A COMPARISON OF THE EFFECTIVENESS OF TWO MEDIA
FOR TRAINING FOOD SERVICE PERSONNEL

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INTRODUCTION

The food service industry faces an increasing need for skilled personnel. This can best be realized from the figures predicted by Lattin (1969) that there would be a yearly requirement for 250,000 persons for food service jobs for the next decade.

Because of the lack of skilled workers, the most likely looking applicant, or sometimes the only applicant, is hired with the idea of training him in the necessary skills. Welch (1967) aptly stated that the food service industry was guilty of reaching "for the nearest body that was capable of movement." This scarcity of food service personnel makes it necessary to develop new training techniques, or to improve the already existing ones.

At present, a commonly used method is on-the-job training. Problems may arise if the supervisor does not have adequate knowledge of proper work methods or is not a good teacher. Another problem is the difficulty in being able to schedule training for more than one or two employees at a time. Less efficient work methods may develop because of varying presentations.

The new employee is often required to use the "sit by Nellie" system where he or she "tags along" with a co-worker, who may or may not be a good teacher. This type of training often leads to incorrect and inefficient work methods. The employee then has to be retrained, adding to the initial cost

of training. A good training program will not only make employees more aware of the importance of their work, but will also teach them how things should be done and thus form correct habits early. In addition, it will reduce costly personnel turnover and the time needed for a new employee to reach a satisfactory level.

Instructions often are vague, forcing the employee to perform to the best of his or her judgment and ability. Proper communication is the basis of understanding which finally leads to efficient training. Optimum performance requires that work instructions be simple, short, and in reproduceable steps. These instructions should be presented through a medium, or combination of media, which is best suited for the particular task to be performed. The training program, in order to be effective, should also make use of principles of time and motion and other techniques of effective work design.

Considerable research has been conducted on the effectiveness of different audiovisual media in industry, but few studies have been made on the effectiveness of these media in training food service personnel. A report by Konz and Dickey (1967) described experiments investigating various media used in communicating manufacturing instructions. The authors concluded that:

> The decision as to which communication medium
> to use is probably more important than the decision
> as to whether a one or a two-hand method is used,
> or whether the distances moved are eight or 18 inches.

The purpose of this study was to compare two media, the typed list and the video tape recorder, for teaching hospital food service tasks.

REVIEW OF LITERATURE

Employee Training

Learning and Training

Attempts often are made to distinguish between training
and education. Educators believe training is narrow in
scope and involves only learning that is directly related to
job performance, while education is concerned with the total
human being and his insight into and understanding of the
whole world (This and Lippitt, 1966). Training, according to
Ackerman (1968), is the same as education and development. It
is a planned program designed to increase the performance of
a person or group of people by increasing their knowledge and
skill.

Glaser (1962) stated that the process of training and
education is concerned with procedures for guiding and modify-
ing human behavior. Training refers to the process concerned
with teaching to perform similar or uniform behaviors. Guidance
of behavior in accordance with individual differences is re-
ferred to as the educational component.

According to Butterworth (1966), the learning process
should focus on the learner. Teachers must be concerned with
helping to create situations in which there are more opportun-
ities for learning. Fundamental principles of learning were
listed as:

1. Principle of Individuality - learning rates and
capabilities vary from one person to another.

2. Principle of Participation - learner needs to be involved actively.

3. Principle of Contact - new knowledge must overlap with what is already known.

4. Principle of Usefulness - what is to be learned must be perceived as useful.

5. Principle of Appraisal - only way to determine if change has taken place.

Kintzer (1967) stated that three elements are required to learn: motivation, learner behavior, and feedback. Motivation is a readiness to learn. A person must want to learn or learning will not result. Participation results in more and better learning and purposeful repetition will help assure retention of learning. Feedback, or informing the learner of his relative success or failure, is necessary for effective progress. As knowledge of performance increases, both the speed and level of learning increases.

A person's learning ability does not change as he grows older. Sensory efficiency, which may be decreased, is offset by intensity of interests and clarity of incentives. One of the common concerns of all adult educators is the provision of effective learning experiences. A study by Knox and Sjogren (1965) concluded that:

1. Age was not significantly related to achievement as measured by course grades but there was a positive relationship between achievement and level of education.

2. Learning ability can decline with disuse.

3. Adults, as well as young adults, learn best at their own pace.

Employee Turnover

Labor turnover is one of the most costly problems confronting food service departments. Every employee is a financial outlay that includes the cost of hiring, inducting, and training. Turnover, as defined by Elliott (1967), is the loss and replacement of an employee. In a study by Gray and Donaldson (1967) cost of labor turnover included the salary of time spent by all personnel in the accession and separation of employees plus costs of materials and services used. Accession costs included costs of recruitment, preliminary screening, interviewing, checking references and employment as well as costs of orientation, formal training, on-the-job training, and probation.

There is widespread recognition of the labor turnover problem in food service, but little research has been conducted to determine the incidence, cost, and correlates of turnover. According to Winter (1969) most organizations do not know what it costs to train a person and what it costs when that person quits within 30 days. Operating statements do not show this. Every time an employee terminates management loses money spent on his training and experience. Cortesi (1966) estimated that it costs over $500 to train an employee but costs may range much higher. In addition to

increasing labor costs, turnover also leads to poor morale, overtime, and increased work loads for other employees. Perhaps one of the most important effects of turnover is poor quality of work. Serious effects of high turnover are seen as internal unrest, poor employee relations, lowered efficiency, job dissatisfaction, and a high degree of absenteeism.

Over 50% of turnover occurs during the first 30 days of employment. This indicates either poor selection or poor orientation and training. High turnover rates during the first year of employment often indicates poor training (Pelto and Sweatt, 1965). Gray and Donaldson (1967) reported that most turnover occurred in the first three months of employment. The major part of the direct costs were expended during training and learning periods of the accession phase. They concluded that, through an expanded training program for new employees, the total direct costs of labor turnover might have been reduced.

