*Indian Journal of Agricultural Sciences* **87** (6): 785–91, June 2017/Article
https://doi.org/10.56093/ijas.v87i6.70995

# Comprehensiveness of Experiential Learning Programme of Indian Council of Agricultural Research (ICAR) implemented in Indian Agricultural Universities

BUSHE LEKANG[1], M S NAIN[2] and RASHMI SINGH[3]

*ICAR-Indian Agricultural Research Institute, New Delhi 110 012*

Received: 12 October 2016; Accepted: 8 December 2016

ABSTRACT

Education, either formal or non-formal has been viewed as the pillar for human development. Central to the education system is the curriculum which determines what is taught, how it is taught what resources are needed for attaining its objectives. Indian Council of Agricultural Research introduced a programme in 2006 on Experiential Learning Programme aimed at equipping undergraduates with entrepreneurial skills. Alongside the programme, a curriculum was developed to instill entrepreneurial knowledge, attitudes, skills and culture among agricultural undergraduates. This has study undertaken to evaluate the performance of comprehensive Experiential Learning Programme curriculum. The curriculum has been in vogue since a decade hence its evaluation comes at a rightful time. An exploratory research study was conducted in six purposively selected agricultural universities in North India among students and a desk review aimed at finding out how comprehensive the curriculum was. Findings revealed that majority of students were aged between 20 and 24 years, first born, rural background, general caste and males except for home science which had 100% females. Course content was generally perceived to be relevant and adequate. The credit hours showed that the curriculum emphasized on both knowledge and skills development. The courses with the curriculum provided basic knowledge and skills on management, economic concepts, communication, marketing, technology, numeracy, legal aspect, support system and research skills which are needed for entrepreneurship development. To continue instilling entrepreneurial knowledge, skills and attitudes among agricultural graduates the curriculum should therefore be maintained.

**Key words**: Course relevance, Course content adequacy, Course credit hours, Entrepreneurial knowledge and skills,

The growth and development of any society and the development of human resource occurs mainly through education (Singh 2012). Katyal and Bisht (2005) opined that 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 are they confident enough to pursue self-employment. Increasing job markets in private industrial agriculture need graduates who have entrepreneurial spirit and the capacity to independently set up enterprises in the areas of production agriculture and advisory services. They further pointed out that the prevailing syllabus of agricultural education produces graduates seeking white-collar jobs in government departments and are not confident enough to pursue self-employment. Singh (2012) advocated that there was need for agricultural education to respond to the requirements of employment, food security, poverty, economic growth and sustenance of the natural resource quality.

In an effort to reorient agricultural education for employability, Indian Council of Agricultural Research (ICAR) developed and launched a programme named Experiential Learning Programme to facilitate learning by experience for professional development. In pursuit of hands on training, a scheme on creating facilities for establishing experiential learning farms, model plants, engineering workshops, veterinary and plant clinics was launched during the tenth five-year plan in 2006 (Katyal and Bisht 2005). The units named Experiential Learning Units (ELU) are aimed at promoting entrepreneurship, knowledge and marketing skills through meaningful hands on experience and working in project mode, from assembling inputs to sale of what is produced. The programme is mandatory to undergraduate students in Agricultural Universities and offered during the final year. Through the programme it was envisaged that basic knowledge and conceptual aspects will be integrated with hands-on training and practice in a real life work environment, leading to more confident, competitive and competent graduates to meet the needs

[1]Former Ph D Scholar, Present Address: Agriculture Lecturer (e mail: bushelekang@gmail.com),Serowe College of Education, Botswana. [2]Senior Scientist (e mail: msnain@gmail.com), [3]Principal Scientist (e mail: rashmi.iari@gmail.com), Division of Agricultural Extension.

of private sector and self-employment (Katyal and Bisht 2005). Entrepreneurship is guided by forces which include demographic factors, new technologies, training in field of entrepreneurship, development of the internet and globalization. The largest group within a population that is able to identify business opportunities and contribute to the development of entrepreneurship comprises of 25 to 40 years age group (Burduº 2010).

