SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter comprises not only a comprehensive review of the entire study, its purposes, objectives, hypotheses, method of investigation and major findings, but also includes major conclusions and recommendations related to the effectiveness of audio-visual aids, both traditional and modern projected and non-projected, under rural conditions.

Purpose of the Study

The main purpose of this research project was to study the effectiveness of selected audio-visual aids in terms of gain and retention of knowledge in homemaking practices.

Specific Objectives of the Study

1. To find out the existing knowledge of the farm-women regarding the homemaking practices to establish the benchmark.
2. To study the comparative effectiveness of selected audio-visual aids in terms of gain in knowledge regarding the homemaking practices.

3. To study the comparative effectiveness of selected audio-visual aids in terms of retention of knowledge regarding the homemaking practices.

4. To study the effectiveness of selected audio-visual aids in terms of gain and retention of knowledge on various aspects of subject matter.

5. To study the effect of age of the respondent on gain and retention of knowledge.

6. To study the effect of socio-economic status of the respondent on gain and retention of knowledge.

7. To compare projected aid (slide) with other selected non-projected aids in relation to effectiveness.

**Research Hypotheses**

H₁ There is significant difference in effectiveness of selected audio-visual aids with respect to gain in knowledge in drying of vegetables.

H₂ There is significant difference in effectiveness of selected audio-visual aids with respect to gain in knowledge in grain storage.

H₃ There is significant difference in gain in knowledge with respect to different aspects of drying of vegetables.
$H_4$ There is significant difference in gain in knowledge with respect to different aspects of grain storage.

$H_5$ There is significant difference in effectiveness of selected audio-visual aids in retention of knowledge in drying of vegetables.

$H_6$ There is significant difference in effectiveness of selected audio-visual aids in retention of knowledge in grain storage.

$H_7$ There is significant difference in retention of knowledge with various aspects of drying of vegetables.

$H_8$ There is significant difference in retention of knowledge with various aspects of grain storage.

$H_9$ There is significant relationship between gain and retention of knowledge with respect to drying of vegetables.

$H_{10}$ There is significant relationship between gain and retention of knowledge with respect to grain storage.

$H_{11}$ There is significant effect of age on learning.

$H_{12}$ There is significant effect of socio-economic status on learning.

$H_{13}$ There is significant effect of age on retention of knowledge.

$H_{14}$ There is significant effect of socio-economic status on retention of knowledge.
Method of Investigation

Selection of the Population and Sample: "Before and after" experiment/research design was used in this research project. The present study was undertaken in two Panchayat Samities (Community Development Blocks) of Udaipur district of the State of Rajasthan. These Panchayat Samities were purposively selected. From these two selected Panchayat Samities, twenty villages were selected randomly. Then from each village a group of 20 to 25 farmwomen was selected randomly. These groups of farmwomen were administered the knowledge test. On the basis of the scores obtained by the respondents, homogeneous group of 15 farmwomen was selected from each village. Thus, this constituted the final sample of 300 farmwomen which was used for the study.

In order to study the effect of two personal characteristics, i.e., age and socio-economic status of the respondents on gain and retention of knowledge, the socio-economic status scale developed by Trivedi and Udai Pareek was used and three categories of age range were also formulated.

Selection of Audio-Visual Aids: With a view to study the effectiveness of audio-visual aids following aids were selected representing the modern, traditional, projected, and non-projected aids.
Modern - Radio
Traditional - Puppet and Kavad
Projected - Slide
Non-projected - Flipbook

Only one audio-visual aid was exposed in two selected villages for each homemaking practice.

Selection of the Homemaking Practices: Only those homemaking practices were selected which were simple, significant and applicable to the group. Thus drying of vegetables and grain storage practices were selected as two important practices to serve as the vehicle for this investigation.

Knowledge Test

In order to measure the effectiveness of aids a knowledge test which would indicate the existing knowledge, the gain in knowledge, and retention of knowledge with respect to the homemaking practices was developed. Twelve major areas were identified in drying of vegetables while thirteen areas were included in grain storage. Each area was further divided into a number of questions. Each correct alternative in a question was assigned a score. A total of 55 scores were assigned for drying of vegetables and 50 for grain storage. The test was administered to the selected group of respondents at three times:
1. Prior to exposure of aid to establish the benchmark.

