (ex.) : [kai atume][minna de osero circuit][chiisana kumo][sake no kawanobori] (could you check with the word document please)

(4) Validation of effects and results

a) Validation of effects

The new physical fitness test by the Ministry of Education was implemented at the beginning and end of the program.There are 6 items implemented: grip strength, sit-ups, sit and reach, jumping side to side, shuttle run and long jump which are possible to do indoors. In measuring the new physical fitness test, the study considers correlation, intra-subject variation (comparing May with November in each school), and individual variation (comparing school A with school B).The study considers a change between May and December in each boy and girl of the school A and school B to calculate each average

and a standard deviationby arepeated measure ANOVA test. Further, for showing that there is a significant difference, regarding the intra-subject variation, it uses a paired t-test (two-sided test). Regarding the individual variation it uses an independent t-test(two-sided test). Significance level is $p<0.05$

b) Results

Class 1 boys at school A

Among the class 1 boys at school A, compared with the average of their results in May, the average of their results in December had improved. Especially, the averages of long jump, sit and reach, jumping side to side and shuttle run has improved. In addition, all items which were measured in December were better than the national average of class 1 boys.

Class 1 boys at school B

Among the class 1 boys at school B, compared with the result of sit and reach in May, the result in December had decreased significantly, but in all other items,the averages in December were better than in May. Especially, jumping among the class 1 boys at school B, compared with the result of sit and reach in May, the result in December had decreased significantly, but in all other items, the averages in December were better than in May. Especially, jumping side to side and long jump improved.

Class1 girls at school A

Among the class 1 girls at school A, the results of all items except sit and reach in December were better than the results in May. Jumping side to side and shuttle run had improved. Comparing the results with the national average, all items except sit and reach showed high scores.

Class 1 girls at school B

Among the class 1 girls at school B, the results of all items except sit-ups in December were better than in May. Further, all items which were measured in December were better than the national averages.

To summarize the above results, comparing school A's class 1 and school B's class 1, the results of all items in May show low scores, but the results in December show the same or higher scores. Based on these results, it appears that the activities for skillfulness, agility, and combining different movements work effectively as morning exercises.

2)What is Physical Training?

Physical Training Program, also known as a PT program, has been implemented every Monday and Thursday in the school where I have been working in eastern Bhutan. It is not implemented in schools in the capital city and other similar places. It is not possible for day-scholars to attend. The exercise program is planned and implemented by the school's SSI with importance placed on 2 points: Foster healthy lifestyles, instill values and enhance life skills, and promote mass participation of children in sports and physical activities. Class PP to class 2 do not participate in order to get enough sleep, but the SSI ensures that other students participate in the morning exercise by taking attendance.

- Place: School ground
- Date and time: Every Monday and Thursday from 5:30 to 6 am
- Target of students: About 300 students, class3 to class10
- Contents: Jogging, simple workouts, stretching, aerobic dancing and so on.

a) Status of students

In Bhutan, a sedentary lifestyle prevents their physical growth. As mentioned in the introduction, research revealed that the physical strength of Bhutanese children is low compared with Japanese children at the same age, based on results from Physical Fitness Tests (Naoki Hase,2014). Bhutanese students are similar in background to students in Hokkaido, Japan who were studied. Male students often play football or basketball on weekends, but female students are not found playing any sports except for the PT program and HPE class, hence, there is apolarization of exercise habits.

b)Problems and suggestions

1) Problems

There are two possible problems in the PT program.The first is that general teachers are in charge of PT programs in schools which do not have any HPE teacher or SSI. In Bhutan, there are 231 active teachers trained and oriented by HPE workshops, and 245 teachers who are planning to attend. In addition, there are 180 SSIs working in Bhutan.

On the other hand, more than 300 primary schools (class pp to class 6) do not have HPE teacher or SSI (only 2 have that facility). Rinzin Wangdi (GSD chief Officer). For this reason, general teachers who are not related with sports have to conduct SSP programs and lead PT programs.This leads to overworking of teachers.

The second problem is that there are no guidelines or activity books. PT programs are one of the activities of SSP, but concrete plans have not been given by DYS. Therefore, it is easy to see that it is a burden for not only HPE teachers and SSIs but also for general teachers who do not have the knowledge to make lesson plans for a PT program.

2) Suggestions for activities based on the program by Hokusho University

a) An idea for anactivity book

Similar to the HPECA guide, a PT activity book through collaboration with JOCV, REC and DYS is recommended. The guide would focus on teaching fundamental skills throughout the year with activities divided into five groups: Running exercises, Throwing exercises, Jumping exercises, Support exercises, and Multiple-movement exercises, all based on the program by Hokusho University. Such a guide would help compensate for the lack of knowledge because teachers could implement activities by following the PT activity book.

b) Junior leader system

Another suggestion is to appoint a boy and a girlas junior leaders from each grade, similar to the program by Hokusho University.Teachers in charge of the PT program and junior leaders could meet to share the lesson for the next day and discuss reflections or improvements from the previous PT program.A junior leader system requires some teachers to join PT so that PT will be implemented smoothly until the junior leaders are selected and prepared. Moreover, students who are appointed as junior leaders will have more responsibility and can become good model leaders for all students, thereby improving the school.

c) Implementation of a Physical Fitness Test

It is necessary to implement a Physical Fitness Test to know the reality of student's physical strength.The Physical Fitness Test is implemented during HPE class in my school. It is not effective to use HPE class, which has only 30 hours per year, for the Physical Fitness Test.

On the other hand, DYS has said that the Japanese Physical Fitness Test is better. The Bhutanese one was only completed recently and there is not enough data to support it. I would like to request JOCV to continue to implement the Japanese Physical Fitness Test from now on. Moreover, they have requested teachers to send results and feedback. In addition, a Physical Fitness Test is recommended in NSFSSPA. The Physical Fitness Test should be conducted at the beginning of the year during PT time in order to make a plan to use PT time effectively. Furthermore, it is likely that students will get interested in

their physical abilities by comparing the results of their Physical Fitness Tests every year, and that will lead to greater awareness of the development stages of their bodies.

Conclusion

This study examined three topics in order to make suggestions about improving the state of SSP: 1. What is SSP which is one of two main components of SPA like, 2. The spread of SSP using Japanese Undokai, 3. Validation of Physical Training of usability based on the model case of morning exercise which is aimed to improve children of Hokkaido prefecture, Japan's physical strength and foster junior leaders of Hokusho university.

It was found out that SSP is assigned for 75 to 80 minutes per week as other activities such as after school activities or school sports events. SSP is implemented by School Sports Instructor, called SSI,who works under DYS.

It was also found that many schools do not implement SSP properly. For this reason, GSD, DYS and MoE set the outline called NSFSSPA to clarify the contents of HPE and SSP and to improve the present state. (Gyeltshen, 2013).

There are 2 main problems with SSP. The first is total time of participation in SSP. This is because of the great weightage given to academics: students are always studying hard in the early morning and after school. Students from class pre-primary to class 3 do not participate in early morning SSP in order to get more sleep time. Moreover, students who are not boarders come to the school from their houses and cannot participate in the early morning.

The second problem is limited participation.There are limited students who can participate in school sports events because more than half SSP events are not open for full-participation. As a suggestion for the first problem, schools can use Saturday afternoon or change the study timing to accommodate SSP activities once a week. For the second problem, schools need events for full participation such as Undokai. Such events would provide more opportunities for exercise for all students.The problem is where to find 120 minutes for SSP programs in non-boarding schools.

In the section on implement Undokai for SSP, it was shown that it is important to provide enough exercise opportunities for all students. Holding Undokai events in Bhutan must fit the needs and facilities of the local community.One potential problem with Undokai is the loss of HPE class time if HPE class is spent on the practice of items for Undokai. However, if Undokai is treated as one SSP event, it will improve the effectiveness of both HPE and SSP.

Bhutanese who have experienced Undokai are limited. It is important to share the value of Undokai and the difference of present sports event from Undokai, and to transfer technical knowledge through collaboration between Japanese and Bhutanese teachers.

In the research on the usability of Physical Training based on the model case of morning exercise aimed at improving children of Hokkaido prefecture, Japan's physical strength and foster junior leaders of Hokusho university, two problems were revealed: general teachers are in charge of PT programs in schools without HPE teacher or SSI and there are no guidelines or activity books. Therefore, the implementation of PT programs can be improved with 1, An activity book, 2, A junior leader system, 3, Implementation of a Physical Fitness Test based on the morning exercise research of Hokusho University. In the present state, the scope of teacher's work has been extended, there is shortage of teachers and working hours have been increasing. In addition, general teachers have been placed in charge of PT programs in schools which do not have any HPE teacher or SSI. The contents of PT programs can be improved by gradually adopting activities based on the model case of morning exercise from the research by Hokusho University.

Recently, in Bhutan, the government has begun implementing ongoing workshops to spread activities for improving SPA. There is a tendency not to appreciate SSP because the results of SSP are invisible. According to NSFSSPA, all schools engage students in SPA for a minimum of 120 minutes in a week, but there are some schools which do not implement SPA for 120 minutes per week currently.

SPA started in Bhutan recently. By implementing new and modified activities through trial and error, SPA could be developed and continue to change for the better.

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- Meeting among JICA, JOCV, DYS, REC held during summer, 2017

1. Suggestion by DYS

Undokai is the wonderful physical education event to be able to involve not only all students and teachers, but also region. We would like to hold Undokai at least three times a year in different schools.

2. suggestion and answer

(JOCV)Q.1 : HPE teachers of JOCV have implemented Japanese Physical Fitness Test so far, are you planning to use it or Bhutanese one ?

(DYS)A.1 : Japanese Physical Fitness Test is better. Bhutanese one has completed lately and there is no enough data. I would like to request JOCV to continue to implement Japanese Physical Fitness Test from now on and to give feedback of the result to me

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Abbreviations

DYS : Department of Youth and Sports

GSD : Games and Sports Devision

HHL : HealtLifestyle

HPE : Health and Physical Education

JICA : Japan Overseas Cooperation Agency

JOCV : Japan Overseas Cooperation volunteer

MoE : Ministry of Education

MoH : Ministry of Health

MPA : Movement and Physical Education

NSFSSPA : National Strategic Framework for School Sports and Physical Activity

PID : Personal and Interpersonal Development

PT : Physical Training

REC : Royal Education Council

SPA : Sports and Physical Activity

SSI : School Sports Instructor

SSP : School Sports Program

Present situation & characteristics of domestic high-value processed food product businesses

A case of Happy Chips and Chuniding Food

Takahiko Shimbo

Abstract

This paper proposes as agendas that Bhutanese eating habits, which change with rapid modernization, depend on imports and there is a risk of collapse due to trade situation if the current domestic food-processing industry production system doesn't change. On the other hand, domestic companies that produce "Domestic High-Value-Added Processed Foods" have appeared. As a case study, two companies were studied to elucidate the actual situation. From interviews, it was found that the two advanced companies have made it possible to export to the international market because they have enhanced corporate and product value by their unique corporate philosophy, through the use of "Domestic Organic Raw Materials" and high product quality, which has been realized by their product development awareness of foreign products.

In addition, they established a new business model based on "Double Standard". which produces according to the difference in quality level required in the domestic market and the international market. They are trying to enhance their brand by expanding their market share in the domestic market and to obtain profits in international markets. This new business model has the potential to become the model for food-processing companies in Bhutan. By spreading it to the whole country, it is expected that the Bhutan food-processing industry will develop and risks related to import dependency would be reduced. Moreover, it brings a new evaluative standard of "quality" to Bhutanese Agriculture, which had been evaluated by "weight" so far.

A ripple effect is also expected to further develop Bhutanese Agriculture. In order to promote such advanced companies in Bhutan, it is necessary not

only for the enterprise to make efforts, but also for the Royal Government of Bhutan to support it and the intermediate organization connecting the enterprise and the government.

Introduction

Bhutan's food-processing industry is still in the process of development. At the weekend vegetable market in the capital city, Thimphu, domestic vegetables and fruits are lined up richly. On the other hand, you can see similar imported items in the market. However, the proportion of domestic products and imported products in the market is not comparable in the supermarkets. Most processed foods are filled with imported items from India. Bhutanese products are some factory products and homemade products such as "Ezay (pepper's spices)" which is a unique recipe in Bhutan. Between Bhutanese products and Indian products, which are all factory products, there is a big difference even if focusing on the packaging technology alone.

Bhutan has put efforts into agriculture as well as improving food productivity not only to enrich people's lives, but also from the viewpoint of food security, as the Royal Government of Bhutan policy. Therefore, the food self-sufficiency rate in Bhutan increased from 40% in 1999 to 60% in 2008, [1] and recently it has reached more than 80%. [2] Simultaneously, organization such as FCB (Food Corporation Bhutan) tried to ensure stable supply of food by storing rice and maintaining oil and sugar. [3]

Bhutan may be gradually adding power in terms of simply covering food. However, It is assumed that it is indispensable to develop the domestic food-processing industry as well as agriculture in order to maintain a rich and nutritious food habits in Bhutan.

In the domestic food-processing industry, BAIL (Bhutan Agro Industries Ltd.), a government-linked company established in 1993 with support from Denmark, BFPPL (Bhutan Fruit Products Pvt. Ltd.) under the umbrella of Tashi Group, which is one of the biggest companies in Bhutan, ZFPL (Zimdra Food Product Ltd.) and BMAPL (Bhutan Milk & Agro Pvt. Ltd.) are the four major companies. All these companies are producing fruit juice, jam, bottled water, milk and so on. These companies have large capital, realize mass production by a mechanized food plant although there is a degree, and you can often see their product in supermarkets. These processors are expected to become domestic agricultural crop sales channels and contribute to further promotion of domestic agriculture and, simultaneously, are expected to contribute to departure from import dependency. However, due to cost, whereas BFPL purchased raw materials only Nu.1.5 million ($24,000) from domestic market in 2016, it purchased raw materials Nu.10.4 million

($165,000) from India in the same year. ZFPL and BMAPL imported all its raw materials. [4] In such a state, even if there are food processing companies that can mass produce domestically, there will be no change in the dependence on import and it will not lead to promotion of domestic agriculture.

On the other hand, there are also food-processing companies that are committed to the use of domestic raw materials although they are small in scale. They add value as it increases the commercial value. This "DHVA-PFP (Domestic High-Value-Added Processed Food Product) Business" not only helps to depart from import dependency and promotes domestic agriculture, but also becomes an attraction for tourists. It is also expected that it would contribute to the Bhutanese economy by expanding markets to foreign markets and revitalizing exports.

The purpose of this paper is to focus on such advanced enterprises that are committed to domestic raw materials and domestic production, develop and sell their own processed foods, and to consider the future of the Bhutan food-processing industry by investigating their activities.

1. Present Situation of Bhutan's Food-Processing Industry

1-1. Food Access

According to a 2017 National Statistics Bureau of Bhutan study, 1.5% of people are living below Nu.1473.45 (approximate $25) per month, which is the poverty standard of food. [5] Simultaneously, this figure means that the majority of people are satisfied with food, "financially".

Also, according to the food security report in 2014, [3] food access in Bhutan improved with the improvement in accessibility. Most Gewogs (blocks) can be accessed with better road condition and food is distributeb by grocery stores and vegetable sales facilities, established by the government. Moreover, the ancient social safety network in Bhutan also helps food access to weak people such as the elderly, unemployed and sick people. The report also points out, "Most food commodities are imported from India and changes in import scenario from India would have significant impact on access to food by the Bhutanese." [6]

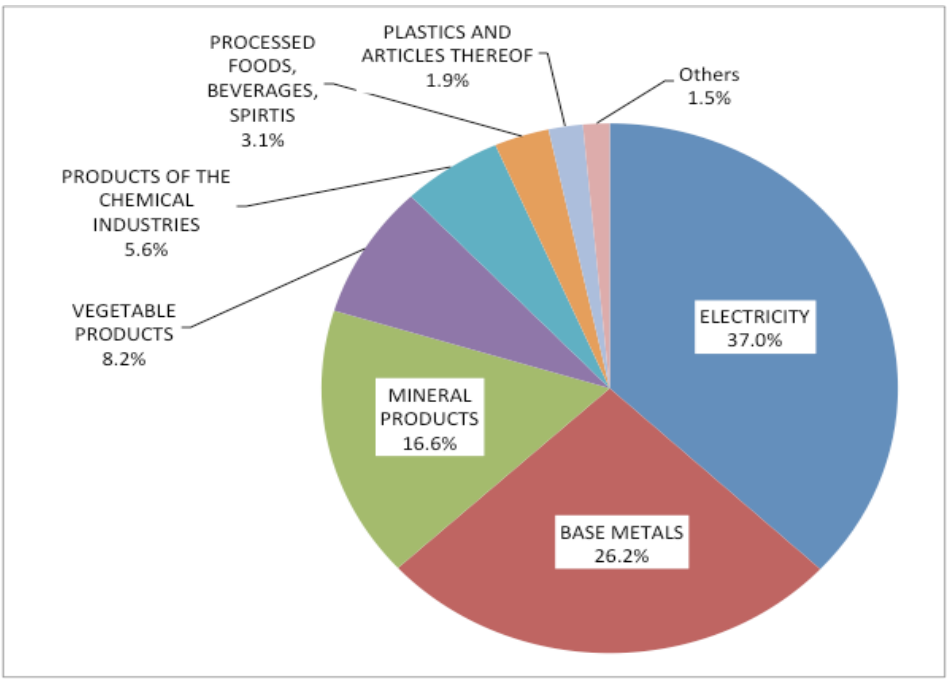
1-2. Trade of Bhutan

1-2-1. Situation of Trade

According to the statistics of trade in 2016 by Department of Revenue & Customs, Ministry of Finance, [7] whereas the export figures are about Nu 35.2 billion ($560 million), the import figures are about Nu 67.3 billion ($1,080 million). The export figures are only about half of the import figures

resulting in a significant trade deficit. In addition, 37.0% of the total export figures are electricity (Nu.13.0 billion: $200 million), 26.2% is base metals and 16.6% is minerals such as cement. Minerals are just natural resources and according to JICA's report, "Export items of Bhutan are alloyed iron silicon, metal, steel rods, cement, gypsum, etc., except for electricity, most of which are manufactured using government-funded free electricity. In other words, these export items are merely a change in the form of free electricity and it is the same as exporting electricity." [8]

Figure 1. Percentage of Export 2016 by Items



Source: Bhutan Trade Statistics 2016

As Figure 1 shows, 80% of Bhutan's export is electricity and natural resources and the remaining 20% from other industries. Vegetable products are 8.2% of total export figures and processed foods only 3.1%.

Incidentally, 6,133 million kWh of electricity exported by Bhutan in 2016 is 77% of the annual power generation in Bhutan. This electric energy is about the same as annual power generation of 6,492 million kWh by Okinawa Electric Power Company Inc. in 2016. [9]

In terms of trading partners, 82.1% of imports and 90.9% of exports are with India. This figure shows that India is a large presence for Bhutan. Bhutan cannot severe relations with India, not only for import but also for export.