Harwood and Brown (1968) studied the relationship of indoctrination, orientation, and methods of training in hospital food service departments and their relationship to turnover and job satisfaction. Significant relationships were found between turnover rates and the extent and use of a variety of indoctrination and orientation techniques and aids, and the excellence of inservice training programs. The departments having the most concentrated programs had the lowest turnover rates.

Turnover rates in most food services are 7% per month (Westbrook, 1969). The United States Department of Labor stated that this is three times as high as in other industry.

Training Problems

Common training errors are: failure to communicate clear training objectives, too much reliance on verbal instruction, and assuming that employees understand and can apply what they have been taught without proof that this is the case.

One of the reasons employee training is so time consuming is that most employers use the old fashioned methods of on-the-job training. Of all the methods of training, none is more costly and inefficient according to Mescon (1966). What actually happens in many cases is that the new employee is given a few verbal instructions and then put to work. The employee is told that the supervisor will check on him later, and may or may not be given an employee manual. Having a new employee read a procedure manual or watch another employee do the job is not training him, it is just ignoring him.

Other problems of traditional training according to Hannon (1967) are: an overworked training director who tends to cut corners or falls behind schedule, uneven learning paces resulting in the bright being bored and the slow frustrated, and lack of training involvement. On-the-job training is poor because the employee faces ignorance and fear. This can lead to making more mistakes, forming bad habits, and developing a dislike for the job. Douglas (1966) believed that possible reasons for training failure were that:

1. Trainer may be deficient in knowledge, ability to communicate, and/or essential personality attributes.

2. Trainee may be lacking in mental ability and foundation knowledge, motivation, or proper frame of mind.

A survey of 146 industrial firms by the Maynard Research Council indicated a widespread dissatisfaction with current employee training programs (Anon., 1968). The most common complaint was outdated training methods.

Training Methods

Need for Training

Costly, inefficient manpower with poor productivity can only be solved by streamlining operational methods and improving the caliber of people in food service (O'Malley, 1969). The industry must become more sophisticated in employee training. Many potentially competent food service workers are attracted to other fields with more favorable working hours or conditions. Since employees entering food service operations have little or no background, they will have to be trained to be efficient workers, according to Gunter (1967) and Fisher (1967). This will require a dynamic training program using the best up-to-date techniques. Government, industry, and education all are placing more emphasis on the training and educational processes in the organization.

According to Bennett (1968) training can bridge the gap between manpower available and manpower required to perform

to-day's and to-morrow's jobs. Training can help to achieve
many objectives such as: improvement of service and produc-
tivity, reduction of waste, improvement of morale, and develop-
ment and conservation of human resources.

For a training program to succeed in the food service
field it must be simple, practical, and produce the desired
results within a reasonable period of time at an appropriate
cost. Training methods must be a means and not an end to
obtain the most for training dollars. Training departments
are turning to the use of highly complex and sophisticated
equipment to train people and this will continue in an attempt
to use manpower potential more profitably. Many executives
recognize the need for employee training and they support pro-
grams to meet the needs. Industrial psychologists are gener-
ally agreed that more research is essential for improvement
of training programs (Smith, 1964) and that executives might
profitably spend money in training research. Information
other than opinions and subjective evaluations are necessary.
Sufficient data are not available to show that one method
is significantly better than another.

The more closely employee training can simulate on-the-
job reality, the more likely an employee will learn a job
quickly and perform it well according to Buchanan (1967).
The more senses involved the deeper the impression. Learning
takes place with ears and eyes, and with muscles and fingers.
Confidence comes from actual doing. Wording of instructions

should be kept simple and new words should not be used unless there is a need to know them.

Conner (1967) stated that a trainer should be knowledge-able in the field of learning principles and practices. He must know how people learn and change. Supervisors must be trained and continually refreshed in methods and techniques of supervising and training. A qualified teacher with effective materials is the key to proper training.

It was determined by Chidester (1967) that a training program in only as good as its results and results in terms of what the student has learned are all that matters. If one technique allows a person to learn more quickly, more deeply, and with greater retention than another, then it is the better technique if the cost is reasonable.

Training can be done in a variety of ways. The training role, according to Brown (1966) should not be limited to a few techniques or a single approach. All dimensions should be explored. Using a combination of methods increases interest and allows each segment to be taught by the best method for it.

Pope (1969) stated that the basic responsibility for training must rest with the individual company. Each facility should develop its own training program designed to meet the needs of its operation and policies. The trend is toward more training, higher costs, and more people involved in training. It is no longer a question of what additional costs a training

program will impose, but rather how much more it is costing not to train.

With continuing education employees have a greater awareness of proper techniques, have a sense of belonging to a team, and a consciousness that each job is important. Training is a job that is never ended. As noted by Sumbingco et al. (1969) continuing education is necessary due to technological advances. Continual inservice training is a necessity if a food service is to provide high quality food and service, be efficient, and operate within a reasonable budget.

Individualized Training

The trend in training is learning by doing and by individualized training. Hannon (1967) suggested that the solution to the training problem is the new approach of individualized training. The trainee can spend more time on those parts that are difficult to him and move more quickly over easy parts. This type of training results in greater retention. It uses the new and advanced teaching equipment and techniques used for autoinstruction such as teaching machines, movies, color slides with related sound tapes, kinescopes, programmed books, and video tape recorders. The trainee studies at his own pace and participation is included. Emphasis must be placed on the program and not on the machine as training will only be as good as the material presented. In automated learning the trainee learns by interacting with the program without the trainer being present. Ideally, the counsellor is available

at all times. Trainees using programmed instruction spend less time learning, learn much more, and enjoy learning more.

A series of experiments on communication of work methods was carried out under the direction of Konz (1967). The aim was to study the effect of different media of communication on the learning of varied tasks such as peg-board assembly tasks and wiring tasks. The results indicated that, when pictures were used, fewer mistakes were made and less time was required for doing the job. It was also found that subjects preferred pictures to other media such as typed lists, audio, and audio plus pictures. Few studies have been made on the effectiveness of audiovisual media in training food service personnel. A few of the studies that have been conducted are:

1. Middleton and Konz (1965) used slides plus commentary to instruct food service employees in two methods of breading foods. The authors believed that audiovisual instruction could help solve the problem of employee training.

