Indian Journal of Agricultural Sciences **86** (12): 1536–46, December 2016/Article
https://doi.org/10.56093/ijas.v86i12.65393

Perceived utility of experiential learning programme of Indian Council of Agricultural Research

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Received: 14 March 2016; Accepted: 13 June 2016

ABSTRACT

Youth unemployment is a global concern, attributed among others to lack of appropriate skills. Skills-focused education has been found to be an appropriate tool to fill the void. Indian Council of Agricultural Research heeded to this by introducing a programme in 2006 named Experiential Learning Programme the aim which was to equip undergraduates with entrepreneurial skills. The programme has been running for a decade since its inception, hence its evaluation comes at a rightful time. An ex-post facto study aimed at finding out among students and teachers how useful the programme had been in imparting entrepreneurial skills and competencies as well as to enable students to go through all entrepreneurial education stages was conducted in six agricultural universities in North India. The findings revealed that the programme was perceived useful by both students and teachers in imparting entrepreneurial skills, entrepreneurial competencies and allowed students to go through all stages of entrepreneurial education. Significant differences of usefulness of the programme as perceived by students from different disciplines were noted. Generally there were significant differences on perceived utility on the basis of personal characteristics of respondents, except for students' sex and age. Students had little intention of venturing into self-employment, whereas teachers indicated that none of their graduates had established an enterprise. Even though the programme had been perceived useful in equipping graduates with the necessary entrepreneurial skills and competencies, graduates were not yet motivated to venture into self-employment. Therefore, there is need to review the programme and provide start-up fund at institutions which can assist students to go through all stages of entrepreneurship education as well as lure graduates into self-employment.

Key words: Entrepreneurial skills, Entrepreneurship competencies, Experiential learning programme, Stages of entrepreneurship education, Utility

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. Conceptually, experiential learning follows a cyclic pattern of integrated learning from experience through reflection and conceptualizing to action and on to further experience. 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 10th five year plan in 2006. The units named Experiential Learning Units 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 is 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 of private sector and self-employment (Katyal and Bisht 2005).

Educational programmes, elsewhere have been found to impart positively on the lives of the recipients. Birdthistle *et al.* (2009) found entrepreneurship programme participants to have acquired knowledge and understanding of what was involved in starting and managing a business. According to Kaijage and Wheeler (2013) alongside technical skills and business management skills, entrepreneurial education must also provide personal entrepreneurial skills or "smart skills", as its important learning outcomes in order to be successful entrepreneur. Duval-Couetil *et al.* (2011) concluded that students who took some entrepreneurial courses acquired hands-on skills related to market analysis, technology commercialization, business communication had

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significantly higher entrepreneurial self-efficacy. Clouse *et al.* (2003) observed a significant change in knowledge in market research, product or service design, financial and entrepreneurial thinking among entrepreneurship education program students. Participating in entrepreneurship programme has been found to contribute positively to personal development because of improved communication skills, confidence, decision making, risk taking abilities, negotiation and presentation skills (Birdthistle *et al.* 2009). Lekang and Jibowo (2008) found clients/recipients of an out-of-school programme to have perceived the programme to be more effective than the youth officers/change agents which was attributed to high expectations by the youth officers accruing from high exposure over the years as compared to the youth.

Oosterbeek *et al.* (2008) and Nkang (2013) on the other hand reported that the Entrepreneurial Education Programmes in their respective areas did not have the intended effects. Students' self-assessed entrepreneurial skills were found insignificant while the intention to become an entrepreneur was significantly negative (Oosterbeek *et al.* 2008). Zhou and Xu (2012) reported that less than one per cent of Entrepreneurship Education college graduates in China went for start-ups, while most of them either went to graduate school or preferred job security of working for a large firm or government.

It is yet not known as to how far the objectives of Experiential Learning Programme are met in principle. The present study was undertaken to collect data on the perceived utility of experiential learning units by the students and teachers with the view to determine the possibility of it being replicated in other socio cultural and geographical areas and document the experiences in the form of newer needs along with suggestive improvements.

MATERIALS AND METHODS

An ex-post facto research study was conducted in six purposively selected agricultural universities at five places from four states in North India namely Punjab, Uttar Pradesh, Haryana and Uttarakhand. The universities selected were Punjab Agricultural University (PAU) and Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) in Ludhiana, Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) in Hisar, Govind Ballabh Pant University of Agriculture and Technology (GBPUAT) in Pantnagar, Sardar Vallabh Bhai Patel University of Agriculture and Technology (SVBPUAT) in Meerut, Chandra Shekhar Azad University of Agriculture and Technology (CSAUAT) in Kanpur. This was based on the fact that they had experiential learning programme.