1-2-2. Trade in Food

In terms of food items, whereas import figures of all food items are approximate Nu. 9.96 billion ($160 million), export figures of it are approximate Nu. 3.93 billion ($60 million) and the import figures are about 2.5 times the export figures. In terms of processed food items, whereas import figures of processed food items are approximate Nu. 2.42 billion ($39 million), export figures of it are approximate Nu. 1.03 billion ($16 million). The import figures are about 2.3 times the export figures.. 80.1% of imports and 98.8% of exports are all with India.

Table 1. Ranking of Processed Food Trade Items 2016

Rank	Processed Foods Import	Total (Nu)
1	Other cane sugar	373,952,907
2	Stuffed pasta	273,711,129
3	Sweet biscuits	210,208,859
4	Whiskies	132,415,323
5	Other sugar confectionery	102,012,646
Rank	Processed Foods Export	Total (Nu)
1	Ethyl alcohol of an alcoholic strength by volume of 80% vol. or higher	344,272,000
2	Waters, containing added sugar or other sweetening matter or flavoured	203,478,587
3	Mango juice in unit package of capacity upto 250 ml	164,297,878
4	Homogenised preparations	84,635,320
5	Mineral waters and aerated waters	32,114,820

Source: Bhutan Trade Statistics 2016

Table 1 summarized top 5 imported and exported processed foods of Bhutan in 2016. The table shows that whereas sugar, pasta, biscuits and so on occupy the top import list, alcohol, beverages and jams occupy the export list. Beverages and jams are just products produced by major four food-processing companies in Bhutan. These top five items of the export occupy 80.6% of the total processed food exports and only "alcohol and beverages" have a surplus in the items of processed food. However, most of these raw materials excluding water are imported from India. In other words, it means that the top export products of processed foods do not exist without the existence of India.

In terms of alcohol, which is among the top exports, Bhutan has traditional alcohol such as "Ara", which is made and enjoyed in each household. However, production of alcohol for home consumption in Bhutan is not illegal but licenses are required to sell. Therefore, manufacturers are limited. For this reason, traditional homemade alcohol is hardly ever distributed to the market in Bhutan as a product. [10] "Druk" which is a major domestic beer brand is produced by Bhutan Brewery Pvt. Ltd., which belongs to Tashi Group as well as beverages and jams, and major whiskey and wine represented by "K5" are produced by Army Welfare Project Ltd., which is a part of welfare project for veterans. In other words, the production of alcohol is done exclusively by some special companies and organizations.

The current state of processed food trade in Bhutan is summarized as follows:

i. The trade deficit is significant and it proves the import dependency regime.

ii. India is a huge presence because more than 80% of imports are from India.

iii. A few high-ranking products occupy more than 80% of the total export figures and are produced by some special companies.

The high-ranking products use almost all raw materials imported from India.

Thus, it is recognized that the Bhutan food-processing industry is markedly low self-sufficiency and its production is overconcentrated, and has taken the risk of catastrophic damage depending on the situation in India.

1-2-3. Risk of Bhutan Trade

This risk is not an unrealistic story. For instance, BAFRA (Bhutan Agriculture and Food Regulatory Authority) banned imported chili peppers from Indian after detecting agricultural chemicals exceeding the standards in July 2016. Chilies are indispensable to Bhutanese. At first, Minister of Agriculture and Forests Yeshey Dorji said, "Consumers need not worry because chili produced locally would be able to meet demand. The domestic production is able to meet the requirement for summer. For winter, agriculture department is working out a strategy." [11] However, as a result, chili peppers were thinly distributed and their prices soared. Therefore, the Royal Government of Bhutan was forced to take prompt measures and carried out temporary airlifts. FCB sought to price control by supplying imported chili peppers cheaply to the market. [12-13] After such efforts in vain, chili peppers were sold at three times the usual price in the market of Thimphu in December 2016 and the situation got worse that smuggling happened in the city near the border. In Gelephu, 1.8MT of chilies

were smuggled in just 8 months and 1MT in Phuentsholing in only 4 days. [14-15]

This case occurred because Bhutan limited imports. However, the same case also occurs by export limitation of India. The latter is more likely to cause a miserable case because Bhutan does not have any option at that time. This case shows clearly that Bhutan is always at a risk. It is difficult to continue modern food habits in Bhutan if some troubles happen. In order to avoid such a case, it is necessary to reduce dependency on import and to develop domestic food-processing industry.

1-3. Suitable Food-Processing Industry for Bhutan

What kind of the food-processing industry is suitable for modern Bhutan?

First of all, to reduce import dependency, domestic products that substitute imported processed foods must increase in the market. However, it is difficult to compete with the same business model. For example, Indian processed food products are cheap. This price is realized by abundant resources and efficient and mechanized mass production plants with large capital. If Bhutanese entrepreneurs aim for a production method that competes with this price, the initial investment and operation cost will be huge. At this point it is a difficult business model for Bhutanese entrepreneurs. Even if it can be realized, unless domestic production of processing materials according to it is done in a set, eventually it will follow the same path as the current major food-processing companies. Instead, it is presumed that a small-scale food-processing business is established at the local level where people can work easily at first, after that, it is realistic that the food-processing industry develops throughout the country. It is assumed that companies that gained achievements would gradually expand their production scale with the growth of raw material production. ,

Next, domestic products must have advantages over imported processed foods with values other than price. As regards to this, it is presumed that "organic" is a useful value. Bhutanese people like organic foods. They dislike imported crops at the vegetable market in Thimphu because they fear cintamination even if it is cheaper. A large number of them prefer domestic organic crops. Therefore, products using domestic raw materials can be an advantage over imported processed foods. Thus, it is assumed that from both perspectives of reducing dependency on import and attracting consumers using domestic raw materials are necessary for the Bhutan's food-processing industry.

From the above, the food-processing industry suitable for modern Bhutan is summarized as follows:

i. The business scale is easy to handle.

ii. The business scale matches production scale of raw materials.

iii. The raw materials are from by domestic organic farming.

The above three things are prerequisite for the food-processing industry.

It is not that processed foods are absent in the market. As mentioned above, some unique products of Bhutan such as "Ezay" are produced using domestic organic raw materials although their business scale is small. However, many of these products do not go beyond the handmade level and are inferior to imported processed foods in terms of both quality and design. Most Bhutanese people emphasize appearance of products and prefer products, which are branded and have a sophisticated package design. Therefore, in order to develop into the food-processing industry, the followings are also necessary.

iv. Improvement of the product quality.

v. Branding and sales strategy.

Some of food-processing companies in Bhutan have been working on this new business model. This paper defines processed foods produced by this next generation business model as the "DHVA-PFP" and interviewed with two companies: "Happy Chips" and "Chuniding Food" located in Thimphu as outstanding cases of the food-processing business in Bhutan.

2. Works of the Two Advanced Companies

2-1. Happy Chips

2-1-1. Company Profile

Happy Chips (HC) was established in 2013. It is one of the of HGC (Happy Green Cooperative) brands established in 2010. Since 2015, NBPLC (Nob Bhutan Plc.) has administered HC by FDI (Foreign Direct Investment). The founder is Mr. Sangay Rinchen, popularly known as Farmer Sangay. He had worked once at the MoAF (Ministry of Agriculture & Forests) and after leaving founded both the HGC and HC. HC has 10 staff, some outside supporters, cooperative farmers (18 farming households, 52 active farmers and 125 family members) and 19 youth members belonging to HGC. HC's products are potato chips as its name. HC has and sells three flavors: "Classic Salted", "Bhutanese Spices" and "Ema Datshi". (Photo 1)

Photo 1. Products of Happy Chips

The sales volume in 2017 was about 100,000 packs in total of 3 kinds. There are more than 350 stores that sell the products in four districts: mainly in Thimphu, Paro, Punakha and Chukha.

Mr. Thinley Namgay who is the Operation Manager of HC was interviewed .

2-1-2. Corporate Philosophy

According to HGC's website, [16] the goal of HGC is "to create a circular local economic model, based on the principals of interdependence and co-existence". Mr. Thinley explained that the cycle meant creating production in the country with domestic raw materials and selling the products to the domestic market, and the three parties: "farmers who produces raw materials", "HC" and "consumers", are connected by the products. The background of establishment of HGC has included HGC staffs' concern about declining agriculture in Bhutan. "Bhutan has to develop agriculture and agro-processing, if it wants to remain independent and strong" is the conclusion that they have reached. They try to solve social problems in Bhutan by revitalizing rural communities, enhancing Bhutanese agriculture through added value and changing the perception of agriculture especially among the youth. This thinking is based on GNH (Gross National Happiness), which is the Bhutanese development philosophy.

In order to achieve HGC's goal, HC was established. HC's vision is "to produce and market a variety of value-added products in Bhutan and internationally, building a successful business with high ethical and environmental values". The reason why HC focuses on using domestic raw materials and domestic production is to avoid being influenced by foreign trends in addition to the corporate philosophy.

2-1-3. Characteristics of Company & Products

(A) Product Concept

There were two reasons to decide potato chips as their products when they started the business. First, potato chips were the most consumed snacks and in demand in Bhutan. Second, potatoes were cultivated throughout Bhutan and easy to obtain. When they started their business, domestic potato chips had already been sold to the market, however they were simply packed in transparent plastic bags and of not good quality. (Photo 2) On the other hand, all the potato chips branded were imported from India and were in big demand. The product developer of HC who saw this decided to make good quality and branded potato chips to replace imported potato chips. At the same time, HC aimed for a potato chips, which consumers can feel and connect with Bhutanese local values and cultures when they eat them.

Photo 2. Example of general simple packaging domestic potato chips

(B) Enthusiasm for Product Quality

As stated in the corporate philosophy, HC thoroughly use domestic raw materials, and at the same time, the characteristic of HC is investing in farmers producing raw materials. (Figure 2) At first, HC looked at potato chips because raw materials are available. However, when HC started production, they found out that potatoes produced in Bhutan were suitable for cooking and not for processing. Therefore, currently, HC works in cooperation with MoAF, introducing new potato varieties, which are suitable for processing, and promoting its cultivation. Specifically, HC is responsible for the cost and gives farmers free or charge a minimum for the seed potatoes so that high quality raw materials are cultivated. Mr. Thinley said, "Quality of raw materials determines the product quality", and works not only to process but also to improve quality from raw material production.

Figure 2. The Map of Raw Materials of Happy Chips

(C) Outside Supporters

The biggest feature of HC is the presence of outside supporters. When HC was established, Mr. Sangay met Mr. Adrian Von Bernstorff who is a lawyer from Germany and now the Managing Director of HC. Mr. Bernstorff agreed with HC's concept and he introduced HC to food scientist in U.K., experts of the potato chips company in Switzerland. Then, they started giving technical support to HC. Since they supported initial infrastructure building of HC factory, they have provided necessary supports for important opportunities such as scientific analysis during product development and product quality improvement without charge. Especially now, they create SOP (Standard

Operating Procedure) based on the potato chips manufacturing standards in Switzerland. For example, the SOP of the raw material is divided finely by items such as size, color, damage etc. and the raw materials can be classified into "Good Quality", "Okay Quality" and "Bad Quality". HC has named this SOP as "Mobile Lab" and brought it to the raw material production site and tested on the raw materials to judge the quality. Tests by the SOP are carried out not only on the raw materials but also at processing places.

Thanks to outside supports, HC makes it possible to manufacture products that meet European quality standards. Mr. Thinley said, "Our strengths are 'the local value of Bhutan' and 'the realization of international quality standard production through support of outside experts'." He is not looking at domestic competitors in the same industry as competitors, however, keeping in mind the development of products that can compete in the international markets.

2-1-4. Agenda of Happy Chips

(A) Small Domestic Market Size

Bhutan has a population of about 780 thousand as of 2018. Mr. Thinley points out small domestic market size and the problems of two aspects: purchase of raw materials and sale of the products. First, in terms of purchase of the raw materials, he said, "Since domestic raw materials are not produced efficiently, there is not much production, price competition does not occur in the market and the price is expensive." The market price of potatoes grown in Bhutan is Nu. 25-30/kg, whereas potatoes from India are Nu. 7-8/kg. Indian potato chips companies use these cheap potatoes and some domestic companies in the same industry also use Indian potatoes to reduce price. However, HC cannot replicate that because it is against the corporate philosophy. Accordingly, even though domestic raw materials are valuable, the price difference results in a tightening of the product price.

On the other hand, in terms of agenda of sale to the domestic market, HC sets the price of the 50g product to Nu. 25-30 and the 100g product to Nu. 50. This price is the same as or somewhat more expensive than other products sold in the domestic market. HC's outside supporters advised that it is better to set the product price higher since HC's products have added value. However, HC cannot do it because of the management strategy. Mr. Thinley said, "We want Bhutanese people to know 'the value of our company' and 'the value of domestic products' first, and if the price is raised, locals will not be able to buy the products." It can be speculated that HC can obtain profits from huge volume sold at cheaper price. However, in addition to the small domestic market scale, the road situation in Bhutan affects transportation making it difficult for HC to

expand. As a result, it is a deficit as a business of HC alone, and it compensates for deficits from the profit of other business of NBPLC.

(B) Less Agricultural Knowledge and Technology

The second agenda is "less agriculture knowledge and technology." Although this is an issue currently being improved, quality is not improved unless there is no technical capability to realize it even if HC aims to improve quality by setting high quality standards. Problems related to machines can be solved within HC with supports from outside experts. However, problems related to raw materials require cooperation of farmers. Farmers in Bhutan can cultivate potatoes, however, they cannot cultivate quality potatoes suitable for processing potato chips. HC's outside experts cannot advise on agriculture because they are mainly specialized in processing. Therefore, HC currently cooperates with the MoAF to prepare a production system for raw materials that are suitable for processing. However, it is still not enough. Even HC with outside expert support, there is still a problem to realize the corporate philosophy and get the business on track.

2-2. Chuniding Food

2-2-1. Company Profile

Photo 3. Ms. Kesang Choedon with her products

Chuniding Food (CF) was established in 2015 by Ms. Kesang Choedon. (Photo 3) She established CR (Chuniding Resort) in 2007 and FHR (Folk Heritage Restaurant) in 2010 after retiring from the RBP (Royal Bhutan Police). CR and FHR are facilities where people can enjoy traditional Bhutanese dishes and CF is the shop, which sells over 150 items of organic processed foods in Thimphu. The main products include jams, which are made of only domestic materials and sugar, ginger and garlic powder, pumpkin and buckwheat flour and dried vegetables and fruits. CF products are popular as gifts to Bhutanese who live abroad as well as for self-consumption and souvenirs. There are about 30 people employed in all the facilities and they are all women except the drivers. She was recognized as the 'Woman Entrepreneur' of the year, 2015.

2-3-2. Corporate Philosophy and History

The corporate philosophy of CF, CR and FHR is, "'revival', 'preservation' and 'innovation' in Bhutanese food practices." This corporate philosophy and business policy of CF is easy to understand by following the history of CF.

For many years Ms. Kesang was concerned that Bhutan could lose its traditional food culture. With rapid modernization and expansion of imports, Bhutanese traditional food culture and foodstuffs have changed, while at the same time the number of elderly Bhutanese who know Bhutan in the old days has decreased. An ardent fan of Bhutanese cuisine, she established CR after retiring from the RBP. This was to preserve and promote Bhutanese food culture she learnt from elderly people and teach it to future generations. When she started CR, she wanted to make CR a place for Bhutanese people to offer opportunities to touch the traditional food culture. However, CR became popular among tourists. As the reputation spread among the travelers, the number of tourists visiting CR steadily increased. She set up FHR in the Folk Heritage Museum in the city so that more people can visit.

Ms. Kesang is very particular about the recipe of traditional dishes. The cuisine offered use domestic organic fresh food prducts, and she sometimes visits the local vendors to purchase foodstuffs herself. Peopel have stopped growing some of the fodo crops along with the decline of the traditional food culture. In such cases, she requested farmers to grow them again. As there were not many buyers, she had to purchase the whole food products she asked farmers to grow. Sometimes she failed to use all the foodstuffs purchased. Recognizing that the much of the food was getting wasted, she began making preserved foods using the surplus. However, consumption of the preserved foods is also limited. Therefore, she established CF in order to sell preserved foods and other processed foods. CF in this way is preserving "the inheritance of Bhutanese traditional food culture" and promoting domestic organic food. "the attraction of the domestic organic foods".

Inspired by His Majesty the King's address in 2015, where His Majesty said that it was the responsibility of every citizen to realize food self-sufficiency, She said, "I would like to show good examples to the world by Bhutanese becoming healthy through Bhutanese rich natural foods because we are responsible for choosing a healthy diet in Bhutan where the environment is good and rich in natural resources." In particular she is concerned that the imported food is overflowing with junk foods. "I would like Bhutanese to once again appreciate the value of domestic natural foods and select domestic products as substitutes for the imported foods," she said.

2-2-3. Characteristics of Products

Photo 4. Products of Chuniding Foods

CF products are sophisticated not only because of its aesthetic design but also because of its focus on quality. (Photo 4) It takes an average of six months to develop the product. CF conducts thorough research. Research and modern knowledge and technology are also incorporated into processing and packaging. The products of CF use domestic organic raw materials. Preservatives and coloring agents are not used. However, it is the same for homemade products sold in the market from long ago.

Ms. Kesang explained that CF products are produced using appropriate processing methods and that has enabled CF to maximize the potential of foodstuffs. Food safety and hygiene are prioritized . CF has undergone preservation test of products under various conditions before selling and

verifies the correct shelf life, after completion of the product. It uses packaging materials customized to each product and purchased independently.

Ms. Kesang respects tradition, however she use modern technology without hindering the tradition. Unlike HC, CF does not have any outside experts. Therefore, the professional knowledge on manufacturing is researched by Ms. Kesang herself who sometimes participate in overseas training seminars at her own expense. These activities represent the "innovation" part of CF's corporate philosophy.

Ms. Kesang was uneasy about the safety of products produced by the traditional manufacturing methods. At that time, she visited Oita Prefecture in Japan to learn Japanese food processing under JICA 's training. She met one elderly lady who belongs to the women's food-processing group and that lady advised her, "Traditional manufacturing methods have been inherited for hundreds of years, and its correctness is proved by the time. If there is a mistake, its recipe has not been handed down generously." She was encouraged by this word and the appearance of women who protect traditional recipes in Japan filled with advanced technology. She became confident to produce processed foods that respect the traditional recipe.

Ms. Kesang is currently focusing not only on traditional foods but also on the development of new processed foods such as buckwheat noodle, instant soup and energy bar. It can be said that CF products are shaped as products as her attitude to constantly learn from both traditional and contemporary technologies.

2-2-4. Agendas of Chuniding Food

The agenda of CF is similar to HC. Ms. Kesang points out that farmers in Bhutan are unaware of the appropriate pricing method and decide the price with reference to only the market price and past sales performance regardless of their own situation. For example, "the same vegetables are sold at this price in the capital market" or "I will make the same price this year because we sold at this price last year" and so on. She went to the filed to buy locally and negotiated directly with the farmers to keep the raw material price down. It was part of management efforts to cut expenses to intermediaries. However, she had to purchase at their asking price because the farmers did not make individual judgments according to the situation. As a result, the product prices were influenced by the cost of raw material.