2. Carter et al. (1964) used a programmed course for teaching sanitation to food service personnel, and found the results to be encouraging.

3. Sumbingco (1967) found that a programmed textbook with colored photographs was useful for training food service personnel.

4. Apley (1968) used audiovisual programmed instruction to teach waitress duties with good results. This was based on learning, retention, and attitudes of trainees.

5. Kahl (1968) found that slides were useful for training food service employees to use a flight type dishwasher.

There is an old theory that people learn faster and better through their eyes than through their ears. Educators have proven that "a picture is worth a thousand words." Visual training can show an employee the total picture of his job, not just a fragmented series of events.

Kayser (1968) stated that anyone can read pictures. Pictures speed up the training process and thus reduce the cost of training. With printed instructions, the literacy level makes it risky, and the time spent pouring over instructions is lost in terms of productivity. In addition, interpretation of the printed instructions is necessary. A demonstration can clarify what otherwise may require hours of talking.

Authorities in the food service field are increasingly recommending pictures as a partial answer to training programs. Color prints, slides, and movies could be used in place of personal "show and tell" instructions in both large and small operations.

Video Tape Recorder for Training

The video tape recorder makes a record of moving pictures and sound on reels of magnetic tape. The audio may be added after the picture is made. Video tape is television's familiar "instant replay." The technique of recording television images and sound on magnetic tape has been used by commercial broadcasters since 1956. Only since 1966, when the new generation

of small, portable, relatively low cost recorders became avail-
able, has much application in training been made (Anon. 1967a).

Slides and pictures which have been found suitable for
training many tasks sacrifice action. Films and video tape
recordings are the only two practical methods of recording
moving pictures at present. An inservice video training
tape may be prepared in a matter of a few hours, whereas film
could take several days. In addition film must be developed
and this takes a long time. If the film is unsatisfactory
when developed it must be redone. The video tape recording
may be played back and reviewed instantly. If the tape is
unsatisfactory, it may be erased and used over again immediately.
Other disadvantages of film are that it is more expensive and
requires much higher light levels than the video tape recorder.
Tapes can be replayed over and over without a loss of quality.
Information can be changed simply by recording over the outdated
information.

Video tapes can be made easily. Instant replay allows the
cameraman to check whether the illumination is correct, the
view recorded is the one wanted, and the picture quality is
satisfactory. Pictures, according to Romano and Bennett (1968)
may be made with ease and efficiency.

The Western Electric Company at Allentown, Pennsylvania,
is using the video tape recorder to train assembly workers,
inform employees of new products, and increase efficiency
of skilled operators (Anon., 1967b). Video tape is used to

train employees in the assembly of micro-circuits. The employee views the tape of an experienced operator assembling a unit, then practices what she has just viewed. The video tape may be reviewed as many times as is necessary. Later in the training program the employee is recorded on video tape while assembling a micro-circuit. The recording is played back immediately so she can see what she is doing. An instructor also is there to praise and point out areas for improvement. Though still in the development stage, it was thought that the video tape recorder would reduce training time for each operator, reduce instructors' time, and increase product yield.

Banks are turning to video tape recordings to perform many jobs. Some uses are: (1) introduction of new bank services, changes, and modifications to all employees, (2) introduction of new employees to each of the bank's departments by viewing tapes which can be replayed as often as necessary, and (3) training. According to Koehn (1968) time and money are saved by using the video tape recorder to teach trainees the basic paying and receiving functions of a bank teller. Learning time is two and a half days with the video tape as compared to five to six days using programmed instruction. The instructor is present to answer any questions the trainee might have.

Connelly (1969) described the use of the video tape recorder to introduce a new filing system to secretaries. The tape was a success and the secretaries' comments were favorable to this medium.

Hershfield (1967) suggested that video tape would enrich and enhance training and help to eliminate many outdated systems of training. With the repetitive nature of the video tape recorder, it is possible to show the tape and test the employee any number of times. Using this method the skilled become more skillfull and the "slow learner" learns faster.

METHOD

Tasks

The tasks were ones that are performed in many hospitals
three times a day. The tasks were:

Task I. Setting trays with required articles - tray
cover, bread and butter plate, cup and
saucer, utensils, napkin, sugar, salt, and
pepper.

Task II. Placing served food on trays - pie, salad,
bread, butter, milk, cream, coffee, main
plate (with roast beef, baked potato, and
green beans.) Food, other than bread, was
not used to prevent waste. Portions of food
were marked on the dishes.

Task III. Stripping of trays and sorting of dishes.

Apparatus

1. Trays

2. Tray covers

3. Napkins

4. Utensils - knives, forks, teaspoons, soupspoons.

5. Dishes - cups, saucers, bread and butter plates,
pie plates, salad bowls, dinner plates, creamers,
glasses, coffee pots

6. Containers - for utensils, "garbage", and paper

7. Tray cart

8. Decimal minute stop watch

9. Methods agreement lists

10. Typed instruction sheets

11. Video tape recorder

The training procedure for setting trays, placing served food on trays, and stripping trays was developed using techniques of effective work design. Every effort was made to make the work instructions simple and easy to understand, and sufficient detail was included to reproduce the desired motions and operations involved. The same wording of instructions was used in both media.

A Sony Video Camera VCK-2100 A (with zoom lens) was used to record the instructions; an electronic viewfinder CVF-4 was mounted on top of the camera for direct monitoring of camera output. A Sony Videocorder CV-2100 was used for playback to an 18" monitor. The tasks were taped by the experimenter who had no previous experience preparing programs or using the video tape recorder. A Lafene Student Health Center employee was instructed as to the procedure to be followed, and was then taped performing the tasks. Incandescent lighting of approximately 60 foot candles was sufficient for taping the picture. A dulling spray was used to eliminate glare from dishes and utensils. The audio portion was recorded after the picture had been taped.

