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## Gardening at School for New Good Life: Entrepreneurship for Sustainable Education in the Public Schools in Nepal

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### Abstract

Entrepreneurship skills are isolated from school science curricula in the context of Nepal. The study explores the students' engagement in the school garden for entrepreneurship resulting in sustainable education. It explicitly reconnoiters the interconnection between entrepreneurship skills through mushroom farming and the curricula of basic-level public schools. Also, the study explores the pedagogical approaches to contextualized teaching and learning for sustainable education for a new good life. A qualitative research design under the interpretivism paradigm with a purposive sampling technique was employed to select the schools and the research participants. Qualitative data were collected through eighteen in-depth interviews and nine focus group discussions and were analyzed using the Atlas-ti software. The study found that students, parents, and teachers actively engaged in mushroom farming in the school connected activities with curricula and enjoyed learning by earning. The contribution of this study chiefly lies in making a new good life through mushroom farming for economically backward parents. It is recommended that the Ministry of Education of Nepal's government needs to formulate policies regarding entrepreneurship-based sustainable education in the context of school education in Nepal.

### Keywords

qualitative research, interpretivism paradigm, entrepreneurship, mushroom cultivation, school garden, sustainable education

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## Gardening at School for New Good Life: Entrepreneurship for Sustainable Education in the Public Schools in Nepal

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Entrepreneurship skills are isolated from school science curricula in the context of Nepal. The study explores the students' engagement in the school garden for entrepreneurship resulting in sustainable education. It explicitly reconnoiters the interconnection between entrepreneurship skills through mushroom farming and the curricula of basic-level public schools. Also, the study explores the pedagogical approaches to contextualized teaching and learning for sustainable education for a new good life. A qualitative research design under the interpretivism paradigm with a purposive sampling technique was employed to select the schools and the research participants. Qualitative data were collected through eighteen in-depth interviews and nine focus group discussions and were analyzed using the Atlas-ti software. The study found that students, parents, and teachers actively engaged in mushroom farming in the school connected activities with curricula and enjoyed learning by earning. The contribution of this study chiefly lies in making a new good life through mushroom farming for economically backward parents. It is recommended that the Ministry of Education of Nepal's government needs to formulate policies regarding entrepreneurship-based sustainable education in the context of school education in Nepal.

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### Introduction

Context-based teaching and learning are not accessible to school children from diverse backgrounds and capabilities in the context of public schools in Nepal. School education in Nepal is not relevant to building the skills needed to succeed in life and achieve a new good life. Schoolchildren are taught a centrally prescribed curriculum irrespective of their needs and desires. Such incongruous learning practices need to be more contextual; they doubtlessly need transformation. Researchers advocate that schoolteachers accept gardening activities that support entrepreneurship education (Acharya, Budhathoki, & Acharya, 2022; Bal et al., 2018). One effective way of achieving this is by learning entrepreneurship skills using gardens in public schools (Acharya, Budhathoki, Bjonness, & Devkota, 2022; Joseph & Van Buren, 2022).

The education system's primary challenge is producing talented and competitive human resources. The environment is degrading all around; people live under the poverty line and are deprived of skill-based education. The holistic learning environment in the schools in Nepal needs to be improved in learning basic skills to sustain life. To address these problems, the Constitution of Nepal (2015) regards education as the fundamental right of all people. The

government of Nepal Science and Technology (GoNST) is committed to providing quality education for all, as evident in the Education for All National Plan of Action (2001-2015; Ministry of Education, Science and Technology, 2001a), a five-year strategic plan called Education for All 2004-2009 (Ministry of Education, Science and Technology, 2001b), and the Secondary Education Support Program (2003-2008). Besides, the National Education Plan (Ministry of Education, Science and Technology, 2019a) aims to prepare more creative, productive, competitive, and skillful human resources through at least free secondary-level education. National policy documents such as the School Sector Development Plan [SSDP] 2016, National Education Policy [NEP], 2019; the Fifteenth Plan, (National Planning Commission, 2019); Sustainable Development Goal-Nepal National Framework [SDG-NNF] (Ministry of Education, Science and Technology, 2019b); Education Sector Plan [ESP] (Ministry of Education, Science and Technology, 2021); and School Sector Plan [SSP], 2021 have consistently stressed the role of engaged learning to improve the quality of school education in Nepal. However, despite consistent efforts to improve the quality of school education in Nepal, the educational achievement of the students at community schools is below the policy expectation (Education Reform Office [ERO], 2013; 2015; 2018). Students' learning achievements differ from expectations (Silva & Oliveira, 2022).