Ms. Kesang said, "If farmers supply raw materials at a reasonable price, we can also sell our products at reasonable price." She sometimes lowers the selling price without thinking of profit because the selling price will soar if she honestly adds the processing cost to the raw material price, and consumers

will not be able to purchase. CF is not running on loss. However, it is in a situation where management can be maintained without much profit. In addition, CF operates without any outside support, except for JICA's training. Improvement in technology of CF is based on research and investigation by Ms. Kesang herself, only. Therefore, she said, "There is a limit to own capacity."

3. Common Points between Happy Chips and Chuniding Food

As seen above, the actual situation of advanced companies in the Bhutan food-processing industry became clear. We will summarize the common points of the two companies that we found from the interview as "positive common points" and "negative common points" and consider them in more detail.

3-1. Positive Common Points

3-1-1. Clear corporate philosophies

What is common to the two companies is that their business not only makes money, but also picks up social issues and attempts to solve them. The social problem that HC has focused on is "decline in Bhutan's agriculture" and CF has focused on is "disappearance of the Bhutanese food culture". They have clear corporate philosophy for each problem and they are doing business based on it. It is the same as GNH, which is the backbone of Bhutan's development policy. Because their foundation of business is also strong, they have been able to continue business since they started.

3-1-2. Complete use of the Domestic Organic Raw Materials

It is also common to use "attraction of Bhutan" as a tool for solving this social problem. In other words, it is the use of domestic organic raw materials. Simply focusing on prices is not a good idea to use domestic organic raw materials because it is costlier than imported raw materials and the final selling price will increase. However, since the two companies are evaluating the value of domestic organic raw materials, they prefer to use it. This action creates the "value only for Bhutan" and it is multiplied with the corporate philosophy to raise the value of companies and products.

In addition, from a managerial perspective, the reliance on the use of imported raw materials from India is accompanied by risks. If India stops exporting raw materials, there is a high possibility that management will also stop. It is assumed that the two companies that thoroughly use domestic raw materials have their strengths in that way.

3-1-3. Management with Original Quality Standards and Manuals

The point that the products of the two companies are significantly different from the conventional domestic food-processing industry is that they have their own quality standards aware of imported products and overseas products and have manuals of manufacturing process. They always try to produce the same quality products using the standards and manuals. As a result, quality improvement and quality stabilization are realized. In cooperation with outside experts, HC makes it possible to produce quality goods to compete in the international market. On the other hand, CF does not directly receive external support, however constant attitude for learning of Ms. Kesang is improving the quality.

HC is also trying to embark on quality control regarding the raw material production because it has become possible to evaluate quality with numerical values based on their own quality standards. HC plans to buy high quality raw materials for higher price. In other words, the farmers are explained by "visualizing" the quality to aim, therefore they can produce with a goal.

3-1-4. Intent to the International Market

The two companies have a common point of viewing international market development. HC already sells to large supermarkets in Thailand and has been regarded with high esteem by the buyers. There are also buyers who are interested in selling in the Philippines, the US and Europe, and HC sent its product samples to them. CF is currently preparing a joint venture by FDI toward developing international markets. Products that CF plans to sell in international markets are not traditional foods. CF plans to sell new products such as energy bar and buckwheat noodle according to the need of the market.

Companies seeking business opportunities in international markets are not uncommon in Bhutan. Many people in the food-processing industry also think that they would like to sell abroad if there is opportunity. However, it is totally different whether such companies can produce products that meet the quality standards demanded by international markets. Motivation alone cannot solve this problem. In that respect, the two companies focused on foreign products as quickly as possible, and are striving to correctly evaluate its quality and processing technology and incorporate it into their products. It is assumed that such high awareness of the quality and execution abilities realize the entry into foreign markets.

3-1-5. Double Standard

The biggest feature common to the two companies is that they will try to distinguish between two different quality standards in domestic and foreign

markets. In the first place, it is wrong that the higher the quality the better. Trying to raise the quality makes the product more expensive. There is no problem if that market evaluates high quality and pays money as a consideration. However, the current Bhutanese markets do not seek the same quality level as the international markets.

The two companies understand this point and plan to produce domestic sales with minimum quality standards in order to avoid a rise in sales prices. They will however maintain a higher level of quality than other domestic products. Since they have production capacity capable of meeting the higher quality standards demanded by international markets, their production system can be realized. In other words, it is "Double Standard" system that they distinguish quality standards between products sold in the international market and products sold in the domestic market. Currently, they are considering introducing this system.

3-2. Negative Common Points

3-2-1. Product Price Problem

Meanwhile, the two companies have similarities in agendas. The first one is "problem in product price".

In order to realize a high corporate philosophy and advanced product quality, cost has to be consideres, as it can increase the selling price. However, if they sell at a price that honestly adds cost, it will be too expensive and most of the consumers will not buy. Therefore, they lower the selling price. As a result, CF does not make much profit and HC, as a single profit is running on loss.

3-2-2. Gap with Raw Material Producers

The two companies struggle from the gap in production and raw materials. High quality raw materials are indispensable for the production of the DHVA-PFP. However their philosophies of focusing on quality have not yet penetrated into the production of raw materials and it seems that the complete cooperative system is not yet in place. As a result, they struggle to obtain raw materials that match the quality of their products.

3-2-3. Shortage of Domestic Technology and Environment

The last common problem is shortage of domestic technology and environment. Whether the two companies establish high quality standards, the standards have no meaning unless it is accompanied by technological capability to implement them. They have knowledge and skills on processing. However, they point out the shortage of domestic specialized knowledge and technology in other fields.

The two companies pointed out about food-processing machinery. The processing machines used for their production are mainly made in India. When machines break down, there are no human resources in the country to repair them. At HC, sometimes technicians from India are called. Although CF considers importing quality machines from many countries, countries from where Bhutan can import machines are limited.

The lack of technology surrounding these domestic food-processing industries is also pointed out with regard to agriculture that produces raw materials, variety of packing materials etc. The two companies are clear about what they want. However, it is difficult to obtain them today. In order to further promote the development of the Bhutan food-processing industry, the development of the environment surrounding it is also necessary.

3-3. What Positive Common Points Make It Possible

3-3-1. Branding

In the two businesses, both the values - "the value only in Bhutan" and "the value of the company" that are differentiated from other companies are established by a unique story based on "the clear corporate philosophy" and clear concepts like "use only domestic organic materials." In addition, the consciousness of the management for quality standards and food-processing manuals enhance not only the quality but also the design of products that are particularly important in Bhutan. In other words, it can be said that their products have been valued both for content and appearance, and branding has been done. Their products contain various established values for consumers. For the consumers, these values should appear to be distinct from both imported products and existing domestic products.

3-3-2. Establishment of a Double Standard New Business Model

The two companies have made it possible to realize the "Double Standard" that selects quality standards according to the domestic or international market by improving quality, and they are trying to establish a new business model using the "Double Standard". Simply put, it is a business model that aims to enhance the brand power by increasing the market shares in the country first, after that, obtain profits in the international market using the brand power.

As mentioned earlier, the "price of Indian products" is a major barrier to the domestic food-processing industries to generate profits in the domestic market. Even though many consumers understand "the value of domestic products", not all can afford to buy. However, if domestic enterprises, which produce the DHVA-PFP, quit "using domestic organic raw materials" to lower the price, they will lose their "brand". Therefore, the two companies turned to the

international market. For them the quality standards required for selling in international markets are not difficult. It is expected to obtain a lot of profits because the international market has a higher potential to evaluate the value of the product at a higher price compared with the domestic market.

On the other hand, it does not diminish sales in the domestic market. The domestic market is an indispensable market for realizing the corporate philosophy. Even if huge profit cannot be made, expanding share in the domestic market is important while reducing produce costs in accordance with quality standards is required in the domestic market. As a result, it also enhances the brand power in the international market because for foreign consumers who evaluate Bhutan products, the products that are evaluated in Bhutan are attractive and reliable. In other words, it can be said that expansion of the domestic market share is a necessary sales strategy to obtain more profits from outside Bhutan.

3-4. Solution of the Negative Common Points

3-4-1. Problem of the Product Price

To realize the corporate philosophy, considerable management effort is indispensable. It is exceedingly difficult to sustain the DHVA-PFP business without a management strategy to obtain profits. The two companies have undergone various difficulties while improving their product quality and have reached management strategy with new business model using the "Double Standard". Instead of aiming for short- term quick profit, certainty and perseverance to evolve with a mid- and long-term perspective are indispensable for ensuring the success of this new businesses.

3-4-2. Introduction of Evaluation based on the Quality Standards

Regarding the issue of gap between raw material production and food-processing company, it appears that there is no fault in the production. In Bhutan, income of farmers have been decided by the weight of the product rather than the quality in most cases. The quality has been determined when the consumers purchased the products, and the evaluation of consumers has been rarely reflected as income by the individual farmers. It is assumed that in the current situation, farmers cannot properly price their own products. This is related to education as Ms. Kesang of CF noted, but also lack of awareness for the farmers to have any evidences for pricing.

Therefore, it is assumed that "raw material selection (evaluation) based on the quality standard" that HC is planning is effective. With the introduction of this evaluation system, agricultural crops are also evaluated for elements other than weight, and high quality raw materials are purchased at a high price. For

Bhutanese farmers, it would be a new business opportunity to appreciate the time and effort spent on crops. If the farmers agree with this, they will have incentives to improve the quality of their crops. As a result, it is expected that a cooperative system for realizing the corporate philosophies of the advanced companies would be achieved.

3-4-3. For Shortage of Domestic Technology and Environment

The current food-processing industry in Bhutan has to endure this until importers of processing machines and packaging materials, engineers who can repair the machines etc. occur naturally in Bhutan as a business. Until then, each company would have to respond individually.

However, government support is necessary for activities that transcend individual business activities like introduction of new varieties from abroad to improve material quality. Also, in terms of support to promote missing technology, it is expected that its development would be promoted by cooperation between government and similar organizations.

4. Future Food-Processing Industry in Bhutan

Finally, we will discuss what is necessary for the development of the food-processing industry in future Bhutan, through the "DHVA-PFP business" that is being practiced by advanced companies.

4-1. Expected Effect of the Business Development

4-1-1. Improvement of Import Dependency

The DHVA-PFP does not compete with imported processed food products on pricing. However, it is supplied to the market as a new value to counter imported goods and expanding the choices of consumers because by using "domestic organic raw materials," it retains the advantage that imported goods do not have and the product quality is improved as compared with conventional domestic processed foods. It is expected that if enterprises producing such products increase in the country, stepwise improvements would be done even if it cannot completely reduce import dependency.

4-1-2. Further Evolution of Bhutan Agriculture

It is essential to develop the DHVA-PFP business closely with the development of the domestic agriculture supplying raw materials. This business development would contribute not only to the development of the domestic food processing industry but also to the evolution of Bhutan's agriculture. If the system that evaluates raw material quality like the one HC is trying to practice is popularized, Bhutan's Agriculture would be priced not only based

on "weight" but also on "quality". This new evaluation system would diversify the agricultural production system and give many farmers new opportunities for improving their income because it would improve the situation of Bhutan agriculture that is not suitable for mass production due to topographical factors.

4-1-3. Contribution to Bhutanese Economy

The development simply broadens the possibilities of exports because processed foods have potential in transportation compared to fresh foods. Depending on the products, rather than shipping agricultural products produced in rural areas directly to urban markets or processing plants in the city, there is a possibility that shipping costs will be reduced if they are shipped after processing. In addition, currently in Bhutan, the outflow of the productive population from rural to urban areas is a social problem. Against this problem, if such industries, which have strengths in the region are established, it might be possible to create jobs in rural areas and to put a brake on the outflow of the population. Likewise, if the developed product is approved by the local people as their own unique product in their area, it could attract tourists. This trend is also expected to bring in a synergistic effect on the promotion of tourism, which is one of the main industries in Bhutan.

Moreover, quality of the DHVA-PFP makes it possible to enter the international market where it was difficult to realize by the quality of processed homemade foods of the past. Bhutan would get a chance that the value of Bhutan is beamed all over the world with the processed foods as a medium. In mature international markets, it is expected that products will be traded at a higher price than the domestic market. It would contribute to Bhutan's economy by activating the economic activities both domestically and internationally through the processed food products.

This is realized by the business model that fosters brands by expanding the market share of the domestic market and obtains profits for the maintenance and development of business in international markets. In other words, it is the business model using "Double Standard", and HC and CF are trying to realize it. This new business model might be established as one of the normative business models for the Bhutan food-processing industry that matches national characteristic of Bhutan.

4-2. For Development of the DHVA-PFP Business

4-2-1. Attitude of Food-Processing Company

If domestic food-processing companies emulate the business model aimed at by HC and CF, they have to work on product development and corporate efforts

conscious of imported products and products traded in international markets above domestic products produced by other companies, as competitors. The product level is raised by product development aware of others, rather than thinking only about "what I want to make". Each company's uniqueness is the driving force for that.

The uniqueness appears in the corporate philosophy and corporate brands will gradually grow to a level recognized by people, by thoroughly implementing the philosophy. The process of forming brand can only be achieved with strong will that seeks to realize the philosophy. Of course, brands with uniqueness cannot be formed if companies are focused only on immediate profits. Both HC and CF have continued consistent business to realize the philosophy while surviving various difficulties and have raised the level of products and enterprises. Companies with such preparedness serve as the basis for the development of the Bhutan food-processing industry. This is not the place where external force works.

4-2-2. System to Accept Support

If there are external supporters who are familiar with international standards like that of HC, the shortest way to meet quality standards required for selling in the international market is evident. Also, as pointed out by CF, it is easy to start a business if there are financial support like subsidies for facilities and equipment, and loans with low interest rates. However for that, companies must have evidences to prove to the supporter whether they really have a potential in their business. For example, whether raw materials can be sufficiently obtained, how much is the product sales volume, where is the market to sell, how much is the profits and how many years will it take to repay the loan etc.

There is a high possibility that business will not prosper even if technical force and productivity are improved with external support if there is no logical proof, methods or strategies to convince supporters and investors. Both HC and CF have nearly 10 years' experience and have clarified what is needed for growth of the business. Companies need to think from the standpoint of the support side and act on how to obtain the necessary support instead of waiting for support.

4-2-3. Effective Use of Support

The Royal Government of Bhutan support is indispensable for developing the food-processing industries. There are several government supports that will help the food-processing industry development, one of which is food certification system. BAFRA has systems to prove the reliability and safety of Bhutanese foods both domestically and internationally through BOCS

(Bhutan Organic Certification System), which is original certification system by the government, and ISO 22000 and HACCP, which are international standards for food safety management system.

However, the certification by BOCS has been acquired only for one farmer group in Gasa district since its establishment in 2013 until April 2018. [18] According to BAFRA, two new farmer groups have approached, for which the certification process is in the pipeline. However, it cannot be said that the system is fully utilized. BAFRA pointed out that organic certification is almost a new concept in Bhutan, which needs more popularization and there is no premium for the organic certified produce. BOCS effective means for scientifically proving the "domestic organic raw materials" is an advantage for processed foods in Bhutan. Dr. A Thimmaiah who is a consultant of BAFRA and developed BOCS, described in his report as follows: [19]

Certification addresses a growing worldwide demand for organic food and is intended to assure quality and prevent fraud in organic trade. It helps all the stakeholders in the production and distribution chain. Certification helps the organic producer to identify himself as a supplier of products approved for use in the certified operations. While for the consumers certification serves as product assurance. In other words, certification is essentially a marketing initiative aimed at regulating and facilitating the sale of organic products to consumers.

If the Bhutanese food-processing industry aims to advance into the international market, these effective policies must be actively used.

4-2-4. Matching

In order to effectively use existing support and to create new support, it is indispensable to match supporters and beneficiaries. When new supports are created, it is assumed that supporters and beneficiaries make the support effective and practical through recognizing existing issues and discussing solutions. However, there are some policies in which there is a gap in recognizing supporter and the beneficiary about the necessity of support. Focusing on the relationship between the Royal Government of Bhutan and companies, for example, BOCS the initiative of the government is one such case. On one hand, it is assumed that even if the enterprise consults the government for support, the government has difficulty in corresponding from the viewpoint of publicity unless there are many other companies having the same offers. Moreover, the effort is not small to negotiate directly between companies and the government. The companies should be able to concentrate on corporate activities as much as possible, and also, it is not efficient for the government to deal with matters individually.

In such a case, it is assumed that if there are any intermediate organizations that organize opinions of each company and negotiate with the government on behalf of the companies, matching will be carried out more efficiently and the necessary support will reach the companies more effectively. BCCI (Bhutan Chamber of Commerce & Industry) would be a representative of those intermediate organizations.

4-2-5. Role of BCCI

Besides playing the role of a bridge between the government and companies, BCCI also has other big roles. It is inevitable to advance into the international market for the development of domestic food-processing industry. Therefore, it is necessary to gather information on the international market and build relationships with stakeholders. However, it is difficult for a small and medium-sized company to realize it in the current state of Bhutan. In such a case, the international network of BCCI is useful. BCCI can provide information needed by domestic companies through interaction with foreign business organizations and can also connect the domestic companies and foreign companies and organizations. In Japan, JETRO (Japan External Trade Organization) plays this role. This role is also required for foreign companies and organizations as well. When they think that they want to do business with Bhutanese companies or want to support something, if there is an organization as a contact, it becomes easier to establish a relationship. In other wards, the presence of BCCI broadens the opportunities for domestic companies.

Thus, in order to develop the Bhutanese food-processing industry, it is indispensable for the work of organizations like BCCI to connect "the companies and the government" and "the companies and business opportunities with foreign companies". It is assumed that a dramatic development of the Bhutanese food-processing industry would be achieved when support organizations such as the government and external organizations and intermediate organizations such as BCCI work together? in addition to the management efforts of each company.

Conclusion

As stated above, while the food culture of Bhutan has been changing with the change in time, the domestic food-processing industry has not been able to adapt to the change. Bhutan depends on import of processed foods. As a result, Bhutan is at risk of having difficulty maintaining current eating habits depending on trade conditions. However, there are a few companies that produce DHVA-PFP in the country.

These advanced companies, which have clear corporate philosophy and aim to realize the philosophy and improve their product quality have reached the new business model that enhances brand power by increasing their domestic market share and profits in international markets by using "Double Standard" which selectively uses quality in the domestic market and international market as necessary.

It is expected that import dependency would be improved if such companies with quality and value that can counteract imported processed foods grow in the country. Further evolution of Bhutanese Agriculture is also expected because by developing food-processing industry particular about products qualities, crops that have been priced mainly by "weight" will be also evaluated in "quality" and the range of domestic agriculture business for farmers who produce raw materials of processed foods will be expanded.

In order to develop new food-processing industry, first of all, it is essential for each company to encourage management efforts in food processing as seen in the case of advanced companies and raise the level of companies themselves and their products as much as possible by self-help efforts. The knowledge necessary for that can be collected by each company because CF has demonstrated that it is possible. In addition to that, public agencies and external organizations should provide necessary support to promote business across Bhutan. That accelerates development of the Bhutan food-processing industry.