Sampling of units was stratified according to the five subject categories of hands-on training programmes namely Agricultural Production Technologies, Value Addition Technologies, Engineering Technologies, Technical Support Services and Integrated Technologies. At least one unit from all the available functional units was sampled from each subject category across the selected universities. A total of nine experiential units from all the universities were sampled made up of 2 units each from CSAUAT, GADVASU, and PAU, while CCHAU, GBPUAT and SVBPUAT each contributed one unit. The units were discipline based hence the names of disciplines were used instead of the units themselves. All students from the sampled unit who had gone through the programme, enrolled in first year Masters of Science in their respective disciplines, as well as the teachers within the discipline who were engaged in the programme were used as respondents. A total of 140 students and 40 teachers from all the universities were interviewed. Two sets of questionnaire, one for students and the other for teachers were prepared based on the experiential learning programme guidelines and literature review. A set of 30 statements for measuring entrepreneurial skills namely; identifying a business idea, plan for production, management and marketing were prepared. The level of usefulness of the programme in imparting the skills was determined by requesting the respondents to rate the statements on a five-point Likert type rating scale ranging from 1= Very much useful to 5= Not at all useful. Perceived entrepreneurial competencies were assessed basing on 13 entrepreneurial competencies namely initiative, identifying opportunities, persistence, information seeking, and concern for high quality, commitment to work contract, efficiency orientation, systematic planning, problem solving, self-confidence, assertiveness persuasion, influence, monitoring, and concern for employee welfare. Personal Entrepreneurial Competence (PEC) instrument of International Center of Entrepreneurship and Career Development (1988) which consists of a set of 70 statements rated on five-point Likert type ranging from 1 = Not at all developed to 5 = Very well developed, was used. To determine whether Experiential Learning Programme allowed students to go through all Entrepreneurship education stages, respondents were requested to rate 22 statements on a five-point Likert type rating set from 1 = Strongly disagree to 5 = Strongly agree. The data was analyzed using descriptive statistics such as frequencies, percentages and arithmetic mean. Non-parametrictests, Kruskal-Wallis and Mann-Whitney tests were used for comparing means (Kothari 2004).

RESULTS AND DISCUSSION

Usefulness of Experiential Learning Programme

It can be observed from Table 1 that students from Horticulture at PAU, Agricultural Engineering, Home Science at GBPUAT, and Plant Protection were generally not sure (mean =3.0) of the usefulness of the programme, students from the remaining five disciplines perceived the programme useful (mean =2.0). Students could have been satisfied with the way content was covered in class and not necessarily concerned with its practicability as per the expectations of the programme hence they rated it useful.

Teachers were generally not sure (mean=3.0) of the usefulness of the programme in imparting entrepreneurship skills except for Agricultural Engineering and Home Science

Table 1 Discipline and university wise perceived acquisition of entrepreneurial skills by students and teachers

	PAU	GADVASU			CCSHAU	SVBPUAT	GBPUAT	CSAUAT		Overall
	Hort	Ag. Eng	Vet. Sc	LPM	H S	Ag. Proc.	H S	Hort.	Pl. Prot.	mean
Students	(n=20)	(n=20)	(n=19)	(n=10)	(n=16)	(n=15)	(n=13)	(n=13)	(n=14)	N=140
Identifying business idea	3.00	2.80	1.60	2.20	2.40	2.10	2.70	2.75	2.80	2.50
Planning for production	3.10	2.80	1.45	2.40	2.30	2.00	3.10	2.30	2.70	2.50
Production	3.10	2.80	1.60	2.70	2.00	2.30	2.80	2.40	2.70	2.50
Management	3.00	2.90	1.70	2.20	2.20	2.40	2.30	2.30	3.00	2.50
Marketing	3.00	2.80	1.80	2.00	2.50	2.30	2.60	2.20	2.80	2.50
Overall	3.00	2.80	1.60	2.30	2.30	2.20	2.70	2.40	2.80	2.50
Teachers	(n=5)	(n=5)	(n=3)	(n=4)	(n=6)	(n=5)	(n=4)	(n=4)	(n=4)	N=40
Identifying business idea	3.20	2.70	3.20	2.50	2.80	2.60	2.60	2.70	2.70	2.80
Planning for production	2.80	2.40	2.50	2.90	2.20	2.50	3.30	3.30	3.30	2.70
Production	2.70	2.80	2.60	2.90	2.00	2.60	3.00	3.00	3.00	2.70
Management	2.60	2.90	2.40	2.50	2.80	2.60	2.85	2.85	2.85	2.70
Marketing	2.50	2.60	2.70	2.50	2.50	2.60	2.50	2.65	2.65	2.60
Overall	2.70	2.70	2.70	2.70	2.50	2.60	2.90	2.90	2.90	2.70

Scale: 1 = Very much useful, 2 = Useful, 3 = Not sure, 4 = Less useful, 5 = Not at all useful

Table 2 Discipline and university wise perceived development levels of entrepreneurial competency by students and teachers

