

A Review on Inclusion of Agriculture Subject in the High Schools of Bhutan: Perspective and Challenges

Ugyen¹ and Sonam Rinchen²

¹Principal, Bumpazor PS, Mongar, BHUTAN

²Principal, Chaskhar Central School, Mongar, BHUTAN

²Corresponding Author: dorjin62@gmail.com

ABSTRACT

Inclusion of Agriculture subject in the curriculum plays a very vital role in the country where the economic is fully dependent on agriculture. Agriculture education provides an alternative to career ladder for those students who are interested in taking farming in the future. In Bhutan inclusion of Agricultural subject became a part of school's curriculum under the joint initiative of Agriculture and Education ministry from 2013 onwards. Agriculture inclusion in the curriculum of the school brings both the perspective and the challenges to the learners and also to the teachers. The main aim of introducing the curriculum is to make children learn through practical teaching and prepare them to value the dignity of work. But there are also many challenges faced by the student during the learning period that demotivates the children in opting agriculture as their vocational subject. This study aims to find out the challenges encountered by the students of IX-XII in taking up the optional Agricultural subject and also explore some of the benefit gained by the students in taking it to make it worthy in taking up their optional subjects.

Keywords- inclusion, agricultural, perspectives, challenges, Bhutan, vocational.

I. INTRODUCTION

The inclusion of the agricultural science subject has been instituted in formal curriculum both in upper primary and secondary schools syllabus since 1976 when the department of education drafted the first education policy and also the first curriculum of Bhutan. Then the Curriculum and Textbook Division (CTD) launched New Approach to Primary Education (NAPE) in 1986 to bring better quality education in the country which made agricultural subject to vanished completely from the school syllabus. Considering the health problem of the school going children, Education Ministry and Ministry of Agriculture in collaboration re-introduced the School Agriculture Program under new scheme (SAP) in 2000 as a part of vocational subject for all the public school to provide agriculture education on the production of supplementary food and improve nutrition in daily diets.

Only in 2013 the Royal Education of Counsel (REC) in collaboration with the Ministry of Agriculture introduced agriculture for class IX to XII with proper set

of curriculum framework and the guidelines. "The curriculum would not only prepare children for the world of work but also integrate education with agriculture which is one of the largest employment sectors in the country" the view concerned in the press conferences (Wangchuk Rabten, 2018). Agriculture curriculum is designed to develop potential in students to be creative, innovative, resourceful, skillful and dedicated as well as provide opportunity for students to apply their prior knowledge and skills learnt through different subjects in the primary schools (Kuensel, July 10, 2018). It has been instituted as elective subject from class IX to XII beside Environmental science and ICT, and it seems that the syllabus is being carried out actively in all the secondary schools and have many successful story to share. But there are also challenges confronted by the student and teachers while teaching agriculture subject in practical. Following are the programs that are instituted in the different years to promote agriculture in the school.

1. *Bhutan Agriculture Hand Book – 1978*
2. *School Agriculture Program (SAP) – 2000*
3. *SAP & Water, Sanitation and Hygiene (WASH)-2018 (supported by UNICEF)*
4. *Vegetable Goes To School (VeGoTs) - 2013-2017 four year project (Swiss Agency for Development and Cooperation (SDC))*
5. *AgFS curriculum – 2013 and till date*

II. CURRENT TRENDS

Agriculture subject is being dynamically carried out in the public funded central school where all three meals are provided under the WFP and RGoB of Bhutan. Kuensel, Bhutan weekly newspaper (17th January, 2015) stated that the program of instituting Agricultural subject in the school will promote dignity of labor among students and support them for their livelihood through work, produce and consume. It also discuss about the mechanized farming system that will ease the work and increase the production by many times. For that the syllabus are also attractive and motivational so that more children are enchanted towards agriculture subject. It includes not only vegetable production but also discuss about horticulture and dairy farming & poultry.

Higher School with the support from SAP, WASH, AgFS and other Agriculture Supporting agencies tries to produce vegetables and dairy products that can supplement the meals ensuring that student have balance diet meal. But for primary schools it is just to give them first-hand experience and teach them the value of organic food. There is also a presence of Thai Princes project of Thailand which supports few selected central school by providing technical support, supplying farming tools and also in providing scholarship and training for students and teachers in Thailand.