In order for support to be efficiently and effectively applied, sufficient matching between supporter and beneficiary must be aimed. Intermediary organizations like BCCI play a major role in smooth performing this matching work. Also, these intermediate organizations need to provide necessary information like market trends, systems and regulations for export etc., using the international network, and to play a role of expanding business opportunities for domestic companies by promoting relationships with companies and organizations outside the country as a contact when the domestic companies advance into international markets.

Thus, it is important that each of the companies as players, public institutions and external organizations as supporters, and intermediary organizations such as BCCI that connect them, play their roles. This case study revealed a unique business model that can become a norm for the Bhutanese food-processing industry. In order to further develop these cases in the future and also to spread them to other companies in the country, intermediate organizations, governments and other supporters as team Bhutan should respond to these cases. As a result of that, it is assumed that the Bhutanese food-processing industry would grow.

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A survey on TTI graduates employment and current status of Bhutan's construction site

Masanobu Watanabe

Introduction

In January 2018, I visited the site where graduates of the Technical Training Institute (TTI), Chumey, Bumthang, plumbing course were working. I surveyed, interviewed and investigated the situations of the site. The investigation was done to see if the graduates' skills were acceptable at the job site, whether the training at the affiliated place matched the skills. It was also to find out their living condition and satisfaction too. Eight graduates who completed the 2-year course (National certificate Level 2, NC 2) in June 2017 were surveyed.

Among the graduates who graduated in June 2017, there were also trainees whose jobs were not decided, and they took the National Certificate Level 3 course (NC 3), which took place from July to December 2017. A similar questionnaire was carried out in December when NC 3 course was completed. Questionnaires will be written separately for NC 2 and NC 3 respectively.

Note: NC3 is higher than NC2. For details, see page 10, Q3-1 – 3-2 Discussion

1. Plumbing NC 2 Questionnaire for graduates (including interviews) (8 valid responses)

Q1. Are you working as a plumber now?

- Yes 7
- No 1

Q2. How long did you work?

- 5 to 7 months 8

If graduates are hired for one particular work site, the employment period is over when the construction is completed. Working hours per day are around 8 hours, but depending on the work site, there are overtime work. Those that worked overtime earned more.

On Saturdays, graduates only worked in the morning. Sunday is a holiday.

Q3. How much is your monthly salary?

- Nu 9,000 2 (The two are the same assignee. After the training period ends, Nu 13,500)
- Nu 10, 000—10,500 3 (Three people are assigned)
- Nu 21,000 3 (Three people. Overtime work and night work are occasional.)

• Reference 1 yen = 1.72 Nu As of February 5, 2018)

Q4. Is the salary of a plumber sufficient?

- Enough 0
- Want a little more 4
- Not enough 4
- Not at all 0

Q1-4. Discussion

While there are cases where graduates looked for jobs, many graduates were employed by companies and construction managers through campus interviews. Among the graduates in this survey, 3 were hired by the company where they did their On the Job Training (OJT). However, employment at Bhutan's construction site is slightly different from those in Japan. In most cases, workers are hired at a construction site and the employment is terminated when the construction is completed. Also, as a characteristic of Bhutan, there are many jobs for NC 2 and NC 3 qualified plumber, but most employers look for experienced, commonly 3 to 5 years of experience and some even for 10 years depending on the work.

Therefore, if they fail to land a job at a construction site after graduation, the opportunity tends to narrow. The salary is basically about Nu10, 000, which is the national qualification after getting trained for 2 years, unfortunately it is not teh best salary. The priority among graduates is getting work experience. It is a matter of priority for them to survive above anything else.

If I am allowed to propose to the government or ministries of Bhutan on the salary of people involved in the construction site, I would suggest to make a rule that they must employ qualified persons and should pay at least Nu 20,000 a month. Most TTI trainees are not good at studies. Sometimes I feel that there is a problem with the person themselves. Some trainees are studying and working hard, but without much hope of a better future. Although there is not much motivation, most trainees can complete their training and acquire some qualification.

I feel the future of the trainees will improve if they are paid a better salary. When younger people starts to understand that getting skilled from TTI will be followed by good salary in the future, many younger people will want to come to the TTIs. This will then results in better quality of trainees. The TTIs should not allow trainees who are not motivated or who fail to clear exams from graduating.

The Bhutanese government should give opportunities to younger people who seriously want to change the future, easily qualifying people who are not motivated will also hinder Bhutan's future technology improvement. It will be necessary to notice that it is a different task whether to give credential easily to GNH in a true sense.

Q5. What kind of tools (electric tools) does your company have (use)?

- Electric drill machine
- Tile cutting machine
- Demolition Hammer machine

Q6. What kind of special hand tool does your company have (use)? (Tools not with the TTIs)

- PPR pipe welding machine
- PPR pipe cutter
- Laser leveling device
- Pipe bender

Q 5 and 6. Discussion

From Question 5, it can be confirmed that the penetration rate of electric tools in Bhutan is low. From interviews, it was found that chipping work is done manually. Graduates were not taught using electric machines for chipping work. Therefore, if the site is not using electric machine for chipping

work, graduates will not learn. My institute will get electric tools for concrete chipping from JICA. It is hoped that those graduating in 2018 will be skilled in using electric tools. However, it is important that construction sites also need technical guidance about improving knowledge and technology. From Question 6, there were contents that were not taught at the institute. For instance, the cost of PPR pipe is high so the institute didn't teach trainees about it. It is necessary to introduce it. Since the graduates learned during their OJT, it seems that they did not have much trouble in handling machineries or tools that were missing at the institutes. However, since the standard of the building sites has already been replaced with this PPR pipe, the institutes need to adapt to changes in the construction industry.

Another case of mismatch between tools used at the institute and at worksite is the laser-leveling equipment. While students use water level injected tubes and general leveling equipment, construction sites use laser-leveling equipment. Graduates have to learn on the job at the worksite.

The other problem is hiring instructors at TTI. Most of the instructors do not have field experience because they hire architecture or civil engineering graduates. Lack of real life field experience hamper training technical graduates of the TTIs.

From interviews with the graduates, it was learnt that trainees spend a lot of time with basic drawings, but they were not trained to read real architectural drawings. Therefore, it took time to understand the architecture drawing. This content was verbally communicated to a colleague instructor, but as far as possible, it is necessary to incorporate the time to collect, read and understand architectural drawings as much as possible.

- PPR pipe (polypropylene random copolymer pipe) is a plastic pipe. It is rarely used in Japan. Among plumbing available in Bhutan, because of its high quality and strength, it is being actively used in construction sites other than private homes. However, it is necessary to use a dedicated electric welding machine instead of adhesive cement solvent.

Q7. Do you want to go NC 3 course?

- Yes 8
- No 0

Q8. Why do you want to go to NC3 Q7?

- Want to acquire new technology
- It will be advantageous in the future (2 person)

- Want to become a specialist in plumbing· If I acquire a lot of skills, it is easier to receive benefits such as work and salary
- Get more knowledge and practical experience about external pipeline skills.
- It will be easier to get a better job · I am thinking about independence in the future

Q7 and 8. Discussion

All graduates want to acquire higher qualifications. From this, the significance of existence of TTI to which they are affiliated is huge. However, it is not the environment that can teach new knowledge and skills trainees want. Graduates also seem to understand the content of the NC 3 course. As a matter of fact, if they possess higher qualifications, there is a possibility that they can get better jobs with better remunerations. TTI instructors need to put more effort than the trainees.

Q9. Are you thinking about independence in the future?

- Yes 8
- No 0

Q10. When will you want to start?

- When the current site is over (2 person)
- I don't know when, but I want to independence in the future
- When I get a degree
  - After five years
- To learn about all technologies (??)
- 2 years later
- 2-3 years later

Q9 and 10. Discussion

To be honest, I did not think that there are graduates who want to be independent so far. However, they do not have knowledge about company establishment and independence much, and I don't know how far it is real. One of the reasons why I suggested teaching business administration at our TTI was to equip graduates with some knowledge on management, company establishment and other essential knowledge that would come handy. I would

like to propose that our TTI should continue management classes.

Q11. Are you happy now?

- Very much 5
- Good 2
- Don't know 0
- Not so happy 1
- Unhappy now 0

"Very much" reason

- I am able to acquire a lot of knowledge such as civil engineering and electricity.
- I got a job.
- Government expects it.
- I am able to help my parents and other people because I got job.
- I am able to help my parents.

"Good" reason

- Provides meals is not enough for worker
- Salary is not enough

"Not so happy" reason

- · I am happy to be able to get a job, but my salary is not enough.

Q11. Discussion

The answers are very honest. Personally, I expect that graduates who raised negative points will make efforts to seek a better future.

2. Plumbing NC 3 Questionnaire for trainee (including interviews) (9 valid responses)

Q1-1. Did you work as a plumber after graduating from with NC2 ?

- Yes 6
- No 3 (After NC 2, I participate in this course, because the reason for my employment was not decided)

Below, six people who answered "yes" above

Q1-2. How long did you work?

- 7 month 1
- 1 year 4
- 2 years 1

Q1-3. How much was your salary?

- 10,000Nu 3
- 12,000Nu 2
- 12,500Nu 1

Q1-4. Is the salary as plumber sufficient?

- It was enough 1
- I wanted a little more 4
- Not enough 1
- Not at all 0

Q1-1 – 1-4. Discussion

Regarding employment period, the period is shorter than I thought. I got the impression that they wanted to acquire the qualification of NC 3 as soon as possible. Regarding salary, it is the market price after NC 2 acquisition.

Q1-5. What are the electric tools used in the company you work?

- Electric drill machine
- Tile cutter
- Welding machine
- Concrete mixer
- There was 1 person who said there was no electric tool.

Q1-6. Which tools are not used at the TTI that are used in the your company?

- PPR pipe welding machine

- Many trainees said that there are no special tools and their tools are not so different from TTI.

Q1-5 – 1-6. Discussion

It was felt that the penetration rate of electric tools was still low.

Q2-1. Have you decided on work after graduation of NC3 ?

- Yes 8
- No 1

Q2-2

"Yes" who answered "Q 2-1", questions of 6 people who worked after NC 2

Is it same company before coming NC3 course?

- Yes 1
- No 5

Q2-3. How much salary will you get from your new work place?

- 10,000Nu 1
- 15,000Nu 1
- 20,000Nu 1
- Unanswered 2

Q2-1 – 2-3. Discussion

I was surprised that they are employed already. I didn't know whether there was an offer from some company or not during training at TTI.

4 trainees participated in NC3 immediately after the NC2 qualification. But they couldn't get a job at the time of writing this. I feel it is better for trainees to get a job after acquiring NC 2.

Q3-1. Have you learned new skills from NC 3 course?

- Yes 8
- No 0
- Unanswered 1

Q3-2. Which skills were impressive?

- Layout practice
- Connection of piping
- How to use tools and equipment
- Water supply system
- Sewerage system

Q3-1 – 3-2. Discussion

While I am skeptical about the NC 3 course as a higher-level special education, trainees are satisfied with the higher qualification. The NC 3 course includes 3-month's class, practical lessons at the institute for 3 months and another 3 months of OJT. They have to clear the final examination to graduate.

I feel the content is not much different from NC 2 level. If the government wants to position it as the highest qualification to improve the technology of plumbing in Bhutan, OJT is not required if it is necessary to have several years' of practical experience.

The institutes should teach junior college level architectural lessons. Practical skills should not be confined to the domestic level in Bhutan, they should teach world level techniques and skills.

In addition, instructors of technical training institute need to upgrade their qualifications and those with practical experience update their skills and qualification. I feel that the academic oriented education is currently overshadowing the importance of practical-based technical training institute significantly.

Q4-1. Are you thinking about independence in the future?

- Yes 7
- No 2

Q4-2.

A person who answered "Yes" with Q4-1

When do you want to be independent?

- After 5 years
- After 1 ~ 2 months

  - Immediately
- Want to start after saving money
- Want to start with a little more experience
- 2 person unanswered

Q4-1-4-2. Discussion

There was a trainee who wanted to be independent as soon as possible. Others are vague, but there is a tendency to want to be independent in the future as well. If craft workers with knowledge and skills start to get involved more and more, the technology should increase steadily. If there are measures to encourage entrepreneurship, will the problem of unemployment in this country be alleviated to some extent?

Q5-1. Are you happy now?

- Very much 8
- Good 0
- Don't know 0
- Not so happy 0
- Unhappy now 0
- unanswered 1

Q5-2. Why do you think so?

- I was able to complete NC3.
- Since I completed NC 3 and got new knowledge, (2 person)
- I made new friends
- New knowledge and skills, and work was able to be obtained
- Unanswered (4 person)

3. Status of Bhutan's construction site

Bank of Bhutan, Thimphu

The Bank of Bhutan is constructing its own building at Norzin Lam, in the city center of Thimphu city. Three TTI graduates are hired at the construction site. The salary is Nu 20,000, higher than others. Overtime work and night

work seemed to be frequent giving the impression the bank is in a hurry to build.

At the time of the observation, construction works are mainly concrete work with laying of reinforcing bars.

The construction site is in the town and there are no other sites near it. There is garbage scattered on each floor and safety is not considered. Some workers use hard helmets but the level of awareness about occupational health and safety is low. The safety level and work environment should have been a lot better as the construction belong to a rich company. There is the need to upgrade the knowledge on occupational safety and health.

With regards to tools, this site was the only one using an electric machine for chipping work. Also, because the work is in the city, concrete mixing is done at a different site, carried in a concrete mixer truck and poured using concrete pumping equipment and pipe.

Technical level	4	(5 grades evaluation)
Consciousness on occupational health and safety	2	(5 grades evaluation)
5 S Activity	1	(5 grades evaluation)

- **Paro Law School**

The school is located on a hillside at a distance of about an hour's drive from Paro's Bondey Town. Workers wear safety gears and other personal protection equipment are also provided.

One graduate (female) recruited at this site works as a multi-skilled worker rather than as a plumber. Her colleague was a graduate in electric course from a sister institute. On the day, 4 people were working on electrical work. Also, 13 trainees from our institute of plumbing course (short course) were doing OJT there.

This site is making use of top-level building technology and occupational health and safety in Bhutan.

Technical level	5	(5 grades evaluation)
Consciousness on occupational health and safety	5	(5 grades evaluation)
5 S Activity	4	(5 grades evaluation)

- **Paro Royal academy school**

The Academy is located above the Paro Law School. Three graduates are working there. In January 2017, just 1 year ago, I visited this site. At that time the construction was still in its early stages and there were few plumbing work.

Building construction is progressing and plumbing work is also increasing. This year, second year trainees from our institute are working here for OJT. Timing is good for them and it is a very good experience.

At the construction site, they are using PPR pipe and laser leveling equipment, which was not taught at our institute. It is the only site where they use laser-leveling equipment. However, other electric tools on the same site were at the same level as others, and the work on stonewalls and concrete works are also manually done.

Practice of occupational safety and health is no different from other construction site in Bhutan although wearing of safety helmet is mandatory at the site. For example, the use of scaffolding is bad, rubble is scattered all around.

Technical level	4	(5 grades evaluation)
Consciousness on occupational health and safety	3	(5 grades evaluation)
5 S Activity	-	(5 grades evaluation)

- **Pemagatshel Dzong**

A new Dzong is being built in Pemagatshel. One TTI graduate is working as a plumber at this site. The building is very splendid. The main buildings are largely completed, and plumbing work is starting to get busier. However, measures concerning occupational health and safety are not good. Debris in the building were tidied up and the aisles were maintained as tile construction of the floor started. However, most of the workers do not use safety helmets and it seems they don't have their own helmet at the work site. Scaffolding with ladders and bamboo used at a high altitude work is unstable.

The tools used are the same as those in other places. Although they are using PPR pipe, the only electric tool is the electric drill machine. All chipping works are manually done. In Japan, slabs (floor) need not be chipped. I assume this is because there are no specific instructions from the manager and other workers and graduates do not have enough knowledge of doing such a work.

Technical level	2	(5 grades evaluation)
Consciousness on occupational health and safety	2	(5 grades evaluation)
5 S Activity	3	(5 grades evaluation)

Conclusions

Questionnaires and interviews with graduates and visits to the site were very effective in reaffirming the direction of my activities. Although the rest of the activity period is short, I would like to do activities as planned so that I can leave behind something.

As written in my previous reports, the knowledge and skill level of instructors at our institute's plumbing course is very low. Unfortunately, there are not many people with knowledge or skills in the market. With assistance from JICA, Japan's technology is included in bridge construction, but in the case of building construction, foreign expertise is hardly engaged. Therefore, both technology and working quality are low. As long as foreign expertise does not enter, we cannot expect innovative ideas in building technology in Bhutan. Therefore, it is important to rethink how we improve the technical skills of Bhutanese engaged in the construction sector. This survey reconfirmed the importance of technical training institute in Bhutan. However, instructors are not aggressive, and knowledge and experience are poor, which is also impeding the improvement of technical capabilities in Bhutan.

On the contrary, it is uncertain if they will use Japanese knowledge and skills at the institute after I leave. I am not convinced by the willingness to change. I think it will take time for my activities to reach the whole of Bhutan, or it will be difficult.

Bhutan has not yet established quality standards and rules (including laws). As a result, I feel it is obstructing improvement of knowledge and technology. Currently, because there are no standards or rules, instructors at TTI teach trainees directly from what they learn from browsing the Internet. It is not practical as the ground reality is different. Although measurement units used are different, even units are not converted to local units used for the purpose of training the students. Legislation and rules could take time, but proper guidelines and standards could improve the knowledge and skill levels. Guidelines are often enacted or changed in Japan and it will take some time until they are executed, but whichever they take into account could become the standards.

Therefore, in order to improve the knowledge and skills of people involved in plumbing works in Bhutan, there should be standards and rules. In addition, there should be collaboration between ministries and institutes, for instance between the Ministry Works and Human Settlement and the Ministry of Labor and Human Resources with technical training institutes. In addition to establishing relationships, it is necessary to deliver technology directly to the plumbers working in construction sites and areas, as well as technical training schools.

The activities of JOCV at the technical training institute in Bhutan are effective. Besides the skills they bring to the institutes, there is close interaction with the local people and the community volunteers work in. I am convinced that the little knowledge I have is transmitted to people. It is 5S at a small level, a discipline like installing a dustbin.

I think that dispatching JOCV and SV or engineers to vocational training schools to teach skills is the right choice. But considering Bhutan's current situation, I feel that there are difficulties in truly demonstrating technology, only in the plumbing course of Bhutan's technical training institute. The reasons for these are already described above.

I would like to propose to JICA to consider the request or project to help establish laws, standards and rules on Bhutan's water supply. Also, after the law, standards and rules are completed, request volunteers to conduct workshops to spread knowledge at technical training institutes and construction sites for trainees, workers and manager.

If such activities are done, Bhutan's water technology and knowledge will take place quickly.

The role of health and healthy lifestyle class in Bhutan

Shushei Nishida

Introduction

In Bhutan, Health and Physical Education (HPE) has become one of the important subjects since 2000. The HPE curriculum workshops in western Bhutan were conducted with two main objectives - to spread the HPE curriculum and to train HPE teachers.