	PAU	GADVASU			CCSHAU	SVBPUAT	GBPUAT	CSAUAT		Overall
	Hort	Ag. Eng	Vet. Sc	LPM	H S	Ag. Proc.	H S	Hort.	Pl. Prot.	mean
Students	(n=20)	(n=20)	(n=19)	(n=10)	(n=16)	(n=15)	(n=13)	(n=13)	(n=14)	N=140
Initiative	16.95	16.40	18.50	17.60	17.70	17.70	15.69	14.00	14.30	16.60
See opportunities	16.45	17.65	18.60	17.80	16.75	18.70	17.08	16.80	15.90	17.30
Persistence	15.80	16.85	18.80	18.60	18.10	18.30	16.77	15.50	15.50	17.10
Information seeking	17.95	18.75	19.30	19.76	17.10	19.10	17.62	15.80	15.20	18.00
Concern for quality	16.35	17.50	18.80	18.10	17.70	18.30	17.00	16.50	15.40	17.30
Work commitment	16.25	17.15	19.50	17.30	18.20	18.20	17.10	16.80	16.80	17.50
Efficiency	17.00	16.15	18.50	18.20	17.10	18.80	16.60	15.15	14.90	16.95
Systematic plan	16.75	17.65	17.70	19.00	17.30	18.30	16.90	17.00	17.00	17.50
Problem solving	16.00	17.15	17.30	18.70	17.10	17.50	15.80	13.40	14.60	16.40
Self-confidence	17.25	15.95	17.20	18.20	16.10	19.20	16.20	15.85	16.50	16.90
Assertiveness	16.80	15.85	17.40	15.70	16.40	17.20	14.10	14.15	14.90	16.00
Persuasion	15.55	15.55	16.30	15.40	16.00	17.30	15.50	15.38	15.60	15.90
Use of influence	15.40	16.55	17.80	17.80	17.20	18.90	18.10	15.46	15.80	16.90
Overall	16.50	16.90	18.10	18.00	17.10	18.30	16.50	15.50	15.60	16.90
Teachers	(n=5)	(n=5)	(n=3)	(n=4)	(n=6)	(n=5)	(n=4)	(n=4)	(n=4)	N=40
Initiative	16.40	17.40	15.50	17.00	16.20	15.80	15.50	14.50	15.50	16.10
See opportunities	17.80	16.20	17.75	18.00	16.30	17.40	16.00	15.00	16.00	16.80
Persistence	17.40	15.60	16.00	17.00	15.50	15.40	15.25	15.25	15.25	15.80
Information seeking	19.60	19.20	17.75	19.70	18.00	16.20	15.50	15.50	14.50	17.50
Quality concern	17.80	16.40	17.00	18.30	16.00	16.20	16.25	17.25	15.25	16.65
Work commitment	17.60	15.00	17.25	17.70	15.80	15.00	14.00	15.00	16.00	15.60
Efficiency	15.60	15.40	15.50	16.70	15.00	15.40	13.75	14.00	13.00	15.00
Systematic plan	18.40	17.20	19.00	18.30	14.70	16.60	14.50	14.25	14.00	16.30
Problem solving	17.00	15.80	17.25	16.30	16.50	17.00	15.25	16.25	17.25	16.20
Self confidence	18.80	18.20	18.50	17.70	16.50	17.00	15.25	15.50	15.25	17.00
Assertiveness	15.40	15.80	13.25	14.30	16.70	15.20	14.25	15.25	15.75	15.00
Persuasion	16.60	16.40	14.50	17.00	16.50	16.20	14.50	16.50	14.50	15.70
Use of influence	18.80	17.00	18.75	19.00	16.50	16.40	14.25	15.75	14.25	16.60
Overall	17.50	16.60	16.80	17.70	16.20	16.10	14.90	14.95	14.90	16.20

Scale: (0-5) Not at all developed, (5-10) Very little developed,(10-15) Some what developed, (15-20) Well developed and (20-25) Very well developed.

at CCSHAU who rated it as useful (Table 1). Teachers rated the programme useful for skills which can be imparted through their day–to–day teaching like planning for production and production which can be achieved through practical sessions of a normal lesson. The teachers engaged in the programme have been trained in their areas of specialization which they handle along-side the experiential learning programme. Teachers are therefore more competent and confident in handling their areas of specialization than experiential learning programme. As noted by Esene (2015) well trained teachers in entrepreneurship education conversant in both content and appropriate teaching methods were needed in order to impart the right entrepreneurial skills. In the absence of specialized teachers for entrepreneurship education, accountability and commitment towards the programme are also likely to be compromised hence the general "Not Sure" response from the teachers. This could be an indication that practically nothing is taking place as reported by Indian Council of Agricultural Research (2011) that experiential learning programme was not undertaken in food technology due to congested syllabus.

In general students perceived the programme to have been useful than teachers. These results are in accordance with Lekang and Jibowo (2008) who found high perception by clients of a programme as compared to its implementers, which they attributed to a possibility of high expectations from the implementers. They are also in line with Duval-Couetil *et al.* (2011) who found students who took some entrepreneurial courses acquired hands-on skills related to market analysis, technology commercialization, business communication compared to those who did not. Clouse *et al.* (2003) also observed a significant change in students' content knowledge in the areas of market research, product or service design, financial and entrepreneurial thinking among entrepreneurship education program students.

Table 2 shows that students from Home Science at GBPUAT rated assertiveness (mean score =14.10), Horticulture at CSAUAT rated initiative (mean score =14.00), problem solving (mean score =13.40) and assertiveness (mean score =14.20) while Plant Protection at CSAUAT rated initiative (mean score =14.30) as somewhat developed while the rest of the competencies were rated as well developed. Students generally across disciplines (mean score = 15.90-18.00) and within each discipline (mean score =15.50-18.80) perceived themselves to have well developed entrepreneurial competencies.

Teachers from Home Science at GBPUAT perceived work commitment (mean score =14.00), efficiency (mean score =13.75), systematic plan (mean score =14.50), assertiveness (mean score =14.25), persuasion (mean score = 14.50), use of influence (mean score = 14.25) as somewhat developed. Those from Horticulture at CSAUAT perceived efficiency (mean score = 14.00), systematic planning (mean score = 14.25) as somewhat developed. Plant Protection at CSAUAT rated efficiency (mean score = 13.00), systematic plan (mean score = 14.00), and use of influence (mean score = 14.25) as somewhat developed.

In general all the 13 entrepreneurial competencies were perceived as well developed across disciplines and within disciplines by both students and teachers.

Students generally agreed that Experiential Learning Programme allowed them to go through all the stages while teachers agreed that it allowed students to go through basic (mean score =3.81) and competence awareness (mean score = 3.85) stages of entrepreneurship education and were undecided about the other stages (Table 3). Entrepreneurial education stages are more aligned to formal educational levels, at university level therefore the expectation is that students should be able to start up their own ventures after acquiring the necessary knowledge and skills at the lower levels of education (The Consortium for Entrepreneurship Education 2004).

