*Guidelines for*

# Experiential Learning - Setting up of Facilities for Hands on Training

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**EDUCATION DIVISION**
**INDIAN COUNCIL OF AGRICULTURAL RESEARCH**
**NEW DELHI – 110 012**

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## 1. Preamble

*"Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand"* (Confucius, 450 BC).

*Higher agricultural education system in India has provided technically qualified human resource that played the fundamental role in radical transformation of agriculture – what is fondly called Green Revolution. With time the problems confronted by agriculture changed but the quality of human resource produced by the system did not adjust to the changed demand. Consequently, shortage of graduates in many new areas and persistent production of graduates in areas of weak demand coexist. This misaligned focus and impassivity to match the skill and knowledge profile of graduates with the emerging realities has diminished the relevance and utility of agricultural education for employability. The contemporary labour market is not able to absorb large proportion of graduates and postgraduates churned out by the system. Rising unemployment, typically among agricultural graduates, has become a common phenomenon along the length and breadth of the country. Efforts are, therefore, necessary to attune agricultural education curriculum and its delivery to overarch the present day needs and future demands of job markets with quality of agricultural graduates.*

*An analysis of the emerging job markets suggests that employment in public sector is declining and that in private industrial agriculture (production, processing and value addition in all its aspects) and service sector (input supply, banking, consultancy, IT and advisories) is rising. This development demands that agricultural graduates should have: (i) knowledge and skills in industrial agriculture to get absorbed in the fast expanding agro-industry or (ii) entrepreneurial spirit to set up an enterprise independently on production agriculture and advisory services. Above all, they need to be professionals who possess confidence and competence to analyze an agricultural problem and are able to suggest solutions to alleviate it. Whether it is employment with the private sector or the intent is to launch a self-managed professional venture the future graduates must be taught in new subject areas and exposed more and more to learning by practice in real life situation of a field, factory or engineering workshop.*

*It is in pursuit of hands on training, a scheme on creating facilities for establishing experiential learning farms, model plants, engineering workshops, veterinary and plant clinics has been launched during the X Plan. Agricultural Universities on invitation from Education Division submitted proposals on this programme. On review of the proposals, thus received, it was found that these did not adequately address the needs of learning in diverse subject areas of relevance and utility. It, thus, became clear to develop conceptual framework, instructions and guidelines for establishing these ventures and details on practical training. Visionary guidelines presented in this note are aimed to enhance understanding of the Scheme objectives and for providing pragmatic material to the Universities to take necessary steps towards conceptualizing, planning, implementation, monitoring and continued improvements for sustainable success of the scheme.*

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## 2. Concept

*The prevailing syllabus of agricultural education produces graduates seeking white-collar jobs in government departments. Their skill and knowledge capabilities do not fill the requirements of growing private sector. Also they lack confidence and competence to undertake self-employment ventures leading to sustainable development of agriculture or setup agribusiness to support rural-based services. In summation, present-day agricultural education produces degree holders and not hard-core professionals who can anticipate and analyze real life work and field problems and provide solutions on their management. Neither they are confident enough to pursue self-employment. For cultivating professionalism, it is necessary to build practical skills and entrepreneur spirit by making appropriate shifts in course curricula and emphasizing hands on training in life-size situations. In pursuance of the goal on reorienting agricultural education for employability, initiatives are underway to modernize course curricula. Still more important is to create necessary infrastructure for experiential learning.*

*The concept of experiential learning follows a cyclic pattern of integrated learning from Experience through Reflection and Conceptualising to Action and on to further Experience (Pickels on the web). The cyclic pattern of learning is, therefore, constituted of four steps i.e. (i) basic instruction on what student will be learning, (ii) delivery of critical content of the chosen subject of learning, (iii) hands on training or learning by doing and (iv) integration of what is accomplished during hands on training including marketing of the end product of learning for economic benefit (Kolb, 1984). In general, appreciation for experiential learning is more of rhetoric in the existing undergraduate course curricula. Above all, facilities for learning by experience or hands on training across agricultural universities are either non-existent or if exist are in a very rudimentary stage of development.*

