

Video Cassettes "Tops"

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VIDEO CASSETTES came out "on top" in a test of teaching effectiveness. This was the result when five different instructional methods were evaluated by Kansas State University Extension Service in training "private applicators" for proper pesticide utilization. Other techniques included in the study were: State Extension Specialists; County Extension Agents; Telenet; and, Self Study.

The Environmental Pesticide Control Act of 1972 requires that both private and professional applicators be certified in order to purchase or use restricted use pesticides. Many of the common agricultural pesticides fall in the "restricted use" category. This situation created a need to conduct educational programs so that private applicators would be able to meet the certification requirements. Kansas designed and conducted a pilot project to study this training.

This study had two main objectives: 1) To evaluate the relative effectiveness and efficiency of five distinct methods of instruction, and 2) to provide information to the Environmental Protection Agency (EPA) which would be useful in designing educational materials and instructional strategies that could be used by state agencies in this training.

In order to assure an adequate cross section of participants for the study the state was divided into three test regions. Each region had all five methods presented in separate cooperating counties. Public announcements were sent to all agricultural producers stating which method would be used in that county but did not indicate the methods being used elsewhere. Anyone in the cooperating counties desiring to participate

was able to do so, although in instances repeat presentations were necessary to accommodate them.

The methods evaluated in the study included both traditional and new innovation. These were:

Method A — One-day Educational Meeting Conducted by Specialists

(Specialists) This traditional method used a team of specialists to present the materials at a county meeting. Open discussion followed the presentations.

Method B — One-day Educational Meeting Conducted by County Extension Agent

(County Agent) This traditional method used materials developed by the specialists but presented by the local county agent and also utilized open discussions.

Method C — Self Study Programmed Instructional Packet

(Self Study) Specialists prepared a programmed instructional packet for use by individuals. This packet contained the same information as presented in all other methods. Although there was no discussion, the materials were available for as much review as the individual desired.

Method D — Telenet Instructional Program

(Telenet) Using a conference telephone network, this method duplicated the Specialists training meeting. Each cooperating educational center was provided materials to be used and the specialists, at the on-campus meeting site, made the presentations. They then were able to answer questions from any location, so open discussion was possible. The number of participants at one time was limited to the size of the facilities at each center, however, repeat presentations were held when necessary.

Method E — Teaching by Video Cassette

(Video Cassette) Materials used by the specialists were made into slides and visuals for television reproduction. This was basically a duplication of the Specialists method with review questions included as

part of the presentation. These review questions were used as a substitute for open discussion. Repeat presentations were readily available using the video cassette method.

Standard procedures were used throughout the evaluations. Every participant was given a pre-test to determine knowledge level before presentation of any new materials. They were again tested following the training session. The difference between the two scores measured the amount of change or increase of knowledge on the subject.

Results of the study are shown in the following table.

Methods	Means		Change	Cost/Person
	PRE	POST		
Telenet	71%	84%	13%	\$8.12
County Agent	71%	87%	16%	\$2.38
Specialists	76%	89%	13%	\$7.16
Self Study	73%	90%	17%	\$2.14
Video Cassette	71%	96%	25%	\$1.99

In analyzing the data it was apparent that the pre-test mean scores of the participants were fairly close. All five were within a five point range and four were grouped with only a two point separation. Telenet, County agent, and Video Cassette were identical at 71%, and Self Study was 73%. The highest pre-test mean score of 76% was in the Specialists method group.

The positive change between the mean scores of the pre- and post-tests fell into three groupings. Two of the methods, Telenet and Specialists, were the same at 13% improvement. It should be noted, however, that those exposed to the Specialists method had a pre-test mean score five points higher than those in the Telenet group. Two methods were close with the County Agent group at 16% and the Self Study group at a 17% change. The Video Cassette method stood out with a 25% change and the highest mean post-test score of 96%.

Rather than simply rely on the percentage of change to measure which methods were most successful, an examination of the post-test mean scores was included. This observation discounts any extremes in the pre-test scores which would then be reflected in the amount of difference.

When the post-test mean scores are studied the five methods still arrange themselves into three fairly distinct groups. Video Cassette ranked the highest with 96% and was separated by six points from the next highest. Three methods were in the next group with Self Study having 90%, Specialists with 89%, and County Agent 87% as their mean post-test scores. The Telenet method was lowest by three points at 84%.