Comparison of perceived usefulness on the basis of discipline

Table 4 shows that there was significant difference and no significant difference for all the skills as perceived by students and teachers, respectively. This means that though the students perceived the programme useful, their opinions varied across disciplines. Since significant differences were noted in perceived usefulness of the programme by students, further analysis was carried out to find out which disciplines had differences and the results are presented in Tables 5, 6, 7 and 8. The analysis showed that Horticulture at PAU differed significantly for all the skills with Veterinary Science and Agricultural Processing, for four skills with Horticulture at CSAUAT excluding identification of a business idea. Significant differences were also noted between Horticulture at PAU and Home Science at CCSHAU on three skills namely planning, production and management, on management skill only for Home Science at GBPUAT and marketing skill for Livestock Production and Management. Agricultural Engineering and Plant Protection did not show any significant difference when compared with Horticulture at PAU. No significant differences were noted between Horticulture and Agricultural Engineering. These are disciplines from the same institution hence the general operations could be the same across disciplines. For the remaining disciplines significant differences were noted in 1-5 competencies.

Perceived utility by Agricultural Engineering students was found to differ significantly with that of Veterinary Science and Agricultural Processing for all skills while for other skills it differed from one discipline to another except for Plant Protection which did not show any difference for all the skills (Table 6). Perceived utility by Veterinary Science students differed significantly with that of Plant Protection and Home Science at GBPUAT for all skills while for other skills it differed from one discipline to another. Perceived utility by Livestock Production and Management students and those in Agricultural Processing was found to differ significantly only for production skill, while the rest of the other disciplines there was no significant difference in relation to all the skills (Table 7).

Table 3 Perceived entrepreneurship education stages students go through in experiential learning programme

	PAU	GADVASU			CCSHAU	SVBPUAT	GBPUAT	CSAUAT		Overall
	Hort	Ag. Eng	Vet. Sc	LPM	H S	Ag. Proc.	H S	Hort.	Pl. Prot.	Mean
Students	(n=20)	(n=20)	(n=19)	(n=10)	(n=16)	(n=15)	(n=13)	(n=13)	(n=14)	N=140
Basic	3.54	4.04	4.33	3.84	3.48	4.11	3.77	3.55	3.53	3.81
Awareness	3.50	3.95	4. 40	4.00	3.69	4.03	3.77	3.65	3.61	3.85
Creative application	3.49	3.87	4.08	3.68	3.41	4.01	3.65	3.40	3.50	3.69
Startup	3.55	3.85	4.03	3.55	3.38	3.92	3.62	3.50	3.55	3.68
Growth	3.55	3.84	3.77	3.84	3.35	4.11	3.68	3.25	3.26	3.63
Overall	3.50	3.90	4.10	3.80	3.50	4.00	3.70	3.50	3.50	3.60
Teachers	(n=5)	(n=5)	(n=3)	(n=4)	(n=6)	(n=5)	(n=4)	(n=4)	(n=4)	N=40
Basic	3.96	4.04	3.80	4.07	3.53	3.00	3.60	3.70	3.50	3.64
Awareness	4.00	4.10	3.88	3.83	3.47	3.20	4.15	4.00	3.80	3.80
Creative application	4.20	3.72	3.50	4.13	3.63	3.32	2.80	3.25	2.70	3.45
Startup	3.80	3.30	3.25	3.58	3.33	3.35	3.15	3.10	3.33	3.32
Growth	4.00	3.87	3.58	3.89	3.78	3.47	3.20	2.90	3.30	3.56
Overall	4.00	3.80	3.60	3.90	3.50	3.30	3.30	2.30	2.30	3.60

Scale: 1 = Strongly disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly agree

Table 4 Testing for significance of perceived for usefulness of the programme by students and teachers using Kruskal-Wallis test

	Students (n=140)			Teachers (n=40)		
	Mean	χ^2	Sig.	Mean	χ^2	Sig.
Entrepreneurial skill						
Identifying business idea	2.49	32.05	0.00	2.80	1.36	1.00
Planning for production	2.46	40.09	0.00	2.73	13.72	0.09
Production	2.48	34.44	0.00	2.69	11.90	0.16
Management	2.47	28.09	0.00	2.72	2.15	0.98
Marketing	2.46	23.74	0.00	2.56	1.23	1.00
Entrepreneurial competency						
Initiative	16.64	38.43	0.00	16.10	5.02	0.76
See opportunities	17.33	38.43	0.00	16.80	6.16	0.63
Persistence	17.11	38.43	0.00	15.83	3.59	0.89
Information seeking	18.02	38.43	0.00	17.48	18.81	0.02
Quality concern	17.32	38.43	0.00	16.65	5.29	0.73
Work contract commitment	17.50	21.14	0.01	15.58	8.86	0.35
Efficiency	16.95	21.14	0.01	14.98	8.17	.42
Systematic plan	17.46	21.14	0.01	16.28	17.27	.03
Problem solving	16.41	21.14	0.01	16.23	9.18	.33
Self-confidence	16.90	21.14	0.01	16.98	9.14	.33
Assertiveness	15.97	21.14	0.01	14.98	9.41	.31
Persuasion	15.87	6.75	0.56	15.70	6.77	.56
Use of influence	16.93	6.75	0.56	16.58	12.85	.12
Entrepreneurship education stages						
Basic	3.81	20.59	0.01	3.64	5.27	0.73
Competence awareness	3.85	19.72	0.01	3.80	4.97	0.76
Creative application	3.69	11.82	0.16	3.45	12.55	0.13
Startup	3.68	8.78	0.36	3.32	5.38	0.72
Growth	3.63	13.97	0.08	3.56	5.65	0.69

(Alpha =0.05).