A typed list of instructions presented on a sheet of paper was the second medium (see Appendix A). Each subject

using the typed list of instructions could spend as much time as she wished reading the instructions, and could refer to them. Each step was typed on a separate page to insure that the subject would only read one step at a time and then perform as instructed.

Subjects

Thirty-two female food service employees from the Kansas State University residence hall food services were used as subjects. The subjects were selected by the personnel director. All subjects were right-handed and had no previous experience in the tasks used. Each subject was paid $1.00 for her work as the research was performed on her off-duty hours.

Experimental Procedure

1. Table 1, the age, length of experience at the Kansas State University residence hall food services, and educational attainment was completed from personnel files of the Kansas State University Residence Hall Food Service. This information was used to determine if these variables had any effect on the results.

2. The work place was arranged.

3. The subjects were divided into two groups - 16 subjects performed the tasks using the typed list, and the other 16 used the video tape recorder. Independent groups were used to avoid transfer of learning that would result if both media were used for each subject.

Table 1. Characteristics of subjects

Medium	Subject number	Age years	Education Years	Food service experience years
Typed list	1	56	6	6.5
	4	65	11	8.5
	5	19	12.25	.5
	8	61	12	3.5
	9	43	12	.08
	12	37	12.5	1.5
	13	21	10	.5
	16	26	12	1
	17	38	12	.08
	20	49	13	3.5
	21	45	12	4.5
	24	60	12	12.5
	25	18	11	1.5
	28	64	13	1.5
	29	52	12	.5
	32	18	12	.08
	Average	42.0	11.6	2.9
Video tape recorder	2	30	14	.5
	3	60	8	8.5
	6	50	12	1
	7	62	12	15.5
	10	43	12	.5
	11	48	13.5	.5
	14	43	12	2.5
	15	46	12	1.5
	18	50	10	1.5
	19	56	8	.5
	22	55	12	1.5
	23	58	10	3
	26	27	9	.5
	27	55	12	2.5
	30	53	8	.5
	31	23	12	.08
	Average	44.7	11.0	2.5

To balance bias, a counterbalanced design with an A,
B, B, A, A, B, B, A, A, etc. sequence was used.

4. Instructions were read from a typed sheet, prior to
the presentation, to assure that each subject was
given the exact same instructions.

5. a) Subjects using the video tape recorder were
allowed to view an instruction only once, and
were required to do the step immediately after
the instruction. These subjects were paced by
the video tape recorder.

   b) Subjects using the typed list were allowed to
spend as much time on an instruction as they
wanted, and were required to do the step after
reading the instruction. They could refer to
the instructions at any time.

   c) Instructions were repeated for each tray assembly.

6. The subject performed the task standing, and was
asked to perform the operations in the same sequence
as given in the instructions.

7. a) Task I was performed first, task II second,
and task III was performed last by all subjects.

   b) Each subject repeated the task five times,
using the instructions every time.

8. The subject was timed and errors were recorded using
a methods agreement list.

9. Each subject was asked her opinion regarding the
medium she used.

RESULTS

The criteria for evaluation of the effectiveness of the two media were errors and performance times. The results are shown in Tables 2, 3, 4, 5, 6, and 7.

Errors

To evaluate the performance of a subject, a methods agreement list was developed with the correct operational procedures for each task (see Appendix B). An error was recorded when the subject did not follow the correct operational procedures. The video tape recorder had significantly less errors than the typed list (see Figures 1, 2, 3); ($p < .001$) for task I and II, and ($p < .01$) for task III. Average errors for the video tape recorder were 1.5, 1.3, and 1.5 for task I, II, and III respectively while for the typed list the average errors were 7.3, 7.1, and 5.3.

Average errors for the first tray for the typed list were 10.2, 7.8, and 6.5 for task I, II, and III respectively while for the video tape recorder average errors were 3.6, 1.4, and 3.0. The video tape recorder had significantly less errors than the typed list ($p < .001$) for task I and II, and ($p < .01$) for task III for the fifth tray; average errors for the video tape recorder were 1.0, .9, and .9 for task I, II, and III respectively while for the typed list average errors were 6.3, 6.7, and 4.4.

Table 2. Errors and time - typed list - task I

Subject No.	Errors Tray						Time (minutes) Tray					
	1	2	3	4	5	Average	1	2	3	4	5	Average
1	22	14	13	13	13	15.1	4.40	2.39	2.85	1.23	1.60	2.49
4	7	6	4	4	3	4.8	5.80	2.22	1.88	1.77	1.97	2.73
5	9	4	5	5	5	5.6	2.60	2.47	1.05	.93	.50	1.51
8	8	4	3	7	5	5.4	5.53	4.40	1.79	1.30	1.29	2.86
9	8	1	3	2	3	3.4	4.49	2.51	1.51	1.33	1.10	2.19
12	6	5	8	4	3	5.2	3.00	1.15	1.00	.65	.60	1.28
13	12	10	12	11	12	11.4	2.83	1.92	.52	.47	.46	1.24
16	9	5	9	6	5	6.8	3.20	2.00	1.80	1.30	1.12	1.88
17	8	4	3	3	2	4.0	1.48	1.34	1.26	.99	.71	1.16
20	12	11	11	11	11	11.2	2.84	1.56	1.12	.98	1.10	1.52
21	9	5	5	5	6	6.0	3.04	2.15	1.35	1.58	1.09	1.84
24	9	6	8	8	4	7.0	3.62	2.80	1.27	1.07	1.18	1.99
25	11	14	10	10	8	10.6	2.10	1.20	.96	.75	.65	1.13
28	11	4	4	7	5	6.2	2.24	1.32	1.04	.90	.66	1.23
29	11	4	3	6	9	6.6	3.43	2.54	1.22	1.48	1.98	2.13
32	11	7	6	6	6	7.2	4.21	3.53	1.35	1.17	.89	2.23
Average	10.2	6.5	6.7	6.6	6.3	7.3	3.43	2.22	1.37	1.12	1.06	1.84