School education in Nepal lacks the development of basic livelihood skills, and gardening as a part of curricula may support to cater occupational skills. School garden activities promote collaboration with parents, especially from the local community (Lerche et al., 2022). School gardening helps bridge learning needs (Romano & Schnurr, 2022). In this line, Austin (2022) found that students' consciousness and knowledge of gardening can be increased through skill-based pedagogy as a part of learning. Students' engagement in the garden and growing mushroom help connect science learning to entrepreneurship skills. Moxley et al.'s (2022) findings supported the claim that mushroom farming by rural people helps students' learning. Mushroom cultivation in the school supports income and is, at the same time, a part of learning. In this way, it helps to achieve sustainable education in the long run (Nousheen et al., 2020).

Furthermore, research reveals that education for sustainable development (ESD) aims at enhancing pupils' consciousness concerning sustainability issues. Education for sustainable development focuses on developing life skills as a part of the curriculum to make education sustainable. Sustainable education means building skills and developing the knowledge and attitudes necessary to ensure a livable future. ESD is a must today (Catana & Brilha, 2020; Leicht et al., 2018; Nousheen et al., 2020). Other studies highlight the importance of education in attaining sustainable development goals (Boeren, 2019; Marujo & Casais, 2021). Entrepreneurship is essential to develop skills, knowledge, attitude, and values of life to meet sustainable development goals at the local level (Ashari et al., 2021). In this line, research showed that entrepreneurship skills are essential to meet the sustainable development goal (Hsu & Pivec, 2021). The existing situation of entrepreneurship can be improved through school gardening (Ravi et al., 2022; Winkler et al., 2021). Studies focus on changing students' attitudes, providing chances that increase curiosity and creativity. Garden-based engaged learning not only develops students' concepts of gardening but also bridges their actual needs and demands and promotes awareness and knowledge of sustainable learning (Maass et al., 2019). In this context, this study emphasizes exploring and identifying engaged learning through the school garden to develop entrepreneurship skills for sustainable education.

The primary focus of this research was to explore entrepreneurship through school gardening for sustainable education in public schools in Nepal. Likewise, the purpose of the study was to recommend an appropriate national policy framework for engaged learning to develop entrepreneurship skills for sustainable education aligning with national needs and expectations.

Research shows that, in relation to entrepreneurship, school gardening is helpful for inquiry instruction (Henry et al., 2017). It facilitates students to develop the skills of entrepreneurship (Seikkula-Leino, 2018). As Williams and Brown (2013) claimed, garden-based meaningful engagement changes students' attitudes toward entrepreneurship. Along the same line, Tiemensma and Rasmussen (2019) found that the engagement of students in the school garden provides an opportunity to increase curiosity and creativity. This finding was supported by several researchers concluding that school gardening helps to develop entrepreneurship education (Dimov & Pistrui, 2022; Johansen & Schanke, 2013; Tunstall & Neergaard, 2022). Students' meaningful engagement in inquiry learning helps learners to conceptualize practically-based scientific skills (Berglund et al., 2020; Colombelli et al., 2022; Senali et al., 2022).

The dogmatic delivery approach has been a transitional means of pedagogy in public schools in Nepal. In this approach, the assessment is solely based on a paper-pencil test. However, there is a provision for practical examinations in the curriculum, but the practice could be more effectively implemented. There is no collective information and lessons for entrepreneurial learning and assessing. It hinders achieving a sustainable education. Tribhuvan University (TU), Faculty of Education (FoE), an important institution for educating teachers, needs to be oriented towards developing life skills. The Faculty of Education, TU, is responsible for this dimness. TU-FOE science education curricula need to have entrepreneurship strategies in pedagogy, which is a problem for sustainable education to a more significant extent. Policy documents and research show that school education must provide skills in Nepal (ERO, 2015; 2018; Ministry of Education, Science and Technology, 2019a). This indicates a clear knowledge gap regarding the opportunities, status, practice, and effectiveness of learning for earning through entrepreneurship. Therefore, this article aims to explore skill-based education through entrepreneurship at the school garden for the new good life of Nepalese people.

