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Entrepreneurship development through experiential learning in agriculture sector

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Abstract

Experiential Learning is an opportunity for the students to develop high quality professional competence, skill development and confidence to start their own enterprise. This is a step towards "Earn while learn". Experiential Learning aims towards Practical Work Experience in Real Life Situation among the undergraduate students and therefore it helps student become "Job Providers rather than Job Seekers". Experiential learning is a business curriculum-related endeavour which is interactive. The primary aim of this initiative is to improve upon agricultural education system and to develop professionals who can create their own enterprise in agriculture, allied and agro-processing sector. Therefore, the course designed as Experiential Learning i.e. "Hands on Training" is as competence development through knowledge in all aspects of enterprise management so that the graduate students will have complete understanding of project planning, development and execution with an end to end approach.

Keywords: experiential learning, practical work experience, hands on training

Introduction

The READY (Rural Entrepreneurship Awareness Development Yojana) programme aims to provide rural entrepreneurship awareness, practical experience in real-life situation in rural agriculture and creating awareness to undergraduate students about practical agriculture and allied sciences. The programme will help in building confidence, skill and acquire Indigenous Technical Knowledge (ITK) of the locality and thereby, preparing the pass-out for self-employment. It also aims to provide opportunities to acquire hands-on-experience and entrepreneurial skills. To reorient graduates of agriculture and allied subjects for ensuring and assuring employability and develop entrepreneurs for emerging knowledge intensive agriculture, it was felt necessary to introduce this program in all the Agriculture Universities as an essential prerequisite for the award of degree to ensure hands on experience and practical training.

The Fifth Deans committee has given detailed curriculum of student READY programme for all the disciplines in agriculture and allied sciences. The course curricula have been restructured to develop much needed skills and entrepreneurial mind-set among the graduates to take up self-employment contribute to enhanced rural livelihood and food security, sustainability of agriculture and be propeller for agricultural transformation. The following components are proposed for carrying out one year Student READY programme in all the Under graduate (UG) disciplines:

- Experiential Learning on Business Model / Hands on Training
- Experiential Learning on Skill Development
- Rural Awareness Works Experience (RAWWE) Internship / In-Plant Training / Industrial attachment
- Students Projects

The students will be required to have any three of the five components listed above. depending on the requirement of their graduate education but it should be implemented for one complete year, so that their education up to level of III year may get right information and in the IV year and finally they should attain right stage of entrepreneurship. In some disciplines where some components, for eg Experiential Learning is not possible at graduate level, the students will be given Hands on Training and/or Skill Development Training, but it should be (out of these 5 components) implemented for the complete year.

All the above mentioned components are interactive and are conceptualized for building skills in project development and execution, decision-making, individual and team coordination, approach to problem solving, accounting, quality control, marketing and resolving conflicts, etc. with end to end approach.

- Experiential Learning is an opportunity for the students to develop high quality professional competence, skill development and confidence to start their own enterprise. This is a step towards "Earn while learn". Experiential Learning aims towards Practical Work Experience in Real Life Situation among the undergraduate students and therefore it helps student become "Job Providers rather than Job Seekers".
- Rural Awareness Works Experience enable the students to gain rural experience, give them confidence and enhance on farm problem solving abilities in real life situations, especially in contact with farmers, growers, etc.
- In-plant training of short duration in relevant industry is useful to gain the knowledge and experience of the work culture. In Plant training in reputed organization / MNC's/ other organised sectors provides an industrial exposure to the students for developing their career in the Agro based industries.
- Skill development component includes use of Agriculture Systems and devices for enhancing functional skills. It is expected that basic infrastructure and Experiential Learning Units in the university will help in boosting livelihood ensuring opportunities among the Agricultural graduates.
- Student Project is essential for students who are interested in higher education. Through this they will gain expertise for identification of research problem, planning and setting up experiments and writing of reports, etc.
- In the disciplines of Dairy Technology, Food Technology and Agricultural Engineering, there will be in-plant training in place of RAWE. The students of Veterinary Science discipline will undergo internship training at hospitals.