Table 3. Errors and time - typed list - task II

Subject no.	Errors						Time (minutes)	
	Tray						Total for 5 trays	Average
	1	2	3	4	5	Average		
1	16	16	15	16	15	15.6	10.84	2.17
4	14	15	13	13	14	13.8	7.76	1.55
5	7	7	6	6	6	6.4	6.83	1.37
8	3	4	6	1	1	3.0	10.49	2.10
9	5	4	4	4	5	4.4	6.59	1.32
12	3	3	3	3	3	3.0	7.26	1.45
13	12	11	10	11	12	11.2	6.80	1.36
16	2	7	8	3	2	4.4	7.50	1.50
17	2	1	2	1	1	1.4	5.06	1.01
20	15	14	14	12	12	13.4	7.60	1.52
21	5	2	2	3	2	2.8	7.15	1.43
24	11	9	10	10	9	9.8	8.59	1.72
25	11	7	7	7	6	7.6	4.53	.91
28	8	7	10	7	8	8.0	4.81	.96
29	2	2	3	3	3	2.6	6.90	1.38
32	8	6	5	5	8	6.4	9.59	1.92
Average	7.8	7.2	7.4	6.6	6.7	7.1	7.39	1.48

Table 4. Errors and time - typed list - task III

Subject No.	Errors Tray 1	2	3	4	5	Average	Time (minutes) Tray 1	2	3	4	5	Average
1	15	10	13	6	6	10.0	4.10	5.18	5.80	1.50	1.40	3.60
4	1	2	1	1	1	1.2	3.21	1.61	1.34	1.10	.95	1.64
5	10	8	8	8	8	8.4	2.95	1.29	1.14	1.10	.85	1.47
8	9	7	7	9	7	7.8	3.49	2.05	1.66	1.06	1.06	1.86
9	6	4	2	3	4	3.8	2.90	1.87	1.78	1.28	1.45	1.86
12	1	1	1	0	0	.6	1.29	1.21	.95	.85	.70	1.00
13	13	14	14	13	13	13.4	2.45	1.86	.82	.77	.76	1.33
16	0	1	2	0	1	.8	2.58	1.68	1.55	1.05	.90	1.55
17	4	6	6	5	4	5.0	1.75	1.10	.90	.80	.90	1.07
20	4	6	4	8	4	5.2	2.63	1.47	1.28	1.15	1.10	1.53
21	4	2	3	2	1	2.4	2.46	1.08	1.07	1.04	1.06	1.34
24	13	11	5	10	8	9.4	3.25	2.20	1.63	1.53	1.80	2.08
25	5	3	1	1	2	2.4	1.54	1.25	1.07	.91	.80	1.11
28	15	10	11	11	12	11.8	2.14	1.68	1.45	1.33	1.23	1.57
29	1	1	3	1	0	1.2	2.55	1.32	1.15	1.25	1.04	1.46
32	3	0	0	0	0	.6	2.79	1.33	1.12	1.00	.86	1.42
Average	6.5	5.4	5.1	4.9	4.4	5.3	2.63	1.76	1.54	1.11	1.05	1.62

Table 5. Errors and time -- video tape recorder -- task I

Subject no.	Errors						Time (minutes)					
	Tray					Average	Tray					Average
	1	2	3	4	5		1	2	3	4	5	
2	3	0	1	0	0	.8	3.22	3.23	3.23	3.36	3.36	3.28
3	4	2	0	0	0	1.2	3.30	3.28	3.20	3.20	3.18	3.23
6	4	0	0	0	0	.8	3.13	3.15	3.12	3.13	3.13	3.13
7	2	2	1	1	1	1.4	3.22	3.19	3.16	3.12	3.11	3.16
10	3	1	1	1	1	1.4	3.16	3.10	3.10	3.09	3.05	3.10
11	3	1	0	0	0	.8	3.15	3.10	3.12	3.12	3.12	3.12
14	3	1	1	3	4	2.4	3.16	3.12	3.10	3.12	3.13	3.13
15	3	1	1	1	3	1.8	3.15	3.15	3.05	3.01	3.03	3.08
18	5	0	0	0	0	1.0	3.17	3.13	3.12	2.98	2.98	3.08
19	3	1	1	1	1	1.4	3.16	3.07	3.08	3.08	3.10	3.10
22	5	1	2	2	0	2.0	3.15	3.12	3.12	3.09	3.11	3.12
23	6	3	2	2	1	2.8	3.15	3.10	3.11	3.14	3.13	3.13
26	3	2	2	2	2	2.2	3.16	3.16	3.12	3.08	3.08	3.12
27	3	1	1	1	1	1.4	3.23	3.19	3.18	3.15	3.15	3.18
30	3	0	0	1	1	1.0	3.29	3.16	3.12	3.19	3.17	3.19
31	5	2	1	1	1	2.0	3.16	3.09	3.11	3.13	3.15	3.13
Average	3.6	1.1	.9	1.0	1.0	1.5	3.19	3.15	3.13	3.12	3.12	3.14

Table 6. Errors and time – video tape recorder – task II

Subject no.	Tray 1	2	3	4	5	Average	Total for 5 trays	Average
			Errors				Time (minutes)	
2	1	1	0	0	0	.4	8.27	1.65
3	4	4	6	3	3	4.0	8.27	1.65
6	0	4	2	0	0	1.2	8.10	1.62
7	3	1	2	1	1	1.6	8.02	1.60
10	1	1	1	1	1	1.0	8.01	1.60
11	0	1	0	0	0	.2	7.91	1.58
14	1	1	0	2	1	1.0	8.07	1.61
15	2	2	2	2	2	2.0	8.12	1.62
18	1	2	2	1	1	1.4	8.05	1.61
19	0	0	0	0	0	0	8.00	1.60
22	2	3	1	1	1	1.6	8.24	1.65
23	4	2	2	2	2	2.4	8.08	1.62
26	0	1	1	1	0	.6	7.97	1.59
27	1	1	1	1	1	1.0	8.13	1.63
30	2	2	2	2	2	2.0	8.13	1.63
31	1	0	0	0	0	.2	8.24	1.65
Average	1.4	1.6	1.4	1.1	.9	1.3	8.10	1.62