The content and curriculum of a program are usually the focal point of its design since other categories revolve around them and they tend to have a strong relationship with the outcomes a program aims to deliver (Valerio *et al.* 2014). Entrepreneurial skills development according to Anho (2011), goes beyond training and education, it involves a process of human capacities building through formal and or informal training inculcating in the entrepreneur basic skills such as financial, technical, creative, managerial, intellectual, marketing, communication and technological skills. Common areas that could be included in the curriculum according to Valerio *et al.* (2014) include general business skills, socio-emotional skills, and entrepreneurial awareness and business plan development. Charneyand Libecap (2000) described entrepreneurship education as an integrative educational experience which involved the study of enterprise creation and the development of business plans allow students to integrate accounting, economics, finance, marketing and other business disciplines. Provision of more practical, appropriate and discovery-based learning experiences to students was necessary to help graduates to optimally acquire the desired learning outcomes which enable them to become entrepreneurial (Sasidhar and Reddy 2012). Participants in high-exercise groups were found to perceive themselves to have learned more than those in low-exercise groups because of the experiences in their groups (Kurtz 1998).

Yiyang *et al.* (2013) found that students in Shanghai the most entrepreneurial knowledge they wanted to learn was start-up business management, technological management, laws and regulations, and finance management, with slight interest in marketing and support policy for entrepreneurship. They therefore recommended an entrepreneurship education curriculum system comprising of cross-discipline and cross-specialty course or credit platform, implying that students could cross over to other disciplines to take courses they require and be awarded credits for them.Clements and Cord (2013) however noted that higher education programmes weremore focused on acquisition ofknowledge rather than practice of knowledge which should be the centralpoint in experiential learning programmes.

The suitability of courses offered under Experiential Learning Programme (ELP) of Indian Council of Agricultural Research has not been determined. The present study has been undertaken to find out how comprehensive the courses offered in Experiential Learning Programme are, with the view to determine the possibility of replicating the programme in other socio cultural and geographical areas and document the strengths of the curriculum along with suggestive improvements.

## MATERIALS AND METHODS

An exploratory research study was conducted in six purposively selected agricultural universities in five places from four states in North India namely Punjab, Uttar Pradesh, Haryana and Uttarakhand. The universities used were Punjab Agricultural University (PAU) and Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana; Chaudhary Charan Singh Haryana Agricultural University (CCSHAU), Hisar; GovindBallabh Pant University of Agriculture and Technology (GBPUAT), antnagar; Sardar Vallabh Bhai Patel University of Agriculture and Technology (SVBPUAT), Meerut; Chandra Shekhar Azad University of Agriculture and Technology (CSAUAT), Kanpur.

Nine units from all the universities were used, made up of two units each from CSAUAT, GADVASU, and PAU, while CCHAU, GBPUAT and SVBPUAT had one unit. The units were discipline based henceforth the names of disciplines will be used instead of the units themselves. All students from the sampled unit who had gone through the programme, Masters of Science first year students in their respective disciplines, were used as respondents as well as the teachers within the discipline who were engaged in the programme. A total of 140 students and 40 teachers from all the universities were sampled. Students rated courses offered under Experiential Learning Programme on five-point Likert rating scales set as 1 = Highly irrelevant; 2 = Irrelevant; 3 = Not sure; 4 = Relevant and 5=Highly relevant for relevance and 1 = Very inadequate 2 = Inadequate 3 = Not sure 4 = Adequate; 5 = Very adequate for adequacy. A desk review of the curriculum as prescribed by Indian Council of Agricultural Research (2007) and Veterinary Council of India (2008) was undertaken to assess the number of credit hours available for theory and practical in each discipline. The knowledge and skills acquired from the different subjects offered under the programmewere categorized. The knowledge and skills were broadly categorized into economic, communication, marketing, management, technology, numeracy, legal aspects, support system and research. The data was analyzed using descriptive statistics such as frequencies, percentages and arithmetic mean. Non-parametric tests, Kruskal-Wallis and Mann-Whitney tests were used for comparing means (Kothari 2004). Qualitative analysis was also used.