Table 8 shows that there were no significant differences between Home Science at CCSHAU and each of the four disciplines it was compared with. Significant differences were observed between Agricultural Processing and Home Science at GBPUAT in relation to four skills namely identifying business idea, planning, production and management skills. Other differences were noted between Agricultural Processing and Plant Protection for identifying

Table 5 Comparing perceived utility by horticulture students at PAU with each of the other disciplines using Mann-Whitney test

	PAU	GADVASU		CCSHAU	SVBPUAT	GBPUAT	CSAUAT	
	Ag Eng	Vet Sc	LPM	H Sc	Ag Proc	H S	Hort	Pl Prot
Entrepreneurial skill								
Identifying business idea	0.35	0.00	0.10	0.15	0.00	0.28	0.57	0.59
Planning	0.42	0.00	0.16	0.04	0.00	0.96	0.01	0.12
Production	0.29	0.00	0.25	0.00	0.01	0.27	0.04	0.34
Management	0.94	0.00	0.14	0.01	0.02	0.04	0.01	0.77
Marketing	0.43	0.00	0.03	0.16	0.02	0.28	0.02	0.82
Entrepreneurial competencies								
Initiative	0.46	0.03	0.51	0.24	0.30	0.09	0.01	0.01
See opportunities	0.09	0.01	0.18	0.72	0.01	0.39	0.62	0.77
Persistence	0.10	0.00	0.00	0.01	0.00	0.39	0.68	0.85
Information seeking	0.56	0.14	0.00	0.35	0.31	0.39	0.04	0.01
Concern for quality	0.24	0.01	0.20	0.22	0.04	0.90	0.90	0.26
Work contract commitment	0.17	0.00	0.56	0.03	0.02	0.51	0.57	0.57
Efficiency	0.26	0.15	0.37	0.96	0.09	0.65	0.11	0.04
Systematic planning	0.28	0.22	0.04	0.46	0.09	0.76	0.76	0.74
Problem solving	0.18	0.07	0.02	0.35	0.06	0.41	0.03	0.20
Self confidence	0.14	0.90	0.37	0.26	0.02	0.19	0.17	0.69
Assertiveness	0.34	0.41	0.27	0.81	0.61	0.01	0.04	0.09

(Alpha =0.05).

Table 6 Comparing perceived utility by agricultural engineering students with each of the other disciplines using Mann-Whitney test

	GADVASU		CCSHAU	SVBPUAT	GBPUAT	CSAUAT	
	Vet Sci	LPM	H S	Ag Proc	H S	Hort	Plant Prot
Entrepreneurial skills							
Identifying business idea	0.00	0.10	0.15	0.00	0.28	.57	.59
Planning for production	0.00	0.16	0.04	0.00	0.96	.01	.12
Production	0.00	0.25	0.00	0.01	0.27	.04	.34
Management	0.00	0.14	0.01	0.02	0.04	.01	.77
Marketing	0.00	0.03	0.16	0.02	0.28	.02	.82
Entrepreneurial competencies							
Initiative	0.01	0.18	0.06	0.08	0.24	0.02	0.03
Sees opportunities	0.20	0.88	0.27	0.35	0.50	0.28	0.03
Persistence	0.00	0.03	0.02	0.10	0.39	0.15	0.14
Information seeking	0.47	0.02	0.63	0.19	0.25	0.03	0.01
Concern for Quality	0.03	0.95	0.46	0.56	0.21	0.27	0.02
Work contract commitment	0.00	0.75	0.20	0.25	0.57	0.99	0.93
Efficiency	0.00	0.04	0.00	0.20	0.43	0.41	0.17
Systematic planning	0.92	0.18	0.44	0.74	0.48	0.52	0.51
Problem solving	0.69	0.14	0.54	0.99	0.06	0.01	0.04
Self confidence	0.09	0.06	0.00	0.94	0.87	0.90	0.57
Assertiveness	0.06	0.48	0.27	0.67	0.01	0.18	0.34

(P =0.05).

business idea skill, while there was no difference between Agricultural Processing and Horticulture at CSAUAT. The remaining disciplines showed no significant differences except between Home Science at GBPUAT and Horticulture at CSAUAT for planning skill.

The differences in perceived usefulness of the programme in imparting the various skills and competencies in different disciplines as presented in Tables 5, 6, 7, and 8 could be due to differences in implementation of the programme in terms of teaching methods employed by teachers and time devoted to the programme by the different disciplines in the various universities. Lepoutre *et al.* (2010) noted that the effectiveness of a program was dependent on how intense and experiential it was. Differences in culture in different states could also have led to differences in perceptions. The programme has been

Table 7 Comparing perceived utility by Veterinary Science and Livestock Production and Management students with other disciplines