### **Literature Review Connecting Vedic Education**

Multicultural classroom culture with diverse groups (125 ethnic and caste groups as per the census report 2022) is available in Nepal. Students from culturally marginalized groups but rich in their local wisdom (culture, costume, indigenous knowledge of healing and cultivation, etc.) are the beauty of Nepalese society and the classrooms. Connecting local wisdom in the science curriculum is necessary to develop skills related to entrepreneurship for sustainable education. But the Nepalese classroom situation is dominated by Western modern science (Kato et al., 2023) by expunging local knowledge and practices. In this concern, UNICEF focused on incorporating local knowledge blending on (a) learning by living; (b) learning by doing; (c) learning by collaboration; and (d) learning for project work (UNICEF, 2017). To address entrepreneurship in school education in Nepal, the National Education Policy linked local knowledge through scientific innovation and research for the 'glocal' (global + local) world (National Education Policy [NEP], 2076). Linking local knowledge and skills with the curriculum help to develop entrepreneurship skills for sustainable education. Works are done by blacksmiths, porters, and farmers as the source of livelihood needs to link in the school science curriculum. Although indigenous knowledge is rich, science curricula are isolated from the local wisdom.

Bhagavad Geeta 18.43 mentioned that entrepreneurship skills such as business, farming, agricultural practice, and skillful work are prerequisite functions of Kshatriya (Warriors), Baishya (skilled traders, merchants), and Sudra (unskilled workers). It also focuses on the earning-by-learning principle. Rig Vedic hymns mentioned the appropriate agricultural tools and farming practices related to modern entrepreneurship practice. The Rig Vedic version

indicates that our community is developed based on entrepreneurship practice, but a gap is found in implementing it in our curriculum. In *Satapatha Brahmana* the farming process has been described in four words *Karsana* (cultivating the field), *Vapana* (sowing seeds), *Lavana* (reaping the harvest), and *Maida* (threshing) (Kaur, 2014). It also indicates that there was agricultural practice as the entrepreneurship form, which supports systematic crop planting with an appropriate irrigation system. Vedic seers suggested different agricultural tools, agricultural ingredients, agricultural land, irrigation methods, values of cow dung, cultivation system, and nutrient value (Koirala, 2023).

The constitution of Nepal supports the preservation and innovation of such traditional knowledge of Dalits (*untouchables*) and other cultural people. Local wisdom should be provided patent rights for their work (Constitution of Nepal, 2015). All these local practices are also based on entrepreneurship practice. However, the newly revised curriculum at the school level and the university curricula are seen as needing such types of braiding knowledge (Koirala, 2023). The decolonizing approach could be supportive of minimizing the gap seen in learning institutions between the two Western knowledge systems and local knowledge (Kato et al., 2023; Koirala, 2023).

In relation to entrepreneurship among school children, social and economic problems can be solved through skills development (Madan, 2017). Along the same lines, students', parents', and teachers' self-awareness help in learning (Lohr et al., 2021). This sort of self-awareness can be enhanced through students' activities in the school garden as a part of learning science. To support this statement, Passy, (2014) said that students engaged in learning are effective in the school gardens. Also, research shows that creating engaging garden spaces in learning is necessary for understanding (Cutter-Mackenzie, 2009). In schools, the development of the necessary skills is a necessity (Geitz et al., 2016): cultural awareness and sensitivity regarding their culturally-diverse wisdom; yet students at the schools showed less developed cultural knowledge base and skill levels (Martines, 2005). Another research said that it is necessary "to identify the needs of community schools" (Rajbanshi et al., 2021, p. 1) to transform teaching and learning from a dogmatic approach to engaged learning. In this context the same research focused on the contextualized curriculum helps to improve students' performance that links to sustainable development goal 4. Another research on the schools in Nepal shows that the "low involvement" of students is a problem in the school system (Khanal, 2013, p. 1).

### **Positionality of the First Author**

Concerning my teaching and learning styles and practices as a university science teacher educator and researcher, the approach adopted in this study is rooted in entrepreneurship education. As a researcher and a university teacher educator, the position my 'positionality' as and within the system coalition with the co-researchers the benefit of entering this research space with innovative views to explore entrepreneurship education. For this, as the first author of this paper, I have seen students engaged curiously and wonderingly in the school garden. The data were engrossed on the garden-based engagement accomplished by the students, teachers, and parents for a new good life. The in-depth interviews and FGDs were recorded, interpreted, and scrutinized using qualitative data analysis i.e., themes. The first author engages in this study at the beginning. He collected all the audio files of in-depth interviews, checking the transcribed and translated files by listening audio voices and added more if the filed researcher(s) lapsed to write by listening audio files. The first author developed the themes, sub-themes and tied with the research objectives of the study. The second author reviewed articles and also developed thematic part of the manuscript.