## RESULTS AND DISCUSSION

Table 1 show that the majority of students (63% and above) from seven disciplines wereaged between 20 and 24 years. In most disciplines the respondents were mainly males (63% and above) except for home science which had 100% females. The respondents from at least four disciplines were mainly first born (50% and above), from rural background (57.9% and above) and general caste (57.9%). Demographic factors in general have been reported as a driving force for entrepreneurship, and in particular

Table 1 Personal characteristics of students - discipline and university-wise

| | PAU | | | | GADVASU | | | | CCSHAU | | SVBPUAT | | GBPUAT | | CSAUAT | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Hort (n=20) | | Ag. Eng. (n=20) | | Vet. Sc. (n=19) | | LPM (n=10) | | H. Sc. (n=16) | | Ag. Proc. (n=15) | | H. Sc. (n=13) | | Hort.(n=13) | | Pl. Prot. (n=14) | |
| | f | % | f | % | f | % | f | % | f | % | f | % | f | % | f | % | f | % |
| *Age* | | | | | | | | | | | | | | | | | | |
| 20-24 | 19 | 95.0 | 15 | 75.0 | 12 | 63.2 | 4 | 40.0 | 12 | 75.0 | 7 | 46.7 | 10 | 76.9 | 11 | 84.6 | 13 | 92.9 |
| 25-29 | 1 | 5.0 | 5 | 25.0 | 7 | 36.8 | 6 | 60.0 | 1 | 6.3 | 6 | 40.0 | 3 | 23.1 | 2 | 15.4 | 1 | 7.1 |
| 30 + | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 3 | 18.8 | 2 | 13.3 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| *Sex* | | | | | | | | | | | | | | | | | | |
| Male | 9 | 45.0 | 14 | 70.0 | 19 | 100.0 | 6 | 60.0 | 0 | 0.0 | 10 | 66.7 | 0 | 0.0 | 10 | 76.9 | 10 | 71.4 |
| Female | 11 | 55.0 | 6 | 30.0 | 0 | 0.0 | 4 | 40.0 | 16 | 100.0 | 5 | 33.3 | 13 | 100.0 | 3 | 23.1 | 4 | 28.6 |
| *Birth order* | | | | | | | | | | | | | | | | | | |
| 1.00 | 10 | 50.0 | 8 | 40.0 | 6 | 31.6 | 4 | 40.0 | 10 | 62.5 | 10 | 66.7 | 10 | 76.9 | 2 | 15.4 | 4 | 28.6 |
| 2.00 | 8 | 40.0 | 8 | 40.0 | 8 | 42.1 | 4 | 40.0 | 2 | 12.5 | 5 | 33.3 | 3 | 23.1 | 9 | 69.2 | 8 | 57.1 |
| 3.00 | 2 | 10.0 | 3 | 15.0 | 4 | 21.1 | 2 | 20.0 | 4 | 25.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 14.3 |
| 4.00 | 0 | 0.0 | 1 | 5.0 | 1 | 5.3 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 15.4 | 0 | 0.0 |
| *Background* | | | | | | | | | | | | | | | | | | |
| Rural | 15 | 75.0 | 8 | 40.0 | 11 | 57.9 | 4 | 40.0 | 7 | 43.8 | 6 | 40.0 | 6 | 46.2 | 10 | 76.9 | 12 | 85.7 |
| Urban | 5 | 25.0 | 12 | 60.0 | 8 | 42.1 | 6 | 60.0 | 9 | 56.3 | 9 | 60.0 | 7 | 53.8 | 3 | 23.1 | 2 | 14.3 |
| *Caste* | | | | | | | | | | | | | | | | | | |
| SC | 3 | 15.0 | 3 | 15.0 | 6 | 31.6 | 0 | 0.0 | 0 | 0.0 | 9 | 60.0 | 0 | 0.0 | 3 | 23.1 | 11 | 78.6 |
| B/ward | 3 | 15.0 | 4 | 20.0 | 2 | 10.5 | 0 | 0.0 | 6 | 37.5 | 2 | 13.3 | 0 | 0.0 | 8 | 61.5 | 0 | 0.0 |
| Gen | 14 | 70.0 | 13 | 65.0 | 11 | 57.9 | 10 | 100.0 | 10 | 62.5 | 4 | 26.7 | 13 | 100.0 | 2 | 15.4 | 3 | 21.4 |

the age group of 25-40 years having the highest potential for identifying opportunities (Burduº 2010).

*Relevance and adequacy of courses:* students were requested to rate courses offered to indicate on separate scales their relevance and adequacy.

*Relevance of courses*: Table 2 shows that all the courses were generally perceived to be relevant (mean= 3.69-4.17). The set of courses could to provide learners with appropriate knowledge for entrepreneurship development, which is in accordance with findings by Ineme and Arikpo (2013) that the entrepreneurship curriculum developed skills in individuals to handle business affairs, provided understanding of the economic activities as well as awareness of business activities making it relevant for entrepreneurship development. Students could have rated the relevance of statistics and computer application as "not sure" possibly due to their failure to see the application of such courses as stated by Clements and Cord (2013) that higher education programmes focused more on acquisition of knowledge rather than practice of knowledge which should be the central point in experiential learning programmes.