In the HPE curriculum workshop, the following fields were suggested:

Movements and Physical Activity (MPA)

Royal Education Council (REC) (2016, pp.42) states, "*Many students are first exposed to physical activity in pre-primary and, as they experience movement they will demonstrate proper mechanics of loco-motor skills and recognize the need to make adjustments in the performance of movement skills.*" From here, we understand that, MPA must be taken into consideration to learn and demonstrate new movement skills individually.

Personal and Interpersonal Development (PID)

REC (2016, pp.44) states, "*Students should develop skills of cooperation and collaboration, as well as fairness, sportspersonship, and respect for others.*" From here, it is understood that students must develop communication skills and cooperate with each other.

Health and Healthy Lifestyle (HHL)

REC (2016, pp.44) states, "*This unit recognizes healthy eating, growth and development, reproductive health, personal safety and injury prevention and refrains from substance abuse. It also helps them apply new information to changing circumstances that can influence health and well being of themselves and others in the community.*" Considering the framework, students must acquire new knowledge of health and healthy lifestyle properly.

S.Sugiyama, T.Takahashi, F.Hosoe, N.Ikeda (2000) states, *"Teacher must decide which health class is useful and interesting. It is important to observe the importance of health after the health class. Furthermore, it gives students time to get feedback on their healthy life and safety, and then students must review and learn. When students get habituated to learn under this process in primary level (Class PP-VI), they can decide themselves what to do next in the secondary level (Class7-12)".*

It is known that PHE class is important for student's life in future.

The main objective of this paper is to show the roles of HHL class and the ways of conducting a HHL class. When we focus on the HHL, the HHL class has the biggest role where students acquire new knowledge on health and healthy lifestyle to help them stay healthy. At the same time, when teaching HHL, HPE teachers must understand and make sure that students individually think about applying the knowledge in their own lives.

I would like to cite some examples of a HHL class at Kidheykhar Central School, which I conducted with two Japan International Cooperation Agency (JICA) Volunteers who are working at Mongar Regional Referral Hospital, and the importance and the accomplishment of the class.

Current state of Bhutanese HPE curriculum

In Bhutan, HPE is spreading with the introduction of the REC's Health and Physical Education Curriculum Activity Guide Book (2016). In this guidebook, HPE is categorized into three fields: MPA, PID and HHL. However, these fields are often mixed and confused, and have negative effect on teaching HHL. Moreover, accomplishment of the main objectives of HHL knowledge is disturbed by physical activities like MPA and PID lesson. It is important for students to learn all lessons of HPE.

HPE class must have set objectives. HHL objective must be to acquire knowledge about their health, lifestyle and habits. It is also equally important for HPE teachers to teach HHL lessons properly so that students can learn HHL effectively and achieve the HHL objectives.

HHL class and the activities framed in teaching HHL lessons are mixed with MPA in the HPE Curriculum Activity Guide framed by REC. For example, Class VI HHL 4.2 provides knowledge on healthy meals (pp.162-165). According to the Activity Guide, this class on HHL field is expected to achieve the following outcome.

1. To identify food items of different food groups.

2.To demonstrate explosive strength in frog jump.

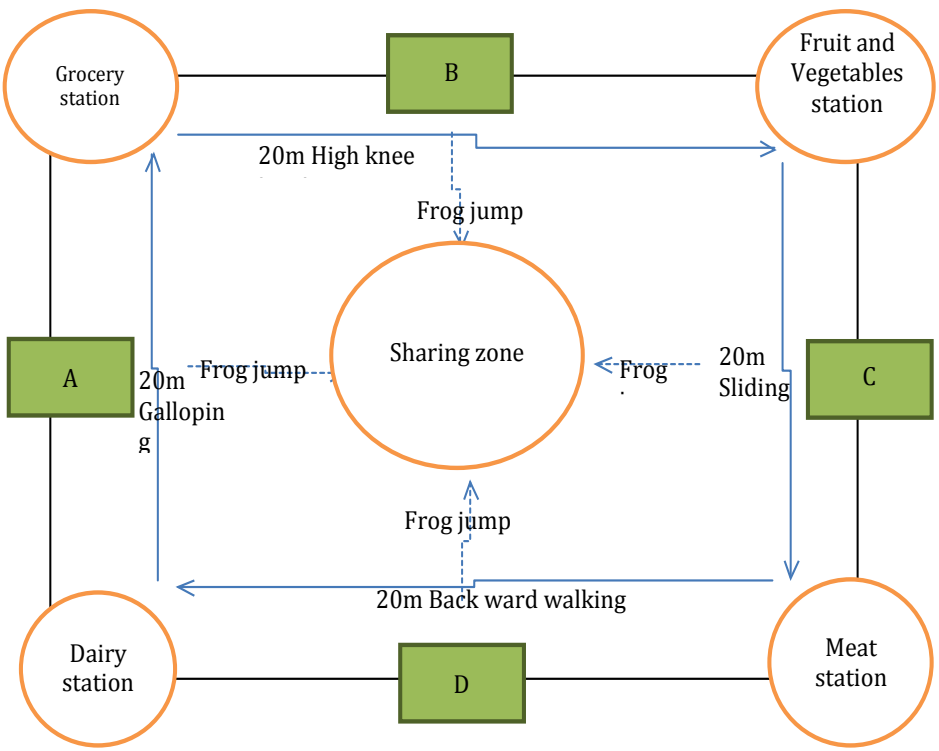
3.To execute smooth transition in performing varied physical activities.

4.To appreciate the importance of healthy meals.

Objectives 1 and 4 are about HHL lesson, whereas objectives 2 and 3 are about MPA lesson. From the HHL class, students are achieving half of the output on MPA field and half on HHL objectives. In HHL class, the most important thing for students is to achieve objectives 1 and 4. Therefore, objectives 2 and 3 are irrelevant in HHL class.

In such a situation, it is doubtful whether this style is the best in acquiring knowledge effectively. The priority in HHL class is not to let students do some exercises and games, but to let them acquire some knowledge on lifestyles and think about it. It should be noted that HHL class is one of the classes similar to any other main subjects that students learn. Otherwise the main objective is defeated. In other words, HHL should exist as an independent lesson and not mixed with MPA and PID in HPE classes. We consider that acquisition of health knowledge in a classroom is efficient when this type of HHL classes can focus on the main objective of the HHL lesson, different from MPA and PID lessons.

Figure1. The model of place in lesson of 4.2 Prepare Healthy Meals (pp.163).



Moreover, space is necessary in this lesson plan. Figure 1 is the model of the place, where students learn. If we conduct HPE class, safety is the priority. However, we must consider weather conditions, seasons and so on. In Bhutan, the rainy season last for about three months and it is difficult to manage PHE classes in Multi-Purpose Hall (MPH). Further, the number of primary schools with MPH or enough space for such activities during the rainy season is very limited. Although it is challenging, we could manage HHL class in a classroom. If we can conduct HHL class in a classroom without exercises and games, we can get enough time to teach and realize some themes of HHL. As a result, both teachers and students can focus on HHL field, reducing the number of MPA and PID classes, which includes a lot of movement and physical activities. That is why I recommend HHL class in classrooms.

Difference of Health Classin Bhutan and Japan

There are more health classes in Bhutanese curriculum than in Japan. There is a difference of 60 classes in a year between the PE curriculum in Bhutan and Japan. In the HPE curriculum of Bhutan, the three fields of HPE are given equal importance. In total, there are about 30 HPE classes in a year, at least once a week. Out of 30 classes, 10 HHL classes are allocated in a year, which accounts for 1/3 of the whole HPE classes. In Japan, there are 90 HPE classes in a year consisting of 2.6 classes a week. And about 16 health classes are allocated within two years, which accounts for about 1/10 of the whole HPE classes.

This means that health class in Bhutan is regarded more seriously compared with Japan. However, PHE classes in Japan are focused more on physical exercise so that students learn and acquire movement skills and develop personal skills compared with those in Bhutan.

The main objective of each field is to make learning contents clear and to help student learn intended objectives of HPE class. HHL basically should be the class for students to acquire health and healthy lifestyle knowledge. In Bhutan since PHE classes are conducted once a week, a lot of HHL lessons are merged with MPA and PID lesson. Therefore, it is uncommon to see students learning HHL lesson mixed with exercises and games compared with PE class in Japan and other countries. Graph 1 and Table 1 show that Comparison (HPE) class between Bhutan and Japan.

Graph 1. Breakdown of HPE class in Class VI between Bhutan and Japan

Table1. Comparison of Health Class curriculum of Class VI between Bhutan and Japan

	BHUTAN		JAPAN	
Textbook	Teacher	Health and Physical Education Curriculum Activity Guide	Teacher	"New Minna no Hoken Class V and VI "
	Students	-	Students	"New Minna no Hoken Class V and VI "
Weekly	1 Class		2.6 Classes	
Yearly	30 Classes		90 Classes	
Fields	1.MPA - Movements and Physical Activity 2.PID - Personal and Inter personal Developments 3.HHL - Health and Healthy Lifestyle		1. Building body Exercise 2. Gymnastic Exercise 3. Track and Field 4. Swimming 5. Ball Exercise 6. Expressive Exercise 7. Health Education	

Health Class	10 Classes a year	16 Classes *within 2years
Topic and Theme of Health Class	Topic1:Basic First Aid 1.1: Ready for First Aid 1.2: Help – I got hurt Topic2: Body Organs And Their Functions 2.1: Knowing body organs 2.2: Working Organs Topic3: Healthy Habits 3.1: Healthy Practices 3.2: Move for Health Topic4: Balanced Diet 4.1: My Plate 4.2: Prepare Healthy Meals! Topic5: Pubertal Changes 5.1 Accepting change 5.2 Hormone Olympics	Topic1: Mental Health 1.1:Development of Mind 1.2: Connection of Mind and Body 1.3: Dealing with anxieties and worries Topic2:Prevention of Injuries 2.1: Occurrence of Injuries 2.2: Prevention of Traffic Accident 2.3: Safety in School and Community 2.4: First Aid Topic3: Prevention of Disease 3.1: Falling to the Disease 3.2: Pathogens and Disease 3.3: Lifestyle and Disease 3.4: Harm of Smoking 3.5: Harm of Drinking Alcohol 3.6: Harm of Drug Abuse 3.7: Health Program in Community

Table 1 clearly shows that Japan has clearer learning topics and objectives in health class than in Bhutan. Because of this, Japanese students learn better with text books in health class. The main point for discussion, however, is neither to say that the textbook sare effective in class nor to say that they are necessary. It is about ensuring required duration for activities relevant to age and the proper number of lessons. In Japan, only three topics are focused within two years: mental health, prevention of injuries and disease. However, the themes are clearly set, and therefore, it is simple and helpful to students to acquire the knowledge. On contrary, Bhutan's HHL objectives are vague because all HHL classes are introduced with exercises and games. For instance, First Aid lesson, which is covered in one hour in Japan, is covered in two hours in Bhutan. From Table2, reasons become clear when we compare the First Aid lesson conducted in Bhutan and Japan.

Table2. Comparison of topic and theme on First Aid lesson between Bhutan and Japan

<table>
<tr><th>BHUTAN</th><th>JAPAN</th></tr>
<tr><td>Topic 1: Basic First Aid</td><td>Topic 2: Prevention of Injuries (pp.15-28)</td></tr>
<tr><td>Lesson 1: Ready for First Aid (pp.135-138)</td><td rowspan="2">Specific Objectives of the Topic:

1. To understand when it happens injuries and traffic accident.

2. To understand how we can prevent traffic accident.

3. To understand how we can prevent injuries in school and community.

4. To understand what we have to do when it happens injuries.</td></tr>
<tr><td>Specific Objectives of the Lesson:

1. To name at least five components of a First Aid box.

2. To make a basic First Aid box.

3. To perform jogging, running and hopping with proper techniques.*</td></tr>
<tr><td>Lesson 2: Help – I got hurt (pp.139-143)</td><td>Lesson1:Occurrence of Injuries</td></tr>
<tr><td rowspan="4">Specific Objectives of the Lesson :

1. To explain the first aid treatment for minor injuries.

2. To perform ladder leg running with eye – leg coordination.*

3. To perform the sliding movement with proper techniques.*

4. To handle First Aid components safely.

5. To appreciate the importance of trust building.*PID</td><td>Lesson2: Prevention of Traffic Accident</td></tr>
<tr><td>Lesson3: Safety in School and Community</td></tr>
<tr><td>Lesson 4: First Aid (pp.26-27)</td></tr>
<tr><td>Specific Objectives of the Lesson:

1. To learn about how to do First Aid when we got injured.

2. To acquire knowledge and skill which they can do their selves.</td></tr>
</table>

In Bhutan, students learn First Aid lesson in two hours as per the HPE Curriculum Activity Guide; "HHL1.1: Ready for First Aid (pp.135-138)" and "HHL1.2: Help - I got hurt (pp.139-143)" under the theme First Aid learning objectives of HHL are to name at least five components of a First Aid box and handle First Aid components safely. Evidently, in Table 2 that objective of MPA are also introduced in this lesson.

First Aid is taken up as a su- topic and included under the topic "Prevention of Injuries" in Japan. The topics are arranged in the order of- 1. Occurrence of Injuries. 2. Prevention of Traffic Accident. 3. Safety in School and Community.

4. First Aid. In other words, students can learn not only about injuries but also about risk managements in different situations. The class performance and the objectives set on First Aid can be applied in school and community. To learn about "Safety," four different lessons with four different sub-topics are allocated where one class of only one hour is for First Aid. It's possible to conduct HHL class in one lesson and effectively in the classroom because objectives of First Aid in Japan are similar to HHL objectives in Bhutan.

Considering the above condition, I would like to propose the following lesson plan for First Aid.

No.1 Health and Physical Education -Health Class.

Theme: First Aid

Standard: Health and Healthy Lifestyle

Learning Area: Respective Classroom

Grade: Class V -VI

Duration of class: 40minutes

Teaching learning aid required:

General objectives of the lesson:

1) To understand some injuries around students

2) To acquire the knowledge of the basic first-aid

Topic (minutes)	Detail
<Introduction> 6minutes	Students think about injuries. • Ask some questions 1) Have you ever been injured? 2) Did you go to a hospital for treatment at that time?
<Body1> 8minutes	Students learn first-aid for a burn injury. • Teach the way - Immediately cool with running water. (10-20min) - Remove watch, rings and jewelry. - Don't remove peeled skin. - Don't apply creams, ointments and lotions without consulting doctors.
<Body2> 8minutes	Students learn first-aid for a nose bleeding. • Teach the way -Keep down your head. - If your head is up, blood will run to the throat. - Press the nostrils to stop bleeding with tissue. - Hold the nose for at least 5min.

<Body3> 8minutes	Students learn first-aid for a sprain. • Teach the way -Rest - Ice - Compress - Elevate
<Debriefing> 10minutes	• Ask some questions. 1) How do you deal with burn injury? 2) How do you deal with nose bleeding? 3) How do you deal with sprain?

Bhutan Activity Guide suggests that Bhutan's HPE is focused more on acquiring knowledge rather than introducing exercises. According to the visiting hospital staff, injuries occur frequently during physical activities. Following their experience, we conducted First Aid class and it helped them when they got injured. On First Aid procedure, we also tried to explain what kind of help are at one's disposal from a technical viewpoint.The great lesson that could be learned was what they could do and must not do as First Aid in real situations. Students imagine the actual situation, and they could be seen learning aggressively.

Introduction of Health Class at Kidheykhar Central School

Kidheykhar Central School where I have been working since 2016 does not have a multipurpose hall, therefore students lack space to exercise and play games on rainy days. Because of this, I'm conducting some HHL classes in a classroom with paper-picture-show or other teaching aid. Occasionally, I invited JICA volunteers and we conducted health classes together, five times in 2017. Considering the age of students, we made a lesson plan for Class VII and above students who do not have HPE class. It is the time students realize their lifestyle and living habits and acquire knowledge from health classes.

Table 3 shows health class action plan 2017 which was conducted by JICA volunteers.

Table 3. Health Class Action Plan 2017

	Theme	**Grade**
No.1	First Aid	Class V -VI
No.2	Brushing Teeth	ClassPP-II
No.3	Good Lifestyle and Bad Lifestyle	ClassPP-III
No.4	Early to bed, Early to rise and Breakfast	Class II-IV
No.5	Get a strong body and Live a healthy life	Class III-IV
No.6	Health & Nutrition	Class VII-X

Next parts show the lesson plans and the details of each class.

No.2 Health and Physical Education-HealthClass-

Theme: Brushing Teeth
Standard: Health and Healthy Lifestyle
Learning Area: Respective Classroom
Grade: ClassPP-II
Duration of class: 40minutes
Teaching learning aid required:
Specific objectives of the lesson:
1)To learn the importance of brushing teeth and how to brush
2) To acquire the habit of brushing

Topic (minutes)	Detail
<Introduction> 5minutes	Students watch a dance of brushing teeth • Ask what teachers do during the dance • Ask whether they brushed their teeth in the morning
<Body1> 10minutes	<picture-story-show> Students watch the show • Review the story • Ask what the main character took • Ask whether they brush their teeth after meal every day • Ask what's happened to the main character in the story
<Body2> 15minutes	Students learn about how to brush their teeth • Teach how to brush upper and lower teeth • Teach how to brush front and back teeth • Teach the duration of brushing
<Debriefing> 10minutes	1) Dance together 2) Ask some questions What will happen when we do not brush our teeth? How many minutes should you brush your teeth? Do you brush your teeth after meal every day?

No.3 Health and Physical Education -Health Class-

Theme: Good Lifestyle and Bad Lifestyle
Standard: Health and Healthy Lifestyle
Learning Area: Respective Classroom
Grade: ClassPP-III
Duration of class: 40minutes
Teaching learning aid required:
General objectives of the lesson:
1) To understand good habits and bad habits
2) To think about own lifestyle and can improve it in case of need

Topic (minutes)	Detail
<Introduction> 10minutes	<Roll-playing> Students watch the roll-playing. • Review the story • Ask how the main character in the roll-playing lives a daily life.
<Body1> 10minutes	Students think about their good or bad habits in daily life. • Ask and explain what habit is good or bad.
<Body2> 15mins	Students think about a good life style. • Explain a model of good life style. * Good Lifestyle * 6:00 Wake up 6:30 Breakfast 7:30 School 8:00 Study 12:00 Lunch 13:00 Study 15:00 Play 17:00 Homework 19:00 Dinner 21:00 Go to Sleep
<Debriefing> 5minutes	• Ask some questions 1) What are good habits? 2) What are bad habits? 3)How is your life style? 4) How do you live from now?

