

Evaluation of Instructional Materials Packets for Iowa Secondary School Agricultural Education Programs

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Instructional materials for secondary programs in agricultural education have evolved in recent years to include computer and VCR player/recorder technology. At the same time, the more traditional instructional materials such as slide/tapes, filmstrips, transparencies, instructional units, skill sheets, books and booklets continue to be used in classrooms and laboratories. Varrella (1989) stated, "...there is a wealth of instructional material available to use that will serve many of our needs, if we can only access that material effectively and use it efficiently."

The Iowa Vocational Agricultural Teachers Association (IVATA) Instructional Materials Committee began to develop and distribute a packet of instructional materials in the summer of 1970. The instructional packet program was originated by Iowa teachers to promote the development and distribution of quality teaching materials for secondary and post-secondary agricultural education programs. The first packet in 1970-consisted of five transparency master sets and was made available to the high school vocational agriculture teachers at a cost of \$5.00. On hundred and ten packets were distributed that first year.

In 1990, a packet consisted of videotapes on aquaculture, farm safety and biotechnology as well as booklets on water, fish farming, shop plans and instructional units on natural resources and agricultural biotechnology. The 1990 packet sold for \$50.00 and 208 packets were distributed at the summer IVATA conference.

During the past 11 years, 4,548 instructional packets have been distributed to Iowa Schools. This is an average of 207 packets each year which is 80 percent of the agricultural education programs in Iowa. The materials distributed over the past 22 years included:

Filmstrip/cassette tapes/scripts	54
Slides/cassettes/scripts	13
Books, manuals and booklets	78
Transparency master sets	20
Transparency sets	4
Instructional packets	29
Skill sheets	3
Microcomputer programs	7
Videotape programs	39
Commercial booklets and materials	63

The instructional packet is developed annually by a committee of the IVATA consisting of six high school agricultural education teachers representing each district in Iowa and one post-secondary teacher. In addition, the authors of this article are permanent members of the committee and serve to advise and coordinate the development and assembly of the teaching materials included in each packet. Some of the instructional materials included in each packet consist of items developed by agricultural education teachers; others are teaching materials that have been developed by extension, private companies and individuals. A key ingredient to this program has been the involvement of the teachers in preparing, selecting and distributing the instructional materials.

Purpose of the Study

The purpose of this study was to evaluate the extent of use of instructional materials developed and distributed during the past five years and to obtain the instructor's perceptions of the value of the items included in the packets to their instructional program. The study sought to evaluate the cost of the instructional packet and determine the value of nine types of instructional materials for future packets. The major goal of this study was to improve instructional materials distributed to Iowa Agricultural Education Instructors.

Procedure

The population for the study consisted of all Iowa Agricultural Education Instructors. A list of all instructors for the 1990-91 school year was obtained from the Iowa Department of Education. A survey instrument was developed to obtain the data required to determine the extent to which the Iowa instructors used the items in the packet and their perception of the value of each item to their instructional program during the past five years. The instrument also determined the teacher's view of the cost of the total instructional packet and their rating of the value of nine types of instructional materials for future packets. The instrument was reviewed by a panel of teachers, teacher educators and graduate students in Agricultural Education for content validity.

On April 8, 1991, the survey instrument and a cover letter were mailed to all Iowa Agricultural Education Instructors. A follow-up of nonrespondents was conducted two weeks later. A total of 146 completed surveys were returned for a response rate of 57.9 percent. The data were analyzed using means, percents, standard deviations and ranks.

Findings

The mean years of experience in teaching Agricultural Education at the secondary level by the respondents was 12.9 years. Information in Table 1 indicates the number of years the teachers in the schools had received the instructional packet over the past five years. Nearly 80 percent of the schools which had received the packet had received the packet each of the past five years. Over 90 percent of the schools had received the packet during the past four years.

Table 1. Number of schools that have received packets during the past five years.

Number of Years	Number of schools	%
1	4	2.9
2	3	2.2
3	6	4.3
4	15	10.9
5	108	79.4

One of the purposes of the study was to determine the extent of use of the instructional items in the packets during the past five years and the perceived value of each to their instructional program. Table 2 presents the data for the 1986-87 packet. The column, number used, refers to the number of instructors indicating they had used that item in their instructional program. The most frequently used items included a videotape on Swine Production and a slide cassette set on Judging Beef Carcasses with 115 and 102 uses, respectively.