III. LITERATURE REVIEW

Waithera (2013), the study accords that Agriculture attracted few students compared to other studies with which it's paired within the curriculum. The foremost reasons for the selection of Agriculture were students' personal interests as indicated by 64% and performance within the subject as indicated by 24% of the scholars who took Agriculture. The study further found that 87% of the students' indicated that they'd consider taking Agriculture related careers. Concerning the institutional centered challenges, the study found that properties like school farm, Agricultural apparatuses and Agriculture classrooms were insufficient. Added to the challenges includes teacher workload and also the types of punishments offered to students like weeding flowers which hampered their attitude towards acquiring Agriculture subject as proven by 78% of the students respondents. The other challenge includes, the unreliable rainfall and high poverty stages that affected teaching and learning of Agriculture subject in schools as found in the study. Other factors included inadequate agricultural land, the actual incontrovertible fact that some students came from urban areas, and the environment which is arid and semi-arid area which hinders Agricultural practice. The study concluded that the institutional based challenges facing teaching of Agriculture in schools include inadequacy of resources like school farm, agricultural tools and Agriculture classrooms. It was also concluded that the non-institutional challenges facing teaching shortage and learning Agriculture difficulties factors include: unreliable rainfall, high poverty levels, inadequate Agricultural land, the actual incontrovertible fact that some students come from urban areas and nature of the encircling areas. The study recommended that schools should confirm that there are adequate classrooms and land for practical Agriculture work. It also indicates that unlike other subject the agriculture studies attract only few students and far of don't seem to have an interest by this subject because of physical work load. In many faculties principal tend to support less in agriculture subject which has very less to try and do and do with the event of intellectual. Only course work is being provided

but less importance is given to the sensible because of limited resources and manpower.

Njoroge et.al (2014), stated that there's decline in students taking agriculture subject in numerous lyceumbut the perception of youngsters towards agriculture subject remain positive. It's due to different barrier that the college faced i.e. lack of land and equipment, skills, resources and plenty of more. The researcher recommends to stay the topic as elective and thus the curriculum should undergo the revision which is able to meet the requirement of 21st century.

Dyer et.al (2014), in his study reveals that ninety-seven percent of the scholars who had completed high school taking agricultural course work and practical course planned on graduating with a degree in Agriculture. Moreover, students who had finished high school in Agriculture courses shows more positive attitudes toward joining again the university having Agriculture programs and shows more interest towards Agriculture career than students with the student having no high school Agriculture experience. Students indicated that the foremost personage in their decision to attend the college of Agriculture was their high school Agriculture teacher.

Henry et.al (2014), the study reveals that students within the colleges offering the Agricultural education and basic farming practices shows negatively impact in their interest in pursuing instruction furthermore as careers in Agriculture and related fields. In fact, offering optional agricultural education courses won't be enough to interest students in taking the courses. In its place, school administrators and Agriculture focal teachers should give due importance to the Agriculture science and improve teaching and learning tactics to support students in making the connection amongst Agricultural study and other courses of science.

Darko et.al (2015), findings from the study indicated that the foremost challenges facing the teaching and learning of Agricultural Science include frequent use of lecture method in teaching, large class size and poor remuneration of teachers. Besides, insufficient teaching learning materials and their accessibility, trouble in scheduling field trips still as lethargy and regular absenteeism of teachers added challenges to Agricultural learning. However, it must be emphasized that motivational factors like one's own interest, having employment model, future ambitions and then the provision of adequate textbooks positively affect the teaching and learning of Agricultural Science publicly.

Diise et.al (2018), the study find out that restrictions to carry out project method of teaching were recognized as insufficient tools/equipment, oversized class and grouping issues, time limit periods allocated for practical work, poor skilled farm workers, time consuming work and high cost of tools and the harshness

of the work condition decreasing students interest in taking out the Agricultural subject.

Afolabi et.al (2019), the study reveals that agricultural science student-teachers encountered many challenges during their teaching practice exercises. These challenges emanated from various sources like pedagogical issues, cooperating school, learners at cooperating school, the scholar teachers themselves, teacher education institutions and other related factors. These factors constituted a possible challenge to the successful acquisition of teaching skills by the agricultural science student-teachers. However, students have also suggested some measures which they think, if adopted, could serve to ameliorate the challenges encountered.