All the components as per suitability of course i.e. Experiential Learning, Skill Development Training, Rural Awareness Work Experience (RAWE). Internship/ in-plant training and Student Projects are included in the final year of study for 2 semesters to provide entrepreneurial skills, confidence and hands on experience. There are 20 credits for Experiential Learning/ Skill Development Training, 10 credits for RAWE and 10 Credits for Industry Attachment/Student Project for Veterinary Science students, Experiential Learning is designed as per VCI pattern.

In the recent revised curriculum for the B.Sc. degree programme, the Indian Council of Agricultural Research has recommended a new initiative called Experiential Learning programme (ELP). The word 'experiential' essentially means that learning and development are achieved through personally determined experience and involvement, rather than on received teaching or training, typically in group, by observation, study of theory or hypothesis, bring innovation or transfer of skills or knowledge. Experiential learning is a business curriculum-related endeavour which is interactive. The primary aim of this initiative is to improve upon

agricultural education system and to develop professionals who can create their own enterprise in agriculture, allied and agro-processing sector. Therefore, the course designed as Experiential Learning i.e. "Hands on Training" is as competence development through knowledge in all aspects of enterprise management so that the graduate students will have complete understanding of project planning, development and execution with an end to end approach. It is expected that the orientation on Experiential Learning/ Hands on Training programme will bring understanding of effective professionalism and practical work experience in real life situation amongst graduating students. It is further hoped that this orientation workshop will develop competence, capability, capacity and high quality entrepreneurial mind-set among the graduates in service and manufacturing sectors to take up self-employment, that will contribute to enhance rural livelihood and food security, sustainability of agriculture and agricultural transformation.

The Experiential learning programme (ELP) on Mushroom Production Technology started as a recommendation in meeting of 5th dean committee. 'Experiential' denotes the interactive involvement based personally determined experience that would turn into innovation finally leading to the development of an entrepreneur resulting in the generation of job provider rather than job seeker.

The students were trained in Bee-keeping and Honey production, processing and product development of maize, fruits and vegetables, processing and preservation, post-harvest management and value addition of mushroom teaching and learning materials for early Childhood education, Aqua Farming, production technology for biofertilizers technology for biofertilizer.

A total of four (04) batches have been passed out under Experiential Learning Programme on Mushrooms until 2021 and currently a batch is undertaking the course in 8th semester of 2022.

In the training theory, students are taught about the mushroom crop house cleaning and maintenance, spawn production, compost preparation methods (long term and ZEPT method i.e., pipe method), spawning of button mushroom, casing of button mushroom, case run, packaging, spawning of oyster and milky mushroom, watering, harvesting, harvest management and issues related to overall management of the mushroom crop. Training practical's consists button crop production, oyster crop production and milky mushroom crop production chiefly. Under laboratory work, students get trained to maintain pure culture, mother culture and commercial spawn of *Agaricus*, *Pleurotus*, *Calocybe*, *Lentinula* and *Volvariella* sp. on their own along with the tissue culture techniques. This course includes the development of mushroom products and their processing. Students prepare mushroom products under the guidance of Course instructor and make them ready for sale after proper packaging.

After the establishment of Mushroom Unit at Tirhut College of Agriculture, Dholi in 2019 the first batch in 2019-20 commenced under Experiential Learning Programme on Mushroom Production Technology with a total no. of 23 students, enrolled from batch 2016-17 of 8th semester. Similarly in 2020-21, a total of 27 students enrolled themselves from batch 2017-18 and completed the training successfully. Now presently, a massive strength of 74 students is enrolled from batch 2018-19. A revolving fund of Rs. 1.0

Lac has been generated and the routine expenses of the ELP unit of Mushroom are met from it.

In this Mushroom ELP program, the share distribution of students and the department is 75% and 25% respectively. If four products namely Mushroom Samosa, Mushroom Biscuit, Mushroom Bhujia and Mushroom Laddu are prepared along with Mushroom Spawn.

