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A Scale to Measure the Perception of Graduates towards Student READY Programme

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

A scale was developed to measure the perception of graduates towards Student READY Programme (SRP). The Likert's summated rating scale was followed in the construction of scale. Based on the review of literature and discussion with the expert's, 49 statements were enlisted. The relevancy rating were sent to 160 scientists and extension specialists working in research institutes

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of Indian Council of Agricultural Research (ICAR) and State Agricultural University (SAU) for critical evaluation of statements on a 5 point continuum. Out of 160 judges 66 responded within a period of one month. Based on their judgment 40 statements were isolated in the first stage of screening by finding the relevancy weightage scores. Statements having relevancy weightage of more than 0.70, relevancy percentage of more than 70 per cent and mean relevancy score of more than 3.70 were considered for final selection. By this process, 32 statements were isolated in the first stage of screening, which were suitably modified and rewritten wherever applicable. Eight statements were added as per the comments of experts. Thus finally 40 statements were selected for item analysis. In item analysis the selected statements were administered to 80 agriculture graduates of non-sample area of Tamil Nadu and Karnataka. Finally a total of 28 statements were selected for the study based on 't' values (> 1.75) resulted from the item analysis and were included in the final scale. The 'r' value of the scale was found to be 0.922, which was highly significant at one per cent level indicating the high reliability of the scale. Hence, the scale developed was found to be reliable and valid. The instrument developed to measure the perception of graduates towards Student READY Programme (SRP) can be used by the researchers.

Keywords: Agriculture; graduates; perception; scale construction and student READY programme; dairy technology.

1. INTRODUCTION

The Indian Council of Agricultural Research (ICAR) recommended Student Rural Entrepreneurship Awareness Development Yojana (READY) programme and it was launched by Hon'ble Prime Minister of India Shri. Narendra Modi on July 25th, 2015 in the AU's of the country [1]. The programmehas been introduced for one complete year in the last year of the degree programme for UG education in the disciplines of agriculture agricultural engineering, biotechnology, community science, dairy technology, food technology, forestry, fisheries, horticulture and sericulture since 2016-2017.This program aims to equip final-year undergraduates with the necessary skills and knowledge to become successful entrepreneurs in the agricultural sector [2].

As a crucial component of program evaluation and enhancement, researchers sought to delve into the perceptions of individuals who had completed agricultural education and participated in the SRP. This exploration extends beyond the surface, encompassing the collective beliefs, opinions, and attitudes of graduates towards the programme relevance, effectiveness, benefits, and its overall impact on their preparedness for careers or further education in the agricultural domain [3-5]. Studying the perception endeavors to contribute valuable feedback and insights, steering the continuous refinement of the Student READY Programme (SRP).Hence, the research was taken with an objective to develop and standardized a scale to measure the perception of graduates towards SRP.

2. METHODOLOGY

The present study was carried out from80 agriculture graduates of non-sample area of Tamil Nadu and Karnataka through Google forms. The method suggested by the Likert [6] in developing summated rating scale was used to construct the perception scale. The details of the procedure followed and standardization of the scale to measure the perception of graduates towards SRP.

2.1 Identification of Components

As a first step, the available literature on SRP was collected from different sources. Six components related to perception of graduates towards SRP were identified based on the guidelines followed by ICAR and interaction with resource persons. The identified six components namely, 1. Experiential Learning Programme (ELP), 2. Unit/Institutional Attachment, 3. Village Attachment, 4. Plant/Agri Clinic, 5. Agro-Industrial Attachment (AIA) and 6. Student Project report.

2.2 Collection and Editing of Statements

The relevant statements covering the universe of content in the measurement of perception of SRP were collected by extensive review of literature and discussion with experts in the concerned field. A total of 90 statements reflecting the perception of graduates towards SRP were generated. The statements were edited using the criteria suggested by Edwards [7] to make them free from double negative, ambiguity and complexity. After editing, 49 statements were retained under six different components.