2. After teaching the subject matter through the aid to know the gain in knowledge.

3. After 15 days of teaching to find out the knowledge retained.

The difference between the scores after exposure and initial scores indicated the gain in knowledge and similarly the difference between the scores after 15 days and initial score was used for measuring retention.

Data Collection Instrument

In view of the low percentage of literacy of the farmwomen and lack of understanding it was decided to collect information from the respondents through interview technique. For the purpose of conducting interview structured schedule was prepared and used by the investigator personally for each respondent individually. The schedule consisted of three aspects:

1. Personal information.
2. Socio-economic status (rural).
Statistical Analysis

For the purpose of analyzing the data, several statistical tests were used. The main objective of the study was to find out whether each of the aids differed significantly from one another in terms of effectiveness. To observe this difference analysis of variance was used. Another objective of the study was to find out the relative effectiveness of five selected aids and rank them in order. For this purpose relative efficiency index was used. In order to find out the effect of age and socio-economic status on learning and retention again analysis of variance was employed. Correlation coefficient was used to establish the relationship between gain and retention of knowledge. Percentages and mean scores were used to classify respondents on personal characteristics and to find out the initial knowledge, gain in knowledge and retention of knowledge.

FINDINGS

Effectiveness of Audio-Visual Aids in Terms of Gain in Knowledge

It was observed that all the five selected audio-visual aids differed significantly in their effectiveness in both the selected homemaking practices. Further efforts were made to find out the relative effectiveness and the findings related to this aspect are as follows:
(a) Slide was found to be the most effective audio-visual aid out of all the aids in imparting knowledge with respect to the two practices, namely grain storage, and drying of vegetables.

(b) Radio was placed towards the bottom in ranking and was found to be the least effective aid in terms of gain in knowledge with respect to both the practices.

(c) A unique feature in relation to the effectiveness of aids was observed. In case of drying of vegetables the two traditional aids, namely puppet and kavad, were found to be more effective than the modern aids like flipbook and radio. These two aids were ranked second and third respectively on the relative efficiency index on gain in knowledge.

(d) Flipbook secured fourth position with respect to gain in knowledge in case of drying of vegetables while it obtained second rank in grain storage.

(e) In case of grain storage practice the two traditional aids, i.e., puppet and kavad, were ranked third and fourth with respect to gain in knowledge.
Relative Efficiency with Respect to Different Aspects of Two Homemaking Practices

(a) It was observed that the twelve subject matter aspects with respect to drying of vegetables significantly differed from each other in terms of gain in knowledge. The respondents scored high with respect to blanching procedure, timings of blanching and the precautions to be used in blanching where the subject matter was new to them as against the relatively familiar aspects like selection of vegetables, advantages of drying, etc.

(b) In case of grain storage practice also the thirteen aspects differed significantly from each other. The respondents obtained higher scores in new aspects, like fumigants to be used, procedure and precautions to be used while fumigating.

Effectiveness of Audio-Visual Aids in Retention of Knowledge

(a) The slide was found to be the most effective aid in retaining the knowledge with regard to both the homemaking practices.

(b) Radio was found to be the least effective aid in both the practices.
(c) In case of drying of vegetables the two traditional aids — puppet and kavad — proved to be superior and more effective than the modern aids, like flipbook and radio, with respect to retention of knowledge. But the placement of aids changed in case of grain storage. Flipbook was found superior to the two traditional aids in grain storage practice.

(d) More knowledge was retained in those aspects of subject matter which were new to audience in both the homemaking practices.

Relationship Between Gain and Retention of Knowledge

Highly significant positive relationship was observed between these two aspects in both the homemaking practices. In other words, where maximum gain in knowledge occurred maximum retention was also found.

Personal Characteristics of Respondents

(a) Most of the respondents selected for this study were young and below 30 years of age. Around 43 per cent respondents were between the age range of 16-30 years, another 35 per cent belonged to the age group of 31-45 years, while only 23 per cent of them came from above 45 years of age.
(b) In order to categorize the respondents into different categories of socio-economic status a scale was used. It was found that a maximum of 65 per cent respondents had middle socio-economic status, 28 per cent of them were from low socio-economic status, whereas only 7 per cent of the respondents came from high socio-economic strata.

