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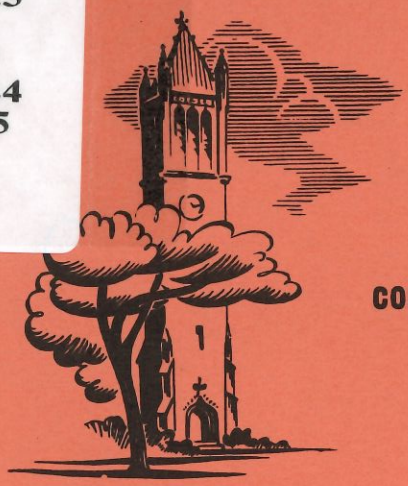

COMPETENCIES IN ANIMAL SCIENCE NEEDED BY VOCATIONAL AGRICULTURE INSTRUCTORS

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This is an abstract of a thesis submitted to Iowa State University of Science and Technology by Walter Mitschele in partial fulfillment of the requirements for the degree of Master of Science in August of 1965.

The study is one of a series conducted by the Department of Education of Iowa State University of Science and Technology with the assistance of graduate students in agricultural education in cooperation with the Iowa Agricultural and Home Economics Experiment Station and the Vocational Agriculture Section, Division of Vocational Education, State Department of Public Instruction.

The study was conducted under the direction of Dr. Duane L. Blake.

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Purpose of the Study

The purpose of this study was to determine some of the competencies in animal science that should be included in in-service training programs for present instructors of vocational agriculture, and in the educational program of future instructors of vocational agriculture.

This study was part of a broader study to determine competencies needed by instructors of vocational agriculture in farm management, crops and soils, animal science, agricultural mechanics, and the nonagricultural area.

The composit study was one of a series of studies conducted by graduate students in agricultural education at the Iowa State University of Science and Technology in cooperation with the Vocational Agriculture Section, Division of Vocational Education, State Department of Public Instruction as a part of the Iowa Agriculture and Home Economics Experiment Station Project Number 1253.

Method of Procedure

Outstanding vocational agriculture instructors at Iowa State University prepared and evaluated the list of needed competencies by vocational agriculture instructors to be used in this study. The competencies were listed in a questionnaire along with selected control items and mailed to the 225 Iowa vocational agriculture instructors with one or more years of teaching experience. The questionnaires were returned by 156 of the 225 instructors for a percentage returned of 69.3.

Instructors evaluated the degree each competency was needed in teaching animal science in vocational agriculture. They also evaluated the degree each competency was possessed. Each instructor indicated if the competency was acquired on the farm, in vocational agriculture, in college, or on the job.

The instructors were evaluated on a nine-point scale on the basis of their over-all competency in teaching vocational agriculture, then classified by quartiles. The higher rated group, those above the third quartile, was classified as group A, and the lower rated group, those below the first quartile, as group D and both groups were selected from statistical treatment in this study.

Findings

It was observed in Table 1 that the ability to balance and plan rations and the principles of nutrition were evaluated as the two most needed competencies by group A. The same competencies but in reverse order, were also rated at the top on the basis of need by group D. The mean needed scores ranged from 7.72 to 7.69 for group A and 7.45 to 7.42 for group D on a scale with a top value of 9.

Rated lowest on the scale was the ability to shear sheep, with a mean needed score of 3.51 by group A and 3.70 by group D.

There was a high correlation observed between the ratings given by the two groups of instructors. However, group A tended to indicate a high degree of competence needed with an over-all mean needed score of 6.62 as compared to 6.42 for group D.

The instructors in group A rated the ability to identify breeds, the ability to balance and plan rations and the ability to care for new born animals as the most possessed competencies with mean scores ranging from 7.18 to 6.95. The ability to identify breeds was the only competency assigned a mean possessed score of over 7.00 by group A. The same three competencies were rated as most possessed by group D with mean possessed scores ranging from 6.78 to 6.45.

More competence possessed than needed was indicated by group A for four competencies: identify breeds, probe hogs for back fat, fit and prepare animals for show, and methods of registration of purebred animals, with excess mean score differences ranging from -.08 to -.41. More possessed than needed scores were revealed for six competencies by group D with excess mean score differences from -.03 to -.28.

In 21 of the 25 competencies listed, the instructors in group A indicated a need for more competence than they possessed. The largest indicated need differences were for use of records in livestock selection and State Health Regulations and sanitation practices with mean score differences of 1.08 and 1.00 respectively. Group D showed a mean score difference of 1.20 for State Health Regulations and sanitation practices.