2.3 Relevancy Weightage Test

The relevancy of the items generated was established by sending these statements to 160 judges with appropriate instructions. The judges comprised of experts in the field from SAUs and ICAR Institutes. The experts were requested to rate the degree of relevancy of each statement in measuring the perception of graduates towards SRP on a five point continuum as 'Most Relevant' (MR), 'Relevant' (R), 'Somewhat Relevant' (SWR), 'Less Relevant' (LR) and 'Not Relevant' (NR) with scores 5,4,3,2 and 1, respectively.

Out of 160 judges, 66 responded within a period of one month. The scores for each of the items were summated over all the respondents and appropriateness of each item was defined with 'Relevancy Weightage' (RW), 'Relevancy Percentage' (RP) and 'Mean Relevancy Score' (MRS) using the following formulae:

$$\text{Relevancy Weightage (RW)} = \frac{[(\text{MR} \times 5) + (\text{R} \times 4) + (\text{SWR} \times 3) + (\text{LR} \times 2) + (\text{NR} \times 1)]}{\text{Maximum possible score } (66 \times 5 = 330)}$$

$$\text{Relevancy Percentage (RP)} = \frac{[(\text{MR} \times 5) + (\text{R} \times 4) + (\text{SWR} \times 3) + (\text{LR} \times 2) + (\text{NR} \times 1)]}{\text{Maximum possible score } (66 \times 5 = 330)} \times 100$$

$$\text{Mean Relevancy Score (MRS)} = \frac{[(\text{MR} \times 5) + (\text{R} \times 4) + (\text{SWR} \times 3) + (\text{LR} \times 2) + (\text{NR} \times 1)]}{\text{Number of judges responded}}$$

Using these three criteria (as followed by Vaishnavi et al. [8]) the statements were screened for their relevancy and those having relevancy weightage of more than 0.70, relevancy percentage of more than 70 per cent and mean relevancy score of more than 3.70 were considered for final selection. By this process, 32 statements were isolated in the first stage of screening, which were suitably modified and rewritten wherever applicable. Eight statements were added as per the comments of experts. Thus finally 40 statements were selected after the relevancy test.

2.4 Item Analysis

The selected 40 statements were subjected to item analysis to delineate the items based on the extent to which they can differentiate the respondents with high and low perceptions. Thus scrutinized statements representing the perception of SRP were administered to 80 agriculture graduates of non-sample area chosen for the study. Through google form, the respondents were asked to indicate their degree of agreement or disagreement with each statement on a five-point continuum *viz.,* strongly agree, agree, undecided, disagree and strongly disagree with scores of 5,4,3,2 and 1, respectively.

The responses were recorded and summated score for the total statements of each respondent was obtained. The scores of the respondents were then arranged in descending order. Later, 25.00 per cent with highest scores (high group) and 25.00 per cent with lowest scores (low group) were taken for the item analysis. These responses were subjected to item analysis for selection of the items that constituted the final perception scale for graduates towards SRP.

The critical ratio *i.e.,* t-value which is a measure of the extent to which a given statement differentiates between the high and low groups of respondents for each statement is calculated by using the following formula.

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum X_H^2 - \frac{(\sum X_H)^2}{n} + \sum X_L^2 - \frac{(\sum X_L)^2}{n}}{n(n-1)}}}$$

Where,

$\bar{X}_H$ = Mean score on given statement of the high group
$\bar{X}_L$ = Mean score on given statement of the low group
$\sum X^2_H$ = Sum of squares of the individual score on a given statement for high group
$\sum X^2_L$ = Sum of squares of the individual score on a given statement for low group
n = Number of respondents in each group
$\sum$ = Summation
t = Extent to which a given statement differentiate between the high and low group

After computing 't' value for all the items with the help of above formula, items with 't' value equal or greater than 1.75 were selected and those with 't' value below 1.75 were rejected as the thumb rule suggested by Edwards [7].

Based on item analysis, 28 statements were finally selected and included in the perception scale for graduates towards SRP.

2.5 Standardization of Scale

A scale should measure what it intends to measure and it should be consistent in its measurement. A scale thus has to be standardized before it is administered. The present scale developed was also standardized by testing its reliability and validity.

2.6 Reliability of the Scale

A scale or any other instrument is considered to be reliable when it gives consistently similar results. In other words, reliability of a scale refers to the consistency of the scores obtained by the same individuals on different occasions or with different sets of equivalent forms [9].