*Adequacy of course content:* Table 2 shows that the content of all the courses was generally perceived to be adequate (mean= 3.59-3.91) except for Business Management (mean=3.41) which means they were not sure of its adequacy. Esene (2015) found contents of the Entrepreneurship Development Education curriculum courses in Nigeria to be adequate towards meeting entrepreneurial skills implying that it enabled the graduates to acquire entrepreneurial knowledge and skills needed for self-employment. The results indicate that the respondents were possibly not satisfied with what was being offered under Business Management course. Business management was found to be one of the most entrepreneurial knowledge that students wanted to learn (Yiyang *et al.*, 2013).

*Comparison of perceived relevance and adequacy on the basis of discipline*: Significant differences were observed in perceived relevance and adequacy for Introduction to Economics, while Business Management showed significant differences on perceived adequacy, and Statistics on perceived relevance (Table 4). The course content in various disciplines could be handled differently hence making students perceive the relevance and adequacy of the courses differently. The differences among other factors could be due competence of the teachers handling the courses.

*Comparison of perceived relevance on the basis of demographic characteristics*: Table 5 shows that there were significant differences for perceived relevance of Introduction to Economics with respect to age and caste, and for Statistics with respect to age. This could be because with age individuals tend to fully establish their career line hence they would have higher expectations compared to the younger ones.

*Comparison of perceived adequacy on the basis of demographic characteristics*: Table 6 shows significant differences in perceived adequacy of Business Management

Table 2 Discipline and university wise perceived relevance of courses by students

| Courses | PAU | | GADVASU | | CCSHAU | SVBPUAT | GBPUAT | CSAUAT | | Overall Mean N=140 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Hort (N=20) | Ag. Eng (N=20) | Vet Sc (N=19) | LPM (N=10) | H Sc (N=16) | Ag. Proc (N=15) | H Sc (N=13) | Hort (N=13) | Pl. Prot (N=14) | |
| Introduction to Economics | 3.50 | 3.75 | 3.79 | 5.00 | 3.69 | 3.73 | 3.77 | 2.85 | 3.50 | 3.69 |
| Introduction to Computer Applications | 4.05 | 3.95 | 3.95 | 4.00 | 4.00 | 4.00 | 3.85 | 3.46 | 3.07 | 3.84 |
| Business Management | 3.80 | 3.84 | 3.95 | 4.00 | 4.00 | 3.93 | 3.77 | 3.69 | 4.00 | 3.88 |
| Entrepreneurship Development and Communication Skills | 3.85 | 3.84 | 3.95 | 4.00 | 4.00 | 4.13 | 4.31 | 3.46 | 3.64 | 3.91 |
| Statistics | 4.40 | 3.95 | 4.53 | 4.20 | 4.69 | 4.40 | 3.69 | 4.15 | 3.29 | 4.17 |
| Specialization area | 4.00 | 3.95 | 4.00 | 4.20 | 4.00 | 4.07 | 4.08 | 3.85 | 3.64 | 4.06 |
| Overall | 3.90 | 3.88 | 4.03 | 4.23 | 4.06 | 4.04 | 3.92 | 3.58 | 3.52 | 3.90 |

1 = Highly irrelevant, 2 = irrelevant, 3 = Not sure, 4 = Relevant, 4 = Highly relevant