	Veterinary science						Livestock production and management				
	GADVASU	CCSHAU	SVBPUAT	GBPUAT	CSAUAT		CCSHAU	SVBPUAT	GBPUAT	CSAUAT	
	LPM	H Sc	Ag Proc	H S	Hort	Pl Prot	H Sc	Ag Proc	H S	Hort	Pl Prot
Entrepreneurial skill											
Identifying a business idea	0.27	0.04	0.01	0.00	0.00	0.00	0.68	0.65	0.40	0.38	0.38
Planning for production	0.85	0.09	0.00	0.00	0.00	0.00	0.86	0.12	0.75	0.29	0.29
Production	0.00	0.91	0.00	0.00	0.01	0.00	0.11	0.02	0.14	0.06	0.06
Management	0.91	0.37	0.02	0.01	0.08	0.00	0.47	0.56	0.81	0.06	0.06
Marketing	0.57	0.10	0.06	0.01	0.04	0.00	0.89	0.62	0.78	0.29	0.29
Entrepreneurial competencies											
Initiative	0.38	0.61	0.15	0.00	0.00	0.00	0.66	0.98	0.07	0.01	0.01
Sees opportunities	0.23	0.02	0.84	0.02	0.08	0.00	0.52	0.24	0.74	0.45	0.10
Persistence	0.84	0.37	0.20	0.00	0.00	0.00	0.59	0.43	0.02	0.02	0.01
Information seeking	0.02	0.03	0.76	0.04	0.01	0.00	0.00	0.01	0.00	0.00	0.00
Concern for quality	0.09	0.51	0.08	0.01	0.04	0.00	0.89	0.40	0.21	0.17	0.01
Work contract commitment	0.03	0.09	0.03	0.00	0.01	0.01	0.70	0.57	0.88	0.74	0.80
Efficiency	0.74	0.04	0.45	0.00	0.00	0.00	0.31	0.50	0.10	0.02	0.01
Systematic planning	0.04	0.59	0.49	0.31	0.47	0.26	0.03	0.44	0.03	0.07	0.04
Problem solving	0.18	0.83	0.86	0.02	0.00	0.01	0.17	0.31	0.01	0.00	0.01
Self confidence	0.25	0.16	0.01	0.16	0.13	0.65	0.15	0.77	0.10	0.10	0.19
Assertiveness	0.04	0.26	0.71	0.00	0.01	0.02	0.48	0.10	0.15	0.45	0.67

(P=0.05).

Table 8 Comparison of perceived utility by students from the remaining other disciplines

	Home Science (CCSHAU)				Ag. Processing (SVBPUAT)			Home Sci. (GBPUAT)		Hort (CSAUAT)
	SVBPUAT	GBPUAT	CSAUAT		GBPUAT	CSAUAT		CSAUAT		CSAUAT
	Ag Proc	H S	Hort	Pl Prot	H S	Hort	Plant Prot	Hort	Pl. Prot	Plant Prot
Entrepreneurial skill										
Identifying business idea	0.68	0.65	0.40	0.38	0.02	0.07	0.02	0.84	0.65	0.87
Planning	0.86	0.12	0.75	0.29	0.00	0.32	0.07	0.03	0.24	0.40
Production	0.11	0.02	0.14	0.06	0.02	0.68	0.45	0.45	1.0	0.40
Management	0.47	0.56	0.81	0.06	0.82	0.75	0.06	0.76	0.09	0.06
Marketing	0.89	0.62	0.78	0.29	0.29	0.96	0.12	0.29	0.58	0.09
Entrepreneurial competencies										
Initiative	0.52	0.03	0.00	0.00	0.00	0.00	0.00	0.20	0.30	0.83
See opportunities	0.04	0.85	0.98	0.29	0.04	0.10	0.00	0.69	0.12	0.52
Persistence	0.83	0.04	0.02	0.01	0.00	0.01	0.00	0.26	0.40	0.87
Information seeking	0.07	0.88	0.29	0.10	0.06	0.01	0.00	0.26	0.14	0.79
Concern for quality	0.95	0.31	0.37	0.04	0.02	0.06	0.00	0.65	0.16	0.49
Work contract commitment	1.00	0.14	0.42	0.36	0.09	0.44	0.35	1.0	0.94	0.94
Efficiency	0.03	0.37	0.08	0.06	0.00	0.00	0.00	0.29	0.12	0.87
Systematic planning	0.25	0.62	0.75	0.53	0.13	0.22	0.12	0.96	0.98	0.91
Problem solving	0.65	0.12	0.01	0.07	0.01	0.00	0.01	0.13	0.72	0.58
Self confidence	0.01	0.85	0.78	0.50	0.01	0.00	0.03	0.92	1.0	0.49
Assertiveness	0.45	0.03	0.10	0.21	0.00	0.03	0.06	0.72	0.4	0.65

(P = 0.05).

infused into a four year degree programme, the expectation being to complete the four year degree course content in three years and proceed into experiential learning programme during the final year. Agricultural courses are usually loaded with content and highly practical, which makes it practically impossible to successfully complete a

four year programme in three years given the standard curriculum used by the Agricultural Universities creating high competition among teachers in their respective areas of specialization.

Comparison on the basis of demographic characteristics of respondents

Students: Table 9 shows that significant differences were observed for all the perceived entrepreneurial skills relation to sex, as well as for management and marketing skills in relation to age. For perceived entrepreneurial competencies significant differences were noted for initiative, persistence and information seeking in relation to age, significant difference was noted for opportunity seeking in relation to sex. Significant differences in relation to sex and background were noted for basic stage of entrepreneurship education. Birth order, caste and background therefore did not have any influence in perceptions of the students.