In present study split half method was employed to test the reliability of the scale. For this purpose the scale was split into two halves on the basis of odd and even number of items. Using Statistical Package for Social Sciences (SPSS) software, the scores were subjected to a correlation test to determine the reliability. The split half test reliability coefficient was 0.855. The Spearman Brown formula was also used to calculate the whole test's reliability coefficient. The 'r' value of the scale was 0.922, which was highly significant at one per cent level indicating the high reliability of the scale. It was concluded that the perception scale constructed for graduates towards SRP was reliable.

2.7 Validity of the Scale

Guilford [10] reported that, a test is valid when it measures what it is supposed to measure. Validity of the scale to measure the perception of graduates towards SRP was ensured by establishing through content validity and statistical validity.

In the present study, the components and their perceptions were identified through review of relevant literature and discussion with experts in the field. The expert's opinion was sought to know the relevancy of the components and its perceptions. This justified the content validity of the scale.

In statistical validity, the validity co-efficient for the scale was found to be 0.960, which was statistically significant at one per cent level of probability indicating the higher validity of the developed scale.Thus, the developed scale to measure perception of graduates towards SRP was feasible and appropriate.

2.8 Administration of Perception Scale and Method of Scoring

The final scale comprises of 28 statements. The responses were obtained on five-point continuum namely strongly agree, agree, undecided, disagree and strongly disagree with weightages of 5,4,3,2 and 1, respectively. Perception score of the respondents were calculated by adding up the scores obtained under each sub components. Thus, 140 and 28 were the maximum and minimum scores, respectively. Perception index for graduates was calculated using the following formula.

$$\text{Perception Index} = \frac{\text{Obtained score}}{\text{Total obtainable score}} \times 100$$

Table 1. Items generated with Relevancy Weightage (RW), Relevancy Percentage (RP) and Mean Relevancy Score (MRS)

Sl. No.	Statements	RW	RP	MRS	Selected/ Rejected
I -Experiential Learning Programme (ELP)					
	Develops both physical and mental skills among students in various fields of agricultural sciences	0.76	75.76	3.79	Selected
	Number of credits allotted for each module is adequate	0.61	61.21	3.06	Rejected
	Enhances the team performance of students	0.79	79.39	3.97	Selected
	Develops confidence to discover solutions for challenging situations	0.76	76.36	3.82	Selected

Sl. No.	Statements	RW	RP	MRS	Selected/ Rejected
	Encourages self-evaluation of students	0.74	74.24	3.71	Selected
	Insufficient credit hours to perform practical exercises	0.56	56.36	2.82	Rejected
	Develops professionalism after degree	0.76	75.76	3.79	Selected
	Improves enterprise management ability and skills	0.81	81.21	4.06	Selected
	Increases the capacity of the students by organizing training programme	0.79	79.39	3.97	Selected
	Availability of equipment and input facilities from the institutions	0.74	73.94	3.70	Selected
	Lack of financial support from the institutions	0.63	62.73	3.14	Rejected
II – Unit / Institutional Attachment					
	Students get acquainted with the activities of KVK / ARS/ RSK etc…	0.80	80.30	4.02	Selected
	Helps to equip the students to identify and analyze the organizational and managerial problems of various institutions	0.65	64.55	3.23	Rejected
	Helps to understand the organization pattern and functions of KVK / Research station / NGO	0.77	76.97	3.85	Selected
	Provides opportunity to visit agriculture and allied departments *viz.* Agriculture, Horticulture, Dairy, Poultry etc…	0.81	80.61	4.03	Selected
	Unable to complete the assigned activities due to less credits	0.54	54.24	2.71	Rejected
	Helps to interact easily with extension personnel / scientist	0.76	75.76	3.79	Selected
III - Village Attachment					
	Helps the students to provision of practical training in crop production, plant protection and extension activities	0.82	82.42	4.12	Selected
	Students realizes the adoption patterns and adoption gaps among farming community	0.88	87.88	4.39	Selected
	Develops leadership qualities	0.84	83.94	4.20	Selected
	Helps the students to understand the crop critical stages	0.67	67.27	3.36	Rejected
	Improves communication skills	0.81	80.91	4.05	Selected
	Builds rapport with the farmers	0.75	75.45	3.77	Selected
	Difficult for other state students to communicate with host farmers	0.69	69.09	3.45	Rejected
	Helps to understand the constraints in application of modern farm technology in the farmers field	0.81	80.91	4.05	Selected
	Helps to obtain first-hand knowledge from farmers	0.83	83.03	4.15	Selected
	Builds confidence to address the field problems	0.78	78.48	3.92	Selected
	Lack of food and accommodation during village attachment programme	0.60	60.00	3.00	Rejected
	Stipend is not sufficient for students from institutions	0.64	63.94	3.20	Rejected
IV –Plant / Agri Clinic					
	Helps to diagnose pests and diseases in crops	0.79	78.79	3.94	Selected
	Helps to identify the nutrient deficiency and other physiological disorders in crops at farmers field	0.77	77.27	3.86	Selected
	Helps the students to improve their skills in conducting the group discussions, trainings, establishment of information centers	0.78	77.88	3.89	Selected
	No of credits is not sufficient to complete all activities	0.61	60.91	3.05	Rejected