*During X Plan, ICAR has sponsored a scheme on experiential learning. It involves setting up of instructional farms for production (crop, animal and fish) agronomy, model plants for food processing and value addition for product diversification and engineering workshops for manufacturing, operation and maintenance of farm machinery and equipments. The major intent of the scheme is to backstop student involvement in learning in the life size environment of experimental farms, model plants and engineering workshops.*

*Once the multi-learning facilities are developed, it will be mandatory for the undergraduate students to take practical training in any of the two areas of employable vocations. The bottom line is learning by experience and learning for professional development. Each area of experiential learning will follow a holistic time schedule, which means learning from assemblage of inputs to sale of what is produced. Each learning activity is projected to last for a period of three to four months subject to 4$^{th}$ Deans Committee Recommendations. In case a programme requires more time for completion, two programmes may run concurrently for six months with appropriate time apportioning.*

*Institutional training will be supplemented by placement of students in private/ public farms, factories or engineering workshops for a period of two to three months as the 4$^{th}$ Deans Committee may recommend. The training programmes would also involve lectures*

*by subject matter specialists on technology, communication skills, business management, quality standards and government policies on rural development programmes and credit institutions. This way the training will infuse and strengthen conceptual learning with technologically advanced practices for field applications. In totality, each training is seen to build practical skills and business management knowledge in all aspects of a vocation from production to consumption and beyond. It will last for one year. On-going rural application work experience (RAWE) programme will be appropriately modified and merged in this scheme. The intent of new look RAWE would be to supplement and complement practical training in instructional farms, model plants or engineering workshops.*

## 3. Objectives

*Broad objective of the Programme is to guarantee learning opportunity to the undergraduate students through integration of basic knowledge and conceptual aspects with hands on training and practice in a real life work environment. It also aims to instill greater confidence, competitiveness and competence among the graduates to meet needs of private sector and to undertake self-employment in vocations of their choice. The specific objectives are as given below.*

*- To induct hands-on training for undergraduate students in agriculture and allied sciences as part of the course curriculum.*

*- To cultivate capabilities suiting emerging job markets and build entrepreneurship spirit and business management competence among students in that they are able to create employment for themselves and others.*

## *4. Scope*

*The scope of the Programme would include hands on training in pre-selected vocations. It would involve creation of facilities in the form of instructional farms, model plants or engineering workshops. The training programme would lean heavily on practice in technologically advanced methodologies for production of agricultural crops, fruits, vegetables, ornamental, medicinal, aromatic, forest plants including fiber and fuel crops etc. It would also engage students in integrated farming systems consisting of production of fish, poultry, livestock for milk, eggs, meat and wool, and processing for value added products etc. The other avenues of practical training would include internships in private industrial houses, technology transfer and rural development programmes. The practical exposure would also involve students in preparation of project feasibility and implementation reports, proper methods and procedures for maintenance of records including inventory of materials, maintenance of accounts, and management of the enterprise.*

*As narrated above, RAWE would be modified appropriately to strengthen the proposed scheme on experiential learning through practice in actual work environment of a field, processing plant or engineering workshop.*

## 5. Placing of the Training Programme

*As conceived currently, the hands-on training would be offered during third year (fifth and sixth semester) of the four-year U.G. Programme. It would be preceded by exposure of a student to modified RAWE. This arrangement would enable familiarization with the input supply, production, processing and marketing problems confronted by the rural areas. Thus, besides RAWE, during third year two hands on training programmes of six months duration (ideally of three months each) would be required to be completed by every student. The periods as mentioned above would be applicable subject to 4th Deans Committee Recommendations. In addition, an internship attachment would be made with a public development programme or private production/processing industry. Actual arrangement and modalities of hands on training and distribution of time would be finalized once the recommendations of the Fourth Deans' Committee become available and are accepted for implementation.*