NCF, Bhutan (2021), the curriculum have developed a rationale which explains that Agriculture is founded upon the principle to make learners more inclined towards agriculture. To the national level, the Agricultural curriculum desires to alleviate unemployment and social crunches; and preserve the national food security index; or prepare pathways for higher learnings. From a point of classroom teaching, it proposes to transfer the skill, knowledge, and values of Agriculture to learners and support in understanding other subjects. Moreover, within the long term, Agricultural subject as a problem expects to contribute in producing adequate and quality supply of farm manager, commercial horticulturist, sustainably responsible farmers, etc.

IV. OBJECTIVE

1. To determine the influence of agriculture subjects on children of grade IX-XII in schools of Bhutan
2. To find out the challenges of the school on having agriculture subject in Bhutan

V. RESEARCH QUESTIONS

1. How the agriculture subject motivating students and teachers on taking up agriculture subject in schools of Bhutan?
2. What are some of the challenges faced by the school in taking up Agriculture class in schools of Bhutan?
3. What is support required by the school to have smooth functioning of agriculture classes in Bhutan?

VI. SIGNIFICANCY OF THE STUDY

To have a well-established agriculture classes they should have proper plan in placed where School management should have proper budgeting and allocation of funds to meet various expenses that will help set up of agriculture classes in the schools of Bhutan. As a result, agriculture classes can fully utilizes

the resources and also motivate other children in taking up the agricultural subject. The school should work out and enable the agriculture classes to provide the separate infrastructure (agri. lab) and give resources according to priorities and capability. The study target to explore some of the basic need of the agriculture support school and to catered needs of the students to support the academic learnings.

VII. SCOPE OF THE STUDY

The study was reviewed taken in consideration of the well-established agriculture school around the world and compared with the agriculture school of Bhutan. The study was targeted the higher schools where the agriculture subject is available as an optional subject. The Bhutan school and well established school around the globe was compared to find out some of the reasons why the performance of the agriculture schools of Bhutan is comparatively low. Some of the issue need to be addressed either by the school or by the Ministry of Education to have better performance on agriculture subjects.

VIII. DISCUSSION

1. BENEFITS OF AGRICULTURE CLASSES

1.1 Hand on experiences facilities

All the schools of Bhutan that are supported by the SAP program are access to school land that is being used to practice hand on experiences for the school children. Teacher who are responsible to look after the school agriculture program explore the feasibility of the agriculture land in the school premises or even explore from the private land in consultation with the school principal and community leaders. *Curbelo (2006)* in his study explained that many students in secondary schools were supportive and interested in taking up agricultural education program beside other subject. In support to his statement, there are many interested individuals in the schools who wants to carry out the classes which have the involvement of hands-on practical training, field trips and simulations work that will enable them to experience and get satisfaction on valuing the real life work. "We can encourage and motivate many youth to go back to farms but if they are not equipped with the skills and the knowledge they will not be able to do anything." (*Rinzin Dorji, Education Secretary, Kuensel...July 10, 2018*). It means that practical based delivery of agricultural education program has the potential to provide hands-on work experiences, and develop life skills that will help students to decide their career paths in future too.

1.2. Farming skills

The children trained and provided potential learning on agriculture about the understanding of agriculture content knowledge, professional skills attainment, and life skill development that are necessary for healthy livings beyond other subject. The knowledge

on the modern farming, the skills and new technology will be inherited from society and the lesson which will add on the beliefs on the technology that will support the agriculture to advancement. There are also many government agencies that support youth to provide skill training that focus more on improving the farming practice during the school break. School with the support from agriculture support agencies send their student for internship training for awareness creation and skill on potential learning in agriculture. To making right choice in farming enterprises student need to have sufficient knowledge and skills that will make their living meaningful living. To break away the poverty cycle one need good potential over skills in agricultural and also in livestock farming. These are the skills that various curriculum in agriculture covered in the school during different period of time from IX-XII classes.

1.3. Develop good Community Relationship

There is a creation of good moral support from agriculture society and development of strong relationships created through communal environments with the community. The bonds formed between students and community certainly demonstrates caring support from the adult society through transactional atmosphere and it is also an indication of how program can serve the educational needs of students through society relationship. It is our society that shapes the student located in that particular region through community relationship which plays a very crucial role in exchanging skills and farming technique. The schools having the agriculture subject should maintain strong community relationship to strengthen and getting support during the requirement of technical assistance or for land encroachment as per the community law.