ELP program is a focused part in the Under Graduate course curricula of the University training the final year 8th semester students so that they can have practical knowledge of what agripreneurship is all about and can be benefitted with it. ELP on Mushroom Production Technology encompasses the mushroom cultivation techniques for Button, oyster and milky mushroom. However, the students since enrolled in the winter semester (after 3rd week of January) get a comparatively lesser time (winter semester binds up classes by the end of May) to learn mushroom cultivation techniques for button and milky in practical.

So, there is a humble submission that the session for ELP must commence from monsoon semester (July to December) in order to practically have season suitable for cultivation of all three major mushrooms i.e., Oyster, Milky and Button mushroom.

The Experiential Learning Programme on "Production Technology for Biofertilizers" started in 2019 by upgrading the Biofertilizer Production Unit of Department of Soil Science, TCA, Dholi with the financial support of Rs. 52.10 Lakh from ICAR in 2019. This unit is actively involved in production of carrier based as well as liquid biofertilizer and have a good setup of laboratory to meet production requirement of two lakh packet (@200g) and biofertilizer research work. This unit have Sterilization laboratory, Media preparation laboratory, Bacterial culture laboratory, Fermentation laboratory, Production Lab., Quality Control Lab., Biowaste disposal Unit & Storage Unit.

Major Skills Imparted during training

- Basic concept of handling instruments of microbiology laboratory.
- SOP for Fermenter and horizontal autoclave.
- Basic concept of media preparation for isolation, purification and storage of Rhizobium, Azotobacter, Azospirillum, Phosphate Solubilizing Bacteria, Blue Green Algae and Azolla culture.
- Preparation of mother culture and mass culturing techniques of bacterial culture for biofertilizer formulation and cfu testing for the quality control in batch fermentation.
- Sieving and sterilization of carrier materials in 50 kg batches.
- Mixing of liquid bacterial culture with carrier materials in standard ratio.
- Packing technique, labelling and stalking for curing of bacterial biofertilizer.
- Techniques of seed treatment, root treatment and tuber/planting material treatment.
- Maintenance of records for stock, marketing and sale.
- Marketing skill and dissemination of technology via stall in Kisan mela.
- Skill for packaging, sealing and labelling of Liquid Biofertilizer.
- SOP for liquid biofertilizer production.
- Culturing technique for Azolla and sporulation technique

for long term storage as inoculum.

- Culturing technique for Blue Green Algae and preparation of soil-based inoculum and their storage.
- Production of mycorrhiza in small scale.
- Composting Technique and production of Bio-enriched Compost.
- Hands on training on village level liquid biofertilizer production for Rhizobium, Azotobacter and Phosphate Solubilizing Bacteria

Students were learning in the center as part of practical courses before 2019. After that ELP module has started.

Success Story of Mushroom Entrepreneur

As an Agriculture graduate he had seen many entrepreneurs in agriculture and allied sectors. But most influencing one and growing market was of Mushrooms as it was blooming in low input and small space with no seasonal constraint. So, he decided to enter into mushroom business after seeing the proper market in July, 2015 Initially (Firm name 'Mushrooms Basket'), he started with button mushroom in winters and then further added oyster and milky mushroom in subsequent seasons.

He became a role model for nearby youths and agriculture landless labors. For the very first crop, he bought spawn from the Advance Centre of Mushroom Research, RPCAU, Pusa and then, past an year of establishment of his mushroom crop production unit, he purchased all the essential equipment like autoclave, laminar air flow, BOD incubator and Refrigerator for Spawn Production Laboratory.

Starting from a seasonal low cost thatched mushroom crop hut house, now the mushroom entrepreneur, Nityanand Kumar runs a massive mushroom enterprise which not only brings wealth and recognition to him but also engages a number of employees into this venture. But, this win win story has lot more to know about the hardships and struggle of Nityanand Kumar. He had faced many problems in initial years like not getting actual price for his mushroom crop due to non-uniform quality, also suffered of varied temperature regimes that influence the production of button mushroom etc. Although, the hardships could have moved him from his path but being an Agrarian he chose to fight back all those adversities and met the Head of Advance Centre of Mushroom Research, Dr. RPCAU, Pusa and PI, AICRP on Mushroom, Dr. Dayaram for his expert guidance who understood the issues and lacuna in the process of mushroom cultivation and resolved the problems faced by him.