## 6. Adjustment of Existing Course Programme

*Installing the Hands-on Training Programme in the U.G. curricula would call for redesigning of the course programme to make way for the new Programme. It would call for placing some of the courses under the category of "Electives", some others to be merged with similar courses offered in other semesters, and few others would need to be phased out. This exercise would take a concrete shape after the availability and acceptance of Fourth Deans' Committee recommendations.*

## 7. Credit Hours for the Training Programmes, RAWE and Industrial Training

*Tentatively, the hands-on Training may be given a weightage of 8 credit hours per Programme. Thus, for two Programmes to be completed by each student, the weightage would be 16 credit hours. RAWE and Internship Training would also have a weightage of 8 credit hours each. Again final decision on allocation of credit hours for each segment of experiential learning will be made in consonance with Fourth Deans' Committee recommendations.*

## 8. Evaluation of the Performance of Students and Grading

*Performance of the students in the Training Programme would be evaluated by the In-charge faculty based on: (a) work quality, (b) acquired knowledge and expertise, (c) attendance, (d) maintenance of records, (e) report, (d) demonstration and presentations in seminars and (v) worth of tangible outcome.*

## 9. Number of Trainees and Budgeting for Learning Facilities

*The number of trainees to be registered under one Programme would be about 20. It, therefore, works out that for a batch of 100 students, a total of five Experiential Learning Programmes would need to be operated during a Semester. What it really means is that a university should ideally set up five individual learning activities. In order to remain within the budgetary limits, three of such activities may be new and the remaining two may be through up-gradation and updating of existing facilities. The costs may clearly identify items needing strengthening and fresh purchases. In either case, link with the areas of*

*training and full justification for establishing/ acquiring new facilities, equipments etc. will speed up approvals. This is a competitive grant scheme and only those programmes, which justify relevance and utility for experiential learning, will be supported.*

## *10. Faculty and their Responsibilities*

*Faculty for running the Training Programmes would be selected out of the available faculty in the University. For each specific Training Programme, a group of three faculty members would be assigned. The composition would be: one Lead Faculty and Two Associate Faculty members. Also, there would be provision to invite Guest faculty who could be from within or outside the University. Assigned university faculty and associate faculty, apart from delivering basic theoretical lectures, would also have the responsibility for arranging various facets of hands on training with all materials and standard methods, guiding the trainees, evaluating their performance and award of grades.*
*Fundamentally, excellent teaching faculty must be assigned the task of imparting hands on training. It is recognized that excellent teachers besides having basic qualities like class management, subject brilliance and skills of teaching, are well organized (measuring up to deadlines and expectations) in their day to day work, have holistic understanding of the learners' needs, cultivate affective bond with the students and are uniquely gifted with ability to motivate and energize learning (**rvallance@nd.edu.au** ). In order to build up these attributes and capability to handle effectively experiential learning classes, organization of specific and special training for teachers is recommended very strongly.*

*Apart from delivering subject domain lectures and guidance during hands on training, faculty would also be responsible for developing appropriate manuals and guidelines before start of the Programme. These manuals should also contain information on the sources of necessary machinery, raw materials, safety procedures, product grading and sanitary and sanitary and phyto-sanitary standards, packaging, marketing of the produce and processed products and maintenance of proper accounts for cost and benefit sharing.*

## *11. Grouping of the Programmes*

*The hands-on Training Programmes may be grouped under different subject categories. It would facilitate selection of any two Programmes by the students belonging to various undergraduate course streams. The following broad subject groups/themes for experiential learning are suggested:*

***(A) Agricultural Production Technologies***
***(B) Value Addition Technologies***
***(C) Engineering Technologies***
***(D) Technical Support Services***
***(E) Integrated Technologies***

*These programme themes would be further sub-divided into specific subject areas for learning. The exact selection of subjects by the Universities should be based on a self-conducted training need assessment study, which inter alia should also consider specific problems of the area, basic facilities available with the University, faculty specialization and HRD initiatives for its up-skilling, availability of space, employment value of the programmes, ready market for the raw produce and manufactured goods, availability of infrastructural support like electricity, roads and communication etc.*