2. CHALLENGES

2.1. Lack of agriculture land

The dream of encouraging student in agriculture program will be accomplished only if the school owns large area of agriculture land for experimental programs. So the land and feasibility of water are very important for the school to have fully functioning of the agriculture class. Many schools of Bhutan are not access to owing large acres of agriculture land due to terrain in some locations. The existence of agricultural education is to provide the life skill development for the students to discover their career path and realization of the success through experiential learning (*Baker, Robinson, & Kolb, 2012; Roberts & Ball, 2009*).

2.2. Absence of Agriculture science laboratories

The absence of Agricultural science laboratories in any of the school is having negative impact on the progress in the teaching of agriculture subject. Only through the laboratories assessment the product can be changed with the introduction of the new varieties of system. Otherwise the output result remains the same how much the effort is being applied. Treatment for the diseases, chemical utilization, new varieties of crops and

many more are tested in Agricultural science laboratory, Agricultural science workshop, school farm and library. So inadequate of Agricultural science laboratory and workshop will affect the production and interest of the children in learning.

2.3. Lack of farming machineries

The machinery resources are the only aids that will support in teaching and learning of agriculture in the schools besides manual practices seen around the society. It simplifies the work and boosts the energy in the children to work in schools' farms. *Danjean et al (2014)*, in their study on hands-on, real world experiences found out that providing an opportunity to deal with technical education will contribution towards the student achievements. It is true that technical farming manage time utilization, perfect work, control on economic, and solve manpower deficit problem. The result will be alarming in which traditional based farming will least motivated our children and many gear towards the modern system of farming which is the indication of more opportunity provided to the student in choosing the career path in future. To all the agricultural benefited school few agriculture tools are supplied but school don't have any provision of additional budget to procure other necessary tools.

2.4. Separate Trained Agriculture teacher or Trained Focal Agriculture Teacher (FAT)

Many school experience the shortage of teachers' especially Focal Agricultural Teacher (FAT). By default, Science teacher are loaded with agriculture subject without considering the background of their studies. Besides teaching regular science subject they are assigned with agriculture works which eliminate the interest of the teacher as they are working under compulsion. In elementary schools the volunteer teachers who don't have any training on agriculture subject take the agriculture assistance work which also greatly hampered the child's learning. Actually, the teachers who are supposed to take agriculture subject needed to be trained separately in any of the Teacher Training Institute and provided separate opportunities that will boost the teacher interest in the field of agriculture subject.

2.5. Wild life conflict with crops

Due to poor fencing facilities in the schools the gardens were never spared from these free roaming animals such as wild pigs, deer, monkeys and porcupines which are found abundant in different zone. Ministry of Agriculture came with different ideas to protect the crops and vegetables from wild animals but it's just wastage of government resources. Electric fencing was the only alternatives after barbed wire fencing to protect the garden but it is economically challenging for the schools to have electric fencing. It also proves to be very dangerous for the school to electric fence which will bring threat to the smaller children.

2.6. Cold climatic condition

Schools located at higher altitude have many problems comparing to that of low altitude. The production is always less due to cold climatic condition. Also in higher altitude only limited types of vegetables that are adaptable to cold are grown. Even some of the school goes to extend by growing their vegetables in a poly house which require lots of man power and care. The production is very limited but need more effort which is yet problem for our children to use poly house garden. Addition to this the low altitude experiences heavy rain during the summer for 5-6 months and don't allow working in the garden. But in high altitude only 4-5 months summer can be used to cultivate vegetables which is yet another challenging task for the agriculture children to complete their agriculture subject.

2.7. Inferiority discourse on Agriculture student

The influencing of student participation in the agriculture subject depend on how the school has aligned the task that will gear the teachers' interest- (Murphrey et al., 2016; Stoller & Knobloch, 2005). Support to the above statement made by different researcher, the agriculture subject in the school should be motivational and interesting so that more number of students will take the optional subject and teachers will take willingly. But owing to have larger groups in taking agriculture subject the practical scenario is just the opposite with only few children interested in the field of agriculture. And many belief that this curriculum is designed only to serve the purpose of the low achiever who can make a living with it. Because of this belief system agriculture student started developing low esteem and feel inferiority in the society thus resulting children to shift their interest towards other subject.