Teachers: Table 10 shows that no significant differences perceived entrepreneurial skills, entrepreneurial competencies and entrepreneurship education stages in relation to all the teachers' personal characteristics. This indicates that teachers irrespective of their personal characteristics perceived the programme in the same way.

Graduates' self-employment intentions and adequacy of duration of programme

Students: Results in Table 11 below reveal that the size of working groups mainly ranged between 11 to more than 16 per group for five disciplines, followed by 6 to10 which are too big for meaningful learning to occur through experiential learning. The big working groups do not allow full participation of all learners in a group as well as close monitoring of their activities hence groups of five is normally recommended (Hannon and Lonappan 2013). The respondents did not have prior training, meaning that the perceived skills and competencies acquired would have been gained through the programme. Role models have been found to increase entrepreneurial intention, but the respondents indicated that they had none; hence their entrepreneurial intentions are likely to be low. Majority of students, more than 50% across the various disciplines had no intention of venturing into self-employment after completing their studies except for those from Veterinary Science and Home Science (GBPUAT) which showed that half of the students were interested in self-employment while the other half was not. The general view about the duration of the programme was that the allotted time was enough.

Table 9 Perceived Utility on the basis of different students' personal characteristics

	Age	Birth order			Caste		Sex	Background
	χ^2	sig	χ^2	Sig	χ^2	sig	sig	sig
Entrepreneurial skills								
Identifying a business idea	4.31	0.12	0.36	0.95	2.94	0.23	0.00	.33
Planning for production	3.82	0.15	1.14	0.77	1.14	0.57	0.00	.41
Production	1.26	0.53	2.41	0.49	0.09	0.96	0.00	.33
Management	10.28	0.01	0.93	0.82	0.39	0.82	0.01	.84
Marketing	9.42	0.01	2.13	0.55	0.71	0.70	0.00	1.00
Entrepreneurial competencies								
Initiative	6.36	0.04	.28	0.96	0.46	0.80	0.22	.34
See opportunities	4.59	0.10	1.40	0.70	1.05	0.59	0.04	.47
Persistence	7.35	0.03	2.33	0.51	1.90	0.39	0.59	.23
Information seeking	6.88	0.03	0.84	0.84	2.09	0.35	0.33	0.23
Concern for quality	1.66	0.44	0.91	0.82	.10	0.95	0.34	0.11
Work contract commitment	2.27	0.32	2.07	0.56	1.78	0.41	0.54	0.69
Efficiency	5.37	0.07	1.81	0.61	1.52	0.47	0.34	0.31
Systematic planning	3.18	0.20	4.53	0.21	1.81	0.41	0.18	0.42
Problem solving	0.80	0.67	2.02	0.57	2.90	0.24	0.63	0.22
Self confidence	4.94	0.09	4.12	0.25	0.41	0.82	0.08	0.56
Assertiveness	2.15	0.34	1.67	0.64	2.42	0.30	0.50	0.95
Persuasion	1.19	0.55	2.21	0.53	3.77	0.15	0.45	0.34
Use of influence	3.39	0.18	0.27	0.97	0.05	0.98	0.78	1.00
Entrepreneurship education stages								
Basic	7.05	0.03	4.93	0.18	1.02	0.60	0.00	0.02
Competence awareness	8.49	0.01	3.28	0.35	6.07	0.05	0.47	0.95
Creative application	6.27	0.04	4.29	0.23	1.40	0.50	0.23	0.23
Startup	6.39	0.04	2.63	0.45	3.50	0.17	0.12	0.10
Growth	2.56	0.28	3.81	0.28	0.47	0.79	0.97	0.92

(Alpha = 0.05)

Table 10 Perceived utility on the basis of different teachers' personal characteristics

	Age		Years of experience		Caste		Sex	Background
	χ^2	Sig	χ^2	Sig	χ^2	Sig	Sig	Sig
Perceived entrepreneurial skills								
Identifying a business idea	1.51	0.47	0.00	0.97	0.99	0.61	0.88	0.41
Planning for production	0.47	0.79	0.63	0.43	0.01	0.99	0.88	0.88
Production	1.50	0.47	1.60	0.21	0.28	0.87	0.88	0.95
Management	1.09	0.58	0.99	0.32	0.42	0.81	0.70	0.59
Marketing	1.37	0.51	0.06	0.81	1.32	0.52	0.93	0.80
Perceived entrepreneurial competencies								
Initiative	1.35	0.51	0.27	0.60	3.15	0.21	0.91	0.69
See opportunities	0.94	0.63	0.44	0.51	8.98	**0.01**	0.52	0.69
Persistence	0.73	0.69	.00	0.97	3.78	0.15	0.86	0.73
Information seeking	2.22	0.33	1.20	0.27	4.13	0.13	0.36	0.86
Concern for quality	7.45	0.02	.24	0.62	2.66	0.27	0.07	0.95
Work contract commitment	2.68	0.26	.09	0.77	2.77	0.25	0.26	0.74
Efficiency	3.63	0.16	2.58	0.11	1.71	0.43	0.53	0.79
Systematic planning	1.88	0.39	2.49	0.12	8.96	0.01	0.28	0.19
Problem solving	1.78	0.41	2.77	0.10	2.82	0.24	0.65	0.85
Self confidence	1.89	0.39	2.00	0.16	4.62	0.10	0.42	0.10
Assertiveness	5.60	0.06	0.96	0.33	.70	0.71	0.68	0.79
Persuasion	.010	0.95	0.03	0.86	2.15	0.34	0.54	0.93
Use of influence	1.92	0.38	0.46	0.50	6.79	0.03	0.36	0.56
Perceived entrepreneurial education stages								
Basic	0.91	0.64	0.00	0.99	2.44	0.30	0.61	0.35
Competence awareness	2.37	0.31	0.29	0.87	1.18	0.54	0.22	0.44
Creative application	0.00	0.99	0.60	0.74	0.91	0.63	0.43	0.61
Startup	0.83	0.66	0.15	0.93	0.79	0.67	0.58	0.43
Growth	0.63	0.73	0.10	0.95	1.23	0.54	0.48	0.40

(Alpha = 0.05).