Sl. No.	Statements	RW	RP	MRS	Selected/ Rejected
V –Agro-Industrial Attachment (AIA)					
	Students get exposure to agro-industrial environment	0.85	84.85	4.24	Selected
	Helps to know the potential marketing of agricultural products	0.82	82.42	4.12	Selected
	Creates opportunity to work with various agro based industries	0.80	79.70	3.98	Selected
	Helps the students to understand the source of institutional finance	0.62	61.82	3.09	Rejected
	Motivate the youths to become entrepreneurs	0.79	79.39	3.97	Selected
	Helps the students to know the wide spread publicity and popularization of firm's products	0.68	68.18	3.41	Rejected
	Challenging to grasp the management of the industry	0.74	73.94	3.70	Selected
	Students realize the problems in identification of suitable enterprises	0.79	79.09	3.95	Selected
	Reduce the duration of RAWE and allot the remaining time to industrial training	0.59	59.39	2.97	Rejected
	No uniformly in division of activities	0.57	57.27	2.86	Rejected
VI - Student Project report					
	Helps the students to improve their writing skills	0.66	66.36	3.32	Rejected
	Develops capability to do work independently	0.80	80.00	4.00	Selected
	Improves skills in presentation and use of sketches, schematic diagrams and graphs	0.89	89.09	4.45	Selected
	More time is consumed for report writing	0.62	61.82	3.09	Rejected
	Helps the students to design their work plan	0.69	69.09	3.45	Rejected
	Creates exposure to learn various aspects that cannot be taught in a class room or laboratory	0.74	74.24	3.71	Selected

Table 2. Items generated with t values based on item analysis

Sl. No	Statements	t value
I	**Experiential Learning Programme (ELP)**	
1.	Develops both physical and mental skills among students in various fields of agricultural sciences	4.58
2.	Enhances the team performance of students	5.05
3.	Develops confidence to discover solutions for challenging situations	5.51
4.	Encourages self-evaluation of students	5.67
5.	Duration of the EL programme is not sufficient	1.30^{NS}
6.	Improves enterprise management ability and skills	5.67
7.	Availability of equipment and input facilities from the institutions	3.57
8.	Increases capacity by organizing extension programme	1.42^{NS}
9.	Creates opportunity to gain potential market knowledge	1.50^{NS}
10.	Develops professionalism after degree	4.86
11.	The profits gained in ELP is distributed to students	2.98
II	**Unit / Institutional Attachment**	
12.	Students get acquainted with the activities of KVK/ARS/RSK etc…	9.22
13.	Helps to understand the organization pattern and functions of KVK / Research station / NGO	5.22
14.	Provides opportunity to visit agriculture and allied departments *viz.* Agriculture, Horticulture, Dairy, Poultry etc…	1.74^{NS}
15.	Helps to interact easily with extension personnel / scientist	5.62
16.	Inspires to find out the job opportunities in various departments	5.51
III	**Village Attachment**	
17.	Enhances the provision of practical training in crop production and	1.70^{NS}