Effect of Personal Characteristics on Learning and Retention

(a) Efforts were made to find out the effect of age on learning. It was observed that age had significant effect on learning. Younger respondents differed significantly from older people on gain in knowledge. Older respondents above 45 years scored significantly low in comparison to the respondents below 45 years of age.

(b) Further efforts were made to study the effect of socio-economic status on learning. It was observed that the socio-economic status did not have significant effect on learning. The three categories of respondents did not differ from each other with respect to the scores on gain in knowledge.

(c) As far as retention is concerned it was again observed that age had significant effect on retention too. Younger people were found to score higher than the older ones.
(d) Similarly, socio-economic status did not have any effect on retention. The respondents belonging to three categories did not differ from each other in terms of scores on retention.

CONCLUSION

Effectiveness of Audio-Visual Aids

A set of five different audio-visual aids was selected for the present research project to find out whether they are equally effective as far as learning and retention is concerned or significantly differ from each other because of their inherent characteristics and potentials. To study the effectiveness some subject matter was taught to different groups to find out the differential gain in knowledge with each one of them. Each one of the groups exposed to each one of the aids scored significantly different from each group. This leads to the conclusion that while keeping the common subject matter and developing the similar teaching-learning situation each aid contributed differently. The scores obtained by the respective groups could be directly attributed to the audio-visual aid to which a particular group was exposed. It has been further observed that even by changing the subject matter the most effective aid consis-
tently fared better than the others. On the basis of these findings it can be conclusively said that the most effective aid will contribute maximum as far as learning is concerned irrespective of the change of subject matter.

Besides, the effect on retention was also studied. As the audio-visual aids were found to differ from each other with respect to learning so also they differed from each other as far as retention was concerned.

Relative Effectiveness of Selected Audio-Visual Aids

Earlier it was observed that the aids differed from each other in their effectiveness. To further probe this subject it was decided to find out the extent of effectiveness in comparison to the aids under study. The radio was found to be the least effective aid in both the practices while slide was found to be the most effective. The placement of other three aids slightly changed by changing the practice or subject matter. The next in order of effectiveness in case of drying of vegetable was puppet followed by kavad and the flipbook. While in case of grain storage practice the next in order was flipbook followed by puppet and kavad. Although no efforts were made to investigate the causes of the change in placement, yet on the basis of related literature and personal experience of the investigator the
difference in placement in grain storage may be on account of
the following:

In the case of grain storage practice efforts were
made to teach about the insects infesting grain, fumigants
used to control the pests and doses and procedure to use
fumigants. This required the actual specimen to be shown
or at least the figures, while the things were not possible
in case of puppet where only words could be used to name the
insect control measures to be used. In case of kavad the
figures were used to present these facts but they were small
to be easily visible to the audience. Moreover, in kavad
poetic expression was used. These limitations probably
account for their low effectiveness in comparison to flip-
book in case of grain storage.

On the basis of the findings of this study and others
conducted to assess the relative effectiveness of audio-
visual aids it can be conclusively said that the slide is
the most effective aid. The reason for its superiority over
others is the real or near to real presentation of the
object. In case of both the practices under reference with
the help of coloured slides the subject matter true to the
type was presented enabling the learner to easily comprehend,
understand and learn. The slide was found not marginally
superior but out-right superior to others because of these
attributes.
On the other hand radio was found to be least effective aid because of its inherent weakness. It was possible to show near to real object with the help of coloured slide but the same was completely missing in case of radio. In using radio one has to depend only on the words to explain the concepts which may or may not communicate the meaning desired. Furthermore, in case of radio only one sense, i.e., sense of hearing is used which does not prove helpful in comprehending and understanding. In addition to this through radio only one way communication takes place where the discussion with the teacher is not possible which in other situation proves useful in removing the doubts. Exacting attentiveness on the part of the learner while listening to the radio, improper tuning and other distractions further reduce the effectiveness of radio. As far as the usefulness of radio is concerned it has been widely suggested that it is the quickest mean of communicating with the largest number of people. But when it is compared on the dimension of effectiveness on gain and retention it is placed towards the bottom and comes very close to the lecture method of teaching.