Table 3 Discipline and university wise perceived adequacy of courses by students

| Courses | PAU | | GADVASU | | CCSHAU | SVBPUAT | GBPUAT | CSAUAT | | Overall Mean N=140 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Hort (n=20) | Ag. Eng (n=20) | Vet Sci (n=19) | LPM (n=10) | H S (n=16) | Ag. Proc (n=15) | H S (n=13) | Hort (n=13) | Pl. Prot (n=14) | |
| Introduction to Economics | 3.75 | 3.55 | 3.74 | 3.80 | 4.31 | 4.27 | 4.00 | 3.23 | 3.79 | 3.82 |
| Introduction to Computer Applications | 3.95 | 3.35 | 3.11 | 4.20 | 3.75 | 3.67 | 3.77 | 3.38 | 3.43 | 3.59 |
| Business Management | 4.10 | 3.15 | 2.26 | 3.40 | 3.19 | 3.60 | 3.69 | 3.69 | 3.88 | 3.41 |
| Entrepreneurship Development and Communication Skills | 3.90 | 4.00 | 3.95 | 3.80 | 4.00 | 4.13 | 4.15 | 3.54 | 4.21 | 3.97 |
| Statistics | 3.85 | 3.95 | 4.26 | 4.20 | 4.25 | 3.93 | 3.38 | 4.23 | 3.64 | 3.97 |
| Specialization area | 4.80 | 4.50 | 4.65 | 4.70 | 4.88 | 4.67 | 4.78 | 4.85 | 4.76 | 4.73 |
| Overall | 4.05 | 3.75 | 3.66 | 4.02 | 4.06 | 4.05 | 3.96 | 3.82 | 3.95 | 3.78 |

1 = Very inadequate, 2 = Inadequate, 3 = Not sure, 4 = Adequate; 5 = Very adequate

Table 4 Testing for significance of perceived relevance and adequacy of course content using Kruskal-Wallis test (Alpha= 0.05)

| Courses | Relevance | | | Adequacy | | |
|---|---|---|---|---|---|---|
| | Mean | $\chi 2$ | Sig. | Mean | $\chi 2$ | Sig. |
| Introduction to Economics | 3.69 | 22.82 | .00 | 3.82 | 15.98 | 0.04 |
| Introduction to Computer Applications | 3.84 | 5.43 | .71 | 3.59 | 11.55 | 0.17 |
| Business Management | 3.88 | 1.21 | .99 | 3.41 | 40.31 | 0.00 |
| Entrepreneurship Development and Communication Skills | 3.91 | 5.40 | .71 | 3.97 | 3.96 | 0.86 |
| Statistics | 4.17 | 26.23 | .00 | 3.97 | 8.84 | 0.36 |
| Specialization area | 4.06 | 1.21 | .99 | 4.73 | 6.07 | 0.64 |

Table 5 Comparison of relevance on personal characteristics (Alpha= 0.05)

| Courses | Age | | Birth order | | Caste | | Sex | Background |
|---|---|---|---|---|---|---|---|---|
| | $\chi 2$ | Sig. | $\chi 2$ | Sig. | $\chi 2$ | Sig. | Sig | Sig |
| Introduction to Economics | 9.45 | .01 | 2.64 | .45 | 6.29 | .04 | .33 | .69 |
| Introduction to Computer Applications | 5.90 | .05 | 2.00 | .57 | .08 | .96 | .79 | .33 |
| Business Management | 4.30 | .12 | .35 | .95 | .74 | .69 | .58 | .73 |
| Entrepreneurship Development and Communication Skills | 2.36 | .31 | 2.44 | .49 | .58 | .75 | .17 | 1.00 |
| Statistics | 10.98 | .00 | 3.67 | .30 | .49 | .78 | .67 | .86 |
| Specialization area | 9.67 | .53 | 5.34 | .25 | .54 | .61 | .42 | .33 |

Table 6 Comparison of adequacy on personal characteristics (Alpha= 0.05)

| | Age | | Birth order | | Caste | | Sex | Background |
|---|---|---|---|---|---|---|---|---|
| | $\chi^2$ | Sig. | $\chi^2$ | Sig. | $\chi^2$ | Sig. | Sig. | Sig. |
| Introduction to Economics | .29 | .86 | 4.00 | .26 | .40 | .82 | .76 | .56 |
| Introduction to Computer Applications | 2.34 | .31 | 4.72 | .19 | .47 | .79 | .44 | .80 |
| Business Management | 10.89 | **.00** | 4.79 | .19 | .24 | .99 | .10 | .16 |
| Entrepreneurship Development and Communication Skills | 1.14 | .56 | 5.09 | .17 | .79 | .68 | .68 | .19 |
| Statistics | 4.51 | .11 | .39 | .94 | 5.28 | .07 | .37 | .89 |
| Specialization area | 3.45 | .35 | 5.32 | .21 | 5.21 | .09 | .12 | .34 |

in relation to age which means the perceived adequacy of the course varies with the of the respondents. The expectations of the older students could to be higher than that of the younger ones due to experience gained over time.