## Method

The study adopted a qualitative research design under the interpretivism paradigm. Through eighteen in-depth interviews and nine focus group discussions, we brought together the diverse views of students, schoolteachers, and parents from the Terai (low land- Chitwan district), hill (middle land- Kathmandu valley), and mountain (high altitude- Rasuwa) regions of Nepal. The study adopted a qualitative research design under the interpretivism paradigm. Interpretivism has its roots in hermeneutics, the study of the theory and practice of interpretation (Carminati, 2018). Fundamentally, qualitative research is generally contextualized (Castell et al., 2022). Co-researchers aware in that precise setting and have lively participation in the progression of exploration (Hsieh & Shannon, 2005, Mayring, 2021). Hence, we have focused on the conceptualization of indicators and strategies of entrepreneurship education arising from students at community schools.

Prior to the participation, oral and written consent was obtained from the students, teachers, and parents of all the sampled institutions. Confidentiality of the information both at individual and institutional levels was highly respected during the research process. This research was funded in part through a National Priority Area Research Grant Award (Award Number: TU-NPAR-078/79-ERG-03), Research Directorate, Research Coordination, and Development Council (RCDC), Tribhuvan University, Nepal, 2022. The ethical consent letter (provisioned in the *I.1.18* agreement), the ethical review approval letter has been taken to collect the data and publication.

For the collection of the data, in-depth interviews and focus group discussions were conducted with the schoolteachers, students, and parents of the sampled schools on the themes of entrepreneurship education, the importance of school gardens, mushroom farming, and a new good life for parents, particularly for those whose economic condition was weak. Each in-depth interview took about 30 to 35 minutes. A total of eighteen in-depth interviews were taken and each FGD about 40 to 45 minutes. A total of nine FGDs were conducted.

The in-depth interview route is given (Table 1).

**Table 1.**

Themes	Statements/ Questions
Science Teaching and Learning	<ol style="list-style-type: none"> <li>1. Methods used (science teaching methods used by teachers?) Do you like this method? Why? Why not?</li> <li>2. How do science teachers teach? (Note giving, lecturing, sharing, solving problems, engaging us in activities, use of a whiteboard, etc. Explore why in every theme)</li> <li>3. How do you learn science (Only listen, share ideas, involve in activities, discuss, write notes, play games, etc. Explore why on every theme)</li> </ol>
School Environment	<ol style="list-style-type: none"> <li>1. Do you like your school? Why? Why not?</li> <li>2. Do you ask questions in science class?</li> <li>3. Do your friends share ideas during learning?</li> <li>4. Do teachers punish you?</li> <li>5. Do your friends scold you? Why? How do you feel if they scold you?</li> <li>6. Do you help the community people? How? Why?</li> </ol>
Engaged Learning	<ol style="list-style-type: none"> <li>1. Did your teacher motivate you to learn science from nature? (If yes,) Where? When? Why? If no, Why? Reasons.</li> </ol>

	<ol style="list-style-type: none"> <li>2. What did your teacher do in such a learning condition?</li> <li>3. Are you satisfied with your own learning styles? Why? Why not? Detailed explanation with reasons.</li> <li>4. In your opinion, what possibilities are there, and how effective are the students-centered learning programs?</li> <li>5. Do you want to learn science by playing games? Why? Why not?</li> <li>6. What do you think about science teaching and learning through activities?</li> <li>7. Do they want to learn science through field visits? From where? Garden? Forest? Or outside environment?</li> <li>8. Do you have anything more to say?</li> </ol>
School Gardening and Mushroom Cultivation	<ol style="list-style-type: none"> <li>1. Do you have a school garden?</li> <li>2. Do you want to learn and play in the garden?</li> <li>3. What do you want to cultivate in the garden? Fruits? Vegetables? Or what?</li> <li>4. Do you like curry prepared from mushrooms?</li> <li>5. Is mushroom farming necessary in your school? If yes, where can we grow mushrooms in the school?</li> <li>6. Do you want to work in the garden? What do you want? Seedling? Watering plants? Uprooting herbs? Or what?</li> </ol>
Entrepreneurship in the Schools	<ol style="list-style-type: none"> <li>1. Do you know about entrepreneurship? Is it necessary for the school? Why?</li> <li>2. Is it possible in your school? If yes, what might be your roles and responsibilities for this?</li> <li>3. Do the students want to work in the school garden?</li> <li>4. Can you sell mushrooms/ vegetables in the local market?</li> <li>5. Do the parents share their skills in the school garden?</li> <li>6. Can you raise funds for this? If not, can you coordinate with parents to work in the garden?</li> </ol>
Parents' Involvement in the School	<ol style="list-style-type: none"> <li>1. Do your parents involve garden activities in the school? If yes, for what activities? When? At what time? etc. If not, why?</li> <li>2. Do you think, parents need to come to school as a part of activities?</li> <li>3. Do you work, play and learn in the school garden with your parents? Why? Why not?</li> </ol>