Sl. No	Statements	t value
	protection	
18.	Students realizes the adoption patterns and adoption gaps among farming community	6.11
19.	Develops leadership qualities	6.12
20.	Helps to identify the key communicator	1.62^{NS}
21.	Improves communication skills	5.33
22.	Builds rapport with the farmers	5.84
23.	Helps to understand the constraints in application of modern farm technology in the farmers field	4.58
24.	Helps to obtain first-hand knowledge from farmers	5.32
25.	Builds confidence to address the field problems	4.07
26.	Enhances capability to adapt to rural institutions and farmers culture	1.72^{NS}
IV	**Plant / Agri Clinic**	
27.	Helps to diagnose pests and diseases in crops	2.99
28.	Improves skills in conducting the group discussions, trainings and establishment of information centers	1.42^{NS}
29.	Helps to identify the nutrient deficiency and other physiological disorders in crops at farmers field	5.28
30.	Creates a pathway to start agribusiness and entrepreneurship	1.02^{NS}
31.	Helps to know about soil and water testing	5.21
V	**Agro-Industrial Attachment (AIA)**	
32.	Students get exposure to agro-industrial environment	4.54
33.	Helps to know the potential marketing of agricultural products	4.85
34.	Challenging to grasp the management of the industry	1.26^{NS}
35.	Creates opportunity to work with various agro based industries	1.74^{NS}
36.	Motivate the youths to become entrepreneurs	4.86
37.	Students realize the problems in identification of suitable enterprises	3.68
VI	**Student Project report**	
38.	Improves skills in presentation and use of sketches, schematic diagrams and graphs	5.23
39.	Develops capability to do work independently	1.09^{NS}
40.	Creates exposure to learn various aspects that cannot be taught in a class room or laboratory	2.48

Table 3. Final statements of perception of graduates towards Student READY Programme (SRP)

Sl. No	Statements	SA	A	UD	DA	SDA
I -Experiential Learning Programme (ELP)						
1	Develops both physical and mental skills in various fields of agricultural sciences					
2	Enhances the team performance of students					
3	Develops confidence to discover solutions for challenging situations					
4	Encourages self-evaluation of students					
5	Improves enterprise management ability and skills					
6	Availability of equipment and input facilities from the institutions					
7	Develops professionalism after degree					
8	The profits gained in ELP is distributed to students					
II – Unit / Institutional Attachment						
1	Students get acquainted with the activities of KVK/ARS/RSK etc…					
2	Helps to understand the organization pattern and functions of KVK / Research station / NGO					
3	Helps to interact easily with extension personnel / scientist					

Sl. No	Statements	SA	A	UD	DA	SDA
4	Inspires to find out the job opportunities in various departments					
III - Village Attachment						
1	Students realizes the adoption patterns and adoption gaps among farming community					
2	Develops leadership qualities					
3	Improves communication skills					
4	Builds rapport with the farmers					
5	Helps to understand the constraints in application of modern farm technology in the farmers field					
6	Helps to obtain first-hand knowledge from farmers					
7	Builds confidence to address the field problems					
IV –Plant / Agri Clinic						
1	Helps to diagnose pests and diseases in crops					
2	Helps to identify the nutrient deficiency and other physiological disorders in crops at farmers field					
3	Helps to know about soil and water testing					
V –Agro-Industrial Attachment (AIA)						
1	Students get exposure to agro-industrial environment					
2	Helps to know the potential marketing of agricultural products					
3	Motivate the youths to become entrepreneurs					
4	Students realize the problems in identification of suitable enterprises					
VI - Student Project report						
1	Improves skills in presentation and use of sketches, schematic diagrams and graphs					
2	Creates exposure to learn various aspects that cannot be taught in a class room or laboratory					

3. CONCLUSION

It is concluded that the perception scale created was valid and dependable. Eighty agriculture students from a non-sample area were given the constructed perception measure; there were no issues with its use. Thus, it can be said that the scale created was helpful in clearly gauging graduates' opinions of the Student READY Program (SRP).The scale can be used in future research to gauge graduates' perceptions of SRP in studies of a similar nature.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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