With respect to the other aids selected for this study the placement is more in relative terms rather than absolute. It cannot be very specifically said that the two traditional aids are definitely better than a modern aid like flipbook
but it is certain that they have proved their effectiveness 
on gain and retention of knowledge. This calls for innova­
tiveness and ingenuity to develop and make use of the tradi­
tional aids for effective teaching. The two aids, namely 
puppet and kavad, have been used for long as devices for 
entertainment as part of Indian culture, but their establi­
shed utility as teaching aids calls for their inclusion in 
the list of teaching aids and more intensive use.

Relationship Between Knowledge Gained and Retained

After studying the relative effectiveness of the 
teaching aids under reference on gain and retention of know­
ledge it was studied whether there was any relationship 
between gain and retention of each aid. In other words 
efforts were made to find out whether the teaching aid which 
was most effective as far as learning was concerned was 
equally effective with respect to retention. The results 
had shown that the aid which has proved most effective for 
learning is also most effective for retention. To further 
elaborate, the maximum gain in knowledge was obtained in case 
of slide and so also with regard to retention. Similarly, 
the radio has been found least effective on learning as well 
as on retention. On the basis of these findings it can be 
concluded that there is positive relationship between the 
effectiveness of a particular aid on gain and retention.
Effect of Age on Learning

The studies in the field of psychology have revealed that there is significant effect of age on learning. Several studies have reported that younger people score significantly higher than the older people. The possible reasons for the significant gain in knowledge are lack of interest and confidence, less acute sight and less acute hearing in case of older people as compared to the younger ones. It has been further suggested that speed and rate of learning decreases as the age advances rather than the learning ability. With this background knowledge it was decided to study the effect of age on learning. While selecting the respondents for this study, however, age was not considered as one of the criteria but those respondents were selected who were in a position to take decisions in favour of the recommended practice. However, 77 per cent respondents were below the age of 45 years and scored higher than the respondents above 45 years of age. This leads to conclude that younger people score higher or in other words they learn more quickly than the older people.

A possible inference out of this finding is that younger people should be selected for teaching new techniques. Nevertheless, we cannot lose sight of the older people. The
main emphasis should be on those people who are capable of learning fast and at the same time are in a position to take favourable decision to adopt the practice. The ultimate aim is to make them learn and subsequently adopt the practice rather than mere learning. On the other hand, we cannot include those people in extension programme who are too old to learn new things, have entrenched habits which are difficult to change, and are not concerned about the family affairs. There has to be a combination of comparatively younger people with their ability to take decisions in favour of new methods and techniques.

Effect of Age on Retention

The age has been found to have an effect on learning and so also on retention. From the standpoint of using a recommended practice retention of knowledge is more important than sheer learning. As the age is supposed to have positive effect on these aspects selection of comparatively younger people should present favourable results. The review of literature has revealed that there are several other factors which are responsible for retention of knowledge, strength of original learning, meaningfulness of the subject matter, organization of subject matter and utility in practical life. Keeping all these factors in consideration if the subject
matter is developed and taught to younger people it is bound to be retained for a longer period which may be put to use in actual life situations. If care is taken in developing the subject matter but it is taught to those people who are not capable of retaining it and making use of it, all the efforts of teaching are wasted.

**Effect of Socio-Economic Status on Learning**

The review of literature in the field of innovation and diffusion suggests that there is positive effect of socio-economic status on adoption. As learning is a prerequisite to adoption it was decided to find out whether socio-economic status has any effect on learning and retention. The results have shown that there is no effect of socio-economic status on both these factors, i.e., learning and retention.

**RECOMMENDATIONS**

On the basis of the findings of this investigation and the conclusions drawn from them, certain recommendations are set forth:

1. In view of certain inherent characteristics of slide and its outright superiority over other aids it is recommended that as far as possible slides should be used in any teaching plan. It cannot be suggested that for all
the situations it should be blindly used, but depending on the subject matter and availability of other facilities it can be used to a greater advantage. However, care must be taken to prepare the set of slides depicting local people and local conditions which naturally have direct impact on the behaviour of the people. It is not within the reach of each individual extension worker to prepare a set of slides for a given teaching situation and, therefore, some institutional arrangements have to be made to prepare such sets to be used for a geographical area. Preparation of such sets will encourage the extension worker to readily use them. In addition to this, institutional support should be provided for proper maintenance and care of slide projector also. Survey conducted by Rao in the country indicates that quite a number of extension blocks provide projectors which are hardly ever used either because they are out of order or locally applicable sets of slides are not available.