Table 7. Errors and time - video tape recorder - task III

| Subject no.	Errors						Time (minutes)					
	Tray					Average	Tray					Average
	1	2	3	4	5		1	2	3	4	5	
2	1	0	0	0	0	.2	1.63	1.64	1.60	1.59	1.65	1.62
3	0	1	0	0	0	.2	1.60	1.60	1.63	1.64	1.60	1.61
6	0	0	0	0	0	0	1.66	1.64	1.60	1.60	1.63	1.63
7	3	2	2	0	0	1.4	1.60	1.61	1.59	1.58	1.61	1.60
10	0	0	0	0	0	0	1.65	1.63	1.61	1.60	1.60	1.62
11	0	0	0	0	0	0	1.63	1.59	1.59	1.56	1.56	1.59
14	2	5	0	0	0	1.4	1.72	1.65	1.50	1.56	1.57	1.60
15	3	1	3	3	5	3.0	1.69	1.59	1.62	1.56	1.68	1.63
18	2	5	6	5	4	4.4	1.66	1.65	1.65	1.63	1.62	1.64
19	0	0	0	0	1	.2	1.68	1.63	1.60	1.62	1.65	1.64
22	0	0	0	0	0	0	1.65	1.63	1.60	1.62	1.55	1.61
23	13	2	0	2	0	3.4	1.99	1.94	1.59	1.66	1.66	1.77
26	1	2	2	0	2	1.4	1.68	1.66	1.65	1.64	1.60	1.65
27	7	1	0	0	1	1.8	2.16	1.66	1.66	1.63	1.65	1.75
30	15	9	4	2	2	6.4	1.75	1.70	1.70	1.58	1.64	1.67
31	1	0	0	0	0	.2	1.70	1.64	1.63	1.64	1.64	1.65
Average	3.0	1.8	1.1	.8	.9	1.5	1.72	1.65	1.61	1.61	1.62	1.64
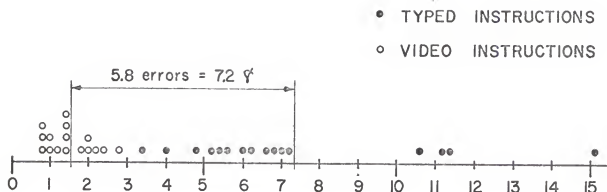
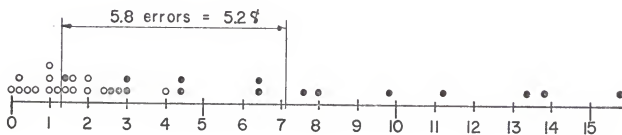FIG. 1. AVERAGE ERRORS PER SUBJECT PER MEDIA
FOR TASK I

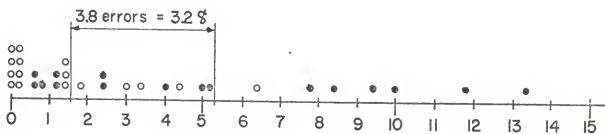FIG. 2. AVERAGE ERRORS PER SUBJECT PER MEDIA
FOR TASK II

FIG. 3. AVERAGE ERRORS PER SUBJECT PER MEDIA
FOR TASK III

Using the video tape recorder, four subjects had zero errors in task III, and one subject had zero errors in task II; all subjects using the typed list had errors in all three tasks.

The subjects' age, educational attainment, and length of experience at the residence hall food services were correlated with errors. The Spearman Rank Correlation Coefficients are shown in Table 8.

A comparison of age and errors showed a slight positive relationship. There was a statistically significant relationship (p < .05) for task II using the video tape recorder. As was expected, there was a negative correlation between errors and education, that is subjects with more education had less errors. The positive correlation which occurred between experience and errors meant that the more experienced employees made more errors. This was significant for task II, typed list (p < .05) and the video tape recorder for task II (p < .01).

Performance Time

Time, including both the instruction time and the performance time, was recorded for each subject. For task I the typed list (average time 1.84 minutes) was significantly (p < .001) shorter than the video tape recorder (average time 3.14 minutes). For task II the typed list (average time 1.48 minutes) was significantly (p < .05) shorter than the video tape recorder (average time 1.62 minutes). For task III, the 1.62 minutes for the typed list was not significantly less than the 1.64 minutes for the video tape recorder.

Table 8. Spearman rank correlation coefficients between errors and the personal characteristics of age, educational attainment, and experience.

Personal characteristics	Typed list			Video tape recorder		
	Task I	Task II	Task III	Task I	Task II	Task III
Age	-.20	.22	.31	-.05	.56*	.18
Educational attainment.	-.21	-.20	-.01	-.11	-.29	-.34
Experience	.27	.47*	.21	.18	.70**	.35

** p < .01

* p < .05

The subjects' age, educational attainment, and length of experience at the residence hall food services were correlated with performance times. The Spearman Rank Correlation Coefficients are shown in Table 9.

A comparison of time and age showed that older people took a longer time using the typed list. There was a significant correlation for task I ($p < .05$) and task III ($p < .01$). There was not this relationship for the video tape recorder. No relationship was noted between time and education. Subjects having more experience took a longer time to perform the tasks. There was a statistical significance for task II ($p < .05$) with the typed list.

Subjects' Reactions to Medium

Upon completion of the tasks the subjects were asked their opinion regarding the medium they had used.

All of the subjects using the video tape recorder were enthusiastic about this medium. They commented that they could see exactly what was to be done and didn't have to guess at what was wanted.

Comments regarding the typed list were rather vague. A few did remark that they had difficulty understanding some of the instructions. Many said that the typed list was "okay". Several of the subjects stated that they liked receiving written instructions instead of just being told what to do because they could refer to the instructions when needed.

Table 9. Spearman rank correlation coefficients between time and the personal characteristics of age, educational attainment, and experience.