The basic-level students (grades five to eight) were selected considering the flexibility of exploring entrepreneurship in the school garden. Purposive sampling was used to select the schools for the study. Staller (2021) argued that purposive sampling is used as per the research demands of the qualitative study. The rationale for the selection of all three regions was to explore the knowledge and skills of entrepreneurship from diverse students studying at the same level. Although the study is a part of the National Priority Research Grants with large sample size, area, and scope, this paper is based on the data sources of only three community schools in Bagmati Province. Since the purpose of the present study is to explore entrepreneurship in the school garden for sustainable education, it is a kind of interpretative research.

The data obtained from the in-depth interviews and focus group discussions were analyzed by using the verbatim and the Atlas-ti software. For the data collection process, this study recruited research assistants with a fair balance of gender and locality. Quan-Haase and



Sloan (2022) remark that gender balance is needed to collect the research data. In this research, preference was given to the research assistants who had obtained their Bachelor's degree and most preferences was given to the Master's degree students in science education. Preference was also given to the research assistants of the age group of 25-40 years because people of this age group can collect the data as per the objectives and research questions more effectively (Flick, 2017).

After the selection of the research assistants based on the agreed criteria, they were oriented to the field study. The training was conducted for two days to collect the data through focus group discussions, transcribing and translating data, and conducting the thematic analysis.

As stated above, this paper applied a qualitative content analysis technique. The first author systematically used qualitative data collected from in-depth interviews and FGDs to explore, extract, categorize, and assess appropriate content to the investigation area. Its findings were approved by the Research Management Committee of this study, Central Department of Education, Tribhuvan University. Besides the curriculum analysis of the school and the TU-FOE, research published on entrepreneurship, school gardening, and sustainable education was also analyzed for validation of the findings. The first author transcribed the qualitative data first: they were taken in the Nepali language and translated into English. The data were prepared for extended dialogue summaries and analyzed using the thematic content analysis technique (Denzin & Lincoln, 2011; Thomas, 2011). The researchers used the thematic analysis through a rigorous process of coding and refinement of the themes to answer the research questions. First, open coding was carried out with the use of the ATLAS-ti software. In the second step, the first author noted the themes, and finally, the themes were refined with the help of the university professors. At last, the relationship among the themes was maintained.

The body language and gestures of the respondents during the data collection were observed, written, and analyzed. Data saturation was ensured after receiving the same meaning from the respondents in most of the cases. However, adequate saturation of data was ensured in a few cases. Guest et al., (2006) establish that the point where no new information is obtained is the adequate saturation of the data in a qualitative study. An interpretive "explanation would be better to analyze the qualitative data" (Sandelowski & Barroso, 2003, p. 1). At last, the English language was edited by an English language expert. The trustworthiness of the research findings was evaluated through audit trials, member checks, conformability, and theoretical relevance. The reliability of the research findings was also maintained through prolonged engagement in the field during data collection.

## Findings

This study came across the existing conditions of the school gardens to develop the skills of entrepreneurship for sustainable education. The findings are supposed to contribute to the application of school gardens through mushroom farming for entrepreneurship and sustainable education that enables students, teachers, and parents to get first-hand experiences. This study supported achieving the national development goal through green gardens, national priority outcomes as a source of livelihood, learning resource access, and improving the quality of school science education.

Students formed a Student Entrepreneurship Club (SEC) in three intervention schools. SEC was an eleven membered student club where they actively participated in gardening activities, particularly mushroom farming. For this, the students bought mushroom spores from the local market. The parents prepared plastic bags with holes filled with pieces of paddy straw after sterilization. In favor of the above finding, one of the science teachers said,

Mushroom cultivation is included in the curriculum. Therefore, we incorporated it into our lessons. The students need to study mushroom and its uses. It was easier for us to bring the students to the garden and engage them in it as a part of learning.