2. Although from the standpoint of this study the radio has been found to be the least effective aid, it cannot be said that there is no advantage in using this aid for teaching purposes. A number of research studies have shown that it is useful for communicating messages quickly to a larger population. It has been found to be more useful in creating awareness in rural population rather than
directly teaching a subject matter or skills of new technology. Here the main objective was to use the teaching aid and measure the gain in knowledge and, therefore, in such situations radio could not prove its worth. In this limited sense it can be said that it is least effective but otherwise this aid is getting popular in the fast developing technology and more and more people find time to listen to the radio talks and take advantage out of it. In view of all this it is recommended that the radio can be used effectively when it is supported with some other teaching aids to reinforce the subject matter taught. Personal experience of the investigator is that the radio listening clubs have very well proved their worth in disseminating the knowledge. It is, therefore, recommended that they should be further strengthened. In addition to this, it should be emphasized that as far as possible the extension worker should collect the farmers, prepare them for radio talk and when the talk is over, discuss the matter with them in order to remove their doubts. He should also write regularly to All India Radio suggesting the topics to be included in the programme and improvement in the programme. It will be worthwhile if brief supporting literature based on the script developed by talker be selectively distributed for further reference.
3. The unique feature of this study was the inclusion of traditional aids in the study and their comparison with selected modern, projected as well as nonprojected aids. The placement of the two traditional aids, namely puppet and kavad, was lower than the slide but was higher than the two modern aids — radio and flipbook. This placement cannot, however, be considered as an absolute one but is relative. Nevertheless, this goes to prove that these two aids have educational value and can be included in the teaching plan. The greatest advantage is that they have roots in the culture and accepted as channels of communication; and to communicate with established means is comparatively easier. The only thing is to change orientation. The subject matter is to be changed from entertainment point of view to educational. Under Indian conditions where availability of electricity and projectors in the rural area is fairly low the traditional aids can be used to a great advantage. They are very cheap, easy to handle and transport. They can be very conveniently used by the extension worker. Only thing is that the right type of attitude and initiative is required on the part of the extension worker. Traditionally speaking these aids were used by a certain caste to entertain the community. It is not sure how it will be viewed by the extension worker. It is worthwhile knowing the reactions of
this class since this was out of the perview of this study.

Help may be taken from some of the professional centres working on these traditional aids in terms of getting them developed and so also providing training to the field staff.

4. Age has been found to have positive effect on learning as well on retention. It is quite obvious that older people, who have their age-old habits and notions about practices and who are not so much motivated about the improved techniques, are slow in learning and, therefore, to make efforts on such people may not bring the desired results. It is, therefore, recommended that as far as possible comparatively younger people should be selected for imparting training. Care should also be taken to select such people who not only learn faster but are also capable of taking favourable decisions. Because the ultimate objective of any extension programme is the adoption of practice on the part of the learner, there has to be a combination of respondents capable of learning.

Since there is no positive effect of socio-economic status on learning and retention there is no need to select the learner on the basis of their socio-economic status. However, a positive association between socio-economic status and adoption has been observed by several studies.
The decision to adopt a practice directly depends on the financial resources and the social status of an individual. Furthermore, learning is the first step in adopting a practice and the ultimate objective is to make them adopt a new practice. There is nothing wrong in selecting people having higher socio-economic status provided the adoption of recommended practice calls for higher investment. If a particular practice can be adopted by even ordinary persons there is no need to segment the population on the basis of socio-economic status.

Future Research Plans

Since not much of scientific work has been done to study the effectiveness of traditional aids this particular study may help in proving that they have some educational value and can be conveniently used to advantage for teaching purposes. The actual size, shape and the form of using them and also the reaction of extension agencies about their use have not been found as it was beyond the scope of the present study. It is, therefore, suggested that a coordinated project may be taken up by some agency to further find out their effectiveness and probe into other aspects to suggest in very specific terms as to how to use them; what
will be the kind of institution to produce such aids and train the field staff to make them use and further support to make them a part of every day teaching. Different traditional aids from various states should also be studied in order to establish the worth of these aids.