Personal characteristics	Typed list			Video tape recorder		
	Task I	Task II	Task III	Task I	Task II	Task III
Age	.45*	.33	.67**	.17	.06	-.04
Educational attainment	-.19	-.08	.19	.15	.14	-.38
Experience	.29	.55*	.37	.18	.17	-.14

** p < .01

* p < .05

DISCUSSION

Typed List

In this presentation, each instruction was typed on a separate page. The subject read through the instruction and did the task. She could refer to the instruction at any time.

Two factors could have affected errors of the subject. The first factor could be the reading ability of the subjects; that is words had to be translated into actions. Every translation is subject to interpretation. A second factor was the length of each instruction. The instructions in the typed list could not be broken into smaller steps because of experimental design, so each instruction was slightly longer than the instruction in the other medium. In the video tape recorder instructions, within each step were small, reproduceable substeps.

Video Tape Recorder

The video tape recorder has the unique capability of reproducing pictures and sound simultaneously, instantaneously, and continuously. With this medium the subject not only heard how to do the task, but also saw it in action; that is, the subject could match the picture with the task. The instructional picture helped the subject in reproducing the task accurately. This was evident from errors of the subjects.

Performance times were probably affected by the pacing of the video tape recorder. The pacing in task I and II was quite

slow to assure that subjects would have no difficulty following the instructions. Each subject paced herself according to the pace set. Task III had a faster pace by chance and as was noted, there was no significant difference in time between the two media.

The errors in the video tape recorder medium could have been contributed in part by poor filming. One instruction was difficult to see – the step placing the sugar, salt, and pepper packets on the napkin. The subject could only see this step for a short time in closeup. The closeup should have remained on this step longer. Many of the errors were due to the subject not watching the monitor at this time and missing the closeup. The subjects were not allowed to stop the medium and turn it back to replay it.

In task III two subjects were extremely flustered by the pacing but settled down after the first tray; they averaged 14 errors on the first repetition and only one error on the fifth. Some subjects also had difficulty performing task III as instructed. This was a task that they had some familiarity with in their present position. They often proceeded as they were accustomed to doing, only to later realize what they had done.

Cost Comparison

The equipment cost of the video tape recorder (including camera and monitor) is approximately $2000 or $635 per year if the equipment lasts for three years. A 30 minute reel of

video tape costs about $20. This video tape can be reused for 1000 times. If one reel of recorder tape is used ($20) four times a day, and if the machine was used 250 days per year, the total annual cost for the video tape recorder would be $655. Then $655 over 1000 uses becomes $.66 per presentation for the video tape recorder.

A six page typed instruction at .4 cents per page is about $.024 per presentation. The typed instruction has an advantage in the fact that the employee can keep it with him and carry it around, and is disadvantageous because it consumes a large amount of paper, and also the inventory costs increase as the number of personnel and jobs increase.

The difference in cost would be offset by the many advantages of the video tape recorder. Taping a training film is simple and only takes a short time. The trainee can stop the tape and see the still picture whenever she has a doubt. The tape can be backed up and replayed with no problem of synchronization between sound and picture. Best off all, no translation of words into actions is required.

The video tape recorder was found to be better than the typed list for presenting work instructions. Writing instructions to get error free performance for either the typed list or the video tape recorder is extremely difficult even with simple tasks. The interpretation that is required with a typed list makes writing for this medium even more difficult.

The tasks used were simple ones and the subjects were better than the average typical employee found in the food

service industry. Even with the above average employee and well thought out instructions there were a large number of errors made with the typed list. The instructions were much better than would be found in a typical food service for the time spent preparing the instructions was much greater than is typically spent.

SUMMARY AND CONCLUSIONS

A shortage of skilled personnel and high turnover rates
in the food service industry require a formalized, dynamic
training program to supplement guidance and supervision given
on the job. Present training methods are inefficient resulting
in poor service and productivity. The value of training remains
more a matter of faith than of fact. Training research is
essential if the benefits of training methods are to be con-
firmed and if present training is to be improved.

The purpose of this study was to compare the typed list
and the video tape recorder for teaching typical hospital
food service tasks. The training procedure for setting trays,
placing served food on trays, and stripping trays was developed.
The tasks were then taped on the video tape recorder. The exact
same wording of instructions was used for the two media.

Thirty-two subjects of the Kansas State University residence
hall food services were selected as subjects. Sixteen of the
subjects performed the tasks using the typed list and sixteen
subjects used the video tape recorder. Criteria for measuring
the effectiveness of the media were errors and performance
times.

There was a significant difference in errors between the
two media ($p < .001$) for task I and II, and ($p < .01$) for
task III with the video tape recorder better than the typed
list. Performance times were significantly lower for the
typed list for task I ($p < .01$) and task II ($p < .05$), but

there was no significant difference for task III. Subjects using the video tape recorder expressed favorable comments for this medium.

The video tape recorder would be most useful for trainees in the food service industry. Though the cost per presentation is more with the video tape recorder, the additional advantages of this medium would offset these cost differences.

ACKNOWLEDGMENTS

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APPENDIX A

INSTRUCTIONS FOR TASKS

Task I. Setting Trays with Basic Items

Proper handling of dishes and utensils is important to prevent possible contamination of serving surfaces. Grasp utensils by handles, glasses at the base, cups by the handles, and plates by the rims and bottoms only.

Step 1:

Left Hand - Pick up a bread and butter plate.

Right Hand - Pick up a tray cover.

Center tray cover on tray.

Place bread and butter plate in lower left hand corner of tray.

Step 2:

Left Hand - Pick up a fork.

Right Hand - Pick up a teaspoon, soupspoon, and knife.

Place fork on right side of bread and butter plate.

Place knife, with cutting edge facing center of tray, eight inches to right of bread and butter plate. Place soupspoon to right of knife, and teaspoon to right of soupspoon. Do not leave any spaces between these utensils.

All utensils should be straight with side edges of tray.

Step 3:

Left Hand - Pick up sugar, salt, and pepper packets.

Right Hand - Pick up a napkin.

Place napkin in center of tray with long edge of napkin along top edge of tray cover.