Table 2. Value of items to instructional program -- 1986-87 packet.

Instructional item	Number used	Mean	SD
Swine production, view	115	4.14	.84
Meat science, instructional unit	92	3.50	1.07
Judging beef carcasses, slide cassette	102	3.49	.98
Arc welding, AAVIM manual/teacher key	81	3.26	1.33
Corn production, microcomputer program	67	2.99	1.20
Grasses and legumes identification filmstrip cassette	71	2.91	1.15
Check stray voltage, booklet	37	2.07	1.24
Low/No cost energy management booklet	35	2.05	1.12
Electric gardening, booklet	31	1.87	1.02

In addition to being the most used item, the Swine Production videotape was also rated as having the most value to their instructional program with a mean rating of 4.14. This rating was based on a five point Likert-type scale with 1 = little or no value, 2 = some value, 3 = average value, 4 = much value and 5 = very much value. Five of the items rated below average value, however, two of the items, Corn Production and Grasses and Legumes Identification, were only slightly below with scores of 2.99 and 2.91, respectively.

Data for 1987-88 are presented in Table 3. The three videotapes in the packet, Sheep Production, Horticulture and Agricultural Business, and Marketing were used most often and ranked 1, 2, 3 with mean values of 4.12, 3.97 and 3.71, respectively. The AAVIM manual, on the Care and Operation of Small Engines, recorded an above average rating of 3.05 and was used by 83 of the 146 teachers involved with the study.

Table 3. Value of items to instructional program - 1987-88 packet

Instructional Item	Number Used	Mean Value	SD
Sheep production, video tape	123	4.12	.82
Horticulture, videotape	112	3.97	.95
Agricultural Business and Marketing, videotape	110	3.71	.97
Care and operation of small engines, AAVIM manual	83	3.05	1.31
Midwestern farmer cooperatives, instructional packet	79	2.98	1.38
Midwestern farmer cooperatives, student manual	79	2.90	1.34
Machinery management, microcomputer program	57	2.80	1.31
Forestry, instructional unit	61	2.63	1.20
Understanding microcomputers, AAVIM	60	2.51	1.28

Four out of five items in the 1988-89 instructional materials packets were used by over 100 instructors and also rated above 3.00 or of average or above value to their instructional program. The five items in Table 4 rating above 3.00 included Master Gardener/Landscape series - videotape (3.93), Lawn Care series - videotape (3.83), Tree Growth and ID and Integrated Pest Management series - videotape (3.68), Soil

Conservation & Agricultural Respiratory Hazard series - videotape (3.67), and Ag Respiratory Hazard Education series - instructional unit (3.01).

Table 4. Value of items to instructional program - 1988-89 packet

Instructional Item	Number Used	Mean Value	SD
Master gardener/landscape series, videotape	114	3.93	.96
Lawn care series, videotape	107	3.83	1.00
Tree growth and ID and integrated pest management series, videotape	105	3.68	1.08
Soil conservation and agricultural respiratory hazard series - videotape	107	3.67	1.00
Agricultural respiratory hazard education series, instructional unit	76	3.01	1.33
Home electric repair, AAVIM manual	76	2.70	1.09
Poultry breeds, poster	80	2.66	1.30

Information in Table 5 lists the items included in the 1989-90 packet, the number of teachers that used each item and the mean rating or value to their instructional program. Four videotapes were rated above average value including the Beef Production series (3.99), Concrete (3.67), Iowa FFA Judging Contests (3.45) and History of Farm Implements (3.01). Four additional items were rated above average value including Teaching Agricultural Science - instructional unit (3.34), Concrete and Concrete Masonry - manual and teacher guide (3.31), Concrete - transparency masters (3.15) and Concrete - skill sheet set (3.06). As was the case in previous packets, most items that rated the highest value were most frequently used; one exception was the concrete booklet from PCA that was used by 80 teachers but rated 2.91.