*List of subject domains for training outlined below is only suggestive and by no means it is claimed to be exhaustive. Accordingly, universities may add other programmes as per regional needs, their strengths, and relevance. As suggested earlier, to begin with, a university at the maximum may propose setting up five programmes drawn under broad themes. A student may select two out of the five vocational subjects available for experiential learning.*

***(A) Agricultural Production Technologies*** *(including agricultural crops, fruits, vegetables, flowers, agro-forestry, medicinal and aromatic plants, fibre and bio-fuel crops)*

*Model farm for crop and seed production,*
*Nurseries for vegetable, fruits and agro-forestry (including tissue culture technologies)*
*Orchard establishment*
*Model farm for production of ornamental, medicinal and aromatic plants*
*Protected cultivation (greenhouse production technology)*
*Organic farming systems etc.*

***(B) Value Addition Technologies*** *(including warehousing and cold storage management and maintenance, grading, processing and packaging)*

*Model Agro-Processing Centre for processing of grains, oilseeds, fruits and vegetables, spices and condiments, natural fibre products, products from forest produces, animal products (dairy products, poultry, fish, meat and wool products) etc.*

### *(C) Engineering Technologies*

*Manufacture of farm machinery and equipment,*
*Maintenance and custom hiring of farm machinery and equipment (including land leveling, bund forming etc.),*
*Setting up and maintenance of irrigation systems, farm ponds and watersheds*
*Dairy plant*
*Production and management of alternative/ renewable sources of energy*
*Poly-house construction and maintenance etc.*

### *(D) Technical Support Services*

*Soil, water, plants, fertilizers, insecticides-pesticides, and seed testing services and advisories*
*Veterinary clinics*
*Nurseries and crèches for toddlers and kids*
*Quality control and management of raw and processed foods*
*Credit institutions and development programmes etc.*

### *(E) Integrated Farm Technologies*

*Integrated farming for production of crops, livestock and fish*
*Production and Processing of mushrooms, honey, silk, lac etc.*
*Organic manure production in all its aspects*
*Dry granulation (compaction) for synthesis of poly-nutrient fertilizers etc.*

## 12. Experiential Learning Farm, Processing plant, Engineering workshop - Size and Design

*Area of the training farms (crop, dairy, fish and support agri-businesses), capacity of the processing plants and engineering workshops will be such that these are able to sufficiently accommodate use and application of latest techniques and technologies, machinery and production systems for the orderly conduct of training and subsequent practice by a group of 20 students at a time. Also, the size would be such that it represents real-life situations, ensures economies of scale and profitability of operations.*

*The model plant will be designed by experts in the University with the help of suppliers of the equipment and facilities. Adequate space will be made available for easy working and holding of practice sessions by at least a group of 20 students. Besides availability of a reasonably good building, the plants will have facilities for electricity, water, and compressed air as and when required and gas connection. A standby generator of adequate capacity will also be installed for smooth running of the model plant and uninterrupted training of the students. Also, adequate instrumentation would be available with each Training Facility for taking observations such as climatic parameters, weight of produce and products, flow rate of materials, packaging, moisture contents, color and other quality parameters. Additionally, the work area will have good facilities for drainage of used water and proper ventilation and light system.*

*All the Plants would have systems laid for control of insect-pests, rodents and birds. For storage of the raw materials and supplies as well as the finished products, adequate storage space including cold store facility will also be available. The Plants will be so designed that besides serving as training facility for the students, these would be used for research purposes, vocational training as well as for renting out to the interested government and private organizations during lean periods.*