Also faced the marketing problems in Covid-19 situation but further it had solution with different post-harvest products like Mushroom bhujia, namkeen, pickle and biscuits, this solution not only saved him from loss but also additional income from the different products was generated.

After one and half Years of start to this enterprise he had 4500 Bags of mushroom, providing employment to 10 labours permanently (may engage 15-17 labors more as per required) and annual turnover of Rs. 7 lacks which included the sale of different post-harvest products of mushrooms as well.

Success story of Honey Production

The *Apis mellifera* ideal apiary was established during 2019-20 at TCA, Dholi under ELP on Beekeeping & Honey Production for B.Sc. (Ag) degree programme for final year students. About 100 Langstroth beehive with 800 frame (8

frame x 100 hives) were procured and started Apiary at Dholi. Other equipment of beekeeping were also purchased. Mean time the building was also renovated. The theory and practical classes were arranged under the ELP offered by 27 students. The students were allotted colonies for handling but at the mean time due to lockdown were sent to their home. The Apiary was managed by the ELP team and extracted 700 kg raw litchi honey during lockdown period. The raw honey was processed at University Apiary from 20 to 24 April 2020 @ Rs. 7/- per kg. The processed litchi honey was packed in 1 kg and 500 g glass bottles. After that, during the month of May, 2020, colonies were migrated to Kannujar (Ramjannagar), Darbhanga for production of jamun honey. About 150 kg of raw jamun honey was extracted, processed at University Apiary and packed in 1 kg and 500 g glass bottles.

During 2020-21. the theory and practical classes were arranged under the ELP offered by 35 students. Since at the beginning of semester, the colonies were present at Khamhar, Begusarai for the production of mustard honey, a field visit of students was arranged for practical exposure. Thereafter, the students were participated in Kisan Mela organized by university from 7th -9th February under the theme "Atmanirbhar Gaon: Swabilambi Kisan" in which the stall of ELP on Beekeeping and Honey Production, TCA, Dholi received Second Prize. The students were allotted colonies for handling and trained regarding management of colonies, preparation of sugar syrup for artificial feeding, identification of disease and enemies, preparation of frame etc. But at the mean time students were sent to their home due to lockdown.

The Apiary was managed by the ELP team and extracted honey from Van Tulsi, Drumstick and Litchi flora during lockdown period. The raw honey was processed at University Apiary @ Rs. 7/- per kg and packed in glass bottles of 1 kg and 500 g. After that, during the month of May, 2021, colonies were migrated to Kanujar (Ramjannagar), Darbhanga for production of jamun honey. The production of jamun honey was affected because of extreme rain fall and flooding situation.

Success Story of Farmers Solution Entrepreneur

Amit Kumar, resident of West Champaran district, Narkatiaganj, he did his B.Sc. Agriculture in 2015 from Dr. Rajendra Prasad Central Agriculture University and worked as an advisor in Kisan Call Center. In order to give advice to the farmers, when the farmers used to ask him from where will I get the chemical which is mentioned, for the first time he thought of creating a platform where farmers can get their inputs along with advice. In 2017 he left the Kisan Call Center and joined the development sector in which he could understand their reality problem by not being among them. Then in 2018 he again did MBA Rural Management in Dr. Rajendra Prasad Central Agriculture University and at the same time, on 17 April 2020, with the help of his professor, he put his project in Bihar Start-up, for this he was sent to DMI Patna for incubation on 18 August 2020, but due to Corona protocol, his incubation started from December 2020 and got certified on 4 June 2021. On April 2021 he had joined Assistant Technician Manager Atma Shivhar District. After meeting in September, when he left the job in December 2021, except his family members, his friends society started seeing him as a shopkeeper. he also had to go to the department a lot to get a pesticide license. he still lack a team due to which his speed is very slow. Till now, he is constantly

trying to create a platform in the agriculture sector, which will prove to be very effective for the society.

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