When compared on a cost per person basis Telenet ranked as the most expensive (\$8.12) with the Specialists method a reasonably close second (\$7.16). Following in order were the County Agent (\$2.38). Self Study (\$2.14), and Video Cassette (\$1.99) methods.

Regardless of the measure used the five methods arrange themselves in nearly the same order. Video Cassette had the highest mean post-score, the greatest amount of change from the pre-test mean score, and the lowest cost per person of the methods tested. The Telenet method had the lowest post-test mean score, showed the smallest amount of change from the pre-test mean score, and was the most expensive method to reach an individual. The other three, Self Study, County Agent, and Specialists, appear close together but in a different order according to which criterion is observed.

Video Cassettes proved to be very effective and economical. It should be noted that the video cassettes were not used in their most effective way as reported earlier in research by KSU Extension Television Production. Even so, the results of this evaluation clearly demonstrates the strength and acceptance of this method of teaching and reaching Extension audiences.

Comparison of five teaching methods in the three regions of the state

Region I (Western Kansas). Data from this region exposed trends that closely paralleled those of the state as a whole. The pre-test mean scores of the participants were grouped fairly closely. Consecutive pre-test mean scores were observed from the three methods of Self Study (69%), Telenet (70%), and County Agent (71%). The remaining two methods had a two point separation each with Specialist (73%) followed by Video Cassettes (75%). So, pre-test means of all five groups were within a six per cent range.

Three groupings were exposed when the change between the pre- and post-test mean scores was observed. Telenet had the smallest difference with 11% and was five points below the next method. Three methods were adjacent to each other with Specialist at 16%, County Agent at 17%, and Self Study at 18%. The video cassette method had the greatest amount of change with 21%. Even though this method had the highest post-test mean score (96%) of the five tested, and the greatest amount of change, it should be pointed out that it also had the highest pre-test mean score or the change could have been even greater.

Comparison of just the post-test mean scores to dispell any discrepancies involved in utilizing the pre-test mean scores exposes no major realignment. The Telenet method had the lowest post-test mean score of 81%. Grouped together were the methods of Self Study at 87%, County Agent at 88%, and Specialist with an 89% score. Separated by seven more points at 96% was Video Cassettes with the highest post-test score of all the methods.

Region II (Central Kansas). Responses gathered in the testing of the five methods in this region showed some variances from either of the other

regions. First, the range of the pre-test mean scores was greater than in the other two areas and were clustered at each end of the range. From a low of 65% for both the County Agent and the Video Cassette methods, followed by Telenet at 66%, the pre-test mean scores jumped to 77% for the Specialist method and 78% for the Self Study method.

Once more, three groupings appear when the change between the pre- and post-test mean scores for each method is observed. The Specialist (12%) and the Self Study (14%) methods showed the least amount of change. This reflects their both having a relatively high pre-test mean score or they might have been more in line with the Telenet and County Agent methods, both of which had an 18% change. *The Video Cassette method had the greatest amount of change with a 30% difference.*

When comparing just the post-test mean scores the methods align themselves somewhat differently. Lowest was the County Agent method with 83% followed closely by Telenet which had 84%. The remaining three methods space themselves with Specialist at 89%, Self Study at 93%, and Video Cassettes having the highest with 95%.

Region III (Eastern Kansas). Data collected in this area generally tended to follow the trends outlined for the state as a whole. There was a considerable range in the pre-test mean scores of the methods. Lowest was Video Cassettes with a 65% pre-test mean score. Then came Self Study at 73% and the rest grouped closely with the County Agent method at 76% and both Telenet and Specialist at 77%.

In studying the amount of change between pre- and post-test mean scores, three groupings can again be seen. In the first group the Telenet method had 10%, then County Agent at 12%, and Specialist with 13% change. Next was Self Study with an 18% improvement. Video Cassette, having a 30% difference, was the method with the greatest amount of change. Even though 30% is a large amount of increase, it was the same percentage as observed in Region II, and the method would still have had the greatest amount of change if the pre-test mean score had been at the levels of the other methods because of the high post-test mean score.

When the post-test mean scores were observed the range was eight points. Telenet was the lowest method with a score of 87% with County Agent at 88%. Then came Specialist with 90% and Self Study at 91%. The Video Cassette method was once again the highest with a 95% post-test mean score.

In each of the regions the Video Cassette method ranked at the top whether rated on the amount of change between the pre- and post-test mean scores or just using the post-test mean score as the criterion. Likewise, the Telenet method ranked at or near the bottom in each region by either measure and the other three methods closely grouped but arranging themselves differently according to measure and region.