*Credit hour distribution in the various disciplines:* Desk review to assess the number of hours available for theory and practical in each discipline showed that Home Science (58.0%) had the highest credit hours for practical work, followed by Agricultural processing (56.0%) and courses with the least practical hours were Veterinary Science and Livestock Production Management (44.2%). The other courses had almost 50% for practical and theory, which means they give emphasis to both knowledge and skills. Veterinary Science and Livestock Production Management do cover their credit hours in five years while the other courses covered the content in four years. The distribution of credit hours could enable students to acquire practical skills from their respective disciplines which can used in their daily lives as stated Kurtz (1998) that participants in the high-exercise groups felt they had learned more as a result of their group experience than those in low-exercise groups. Provision of more practical, appropriate and discovery-based learning experiences to students was necessary to help graduates to optimally acquire the desired learning outcomes which enable them to become entrepreneurial (Sasidhar and Reddy 2012).

*Curriculum mapping:* Table 8 shows that the curriculum provided basic knowledge and skills related to entrepreneurial development under the courses. The knowledge and skills are managerial, economic, communication, marketing, technology, numeracy, legal aspect, support system and research skills. Entrepreneurship development and Communication Skills provides managerial, support system and communication skills which can help an entrepreneur to run a venture, know where to get help for starting or expanding a venture. Communication skills would help an entrepreneur to know how to share information within the venture, with potential customers and suppliers. The curriculum of the programme draws from a wide range of disciplines therefore allowing students to be well vested with different sets of knowledge and skills required for self-employment. The programme can be said to be integrative as stated by Charney and Libecap (2000) that entrepreneurship education is an integrative educational experience which involved the study of enterprise creation and the development of business plans allow students to integrate accounting, economics, finance, marketing and other business disciplines. Anho (2011) also noted that entrepreneurial skills development go beyond training and education, but are geared towards human capacities building through formal and or informal training inculcating in the entrepreneur basic skills such as financial, technical, creative, managerial, intellectual, marketing, communication and technological skills.

Table 7 Credit hours for course work and experiential learning in the different disciplines

| Discipline | Course work | | Hands-on Training | | In-plant Training | Total Credit hours | | Grand Total ( Percent) |
|---|---|---|---|---|---|---|---|---|
| | Theory | Practical | Theory | Practical | | Theory | Practical | |
| Home Science | 68(40.7%) | 59(35.3%) | - | 20 (12%) | 20 (12%) | 68(40.7%) | 99(58.3%) | 167 (100.0) |
| Horticulture | 71(43.4%) | 49 (30.6%) | 10 (6.25%) | 20(12.5%) | 10 (6.25%) | 81(50.6%) | 79(49.4%) | 160 (100.0) |
| Agricultural Engineering | 87(49.43%) | 49(28.84%) | 4(2.27%) | 11(6.25%) | 25(14.20%) | 91(51.7%) | 85(48.3%) | 176 (100.0) |
| Veterinary Science | 101(55.8%) | 56(30.94%) | - | 20 (11.05%) | 4 (2.21%) | 101(55.8%) | 80(44.2%) | 181 (100.0) |
| Livestock Production Management | 101(55.8%) | 56(30.94%) | - | 20(11.05%) | 4(2.21%) | 101(55.8%) | 80(44.2%) | 181(100.0) |
| Agricultural Processing | 84(44.0%) | 52(27.23%) | 0 | 25(13.09%) | 30(15.71%) | 84 (44.0%) | 107(56.0%) | 191(100.0) |
| Plant Protection | 80(48.19) | 46 (27.71%) | 6(3.61%) | 14(8.43%) | 20(12.05%) | 86(51.8%) | 80(48.2%) | 166 (100.0) |