Table 5. Value of items to instructional program - 1989-90 packet

Instructional item	Number Used	Mean Value	SD
Beef production series, videotape	125	3.99	.86
Concrete, videotape	95	3.67	1.26
Iowa FFA judging contests, videotape	114	3.45	1.17
Teaching agricultural science, instructional unit	88	3.34	1.13
Concrete and concrete masonry, manual and teacher guide	86	3.31	1.31
Concrete, transparency masters	77	3.15	1.35
Concrete, skill sheet set	75	3.06	1.28
History of farm implements, videotape	95	3.01	1.17
Concrete, booklet from PCA	80	2.91	1.32
Forestry, instructional unit (woodlot management)	65	2.89	1.20
Concrete, microcomputer programs	65	2.88	1.36
Agriculture and the constitution - videotape	73	2.87	1.35

Data for the final year, 1990-91 are presented in Table 6. Seven of the nine items in the 1990-91 packet rated above 3.00 or average value. The two top-rated items were videotapes, Farm Safety series (3.99) and Biotechnology (3.86). The item rated third highest was an instructional unit on Natural Resources (3.77). Rated fourth was the

Aquaculture videotape by AAVIM (3.68) followed by the Agricultural Biotechnology - instructional unit (3.42), Water, Water Everywhere -- booklet (3.18) and Fish Farming booklets (3.17). The two items rated below average value were booklets, American Plywood and All Around the Farm (shop plan ideas). Although the booklet, All Around the Farm, rated slightly below average (2.94), it was used by more teachers than three other instructional items rated above 3.00.

Table 6. Value of items to instructional program - 1990-91 packet

Instructional item	Number Used	Mean Value	SD
Farm safety series, videotape	111	3.99	1.11
Biotechnology, videotape	113	3.86	.91
Natural resources, instructional unit	107	3.77	.99
Aquaculture, AAVIM videotape	92	3.68	1.23
Agricultural biotechnology, instructional unit	90	3.42	1.09
Water, water everywhere, booklet	77	3.18	1.21
Fish farming, booklets	76	3.17	1.32
All around the farm, booklet (shop plans)	92	2.94	1.26
American plywood, booklets	58	2.45	1.13

The teachers were asked to provide an overall evaluation of the IVATA instructional materials packets. Table 7 presents the data for this evaluation. Fifty-two of 144 teachers rated the packet very valuable, an integral part of their instructional program. Seventy teachers evaluated the instructional packet program as having much value. The "very valuable" and "much value" ratings accounted for 84.7 percent of the teachers. Nineteen or 13.2 percent of the teachers felt the program was of some value while three individuals rated the program as having little or no value to their instructional programs.

Table 7. Overall evaluation of the instructional packets

Rating	Number	Percent
Much value to my instructional program	70	48.6
Very valuable, an integral part of my instructional program	52	36.1
Some value to my instructional program	19	13.2
Little value to my instructional program, use only small part	2	1.4
No value to my instructional program, did not use any of packets	1	.7
Total	144	100.0

The instructors were asked to evaluate the cost of the instructional packet, normally \$45-\$55 per year, on quality and quantity of the materials. Data presented in Table 8 indicate that two-thirds felt the cost was a real bargain while another 30 percent rated the cost about right for materials received. Only 2.8 percent (4 instructors) felt the cost was too high.

Table 8. Evaluation of cost of total instructional packet

Cost	Number	Percent
A real bargain for the amount of materials received	95	67.4
About right for amount of materials received	42	29.8
Too high for materials received	4	2.8
Total	141	100

The primary purpose of this study was to improve future instructional materials distributed to Iowa Agricultural Education instructors. The instructors were asked to rate

the value of nine types of instructional materials. Information in Table 9 presents the ratings of the nine types of instructional materials for future packets. With a rating of 4.81 out of a possible 5.0, and the lowest standard deviation of all types of materials, videotapes rated as the top instructional material for the future. Instructional packets (units) and microcomputer programs rated second and third place with mean ratings of 3.94 and 3.90 respectively. Birkenholz and Stewart (1991) in a national study on the use of instructional technologies in agricultural education reported that teachers anticipated increased use of microcomputers, and this is confirmed by data in this study. The remaining instructional materials were rated as follows: teacher guides (3.85), booklets, instructional manuals (3.46), skill sheets (3.35), transparency masters (3.23), filmstrip/cassette programs (3.12), and slide/cassette programs (3.10). It should be noted that all types of instructional materials were rated above average value.