Consistent with this statement, another teacher added, “students learn by involving themselves in the garden. Students watch the growth of mycelia. It is a good practice.” It was found that the students enjoyed observing the growth of mycelia in plastic bags. The growth of the mushrooms in the garden was linked with the science curriculum. From these activities, it was investigated that the students learned skills of growing mushrooms by maintaining temperature, humidity, light, and ventilation. In addition, they developed the skills of harvesting and selling the products in the local market.

Supporting this finding, all parents argued that learning in the school garden was a good practice. We concluded that mushroom cultivation in the school garden is a better way for the students to learn science through hands-on activities.

It is found that mushrooms cultivation in the school is one of the techniques of resource collection. Cultivation and selling of mushrooms are done by the students from grade V to VIII particularly by the members of the Student Entrepreneurship Club. One of the head science teachers said:

Selling mushrooms in the local market became the source of income to the school. It was a good idea of developing skills of mushroom cultivation, harvesting, selling and developing a fund. It was done by the coordination with the parents and teachers in the school. It helped to build skills, develop knowledge and attitude with value of dignity of labour for livelihood for the local people. It was an interesting finding of linking students' activities to science curricula.

Students learned the stages of mushroom growing, formation of mycelium, and growth of mushroom buds. Parents engaged in activities with students and teachers in the school, connect gardening activities with the science curriculum. It helped to build skills of parents. Further, the collaboration and dissemination of knowledge from the school to the community is an important part of entrepreneurship. It is also found that the “mushroom cultivation at school is a part of co-curricular activities. Science teachers and parents know that the connection of the teaching contents to the garden was wonderful” (head teacher 1).

As a means of parents-school collaboration, community members were happy to develop entrepreneurship skills. It is found that the development of social entrepreneurship lead community people to earn money for day-to-day life expenditure. It is evident that schools are the medium of transmitting innovative and valuable knowledge. It is also found that mushroom produced in the school provided nutritious food as a mid-day meal to the students. The Government of Nepal has a policy provision to provide mid-day meals to all children up to grade five studying at public schools across the country.

It was also found that mushroom cultivation in the school garden helped to achieve Sustainable Development Goal 2. SDG 2 aimed to end hunger, achieve food security and improve nutrition and promote sustainable agriculture. Supporting this finding, one of the girl students stated:

I have learned the skills to grow mushrooms such as the preparation of plastic bags, cutting paddy straws and sterilization, and filling in the bags to cultivate mushrooms. I also know the appropriate temperature and moisture for the

proper growth of mushrooms. Temperature, light exposure, and humidity are some of the environmental factors that determine the final yield.

Under the theme of learning for earning, the overall finding shows that students learned the skills as part of co-curricular activities in the school garden. Mushroom growing in the garden helped promote entrepreneurship skills, knowledge, and attitude among the students, teachers, and parents. This clearly shows that sustainable education can be achieved through school gardening activities. From this evidence, it comes out that learning for earning motivates school children towards a sustainable education. Mushroom farming in the school garden engages parents as well. Teachers helped to disseminate and achieve skills to grow mushrooms. It has become a good source of income, particularly for economically poor parents for a new good life.

It was found that the life skills of students were increased by engaging in the school garden. Also, they recommended the people nearby to cultivate mushrooms. In this scenario, one of the students argued that,

Engagement of students in the school garden has become a part of co-curricular activities. My friends are happy to learn mushroom farming. I have an interest to play with soil, supplying water to plants and learn science. I started to help my father at home to grow vegetables as well. I learned all these skills in the school garden.

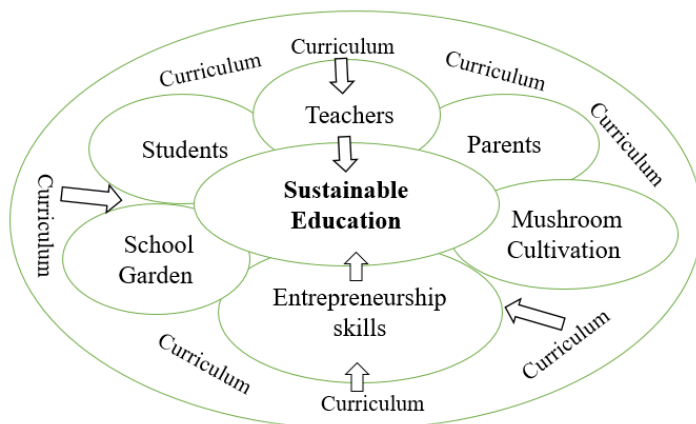
In connecting this finding with the SDGs, students' engagement in the garden through mushroom farming is related to target 4.7 of SDG number 4, which states that the target 4.7 ensures that all pupils attain the information and expertise required to endorse sustainable development through education for sustainable development by 2030. In support of this target, this study found that students, teachers, and parents collaborate in cultivating mushroom. They sold mushrooms in the local market, and it was a source of income for the school, too.