Table 8 Knowledge and skills under the different theory course content

| Knowledge/Skills | Theory Content | Courses |
|---|---|---|
| Economic concepts | Demand, Supply, Taxes, Market equilibrium, Economic laws, theories | Introductory Economics |
| Communication | Basic documentation skills (reading, writing, listening, oral presentation) | Entrepreneurship Development and Communication Skills |
| Marketing | Marketing channels, market efficiency, market mix, pricing. | Business Management, Experiential Learning Units |
| Management | Environmental Scanning, Planning, Motivation, Social responsibility | Entrepreneurship Development and Communication Skills |
| | -Personnel, Marketing, Resource and Project management, -Organizational principles | Business Management, Experiential Learning Units |
| | -Farm management principles e.g. record keeping, budgeting, product life cycle, | |
| Technology | General- Use of computer and various computer programmes, computer languages, Internet | Introduction to Computer Application |
| | Technical –production methods; Processing into different products, preservation | Specialization areas; Computer Application |
| Numeracy | Basic numeracy; Statistical tools | Elementary Statistics |
| | Financial –statements, ratios | Business Management |
| Legal aspect | Types of venture<br>Import/Export policies | Entrepreneurship Development and Communication Skills |
| | Forms of businesses, International trade | Introductory Economics |
| | Quality standards | Specialization areas |
| | Intellectual Property Rights | Business Management |
| Support System | Policies, Schemes for Small enterprise | Entrepreneurship Development and Communication Skills |
| | Financial institutions, Policies, Schemes for Small enterprise | Introductory Economics |
| Research | Analytical and data presentation skills | Elementary Statistics, Introduction to Computer Application |
| | Project | Specialization areas |

Majority of students were aged between 20 and 24 years, first born, rural background, general caste and males except for home science which had 100% females. Course content was generally perceived to be relevant and adequate. Significant differences in relation to discipline were found in perceived relevance and adequacy for Introduction to Economics, in perceived of relevance of statistic and adequacy of Business management. Perceived relevance of Introduction to Economics was found to vary significantly with age and caste of the students, while statistics varied with age. Perceived adequacy of business management varied significantly with age.Home Science (58.0%) had the highest credit hours for practical work, followed by Agricultural processing (56.0%), Veterinary Science and Livestock Production Management (44.2%) had the least while the other courses had almost 50% practical and theory. The curriculum provided basic knowledge and skills on management, economic concepts, communication, marketing, technology, numeracy, legal aspect, support system and research skills which are needed for entrepreneurship development. The curriculum can therefore be said to be comprehensive as it was perceived relevant and adequate, as well as provided the necessary knowledge and skills for entrepreneurship development and had a fairly large time allocation for students to do practical work.The curriculum can therefore be maintained to continue instilling entrepreneurial knowledge, skills and attitudes among agricultural graduates.

REFERENCES

Burduº Eugen. 2010. Fundamentals of entrepreneurship.*Review of International Comparative Management* **11**(1): 33–42.

Charney A and Libecap G D. 2000. Impact of entrepreneurship education. A Kauffman research series, Kansas city, Missouri.

Clements M David and Cord B Amelia.2013. Assessment guiding learning: developing graduate qualities in an experiential learning programme. *Assessment and Evaluation in Higher Education.***38** (1): 114–24.

Esene Robert A O. 2015. Implementation of entrepreneurship development education curriculum of polytechnic education towards unemployment reduction among graduates of office technology and management in the Nigerian South-South zone. *European Journal of Research and Reflection in Management Sciences* **3** (1): 33–45.

Indian Council of Agricultural Research. 2007. Report on norms, standards, academic regulations and UG curricula and syllabi, Fourth Deans Committee on Agricultural Education in India,

New Delhi.

Katyal J C and Bisht B S. 2005. Guidelines for experiential learning - setting up of facilities for hands on training. Education Division, Indian Council of Agricultural Research, New Delhi.

Kothari C R. 2004. Research methodology: methods and techniques, 2nd edition. New Age International publishers, New Delhi.

Kurtz Robert R. 1998. Structured experiences in groups: A theoretical and research discussion. The Pfeiffer Library, **17**(2). Jossey-Bass/Pfeiffer

Sasidhar P V K and Reddy P G. 2012. SWOT Analysis of veterinary and animal science education in India: Implications for policy and future directions. *Journal of Agricultural Education and Extension.* **18**(4): 387–407.

Singh K P. 2012. Growth and development of agricultural education. *Journal of Library and Information Technology*, **32** (1): 5–14.

Valerio A, Parton B and Robb A. 2014. Entrepreneurship education and training programs around the World dimensions for success. International Bank for Reconstruction and Development, The World Bank, Washington DC. Available from http://dx.doi.org/10.1596/978-1-4648-0202-7

Veterinary Council of India. 2008. Veterinary council of India-minimum standards of veterinary education -Degree course (B V Sc & AH) regulations. Department of Animal Husbandry, Dairying and Fisheries. Ministry of Agriculture, New Delhi.

Yiyang Fan, Xing Zhang and Yuting Qiu. 2013. The state of entrepreneurship education in universities in Shanghai, China: A survey from students' perspective. *Creative Education* **4**(2): 92–97.