IX. CONCLUSION

The teaching agriculture subject in Bhutan needed to be re-looked in the curriculum and bring some reforms. With the existing practices the school will have only fewer groups of children taking agriculture classes in future. Shortage of essential human resources, physical facilities, machinery resources, textbooks and reference books are some of the learning materials that are needed to be managed by the agriculture support schools for the benefit and promotion of students' achievement in enhancing their learning interest. It also requires lot of practical settings with abundant resources available to conduct hand on experience on learning through experimenting. Otherwise the theoretical learning of agriculture subject will have no impact on the learning of the children learning and experiencing.

During the next development of curriculum, the developer should design the programs from the basic that incorporate agriculture in science curriculum which will be compulsory subject with methodical design that will motivate the learners to explore further and not to

leave it as elective subject. Curriculum developers also need to study the deficiencies and come out with the better solution that will be helpful for both to elementary and high education considering the future career for those interested children who will be opting to take Agriculture as their main source of livelihood.

Lastly, the modification of the attitude and skill achievement of the learners fully depends on how school will provide at the base for every subject. Individual interest on choosing of the subject should be respected and given the prior option with encouragement.

REFERENCES

- [1] Afolabi, K., Adesanys, E., Shuaib, S. B., & Jimoh, S. (2019). Challenges Encountered by Agricultural Science. *Huria Journal*, 26(1), 126-140.
- [2] Baker, M. A., Robinson, J., & Kolb, D. (2012). Aligning Kolb's Experiential Learning Theory with a Comprehensive Agricultural Education Model. *Journal of Agricultural Education*, 53(4), 1-16.
- [3] Danjean, S., McClure, C., Bunch, J., Kotrlík, J., & Machtmes, K. (2014). Louisiana Secondary Agricultural Educators' Perceptions of an International Experience toward Their Teaching Career. *Journal of Agricultural Education*, 55(2), 1-5.
- [4] Darko, R. O., Ansah, C. O., Offei-Shouqi, Y., & Jun-ping, L. (2015). Challenges in the Teaching and Learning of Agricultural Science in Selected Public Senior High Schools in the Cape Coast Metropolis. *Agricultural Science*, 3(1), 13-20.
- [5] Dorji, R. (2018, 6, 10). AgFS Subject for Secondary Classes. *Kuensel*, p. 1.
- [6] Diise, A., Zakaria, H., & Mohammed, A. A. (2018). Challenges of Teaching and Learning of Agricultural Practical Skills: The case of Deploying Project Method of Teaching among Students of Awe Senior High School in the Upper East Region, Ghana. *International Journal of Agricultural Education and Extension*(2), 167-179.
- [7] Dyer, J. E., Breja, L. M., & Andreasen, R. J. (2014). Attitude of College of Agriculture Freshmen towards Agriculture. *Research Gate*, 40(2), 1-11.
- [8] Henry, K., Talbert, B., & Morris, P. (2014). Agricultural Education in an Urban Charter School: Perspectives and Challenges. *Journal of Agricultural Education*, 55(3), 89-102.
- [9] Murphrey, T., Lane, K., Harlin, J., & Cheery, A. (2016). An Examination of Pre-service Agricultural Science Teachers' Interest and Participation in International Experiences: Motivations and Barriers. *Journal of Agricultural Education*, 57(1), 12-29
- [10] Njoroge, K. T. & Orodho, J. A. (2014). Secondary School Student's Perception towards Agriculture Subject in Public Secondary Schools in Nairobi County, Kenya. *Journal Of Humanities And Social Science*, 19(7), 30-36.
- [11] NCF. (2021). Agriculture for Food Security: Classes IX-XII. *New Normal Curriculum Framework* (pp. 6).

[12] Royal Education Council, Royal Government of Bhutan, Paro. Roberts, T. G., & Ball, A. (2009). Secondary Agriculture Science as Content and Context for Teaching. *Journal of Agriculture Education*, 50(1), 81-91.

[13] Stoller, A. W., & Knobloch, N. A. (2005). Student's Participation and Self-perceived Impact of Extracurricular Activities on Developing Leadership Skills. Proceedings of the 2005 North Central American Association for Agricultural Education Research Conference, 132-146.

[14] Waithera, K. (2013). Challenges to teaching and Learning of Agriculture in Secodary School in Kakuyuni Division, Kangundo District, Machakos Country, Kenya. *Un-Published Dissertation*, 1-110.