It is found from this study that spreading knowledge from the school to the community people was good. It clearly shows that entrepreneurship activities in the schools help to achieve the SDG 4 in the local context.

Furthermore, it was found that there was transferring of knowledge from students to the community people helping them to earn for their livelihood. Also, it was found that the teachers learned from students as well. Connection of practical activities mentioned in the curriculum is achieved from the garden-based activities like mushroom cultivation. Students got practical knowledge of growing mushrooms and they developed skills and gained knowledge of mushroom farming. Reflections and sharing helped them understand their friends and offered time for team bonding, which was a necessary skill for a team to function properly. As a result, social learning environment and trust fostered among the students. It was found that school education needs to be redefined in line with the Sustainable Development Goal (SDG 4). This goal concerns quality education as defined by the Global Goals report as cited by Hák et al., (2016) for ensuring justifiable eminence learning and encouraging lasting learning prospects for all. This study found that gardening activities are basically linked to meeting the target of SDG 4. Target 4.4 stresses that highlighting must be positioned on mounting high-level intellectual and non-cognitive/ transferable skills, such as problem-solving, critical thinking, creativity, collaboration, and communication skills (see Figure 1).

**Figure 1**

*Interconnection between School Gardening, Mushroom Cultivation and Entrepreneurship Education*



Furthermore, it is found that the community people, particularly parents who engaged in the school for mushroom farming, gained entrepreneurship skills. It develops ownership among parents that is proved that they participated in mushroom farming in the school without inviting them to come. In relation with the empowerment, parents nurture critical thinking and creativity of students by sharing ideas and skills. Further, it was realized that teaching and learning in the school garden are one of the scopes of science curricula. It helped students to acquire abilities needed for flourishing life-long skills. In response to the ownership, one of the teachers remarked,

We were deprived of the opportunity to explore the fundamental skills of entrepreneurship before mushroom cultivation in the school. Learning does not necessarily have to be measured by how much students write on the exam paper; it can also be measured by their abilities over time. It is our garden; so, we have responsibilities to save it. Collaborative participation and work responsibility are developed from the garden-based activities.

Overall, it is found that students, teachers, and parents were empowered through activities conducted in the schools related to mushroom farming. Development of skills, gaining knowledge, and changing attitudes are the overall achievements in this study. Interactions, along with formal and informal conversations, actually served as a booster for encouraging them to truly think and prepare lessons ready to execute. The opening argument of this research is that reality is subjective and that there are multiple perspectives of thought. Contextual thoughts determine the wisdom celebration of the local people. School gardens and mushroom farming are needed for school children and their parents for a new good life. It found that the entrepreneurship skills developed by the parents in the school garden are beneficial for a new good life particularly for parents who are economically poor.

## Discussion

The present study's contribution lies on the application of school gardens through mushroom farming for developing entrepreneurship skills. This study supports achieving the national development goal, national priority outcomes, access to learning resources, and quality of school education. One of the findings of this study is that students learn skills for growing

mushrooms by maintaining temperature, humidity, light, and adequate ventilation. This finding is in line with Driussi (2013) who argued that students learn the skills through "meaningful outdoor learning" (p. 1). Similarly, Mavi and Thakur (2021) noted that "mushroom production training has created a favourable attitude" (p. 1). This finding also harmonizes with their conclusion: "integration of curriculum helps to minimize confusion for learning for earnings" (p. 2). Lakshmy et al. (2021) stressed that as school gardening is linked with the school science curriculum, the students get lived experiences. Similarly, as Adeyanju et al. (2021) claimed, empowering students to play, work, and learn from mushroom cultivation is one of the aspects of entrepreneurship. The study stressed that students, teachers, and parents develop the skills of harvesting and selling mushrooms in the local market. This is also similar to the research conducted by Kangogo et al., (2021) suggesting that life skills development is linked to entrepreneurship for sustainable education. This study shows that gap of mushroom cultivation in the school linking with the livelihood of parents. It is also the claim of this study.