No.4 Health and Physical Education -Health Class-

Theme: Early to bed,early to rise and breakfast
Standard: Health and Healthy Lifestyle
Learning Area: Respective Classroom
Grade: Class II-IV
Duration of class: 40minutes
Teaching learning aid required:
General objectives of the lesson:
1) To learn about importance for early to bed, early to rise and breakfast
2) To know necessary sleeping hours

Topic (minutes)	Detail
<Introduction> 5minutes	<picture-story-show> Students watch the show • Ask what is the problems with the lifestyle of the main character.
<Body1> 15minutes	Students learn about good points of early to bed and early to rise and having breakfast • Explain the point of early to bed - Refreshing - Growthduring sleep - Remembering what we learnt • Explain the point of early rising and having breakfast - Be able to study well < brain switch > - Be able to get energy< Body switch> - Be able to go to toilet < stomach switch>
<Body2> 10minutes	Students learn about the adequate sleeping time. Students think about their sleepingtime and number of hours to sleep. • Explain the age-appropriate required sleeping time. Age Time 4~6 10 hours 7~11 9 hours 12~19 8 hours 20~39 7 hours
<Debriefing> 10minutes	• Ask some questions 1) What are good points of early to be and early to rise? 2) Which switchesare turnwhen we rise early and have breakfast? 3) Whateffect do you get by turning on the above switches? 4) How many hours should you sleep in a day? 5) What time should you go to bed at night and get up in the morning?

No.5Health and Physical Education -Health Class-

Theme: Get a strong body and live a healthy life
Standard: Health and Healthy Lifestyle
Learning Area: Outside classroom
Grade: Class III-IV
Duration of class:40minutes
Teaching learning aid required:
General objectives of the lesson:
1) To acquire the knowledge of a regular healthy life.
2) To think about their own daily life.

Topic (minutes)	Detail
<Introduction> 8minutes	Students think about their own usual life. • Ask some questions. 1) What food do you take every day? 2) How often and what amount of junk food do you take? 3) What time do you go to bed at night and get up in the morning? 4) How often do you exercise?
<Body1> 8minutes	Students learn about the importance of balanced meal.<picture-card show> • Explain the major nutrition and roles of each nutrition. • Explain the nutritional requirements and the daily calorie requirements. • Explain bad effects from over calories and less calories. • Explain the importance of the time, amount and frequency of meal. • Explain disadvantages of having too much of junk foods. • Introduce some examples of healthy meal..
<Body2> 8minutes	Students learn about the importance of enough sleep. <picture-card show> • Explain that what happens to your body during the sleep -Growth hormone are produced -Roles of growth hormone - Body and brain is resting for next day. • Explain disadvantages of late hours and oversleep. • Explain the required sleep time and recommended time to go to bed and get up
<Body3> 8minutes	Students learn about the importance of exercise. <picture-card show> • Explain the importance of exercise and playing with ther friends outside. -Refreshing your body and brain. -Making your body strong under the sun. -Keeping your mental health by communication with others. • Explain advantages of playing outside with friends rather than stayingat home .
<Debriefing> 8minutes	Review the all contents. Students select picture card of good habit.

No.6Health and Physical Education -Health Class-

Theme: Health & Nutrition
Standard: Health and Healthy Lifestyle
Learning Area: Dining hall
Grade: Class VII-X
Duration of class: 80minutes
Teaching learning aid required:
General objectives of the lesson:
1)To acquire the knowledge on nutrition and health
2) To think about theirown diet habit and understand a good diet habit

Topic (minutes)	Detail
<Introduction> 10minutes	Students think about their own usual diet. • Ask some questions. 1) What food do you take every day? 2) What amount and how many kinds of food do you take? 3) How often do you take junk foods?
<Body1> 20minutes	Students learn about the basic nutrition. • Explain the major nutrition and roles of each nutrition. - Carbohydrate…to get energy - Protein…to produce strong body - Vitamin…to make body healthy • Introduce some highly nutritious foods.
<Body2> 20minutes	Students learn about the daily diet. • Explain the nutritional requirements. • Explain the daily calorie requirements. - Boys 2750kcal Girls 2250kcal • Explain bad effects of over calories and less calories. Over calories –obesity, hyper tension, brain/heart disease Less calories–anemia, weak bones, malnutrition • Show some examples of recommended meals. • Explain the importance of time, amount, balance and variety of diets.
<Body3> 20minutes	Students learn about good and bad diet habits. Students learn about some disease related to bad diet habits.. • Explain a healthy diet. • Explain bad points of having junk foods.
<Debriefing> 10minutes	Review the all contents.

Conclusion

It is important for students to acquire knowledge about health in health class and lead a healthy life. In Bhutan, exercises and games are merged with HHL lesson that help students to learn both about health and physical exercise. However, number of HPE classes in Bhutan are lesser compared with Japan and many other countries. Therefore, since students lack knowledge on health and healthy lifestyle, we must allocate enough time for them to get knowledge through HHL lesson and class.

Compared with Japan, the HHL learning contents in Bhutan are merged with other physical exercises and games. When the HPE lesson to acquire knowledge in the classroom and physical exercise in the field are segregated, it will be easier for an instructor to plan lessons and conduct classes in the classroom or field according to the weather condition. Therefore, it is recommended that health class aiming to acquire knowledge in classroom in general and physical exercise and games in the field aimed for body building must be segregated. By doing this, we can teach effectively by focusing on the topic and outcome of the lesson. It will also be easier for students to comprehend the lesson and think about their living habit. The main objective of HHL is to acquire knowledge on health and lead a healthy lifestyle.

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Country Office as part of the JICA volunteer program

Background and its implementation in Bhutan

Koji Yamada

1. Introduction – Volunteer Coordinator and Country Office

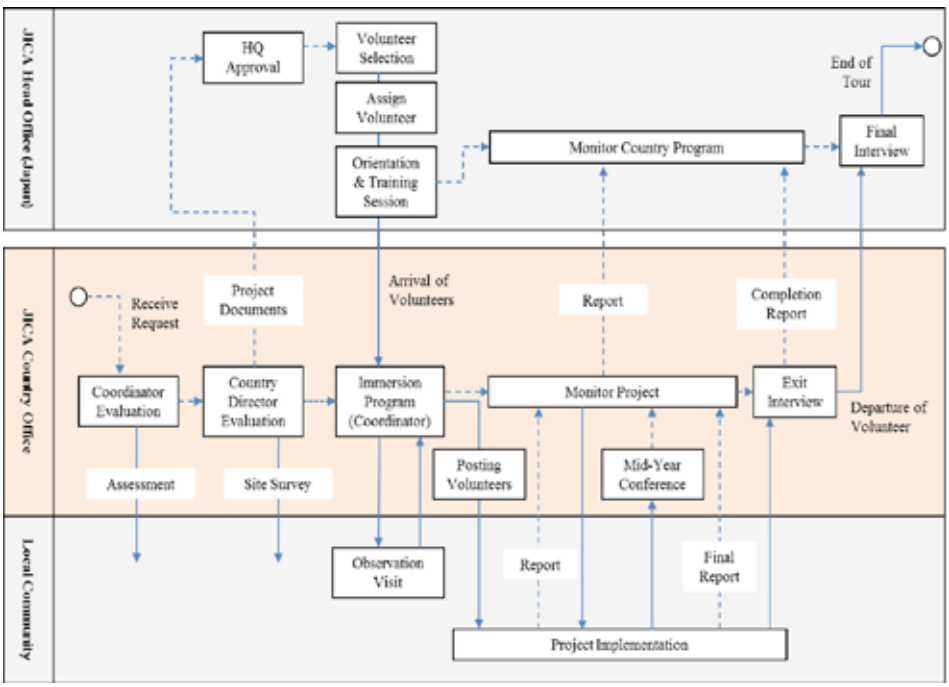
JICA has been implementing the JICA Volunteer Program in accordance with the 2002 Act of the Incorporated Administrative Agency – Japan International Cooperation Agency of the government of Japan[2]. The Act defines, in Article 3, the objective of JICA as "to contribute to the promotion of international cooperation and to the sound development of Japan and the international socio economy by contributing to the development or reconstruction of the economy and society, or economic stability of overseas regions which are in the developing stage." It further defines the scope of operations in Article 13, where the "Citizens' Cooperation Activities" has been regarded as the fourth main pillar of the JICA operations which aims at promoting and fostering the volunteer activities of the Japanese citizens in cooperating with the inhabitants of the developing countries. JICA Volunteer Program is one of the most important instruments to promote the citizens' cooperation.

Therefore, individual activities of the volunteers must be those implemented jointly with the local people to find solutions to the problems local people are facing. Of course, we can expect their secondary impacts, such as deepening of mutual understanding between the people of two countries at the grass-roots level, capacity enhancement of the volunteers, and their contribution to the socio-economic development after completion of their volunteer assignment. But what matters first and most is the effectiveness of the volunteer activities for the development of the host countries.

In addition to the volunteers' own efforts at the individual level, we should not forget about JICA's role in program management. It posts vacancy announcements, recruits Japanese youths and senior citizens via domestic

offices and organizes pre-departure group trainings, including language training sessions, for candidates at two JICA training institutes, before it dispatches final candidates as JICA volunteers. But the program management cycle is not complete without its country offices. They are functioning to identify volunteer opportunities, process the documents for recruitment, coordinate with the host agencies before volunteers' arrival, and provide in-country immersion program for new arrivals. Even after posting, JICA country offices keep an eye on the life and activities of each and every volunteer, and extend additional consultation and support when necessary (See Figure 1).

Figure 1. JICA Volunteer Management Flow



Source: Author.

At the country office, the staff titled "Volunteer Coordinator" (VC) assumes the primary responsibility for the management of the Volunteer Program. Staffs with formal title of VC are all Japanese working on a contract basis. There are approximately 160 Japanese VCs around the world. In Bhutan, there are two Japanese VCs stationed regularly. But besides such formal coordinators, all the other staffs engaged in the volunteer operations, no matter if it's Chief Representative or national staff program officers, can also be regarded as VC. They play different roles so that the country office as a whole could perform

an effective and efficient program implementation towards each volunteer as well as towards the host country.

According to the job description defined by JICA, VCs' role is to support the activities of JICA volunteers in the country of their assignment. They are supposed to implement the program in various ways:

a. Identification of the volunteer needs in the recipient countries;

b. Setting the qualifications required for the volunteer activities;

c. Communication and coordination with the recipient government;

d. Safety and security assurance of volunteers;

e. Advisory and mentoring for volunteers;

f. Coordination with other local development partners;

g. Communication and coordination with the JICA headquarters;

h. Financing and accounting for the volunteer program; and

i. Other supports related to the program.

In addition to these, VCs should collaborate closely with the staffs of other units and work on sector and thematic analyses and design the support programs combining volunteers and other JICA programs. JICA has been looking at VCs as specialist behind the volunteers.

JICA country offices and VCs have frequently been the target of criticism from journalists and politicians on how they implement the program. The most frequently heard are those raised by ex-volunteers who say, "There was no job at the office," "There was no counterpart," and in the extreme case, "There was no office at all." It is primarily the responsibility of the volunteers themselves to try every possible effort to overcome the difficulty they may face on the ground. But it is also true that there must be something that the country offices and VCs could do to avoid the above situations, promote their problem-solving process and help them to get better results.

In this chapter, I will not highlight the achievements of individual volunteers. The remarkable achievements and findings of the existing JICA volunteers in Bhutan are already featured in the previous chapters. Instead, I will argue that the JICA Volunteer Program is not implemented by volunteers alone. With the volunteers and the country offices combined, the Program could be made possible, and this has been backed by the conceptual framework of capacity development as well as the findings of the opinion survey we conducted for

JOCV members around the world. Also, I will touch on the initiatives I took in Bhutan to maximize the program impact on the socio-economic development, with a few explanatory notes on the background. And finally, as part of the efforts to be made by the country office and JICA Chief Representative, I will discuss measures to avoid needs-resource mismatch at entry.

2. Pathways for Volunteer Activities to Reach Sustainable Outcome

2.1 Methodology for Impact Evaluation of the Volunteer Program

Although there are quite a few anecdotal evidences on the impact of the activities of a few specific JICA volunteers[3], there is no consensus on the measurement of their contribution to the economic and social development of the recipient countries. At the JICA headquarters, the Office of JOCV has introduced, since FY2005, a questionnaire survey targeting volunteers, recipient agencies and their beneficiaries at completion of their assignment. In this survey, volunteers' contributions to economic and social development are measured in two major pillars: self-evaluation by the volunteers themselves and evaluation by their recipient agencies:

a. Appropriateness of target-setting and activity plan: Ratio of cases in which volunteers and recipient agencies agree on the targets and activity plan;

b. Effectiveness of activities: Target achievement rate; Timeliness of the volunteer assignment;

c. Impact of activities; and

d. Sustainability of activities.

In addition to the above, JICA evaluated the JICA Volunteer Program in FY2004/05 (JICA 2005). Because of the variety of sectors and thematic areas, JICA (2005) admits that it was difficult to show macro-level impact of the Program on the development of the recipient countries. But it proposes at least the three-tier evaluation framework consisting of: (i) matching rate of volunteer needs and activities; (ii) self-evaluation of the volunteer on target achievement; and (iii) recipient's evaluation on the volunteer's performance.

These analyses described above have been based on the assumption that the macro-level development impact can be measured by the sum of evaluation results of individual volunteer activities. In case they end up with unsatisfactory results, the analyses point out that in most cases it's due to lack of communication skills of the volunteers or the lack of readiness and

capacity of the recipient agencies, and hence make recommendations on the institutional reform and strengthening of volunteer operations.

The framework of impact evaluation about the JICA Volunteer Program, defined in JICA (2005), especially the target achievement rate, may greatly influence the overall satisfaction of the volunteers about their entire life in the countries of assignment. This is clearly depicted in the data collected in the opinion survey by the JICA Research Institute since 2011. In this survey, we have collected panel data, three times, from the same volunteers: pre-service phase, one year after assignment and upon completion. Of all the panel data, however, we used the sample data collected from 2,564 volunteers upon their return to Japan and conducted a multiple regression analysis to identify the factors influencing their overall satisfaction. The respondents were all JOCV members (no senior volunteers), who were dispatched between September 2009 and April 2012 and successfully completed two-year assignment (See Table 1). Short-term assignments were excluded from the samples.

Table 1. Analysis of Factors Influencing Overall Life Satisfaction of Volunteers

Number of Respondents	2,564 ex-JOCV members who completed two full-years as volunteer and agreed to respond to our survey. (Male: 986 / Female: 1,423 / Unknown: 155)
Dependent Variable	
Overall life satisfaction as volunteer	"If you look back at your volunteer life, how do your evaluate your overall satisfaction?": 1 (very unsatisfactory) – 5 (very satisfactory)
Explanatory Variables	
Goal achievement	"To what extent, could you achieve the goals of your activities?": 1 (not at all) / 2 (not much) / 3 (somewhat) / 4 (much) / 5 (very much)
Health condition during the whole period	"Did you suffer from serious diseases or injuries?": 1 (Yes) – 2 (No)
Number of local friends	1 (none) / 2 (one) / 3 (two) / 4 (three-four) / 5 (five-nine) / 6 (more than ten)
Stressful experiences during the whole period	Average of 11 indicators each evaluated by from 1 (no stress) to 7 (much stress)
Obstacles to his/her activities during the whole period	Average of 11 indicators each answered by 1 (Yes) or 0 (No).
Support from supervisors, colleagues and JICA	Average of 5 indicators each answered by 1 (Yes) or 0 (No).

Table 2. Factors Influencing Overall Life Satisfaction of Volunteers (Results)

Explanatory Variables	n=1933		
	Regression Coefficient	t	Significance
Goal achievement	0.335	11.23	***
Health condition during the whole period	0.001	0.02	
Number of local friends	0.055	3.16	***
Stressful experiences during the whole period	-0.206	-9.38	***
Obstacles to his/her activities during the whole period	-0.458	-4.10	***
Support from supervisors	0.162	2.74	***
Support from colleagues	0.124	1.93	*
Support from JICA	0.257	4.73	***

The asterisks *, **, *** indicate that the coefficients are statistically different from zero at the 10, 5, and 1 percent level, respectively.

Source: Yamada (2018).

Table 2 is the summary of our analysis. It clearly shows that the most important factor for their overall satisfaction about their volunteer life was "To what extent, could you achieve the goals of your activities?" Also, it indicates that the more friends they made in the same locality, the more satisfied they were with their entire life as volunteer there. Their satisfaction was raised as they had fewer stressful experiences; fewer obstacles to their activities; benefit more support from their supervisors at office; and as they could receive more support from the JICA country office. The regression coefficients also imply that the support from JICA may have more significant influence than the support from their supervisors or colleagues at office.

We further looked into the individual indicators constituting the explanatory variables, and found some important factors. For example, out of the 11 indicators constituting the obstacles to their activities, the question, "I couldn't get enough support from JICA office or other volunteers" had significantly reduced the level of overall satisfaction. Therefore, we concluded that while it is primarily up to the individual volunteers to maximize the development impacts of their own activities, the effectiveness could be further enhanced if their individual efforts and the other JICA supports were combined. In order for volunteers to raise their self-evaluation on their own activities, the JICA country office must be responsible for ensuring enabling environment for them. In other words we had better look at the JICA Volunteer Program as joint operation of individual volunteers and JICA country office.

2.2 Capacity Development – Can "One Volunteer, One Project" Work?

In the early 2000s, JICA re-examined the past technical cooperation projects and re-defined the technical cooperation as support for indigenous capacity development process (JICA 2004, 2006). The term "Capacity Development (CD)" was first referred to by UNDP as the process in which individuals, organizations, institutions, and societies develop "abilities" either individually or collectively, to respond to emerging development issues. Because it should be an indigenous process initiated by various actors in the developing country, JICA (2004) defined the key role of staffs, experts and consultants in the CD process as facilitator or catalyst for mutual interaction between individuals, organizations, institutions and social systems (p.14).

In their review of the past projects, JICA (2006) identified the four common "pitfalls" of project management frequently observed in the unsuccessful projects (See Figure 2):

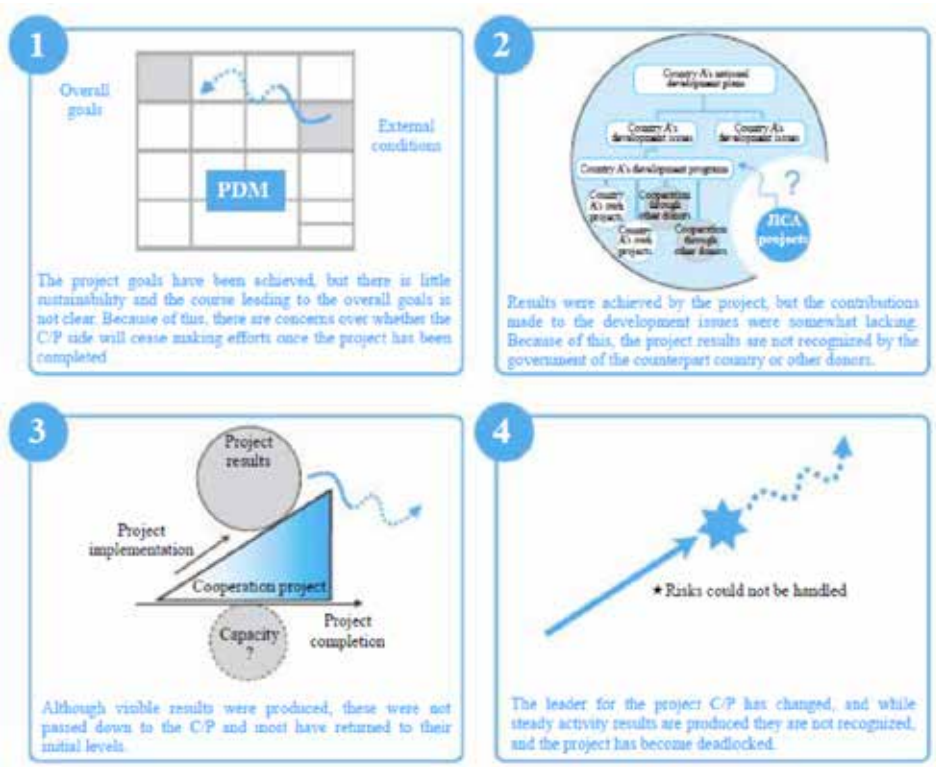
a. Although the project objectives have been met, the project lacks in the measures to address the external conditions that enables it to reach the overall goals. If no one was involved to meet the external conditions, the project is not able to reach the overall goal and it ends up with little sustainability;

b. Because the project was not recognized as important initiative that contributes to the national development plan of the recipient government or other development partners, even though there were substantial results, the counterpart fails in obtaining sufficient budget allocation in the post-project phase;

c. Although the project has ended up with positive and visible results, they were achieved through the extraordinary efforts made by the Japanese project team and there was low commitment made by their local counterparts. Once the project is completed and the Japanese project team leave the country, there is no one looking after the post-project phase and the impact is vaporized;

d. The director or the project manager left the project all of a sudden during the course of project implementation. New ones arrived immediately or after a long interval, without any handing over process on the counterpart side. In consequence, the Japanese project team had to make extra efforts to build trust and good relationships with the new counterparts from the beginning.