## 13. Programme Allotment to the Students and Grading

*Subject to approved recommendations of the Fourth Deans' Committee, at the end of 2nd year all undergraduate students will be required to submit their applications in prescribed format for their choice of the two vocations that they prefer to get trained in. The allotment will be made according to the CGPA of the candidate for the desired vocation. Lists will be drawn and displayed for allotment of students to different training facilities well in advance. It would facilitate the students to collect literature on the subject and get ready for the training well before time.*

*Preference may be given to the students of different U.G. degree programmes in the following manner.*

*Agriculture, Horticulture, Forestry and Fisheries: Programmes (as listed on pre-page) under the groups "A", "B", "D", and "E".*
*Agricultural Engineering: Programmes under the groups "B", "C", "D", and "E".*
*Home Science: Programmes under the groups "B", "D", and "E".*
*Dairy Engineering/ Dairy Technology and Food Technology: Programmes under groups "B", "C", and "D".*
*Agri. Marketing, Banking & Cooperation: Programmes under groups "B", "D", and "E".*
*Sericulture: Programme under the groups "A", "B", "D", and "E".*

*Assigned faculty for a programme will grade performance of the Trainees on a 10-point scale having eight credit hours for each training programme. The level of satisfaction of the trainees and their feedback on the training will also be monitored through a system of pre-designed questionnaire.*

## *14. Sharing of Profits and Losses*

*The entire scheme of experiential, wherever appropriate, would follow the already established system of "earn while you learn". In such programmes, a proper system of accounting would be followed and maintained and managed by the students. Net profits generated by each group of the trainees will be shared as follows.*

*Team Members (trainees) take away 50% of the profits.*
*Faculty (associated with the conduct of the programmes) shares 10% of the profits.*
*"Central Training Fund" of the University gets 20% of the profits.*
*Associated staff shares 10% of the profits.*
*Remaining 10% of the profits would be used for development of facilities and replacement of old facilities.*

*Losses if any will be borne by the "Central Training Fund". Any loss making unit will be subjected to thorough scrutiny by a team of experts and recommendations will be drawn for future corrective measures to minimize recurrence of losses.*

## *15. Costing of Infrastructure and other Items for Support*

*While it is necessary to justify every item on which ICAR support is asked for, the budgetary requirements may be broadly presented into following sub-heads year-wise (2005-06 and 2006-07):*

*Up-gradation and strengthening of facilities*
*Equipments and machinery – requiring modernization and fresh purchases*
*Training and consultancy and*
*Running costs and contractual support*

*Details on costs and other programme details may be presented as outlined in the Annexure*

**Annexure**

# Model Performa for Experiential Learning

1. Name of the experiential learning unit proposed
2. Location with address
3. Name of the nodal officer of this unit
4. Scope and Objectives

(Please justify scope for skill learning and employability)

5. Infrastructure required with cost
6. List of equipment / machinery required
7. Other infrastructure facilities required with cost

(such as storage space / cold storage facility / power supply equipments, etc may be listed along with the cost

8. Recurring contingency required

(Please attach list of raw materials / chemicals / glass wares as the case may be)

9. Give the list of prospective private enterprises with which partnership is proposed
10. Total budget required
11. Attach a brief profile of the core faculty with reference to this programme
12. Any other information

Note: In case of col. no 5-8, please ensure actual costing taking into consideration of prevalent rates.

**Proforma of AUC in respect of Experiential Learning Unit**

Reference No. Grant sanctioned vide letter No. : 2( )/ 200 - EPD

Audit Utilization certificate in respect of the scheme entitled : **Experiential Learning Programme on**

For the period :

Name of the University :

| **Year** | **Opening balance for the year brought forwarded from the previous year** | **Remittance by the council during the year** | **Council's share of receipts released from the scheme during the year** | **Actual expenditure for the year** | **Council's share of sanctioned grant for the year** | **Council's share of expenditure actually incurred and audited during the year** | **Closing balance at the end of the year** |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | Works | | | | | | |
| | Equipments | | | | | | |
| | Recurring Contingencies | | | | | | |

Certified that the expenditure under various heads had been audited and the grant has been spent for the purpose it was granted.