Further, the present study establishes that teachers are one of the means to develop students' skills and learning. Mushrooms in the school garden support earnings in the school. This finding is in line with Tunstall and Neergaard (2022), who suggest that "mindsets and competencies in entrepreneurship education through socially-situated experiential learning" are needed (p. 1). On the basis of this research, it can further be argued that it is possible to enhance sustainable education if learning is interconnected with earning. In a similar line, Moxley et al. (2022) argued that entrepreneurship is one of the sources of income for school children. Student Entrepreneurship Club could harvest and sell mushrooms at a low price in comparison to the local market. This finding was backed by Ashari et al. (2021), who observed that such activities developed entrepreneurship skills among the students for livelihood in the future. More importantly, it was found that students were happy to learn science in the school garden, and they also earn money by selling mushrooms.

Furthermore, this study found that developing entrepreneurship skills is a part of co-curricular activity. This finding is in line with Igwe et al. (2022), who found that co-curricular and extra-curricular activities need to be scheduled in the routine to develop entrepreneurship capabilities among Nepalese students. Community members were cheerful in the school garden; they said that the school taught something new and valuable. Students can learn something which benefits society. This finding supports the study done by Linton and Xu, (2021). The study forwarded entrepreneurship as a must to provide life skills to students for their future livelihood. Mushroom produced in the school was supplied to the school canteen. In return, this practice provided nutritious food as a mid-day meal to the basic-level students.

Moreover, the findings of this study need to be addressed by school and university curricula in line with the Sustainable Development Goal (SDG) 4. The life skills of the students get enhanced by engaging in the school garden. Students recommended nearby people to cultivate mushrooms and flowers. Zguir et al., (2021) researched that "the emergence of education for sustainable development and sustainable development goals need to be implemented and valued by many education systems" (p. 5). Sustainable Development Goal 4 aims at providing quality education as defined by the Global Goals report as cited by Hák et al., (2016) for ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. Elmassah et al., (2021) argued that "all learners acquire the knowledge and skills needed to promote sustainable development" (p. 1). This research is in the line with the finding of this study that school garden activities are basically linked with the target of SDG four, target 4.4 to be achieved by 2030. The acquisition of skills and problem-solving skills related to entrepreneurship learning are part of sustainable education. In addition, entrepreneurship through school gardens for sustainable education through mushroom cultivation was startling in this study. In this concern, many researchers found that entrepreneurship through school gardens for sustainable education is a must (Berchin et al.,

2021; Braßler & Sprenger, 2021; Lal et al., 2021; Vasconcelos & Orion, 2021). The school, therefore, is looking forward to hiring a family with limited income as a full-time caretaker of the entire school garden and mushroom cultivation.

### Concluding Remarks

Entrepreneurship skills for sustainable learning are isolated in school curricula in the situation of Nepal. Learning for justifiable progress aims at enhancing students' consciousness regarding sustainability issues. Education for sustainable development focuses to develop life skills as a part of the curriculum to make education sustainable. Sustainable education here means building skills and developing the knowledge and attitudes necessary to ensure a livable future. School education in Nepal lacks the development of basic livelihood skills, and gardening as a part of curricula may support to cater occupational skills. The study explores participation of co-researchers for entrepreneurship linking contextualized teaching and learning for sustainable education for a new good life. The primary focus of this research was to explore entrepreneurship through school gardening for sustainable education in public schools in Nepal. Likewise, the purpose of the study was to recommend an appropriate national policy framework for engaged learning to develop entrepreneurship skills for sustainable education aligning with national needs and expectations.

It is found that students, parents, and teachers actively engaged in mushroom farming in the school, connected activities with curricula, and enjoyed learning by earning. The contribution of this study chiefly lies in making a new good life through mushroom farming for economically backward parents. Overall, it is found that students, teachers, and parents were empowered through activities conducted in the schools related to mushroom farming. Development of skills, gaining knowledge, and changing attitudes are the overall achievements in this study. Interactions, along with formal and informal conversations, actually served as a booster for encouraging research participants to truly think and prepare lessons ready to execute. It is recommended that the MoEST, Nepal government need to formulate policies regarding entrepreneurship-based sustainable education in the context of Nepal.

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