Table 11 Entrepreneurship related students' personal attributes and opinion on adequacy of programme duration

	PAU		GADVASU						CCSHAU		SVBPUAT		GBPUAT		CSAUAT			
	Hort. (n=20)		Ag. Eng (n=20)		Vet Sci. (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	%
Size of working group																		
<5	3	15.0	3	15.0	18	95.0	0	0.0	2	13.0	7	46.0	6	46.0	1	8.0	1	7.0
6-10	2	10.0	3	15.0	1	5.0	4	40.0	1	6.0	4	27,0	3	23.0	7	54.0	2	14.0
11-15	5	25.0	4	20.0	0	0.0	6	60.0	3	19.0	4	27.0	4	31.0	2	15.0	0	0.0
>16	10	50.0	10	50.0	0	0.0	0	0.0	10	63.0	0	0.0	0	0.0	3	23.0	11	79.0
Previous training																		
Yes	0	0.0	0	0.0	13	68.0	2	20.0	1	6	5	33	1	8.0	4	31.0	5	36.0
No	20	100.0	20	100.0	6	32.0	8	80.0	15	94	10	67	12	92.0	9	69.0	9	64.0
Role model																		
Yes	0	0.0	1	5.0	0	0.0	0	0.0	0	0.0	0	0.0	4	31.0	2	15.0	5	36.0
No	20	100	19	95.0	19	100	10	100	16	100	15	100	9	69.0	11	85.0	9	64.0
Intention to venture into self-employment after completing																		
Yes	3	15.0	7	35.0	10	53	2	20.0	4	25.0	6	40.0	7	54	2	15.0	2	14
No	17	85.0	13	65.0	9	47	8	80.0	12	75.0	9	60.0	6	46	11	85.0	12	86
Time allotted enough																		
Yes	15	75.0	15	75.0	8	42.0	8	80.0	8	50.0	9	60.0	8	62.0	9	69.0	9	64.0
No	5	25.0	5	25.0	11	58.0	2	20.0	8	50.0	6	40.0	5	38.0	4	31.0	5	36.0

Table 12 Usefulness of programme and students venturing into self-employment

	PAU		GADVASU						CCSHAU		SVBPUAT		GBPUAT		CSAUAT			
	Hort. (n=20)		Ag. Eng (n=20)		Vet Sci. (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	%
Graduates established enterprises																		
Yes	2	40.0	2	40.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
No	3	60.0	3	60.0	4	100	3	100	6	100	5	100.0	4	100.0	4	100.0	4	100.0
Usefulness of programme																		
Yes	5	100.0	5	100	4	100	3	100	6	100.0	5	100.0	4	100.0	4	100.0	4	100.0
No	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Time allotted enough																		
Yes	3	60.0	4	80.0	2	50.0	2	66.7	4	66.7	5	100.0	4	100	4	100.0	4	100.0
No	2	40.0	1	20.0	2	50.0	1	33.3	2	33.3	0	0.0	0	0.0	0	0.0	0	0.0

Teachers: According the results in Table 12, all teachers irrespective of their discipline indicated that none of their graduates had ventured into self-employment, except for Punjab Agricultural University where 40% of the teachers indicated that there were some graduates who had established some enterprises. The teachers also indicated that the programme was generally useful for imparting entrepreneurship skills and its duration was enough. The one year experiential learning programme duration, even though considered enough is highly likely to be sacrificed into completing the main curriculum content to ensure that learners master the content than teaching an add-on subject which is highly learner centered. Overall it is clear that the programme has not been able to lure graduates in to self-employment as per the objective which is in line with findings by Oosterbeek *et al.* (2008) who observed significantly negative intention by students to become entrepreneurs. The results contradict the perceived entrepreneurship education stages which showed that through experiential learning programme students went through all the stages. In essence therefore the students did not go beyond the creative application stage.

Students perceived the programme to be useful while teachers were not sure of its usefulness in imparting entrepreneurship skills. In the absence of specialized teachers for entrepreneurship education, accountability and commitment towards the programme are also likely to be compromised hence the general "Not Sure" response from the teachers. Both students and teachers perceived students' entrepreneurial competencies as well developed and perceived the programme as allowing students exposure through all the stages of entrepreneurship education. Significant differences and no significant differences were found for both perceived entrepreneurship skills and entrepreneurial competencies by students and teachers respectively in relation to discipline. Significant differences as perceived by students between disciplines varied from skill–to–skill which could be due to differences in implementation. Generally there were on significant differences on perceived utility on the basis of personal characteristics of respondents, except for students' sex and age in which differences were observed in perceived entrepreneurship skills and educational stages respectively. Students had very little intention of venturing into self-employment and teachers indicated that none of their graduates had established any enterprise. Even though the programme has been useful it has not been able to encourage graduates into self-employment. The programme need to be reviewed and a start-up fund at institute level may be created which may be availed by the graduates willing to venture into self-employment on loan basis.

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