Figure 2. Common Pitfalls of Project Management



Source: JICA (2006).

The arguments in JICA (2004) and JICA (2006) seem to apply to the JICA volunteers too. JICA is expecting each volunteer to facilitate the indigenous CD process, motivate his/her coworkers, and co-create the mechanism to sustain the impact, just like experts and consultants. However, in most cases, volunteers have less experience and knowledge than experts and consultants, but still they have to work for the CD at duty station through their individual efforts.

At the turn of the century, "One Expert, One Project" used to be a buzzword inside the JICA organization, and it had been emphasized that even if it was an individual assignment, we should look at it as one independent project. The question is whether we can apply the same principle to the volunteers. Maybe we can, but we have to be well-prepared for the situation in which the volunteers may ask for technical advice or coaching support from other JICA officials, experts, consultants, and even from other volunteers[4].

2.3 Ground Reality of the Volunteers

In 2009, a group of researchers of the University of Tokyo visited eight African countries and interviewed a few JICA volunteers, staffs of the JICA country offices, and officials of the recipient governments (University of Tokyo 2009). Their findings shocked JICA and the government of Japan, and their report was used as evidence of aid ineffectiveness for the then ruling political party to slash the program budget drastically.

a) Most of the volunteers answered negatively on the level of their contributions to economic and social development of the host countries. Many said that they were not so sure if they had been useful or not.

b) The evaluation by the counterparts and host government officials was in most cases highly positive about the performance of the volunteers. They looked at the volunteers as man-power support, filling the gap of staff shortage. In some cases, they highly evaluated and regarded the volunteers as indispensable member of the organization; but

c) The volunteers still expressed their strong concerns that their achievements might not be sustained after their departure.

This study only collected samples from a few African countries and the readers may think that it is difficult to generalize their conclusion. But according to the text analysis of the progress reports submitted by the JICA volunteers in Bhutan for the last two years, I have come up with a temporary conclusion that "man-power support" and "*maru-nage* (hundred percent sub-contracting)" were the top two phrases which appeared most frequently in their reports. Other common phrases that appeared in their texts were "limited time for the volunteer to work with his/her counterpart," and "limited time for dialogues and conversation with his/her supervisor at office."

These phrases imply that the volunteers are presented specific assignments and told to work on them alone. Their counterparts have their own tasks and assignments, and rarely work together with the volunteers. Even if the volunteers want to discuss the situation with their supervisors at office, they are too busy and in most cases not available at office. The volunteers could at least feel the sense of being needed and appreciated because they had their jobs to do. They could hold on with their own assignments, but they are still not sure how their assignments and deliverables could be taken over and sustained by their counterparts.

I am of the opinion that it is primarily the volunteers themselves who should endeavor to find out the breakthrough for the situation described above. But we should also note that it's difficult for the volunteers alone to work on

capacity development and address the sustainability issue. With just two years of assignment, they are not in a good position to have long-term perspectives on CD and sustainability. They may be impatient to get good results in such a short time, try to do too many things by themselves, and then fall in a pitfall of project-based result management mentioned earlier.

What I am proposing here is a departure from project-based result management with each individual volunteer assignment, toward more programmatic approach combining volunteers with other support programs, including the advisory and mentoring support extended by the JICA country office. In the above situation, sometimes we may have to cool them down and propose downward adjustment in their targets to meet in two years. In other circumstances, we should work out a solution together by providing complementary measures to their on-going activities. In other words, the JICA Volunteer Program is not only of individual volunteers. Instead, it is a program consisting of individual volunteers and the country offices with a variety of cooperation resources behind them.

Since the turn of the century, the number of JICA volunteer assignments has been stagnating because of the adverse demographic trend in Japan and consequent decrease in the number of applicants. Ironically speaking, this will reduce the burden on the capacity of the country office to respond to the support needs from existing volunteers. It is the responsibility of the country office to enhance the quality of each and every volunteer activity and create enabling environment for him/her to be satisfied with their results, so that their impact could be sustained much longer after the completion of his/her activities.

3. Towards the Whole-of-the-Office Approach in Bhutan

The previous two sections are based on arguments I presented in Yamada (2018). There I emphasized that the JICA Volunteer Program has not been implemented by individual volunteers alone and that the country office has always been behind the individual volunteer activities. In Yamada (2018), I have raised three points to note towards the successful volunteer management: (i) institutional arrangement; (ii) proactive bindings of volunteers; and (iii) clustering volunteer opportunities. Here in this section, I will further elaborate my arguments and brief the readers on the background of the new initiatives I have been trying to introduce to the program management in Bhutan since April 2016.

3.1 Changing the Mindset to Program-Based Result Management

With the changing operational environment of the Program, JICA set up a special expert panel in early 2011 to discuss intensively the program direction

(Experts Panel 2011). Their recommendations were published in August, in the same year. They include a few policy measures to maximize the impact of the volunteer assignments.

As for the issue of needs-resource mismatch, it was recommended that individual volunteers agree on their targets and two-year action plans with their supervisors at office within six months after their posting. It is regarded as due process to control the expectations of their counterparts and host agencies and help volunteers identify the capacity they have to build to meet their targets. During this consensus-building process, the panel recommended the JICA country office to: (i) coordinate with the recipient agencies to control their expectations in accordance with the skills and experience of new volunteers in the earlier stages of the volunteer cycle; (ii) provide volunteers with additional learning opportunities, both self-learning and training, to minimize the needs-resource gap; and (iii) facilitate their action plan development after the assignment. In this process, it was also emphasized that the Volunteer Coordinator (VC) at the country office should play a crucial role in advising and mentoring volunteers. Therefore, the panel recommended that JICA should apply more strict selection criteria for VC's recruitment and make extra efforts to enhance their capacity for volunteer management, advisory and counseling during the pre-departure phase.

These recommendations were taken seriously, and JICA also released the concrete action plan that included re-defining the roles of the country office staffs (JICA 2011). It said, "We will reconsider the roles for the permanent staffs and contract-based VCs to play in the country offices so that the JICA permanent staffs should be more committed to the volunteer operations." (p.14)

Since JICA was established in 1974, the JOCV country office and JICA country office have been integrated for one country after another. However, in many of the current JICA country offices, there still exists an autonomous Volunteer Unit, where VCs and national staffs act exclusively for the volunteer operations, under the supervision of the Chief Representative. This institutional arrangement has been efficient in supporting individual volunteers, dealing with recipient agencies, and undertaking mass-production of volunteer opportunities.

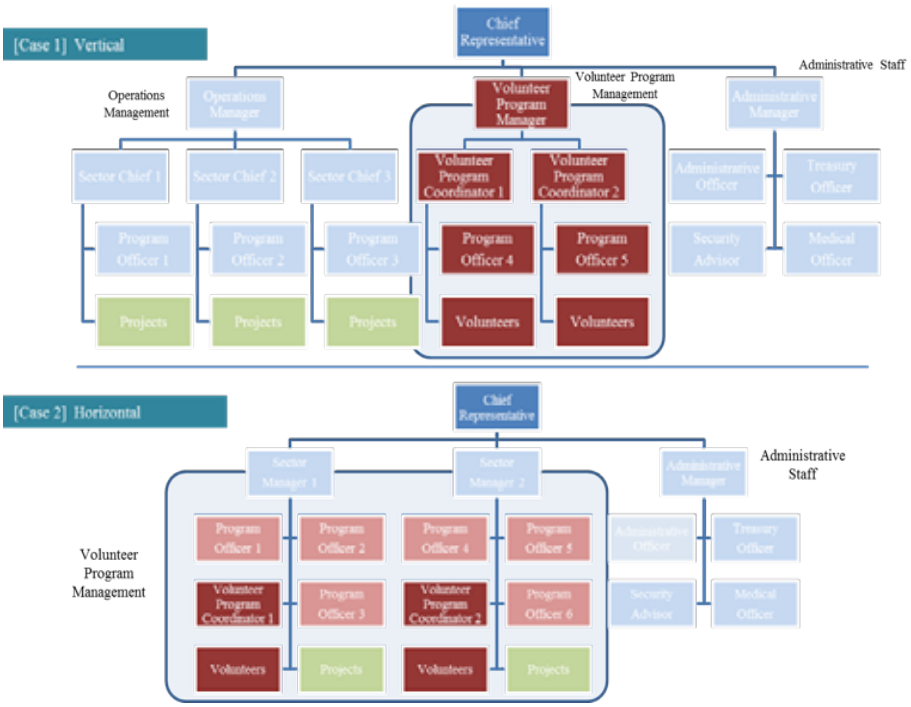
However, as we become more conscious of quality and effectiveness, it is becoming more necessary to show how the JICA Volunteer Program has brought about impact not only on individuals, but also the whole organization or the whole sector. In order to make bigger impact, we often need to go beyond a single volunteer assignment, combining it with other JICA programs on-going in the same sector or thematic area. Sometimes, we need to deploy volunteers in the systematic manner to facilitate the other JICA operations. In

such cases, we must also be concerned about the timing, volume and length of the deployment. These all require more coordination inside the country office.

It is a usual practice that the volunteer assignments are integrated into the overall country assistance program of Japan for the country, and all the volunteer assignments are categorized in line with the five-year rolling plan of the overall JICA country operations. But this doesn't assure the full integration of the volunteer operations. Even today, we often come across two parallel operations in the same sector, same thematic area, or same region, without any coordination. Therefore, we should go further to create an enabling environment for the two operations to at least have more interactions inside the office.

Among all the JICA country offices around the world, some offices have shifted from scheme-wise vertical silo organizational structure to sector-wise horizontal structure (See Figure 3). There still remain a few offices which choose to remain with the vertical structure. Even so, they have been building an internal mechanism to overcome the silo problem by placing a permanent staff as unit chief. Among offices which have shifted to horizontal management structure, some have also introduced a complementary mechanism for VCs to interact on the general issues on volunteers.

Figure 3. Management Structure of JICA Country Offices: Vertical vs. Horizontal



Source: Author.

JICA Bhutan Office is categorized as "small operational base" in JICA's typology with 19 staffs. However, traditionally there has been the autonomous Volunteer Unit and the unit staffs have been looking only after the Volunteer Program. What I have been repeatedly emphasizing since my arrival, as the Chief Representative is to break organizational silos for more interactions between the Volunteer Unit and the Economic Cooperation Unit inside the office.

Because my office is too small and all the staffs, except two, are working in the same operations room, the pre-conditions for information and knowledge sharing were favorable. In addition, we already had a framework for interactions in terms of regular weekly meeting. But still these don't ensure that the way my staffs think is never caught in the organizational silos. As manager, I have always kept asking them if they could do more: "Should we invite volunteers to the event being planned for economic cooperation?" "Should we better share information on particular volunteer activities with the staffs across units?" "Are there ex-participants to the JICA training program in the volunteers' duty stations?" When my staffs plan a field trip on their own business, I ask them if there are other past or present JICA activities nearby, and tell them to drop by and see how they are now.

In addition to these personal initiatives, I have introduced the knowledge-sharing session back-to-back after the regular staff meeting or on ad-hoc basis, where my office staffs or external speakers are invited to make a presentation on a specific subject to other staffs. This framework has been instrumental to help them to know who knows what.

3.2 Proactive Bindings of Volunteers

JICA (2011) also refers to the "Building of the network of technical advisors, experts, senior advisors and volunteers, so that they could extend mutual support to each other." (p.8) Technical advisors and senior advisors are the titles of the sector/thematic specialists stationed in Japan, and I drop them from my arguments here on country-wise operations. What matters most to strengthen our approach to the sectors and the thematic areas in a particular country is the strengthening of the human network among volunteers, office staffs, experts and consultants engaged in the JICA country operations.

In the self-evaluation exercise that the Office of JOCV made in 2002, it referred to strengthening of volunteer support as one of the priority issues for the Volunteer Program for the 21st century (JICA 2002b). It has gone further to the proactive support for network building. It recommends:

JICA will create a platform for existing volunteers, experts and others or ex-volunteers and present volunteers to share their knowledge and experience. This practice is essential to realize the spirit of this program. (JICA 2002b; 94)

Sector/thematic communities of practice (COPs) have already been a common practice among volunteers since long time ago[5]. In Bhutan, volunteers for physical education have voluntarily formed a PE-COP. Member volunteers visit the schools of other member volunteers for micro-teaching exercises to improve their skills for class delivery. Also, they involve their schools and organize *Undokai* (school health and physical education festival), and they help each other in the event operation. *Undokai* was first introduced to Bhutan by a group of JICA volunteers in 2009 and the practice has spread to many schools across the country. Based on their experience and lessons learned from the event management, some volunteers have written a research paper and made a presentation at a research conference. In July 2017, PE-COP suggested that JICA should have a policy dialogue with the Department of Youth and Sports and the Royal Education Council so that they could work closely to improve the quality of health and physical education (HPE) in Bhutan. Similar COPs have been in place for art education and midwives.

The effectiveness of COPs was also pointed out in the program evaluation conducted by the JICA Evaluation Department in 2005 (JICA 2005). Also, in my analysis based on the opinion survey of 2011, I have found a significant correlation between the participation to "study group", proxy of COPs, and overall satisfaction of their volunteer life.

However, COPs was an initiative of volunteers themselves and JICA let them do it without expressing any preference for/against it. What JICA (2002b) recommended was that the country offices should go beyond the historical neutrality and act more proactively to arrange platforms where volunteers are able to participate and share knowledge and experience more frequently and learn from each other.

With this understanding, I have introduced the following measures in collaboration with my staffs.

First, while the existing COPs on physical education, art education and midwives continue to be promoted, I have been proposing that the sector boundaries be further expanded so that they could attract more cross-sector participation. Currently, the existing COPs remain in their expertise-wise silos. For example, PE-COP consists of volunteers teaching HPE at college or individual schools. If it takes in community members with different expertise and sector background, they could come up with more innovative collaboration measures.

For the last two years, JICA Bhutan Office has increased the volunteer assignments in the areas that contribute to private sector development, such as handicraft development, natural dyeing, marketing, animation, and

instructors at Technical Training Institutes. While the teachers and nurses are still occupying major chunks of volunteer assignments, we have diversified the volunteer opportunities so that they could collectively respond to the emerging and more diversified needs of the recipient country. But still they seem to be facing common issues across different sectors. Therefore, I have been proposing the formulation of cross-sector COPs in such thematic areas as 5S (Seiri, Seiton, Seisou, Seiketsu, Shitsuke), safety awareness, meta-facilitation and 3-D modeling. For example, we can see 5S and safety awareness in many workplaces across sectors from construction sites and machine workshops, to TTIs and hospitals. Cross-sector COPs could attract the volunteers with different backgrounds and the members are able to interact more actively.

Second, while I promote the formulation of formal COPs which can act on a regular basis, I have also been proposing ad-hoc group formulation in response to the emerging needs. As the Chief Representative, I receive quite a few visitors from CSOs, private business firms, colleges, and sometimes, informal social groups, who bring so many requests for JICA's assistance. Their requests varies, but they have some common characteristics: They are small and fragmented, but their time frames are too short and they are in a dire need of immediate assistance. In most cases, however, I regret by saying that they are too small and too soon. But if it's not about financial support but about knowledge support in terms of innovative ideas that the conventional wisdom of Bhutan is not able to come up with, the rich and diverse pool of existing volunteers may be instrumental and able to respond very quickly.

In this regard, I have already invited a few volunteers to brainstorming sessions with the women's group who had fund but no idea to start up a new income-generating activity. On other occasions, I have asked a few volunteers to go and see if they are able to rectify the problems that the local entities such as fire stations and milk processing units were facing. This collective capacity of volunteers to respond to the emerging needs on an ad-hoc basis is even more relevant in the new regime of the Priority Sector Lending (PSL), which the Royal Government of Bhutan has launched in January 2018. In case the prospective PSL applicants are facing a capacity constraint to develop a sustainable business, JICA volunteers could collectively advise them.

Third, although I understand that there exist mixed feelings among volunteers on the benefit of JOCV Annual Meetings, I believe that the meetings should take place at least twice a year and JICA Bhutan Office should initiate in complementing with one in addition to the other one they agreed to continue. JOCV Annual Meetings is a gathering of all the existing volunteers so that they come to know each other. Old volunteers share their experiences and lessons learned with new volunteers and they discuss common issues concerning volunteer activities. Taking this occasion, my staffs also share the messages

from the JICA headquarters and the Embassy of Japan in New Delhi, and get the participants to take a regular health check-up and vaccination at the Jigme Dorji Wangchuk National Referral Hospital.

However, for the last two decades, volunteers have become more individualistic and prefer acting more independently of any other volunteer in country. The merit of annual meetings has been taken as agenda for discussion in the last few meetings, and finally in December 2017, the frequency reduction won the majority vote and they decided to meet only once a year. Theoretically, half of the volunteers are replaced by new arrivals every year, and they have to rebuild the human network. Ronald Burt calls each connection of community members a "bridge" and indicates that the bridges between the community members are easy to decay and 90 percent of the bridges are lost in just one year (Burt 2002). Once they lose them, they could do without them and so become more independent. But when they face any problem in their own activities, they have no one to consult with in the volunteer network and come to consult directly with the VCs at the JICA office. This has been causing extra workload to the VCs. Therefore, I have been opposing to their decision and insisting that they should have JOCV Annual Meetings at least twice a year.