Table 9. Rating of the types of instructional materials for future packets

Instructional material	Rank	Mean Value	SD
Videotapes	1	4.81	.52
Instructional packets (units)	2	3.94	1.02
Microcomputer programs	3	3.90	1.08
Teacher guides	4	3.85	1.09
Booklets, instructional manuals	5	3.46	1.11
Skill sheets	6	3.35	1.15
Transparency masters	7	3.23	1.18
Filmstrip/cassette programs	8	3.12	1.30
Slide/cassette programs	9	3.10	1.24

Another question on the survey instrument asked the teachers to list specific subject matter areas that should be developed and distributed in the next five years. Areas listed by more than 15 teachers included:

- Conservation and Erosion Control
- Horticulture and Floriculture
- Biotechnology
- Agricultural Business, Sales and Marketing

Areas listed by 10 to 15 teachers included:

- Leadership and Parliamentary Procedure
- Small Animals (domestic)
- Animal Rights
- Agricultural Law and Agricultural Trade Information
- Career Opportunities and Job Interviewing
- Natural Resources
- Environmental Issues
- Sustainable Agriculture
- Agricultural Science
- Crop Production

The final question on the survey was simply open-ended, other comments regarding the IVATA packet. The following is a list of some of the written responses:

- Best source of material.
- Keep up the good work.
- Good deal.
- Materials allow instructors to make up most of work of which they have no time.
- Useful materials in teaching.
- Good management and organization.

Some topics may not fit current curriculums.
Excellent job overall.
Very good, hope you continue the fine work.
More useful if packet included study guides to go with materials (videos).
Good way to get material out.
Make sure cost of packet gets to teachers by March 1 (to spend leftover budget monies).
Some materials are at a higher level than high school students can understand.
Some materials are shared with others in the school.
Good distribution process.

Summary of Results

The purpose of the study was to evaluate the extent of use of the instructional materials developed and distributed during the past five years and to obtain the instructors' perceptions of the value of the items included in the packets to their instructional program.

It was determined the average years of experience of the secondary agricultural education teacher was 12.9. The instructional packet was received by approximately 80 percent of the schools during each of the past five years. Videotapes ranked first, five out of the five packets with an overall mean score of 4.03, a rating of much value. Videotapes also ranked second in four of the packets and third in three of the packets. Birkenholz and Stewart (1991) also reported that teachers anticipated increased use of VCRs. Instructional units ranked next highest in value to the instructional program with second, third and fourth place ratings over the five years.

The teachers were asked to evaluate the total cost of the annual instructional packet on quantity and quality. Over two-thirds of the teachers rated the packet a real bargain while an additional 30 percent indicated they felt the cost is about right for the amount of material received.

When asked to rate the value of nine types of instructional materials for future consideration all items rated above average importance (3.0). The clear winner however was videotapes with a mean rating of 4.81 followed by instructional packets or units at 3.94, microcomputer programs at 3.90, and teacher guides at 3.85.

Subject matter areas identified for future development included conservation and erosion control, horticulture, floriculture, biotechnology and agricultural business, sales and marketing. Additional areas of emphasis included leadership and parliamentary procedure, small animals, animal rights, agricultural law and agricultural trade information, career opportunities and job interviewing, natural resources, environmental issues, sustainable agriculture, agricultural science and crop production.

Other comments regarding the packet were very supportive of the work of the IVATA Instructional Materials Committee. Typical remarks such as keep up the good work, good deal and excellent job overall summarize the sentiments of the teachers to this program.

Conclusions and Implications

The results of the study clearly recognize the need to continue with a program to develop and distribute instructional materials to Iowa Agricultural Education Programs. Videotapes were identified as the preferred method of instructional delivery in the past five years and for the immediate future. All nine types of instructional materials were rated above average in importance and should be considered where appropriate. The specific subject matter areas listed provide direction for future development and distribution.

Moore (1988) state it well, "technology transfer and understanding will become a major focus of our future efforts in agricultural education. Therefore, all of us in agricultural education should recommit ourselves to the development, distribution, procurement, and appropriate use of high quality instructional materials." The authors of this study believe that one of the key points for success of this program over the past 22 years has been the direct involvement of teachers through their professional organization. This program should continue to serve Iowa agricultural education programs.

References

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