Group A indicated a slightly higher level of competence possessed with an overall mean score of 6.11 as compared to 6.05 for group D.

The instructors indicated that 15.3 percent of the competencies had been acquired on the farm, 10.3 percent had been acquired on vocational agriculture, 46.1 percent had been acquired in college, and 28.3 percent had been acquired on the job. The percentage of competencies acquired in vocational agriculture appeared low. However, only 49 or 31 percent of the instructors had completed four years of vocational agriculture.

Competencies involving understanding were more often learned in college, while abilities were usually more often learned on the farm or on the job.

Table 1. Relationship of ranked mean animal science competency scores needed and possessed by group A and group D vocational agriculture instructors

Competency	Mean scores									
	N[a]	R[b]	P[c]	R	D[d]	N	R	P	R	D
Balance and plan rations	7.2	1	6.97	2	.75	7.42	2.5	6.78	3	.64
Principles of nutrition	7.69	2	6.74	5	.95	7.45	1	6.75	4.5	.70
Care for new born animals	7.59	3	6.95	3	.64	7.15	6	7.18	2	-.03
Principles of feeding various types of livestock	7.56	4	6.72	6	.84	7.42	2.5	6.58	6	.84
Use of records in livestock selection	7.49	5	6.41	11	1.08	7.15	6	6.38	9	.77
Select animals for breeding, feeding, or slaughter	7.38	6	6.92	4	.46	7.15	6	6.75	4.5	.40
Timeliness of management with livestock	7.26	7	6.46	9.5	.80	7.12	8	6.25	12	.87
Nutrient requirements of various types of livestock	7.18	8	6.54	7	.64	7.25	4	6.52	7	.73
Identify breeds	7.10	9	7.18	1	-.08	6.92	9	7.20	1	-.28
Principles of animal breeding, estrus cycles, etc.	7.05	10	6.46	9.5	.59	6.35	16	6.12	14	.23
Care for female at time of parturition	7.02	11	6.38	12	.64	6.75	10	6.35	10	.40
Demonstrate husbandry practices; castrating, etc.	6.90	12	6.23	14	.67	6.68	11	6.28	11	.40
Recognition and prevention of common parasites	6.87	13	6.10	15	.77	6.58	12	5.80	17.5	.78
Housing requirements of various types of livestock	6.72	14	6.00	17	.72	6.18	17	5.98	15	.20
Probe hogs for back fat	6.38	15	6.49	8	-.11	5.58	23	5.32	23	.26
Digestive systems of the various farm animals	6.36	16	6.31	13	.05	6.55	13	6.50	8	.05
Genetics in animal breeding	6.33	17	5.56	22	.77	5.92	19	5.95	16	-.03

[a]Degree competencies were needed evaluated on a nine-point scale.
[b]Competency rank.
[c]Degree competencies were possessed evaluated on a nine-point scale.
[d]Difference between degree needed and degree possessed mean scores.

Table 1 continued

Competency	Mean scores									
	N	R	P	R	D	N	R	P	R	D
State Health Regulations and sanitation practices	6.28	18.5	5.28	23	1.00	6.45	14	5.22	24	1.20
Reproductive systems of farm animals	6.28	18.5	6.05	16	.23	6.12	18	6.15	13	-.03
Formulate protein supplements	6.26	20.5	5.97	18	.29	5.80	20	5.70	19	.10
Evaluate a carcass and cuts of meat	6.26	20.5	5.64	21	.62	6.35	15	5.55	20	.80
Principles of artificial insemination	5.96	22	5.20	24	.42	5.38	24	5.45	22	-.07
Fit and prepare animals for show	5.41	23	5.74	19	-.33	5.65	21	5.80	17.5	-.15
Methods of registration of purebred animals	5.26	24	5.67	20	-.41	5.62	22	5.50	21	.12
Shear sheep	3.51	25	2.82	25	.69	3.70	25	3.20	25	.50
Total overall mean scores	6.62		6.11			6.42		6.05		

Implications

The findings of this study indicated, that while some competencies were given much higher needed scores than others, all 25 of the animal science competencies listed were needed to some extent by vocational agriculture instructors. The findings also strongly implied a definite need for better qualified beginning instructors, and in-service training programs for men on the job to help them keep up to date on new developments in the animal science field.