3.3 Clustering of Volunteer Opportunities

JICA (2011) also refers to the increase of group assignment, saying that it could promote synergy between a few volunteers by mobilizing them to work on the common development agenda or the issues specific to the same geographic area (p.4). Farmer and Fedor (2001) found out that if more volunteers are deployed and they have more interactions among themselves, they could more possibly contribute to the goal achievement of the volunteer assignment. Hidalgo and Moreno (2009) also insisted that the network of volunteers and effective team building would significantly increase the retention rate of the volunteers. Group assignment is nothing new. Since its first introduction in the mid 1980s, the project-type group assignment has been deployed in many JICA programs such as Chagas diseases vector control and mathematics education in Central America, and greenery promotion cooperation in Nepal and Niger.

In addition to this traditional group assignment, JICA (2011) proposes the following two possibilities. The first one was already indicated in 3.2 as either formal COP or ad-hoc group formulation. In the meantime the second one is the cluster formation in a target region with a few volunteer assignments within the same cluster. They don't have to be a formal group assignment in a systematic manner. All the volunteers don't have to have the same technical or sector background. The point is that we need a few volunteers in close proximity. Then they begin to interact with their neighbors and then come up with new collaborations.

This is not a new practice for the JICA Bhutan Office. When we set a particular target area, we would start with searching for a volunteer opportunity at the regional or district hospital. Then building on the primary medical backstopping support to be extended by the health and medical sector volunteer, we could search for the other volunteer opportunities in the same locality. There are two such clusters now in Bhutan: Mongar and Trashigang. With one volunteer or two as nurse or midwife stationed at the regional or district hospital, we have assigned other volunteers as school teacher to the schools on the periphery of the hospital. Soon the volunteers began to collaborate for classroom delivery of health and nutrition education, so that the nurse or midwife volunteers visit the schools of the teaching volunteers. This collaboration has been scaled up as these volunteers started visiting other schools in the same locality, even though there was no volunteer assignment there. Granovetter (1973) compared the innovativeness of the ideas emerging from two different types of networks: the loose personal network of the people remote from each other; and the dense and close personal network of the people staying very close to each other in a small community. Then he found that the first network could come up with more innovative ideas. The volunteers in Mongar and Trashigang clusters seem to be endorsing Granovetter's findings.

In my regression analysis based on the 2011 opinion survey at the JICA Research Institute, I compared the overall life satisfaction of the volunteers between the individual assignment and the group assignment. I found that the life satisfaction of 297 volunteers under group assignment was significantly higher than that of 2,120 volunteers under individual assignment. We can conclude that the collaboration between volunteers in the same cluster could stimulate the vitality of each volunteer toward his/her primary assignment and enhance their life satisfaction in the cluster.

Every year we receive requisition forms for volunteer assignment from different dzongkhags. But in many cases, we have to express our reservation just because I am sticking to the basic principle of clustering volunteer assignments. If there is just one volunteer in the particular town or area, our usual response is not affirmative. In the frontier dzongkhags, where we have no past and present volunteer assignment, my office should start with its own due diligence to investigate other volunteer opportunities in the same locality and see if we could build a new volunteer cluster there[6].

3.4 Helping to Get Results in Their Primary Activities

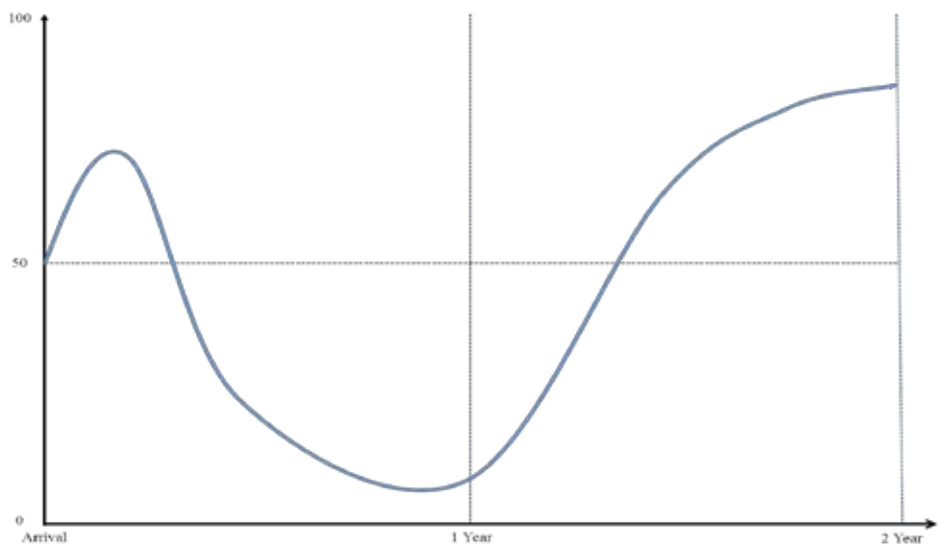
In the previous three sub-sections, I have listed the measures to support volunteers to maximize their life satisfaction in the host country by providing more opportunities for collaborations with other volunteers and other actors working on development cooperation. There I have discussed the incremental

roles that volunteers could play, in addition to their primary activities at their host agencies. Looking back at Table 2 in Section 2 above, however, we should understand that the goal achievement in their primary activities is the most crucial factor to lead to overall life satisfaction.

They could enhance their individual skills and knowledge through their participation to the COPs mentioned in 3.2 above. Their own efforts to learn local language and earn better communication skills will facilitate their relationships with their counterparts and other stakeholders. Besides these individual efforts, we should also bear in mind that there still remain a few external conditions that could be addressed, not by volunteers themselves but by supervisors or JICA country office. Here are two measures that I believe JICA country office could do to create better enabling environment for volunteers.

Since I joined the JICA Bhutan Office as Chief Representative in April 2016, whenever I interviewed the volunteers who were about to complete their assignment and leave Bhutan, at the beginning of the interview, I asked them to draw a curve that shows their positivity transition throughout their two-year assignment. I ask them to draw it, starting at 50 at the time of their arrival (See Figure 4). I have introduced this practice as communication tool to facilitate the interview, so that the volunteers could look back at their experience and describe in details what happened then. As of March 2018, I have collected 22 samples.

Figure 4. Positivity Transition of Volunteers: Sample



Source: Author.

Those 22 volunteers drew 22 different curves. Although my review and analytical work is yet to be started, I have seen the commonality to a certain extent with a few exceptions. Their positivity seems to decline after they join the office, hit the bottom at around the midpoint, and then it bottoms out. The level of recovery is different from one volunteer to another. But their positivity at the endpoint in most cases is higher than the starting point. This implies that there is something we could do around the midpoint to accelerate the bottom-out process.

With this assumption, I have been discussing with the Volunteer Unit the institutionalization of the mid-term monitoring for each volunteer, jointly between their host agencies, counterparts and my office staffs. In the mid-term monitoring meeting, volunteers could make a presentation on the progress of his/her activities and impediments to expected results, and then all the stakeholders around the volunteer could learn about his/her concerns and constraints, discuss the measures to mitigate the difficulties and agree on the activities for the second-half of the assignment. This organizational level of dialogues could strengthen our whole-of-the-office approach for program-based result management, enabling our earlier commitment to the organizational development of the recipient agencies.

In addition to this institutional arrangement, I have also been realizing that there is another bilateral information loop that might facilitate their target achievement. Volunteers are supposed to submit their progress reports to JICA five times during their two-year assignment. This practice is a platform for dialogues between the volunteer and the country office. Although their reports are available only in Japanese language, they are full of information on their daily efforts, observations and lessons learned. They are invaluable source of information on the ground-level reality, and it could enable us to synthesize the bits and pieces and develop policy implications that we could discuss on with high-ranked government officials and other development partners. This practice has potential to send feedback to the government officials and therefore address the external conditions of the volunteer in his/her log frame. Expecting this scenario, my staff and I have been going through each and every progress report of the volunteers even though it's an exhausting job.

4. Before We Enter the Volunteer Recruitment Process

In this chapter, I have argued that the country office also constitutes the JICA Volunteer Program, and that the program should be evaluated not only by the performance of each individual volunteer, but also by the impact they have created as a collective action of the volunteer network facilitated by the country office. Unfortunately, JICA has not developed an alternative methodology which could complement the existing framework described in 2.1 above. At

this point, I could only say that the existing framework of impact evaluation only deals in the performance of individual volunteers but is not enough to highlight the potential of the network of volunteers working together. Based on the assumption that they could collectively create additional impact, I have referred to a few initiatives mentioned in the previous section.

However, we should note that most of the measures mentioned above, except the one in 3.3 about the cluster formation, are those that aim at enhancing the life satisfaction of existing volunteers. Creation of the clusters takes time to emerge to the form as we expect them to be, and so the country office has to undergo an exhaustive identification and preparation process for volunteer opportunities. But even if we succeed in forming a cluster combining a volunteer with the other JICA programs, we should know that there is another type of risk: The volunteer assignment may crowd out the opportunity of the counterpart and coworkers.

This case has been detected in the case of the assignment of HPE volunteer at school. Due to the shortage of teachers, the Ministry of Education has still been maintaining the policy that school teachers must teach multiple subjects to meet the threshold of 18 teaching hours a week. In the meantime, HPE volunteers are assigned to teach HPE classes, and then the school principals may easily decide to have existing HPE teachers to teach other subjects just because there is a Japanese volunteer teaching HPE exclusively. We have selected HPE teachers for the JICA Knowledge Co-Creation Program (KCCP) on Physical Education and they participated in the country-focused group training in Japan in January 2016 and 2017. Many of the participating HPE teachers were counterparts of the HPE volunteers in the same schools. We had expected that the KCCP participation would facilitate the future volunteer activity in the same school and that they would teach HPE jointly.

However, for the last two years, I have received complaints from volunteers who reported that their counterpart HPE teachers have not been cooperative and have not shown up in their HPE class delivery since they were back to school after the training in Japan. Responding to their complaints, I conducted a questionnaire survey in August 2017, and found that while in some cases the HPE volunteers and their counterparts have been teaching HPE classes together, other cases have ended up with the volunteers substituting the existing HPE teachers[7]. Especially at schools facing serious staff shortage, volunteers have still been regarded as manpower support and have never been given a chance to work together with their counterparts.

This preliminary finding indicates that the country office still need to scrutinize each volunteer request and that the detailed screening process would also contribute to minimizing the risk of expectation gap between the

recipient agency and the volunteer. In order to avoid the situation that the volunteer loses his/her positivity after the assignment and ends up dissatisfied, we should be more proactive in the background check of the volunteer request before we pass it to the JICA headquarters and enter into the recruitment process. We have to be more strategic but also more selective.

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(Endnotes)

1 Chief Representative, JICA Bhutan Office. Yamada.Koji@jica.go.jp

2 For tentative translation, please see: http://association.joureikun.jp/jica/act/actdata/110000002/current/FormEtc/13000412601000000008.pdf Accessed 2 April 2018.

3 Miura, et al. (1980), Daughters of St. Paul ed. (1991), Aoki (1998), Kuriki (2001), Hirayama ed.(2005), Kendo Nippon ed. (2007), Yoshioka (2010)

4 One of the most frequently asked questions to the JICA volunteers is the possibility to request JICA to provide technical equipment in connection to the volunteer assignment. In fact we have observed many cases that the volunteer was requested by the recipient agency expecting that the equipment would be attached to the volunteer assignment. And in most cases, we regret for two reasons. First, even though the volunteer may feel that it will facilitate his/her activity after thorough needs assessment, it takes time to procure and complete the delivery of the equipment, and the volunteer is not able to use it fully before he/she completes volunteer assignment in two years. If the equipment had been their main motivation, it should be made it clear and processed in parallel to the request for the volunteer. Second, JICA is not looking at volunteers as equivalent to experts and consultants in terms of their knowledge and experience. In other words, JICA is not expecting results from volunteers so strictly as from experts and consultants. While we might discuss the equipment support to facilitate the latters' activities to get results, we would expect our volunteers to find the way to get moderate results without incurring heavy investments in equipment.

5 For the definition of "Community of Practice," please see Wenger et. al. (2002). Although COP has been used to describe the cross-department platform for sharing knowledge and experience to co-create new innovations inside an organization or a firm, here I define it as personal network of human resources, primarily volunteers, being engaged in the JICA country operations in one way or another.

6 I feel that we should avoid being caught in a pitfall of looking at the target cluster only through the lens of the Volunteer Program. If there is any other JICA-funded activity nearby, the volunteer could build a bridge of personal network. Besides the Japanese contractor, consultants and experts, there are ex-participants to the JICA Knowledge Co-Creation Program (KCCP) courses across the country, such as officers at the community police, school teachers and principals, Gewog Administration Officers, gender focal persons at dzongkhag, agriculture extension officers, etc.

7 This finding is still preliminary and the further investigation will be required in the future.

AFTERWORD

JOCV programme and I

I also have experience as a Japan Overseas Cooperation Volunteer (JOCV), having spent two years in Vietnam in the second half of the 1990s. As a Japanese language teacher I taught Japanese to researchers who were members of the Communist Party and who had been researching Russia until the previous month. The local Japan International Cooperation Agency (JICA) Office gave instructions that, 'To interact equally with local people all clothes should be old,' and, 'Materials related to politics should not be used.' There was also a degree of limitation on one's freedom movement and action. I thought that it would be beneficial if the local JICA Office had the opportunity to learn Japanese as did those researchers.

I once returned briefly to Hanoi to conduct research into Japanese language education, but it was ten years after having left as a Volunteer that I came as a Volunteer Coordinator. The Vietnamese people working in the JICA Vietnam Office's Volunteers Unit, who were to be my colleagues, all spoke fluent Japanese. The common languages of the JICA Vietnam Office's Volunteers Unit were Vietnamese and Japanese. I was completely surprised by this progress. There remained in the Office a number of staff that I had known from my time as a Volunteer when the country was poor, but all now wore fine clothes. The Japan researchers to whom I had taught Japanese had each been promoted, and the Japan research institute at which they worked had been moved to a skyscraper on a wide boulevard. However, while all the researchers remembered the face of me, their 'Japanese language teacher,' they had completely forgotten their Japanese!

The JOCV programme changes the lives of those who have experienced it. It widens their range of values. Before I went to Vietnam as a Volunteer I spent three years in the United Kingdom, but after my experience in Vietnam as a Volunteer I went to Morocco and Tonga, returned to Vietnam, and went to Laos and East Timor before coming here to Bhutan. This means that I have worked in connection with the JICA Volunteer programmes for about sixteen years, spending all that time in developing countries. In short, I too am one of those whose life direction has been changed. While in North Africa the concierge at the apartment block in which I lived asked what was the nationality of my parents. When I answered that both were Japanese he was very surprised. Over these sixteen years I have learnt from experience the diversity of the world and the dangers and immaturity of looking at things one-sidedly. On the other hand, among Volunteers are those who, even if they spend years overseas, remain living in Japan in their heads and hold on to the idea of

being Japanese. Beyond country or nationality, human beings themselves are quite diverse.

The JOCV programme promotes growth and development. It offers such opportunities to all the young people involved and the organizations and countries that it covers. How to make use of those opportunities is up to each individual, organization, and country. It is a structure that respects autonomy. I myself, as a Volunteer Coordinator and as I work in the programme, feel that there are things for me to learn even now, and think that is a fortunate thing.

Yayoi Iwazaki
Volunteer Coordinator

Cooperation with locals, key to satisfaction

Who do you consult with or rely on mostly, when you have difficulties in your volunteer activity?

Having been a Japan Overseas Cooperation Volunteer (JOCV) myself, I feel it is natural that volunteers should ask for advice or count on supports from other volunteers working in the same country in times of distress or when faced with difficulties in their activities.

Priority supporters or advisors of their "paisanos" would frequently be the first to come into their mind in bitter situations. After all, they had gone through the 70-day hard training with their "comrades" in Japan before being dispatched to the assigned countries. During that discipline-required training, they nurture friendships with one another and those firm relationships often continue until the end of the two-year period or even after that.

Would the next choice be us, JICA volunteer coordinators? People tend to take the easy way out for a solution in as familiar a manner as they can. Even in a society of different cultures, it might be tempting to deal with problems in their mother tongue.

But, please wait a minute.

It is important to keep one of the basic ideas of the JOCV program in mind, which is characterized by "Minsyu-Shiko". This Japanese word "Minsyu-Shiko" means a people-oriented or grassroots-oriented attitude, in which volunteers are required to have a spirit of challenge and face difficulties living together with the local residents. In the eyes of the locals who see such an attitude, JICA volunteers are seen literally as representatives of Japan. So it is expected that all JOCVs have this people-oriented mindset as a common ground.

Now that I have worked as a volunteer coordinator in two countries and observed many volunteers return to Japan after assignments, I came to recognize the importance of JOCVs' interaction with local people in order to get satisfaction out of the 2-year volunteer experience. In other words, to what degree JOCVs share time and experiences with locals determines their fulfillment as a volunteer, which our Chief Representative has already discussed in his paper of this book.

One volunteer brought her counterpart to the final presentation of her activity all the way from Trashigang to Thimphu. She let her counterpart speak on how they had helped and encouraged each other when they were in difficult circumstances. Another volunteer reported at the same occasion that she couldn't have accomplished her assignment period, without supports from the neighbors who had taken care of her as a real daughter. Trust and bondage among one teacher-volunteer and his students have also contributed to the achievement of gratifying results.

On the other hand, some volunteers were discontented with their volunteer experiences, although they had made perfect outcomes according to the requests from their host organizations. These cases might stem from the lack of collaboration among volunteers and locals. That is to say, without partnership, any effort seems to be in vain.

The closer they spend their time with locals, the more they will be satisfied, whether it is a good time or bad time. This is the key. It may be simple, but not easy.

I believe the reports of eight volunteers in this book are largely attributed to such grass-root-oriented attitudes by them, and are results of the unified cooperation among Bhutanese colleagues and Japanese volunteers.

We, volunteer coordinators, keeping an eye on them, would like to continue to encourage JOCVs to share his/her precious two years with local people as much as possible.

Kenichi Hatori
Volunteer Coordinator

Contributors

1. Seigo Fujiwara is a volunteer Health and Physical Education instructor at Katsho Lower Secondary School in Haa.

2. Kazuyuki Neki is a Hydrologist volunteering with the Flood Management Division, Department of Energy Services, MoEA.

3. Yasunori Mori is a volunteer Health and Physical Education instructor at the College of Education, Paro.

4. Taro Ohsawa is an Architect volunteering with the Engineering Adaptation and Risk Reduction Division, Department of Engineering Services, MoWHS

5. Shin Kozato is a volunteer Health and Physical Education instructor at Gongthung Middle Secondary School, Trashigang.

6. Takahiko Shimbo is a volunteer Agri-Enterprise Promotion instructor with the Research & Policy Department, Bhutan Chamber of Commerce & Industry.

7. Masanobu Watanabe is a volunteer Plumbing Course instructor, Technical Training Institute in Chumey, Bumthang

8. Mr. Shuhei Nishida is a volunteer Health and Physical Education instructor at Kidheykhar Central School, Mongar.

9. Mr. Koji Yamada is the Chief Representative, JICA Bhutan Office, Thimphu

10. Yayoi Iwazaki is a Volunteer Coordinator, JICA Bhutan Office, Thimphu

11. Kenichi Hatori is a Volunteer Coordinator, JICA Bhutan Office, Thimphu