Place pepper, salt, and sugar in a row in center of napkin with top edges of packets in line with top edge of napkin. The printing on the packets should face toward you.

Step 4:

Left Hand - Pick up a saucer.

Right Hand - Pick up a cup.

Place saucer in lower right hand corner of tray.

Place cup in center of saucer, handle pointing toward lower right hand corner.

Step 5:

Place tray on cart.

Task II. Placing Served Food on Trays

Remember proper handling of dishes:

    Glasses – by bases

    Plates – by rim and bottom

    Creamers – by bases

    Salad Bowl – by rim and bottom

    Coffee Pot – by handle

When necessary, steady or move tray with left hand.

Step 1:

Right Hand – Pick up a pie plate.

Place plate in upper left hand corner of tray, tip of pie pointing "straight down."

Place a pie plate on all trays.

Step 2:

Put plastic glove on right hand, touching only top edges of outside of it. Peel away paper from glove.

Right Hand – Pick up several butter chips.

Place one butter chip between pie plate and bread and butter plate, two inches from edge of tray, and in line with edge of tray.

Place a butter chip on all trays.

Step 3:

  Right Hand — Pick up several pieces of bread.

  Place two half slices of bread in center of bread
  and butter plate, one piece on top of other so edges
  match.

  Place bread on all bread and butter plates.

  Take off plastic glove — discard.

  Walk around to back of cart.

Step 4:

  Right Hand — Pick up a salad bowl.

  Place salad bowl at lower right hand corner of napkin,
  against napkin but not on it.

  Place a salad bowl on all trays.

Step 5:

  Right Hand — Pick up a creamer.

  Place creamer above teaspoon.

  Place a creamer on all trays.

Step 6:

  Right Hand — Pick up a milk glass.

  Place glass one inch above saucer.

  Place milk on all trays.

Step 7:

     Right Hand — Pick up a coffee pot.

     Place cóffee pot two inches above glass, handle
pointing toward lower right hand corner of tray.

     Place coffee on all trays.

     Walk around to front of cart.

Step 8:

     Right Hand — Pick up a dinner plate.

     Place dinner plate against bottom edge of tray between
fork and knife, with roast beef "directly" at bottom
of plate.

Task III. Stripping Trays

     Dishes are scraped to remove waste food. Place food
in garbage container, paper in waste paper container. Place
similar items on top of each other.

     Put plastic glove on right hand and use side of hand
to wipe off leftover food from dishes.

Step 1:

     Pick up a tray from cart, place in front of yourself
on table.

Step 2:

     Left Hand — Pick up a dinner plate.

Wipe off leftovers with side of right hand.

Place plate to left of tray.

Step 3:

Left Hand - Pick up pie plate.

Wipe off leftovers.

Place plate to left of tray.

Step 4:

Left Hand - Pick up salad bowl.

Wipe off leftovers.

Place salad bowl to left of tray.

Step 5:

Left Hand - Pick up bread and butter plate.

Wipe off leftovers.

Place plate to side of tray.

Step 6:

Left Hand - Pick up creamer.

Right Hand - Pick up glass.

Dump any liquid that is left in sink.

Place above tray.

Step 7:

Right Hand — Pick up cup.

Left Hand — Pick up saucer.

Dump any liquid that is left in sink.

Place to right of tray.

Step 8:

Right Hand — Pick up coffee pot.

Dump any liquid that is left.

Place coffee pot on table.

Step 9:

Left Hand — Pick up fork.

Right Hand — Pick up knife and spoons.

Place utensils in container above tray.

Step 10:

Using both hands at once, fold cover toward center.
Place into paper container.

APPENDIX B

METHODS AGREEMENT LIST

Date: _____   Subject: _____

Medium: _____   Key: Correct _____

Time: _____   Wrong   _____

Task I. Setting Trays with Basic Items

METHOD   REPETITION

                                      1   2   3   4   5

1. Tray cover – picked up –
    right hand   ___ ___ ___ ___ ___

2. Bread & butter plate –
    picked up – left hand   ___ ___ ___ ___ ___

3. Bread & butter plate –
    only rim and bottom touched   ___ ___ ___ ___ ___

4. Tray cover – centered edges par-
    allel to tray edges   ___ ___ ___ ___ ___

5. Bread & butter plate – lower
    left hand corner – no spaces
    left   ___ ___ ___ ___ ___

6. Fork – picked up – left hand   ___ ___ ___ ___ ___

7. Fork – touched only handle   ___ ___ ___ ___ ___

8. Knife, soupspoon, teaspoon –
    picked up – right hand   ___ ___ ___ ___ ___

9. Knife, soupspoon, teaspoon –
    touched only handles   ___ ___ ___ ___ ___

10. Fork – placed to right of bread
    & butter plate – no space   ___ ___ ___ ___ ___

11. Fork – perpendicular to bottom
    edge   ___ ___ ___ ___ ___

12. Knife – cutting edge facing
    center of tray   ___ ___ ___ ___ ___

METHOD		REPETITION				
		1	2	3	4	5
13.	Knife, soupspoon, teaspoon – perpendicular to bottom	___	___	___	___	___
14.	Soupspoon to right of knife, teaspoon to right of soup-spoon, no space	___	___	___	___	___
15.	Sugar, salt, pepper – picked up – left hand	___	___	___	___	___
16.	Napkin – picked up – right hand	___	___	___	___	___
17.	Napkin – placed center upper tray	___	___	___	___	___
18.	Napkin – long edge along top tray cover edge	___	___	___	___	___
19.	Sugar, salt, pepper – placed in a row	___	___	___	___	___
20.	Sugar, salt, pepper – placed in center of napkin, parallel to napkin edge	___	___	___	___	___
21.	Sugar, salt, pepper – printing facing person	___	___	___	___	___
22.	Saucer – picked up – left hand	___	___	___	___	___
23.	Saucer – only rim and bottom touched	___	___	___	___	___
24.	Cup – picked up – right hand	___	___	___	___	___
25.	Cup – picked up – by handle	___	___	___	___	___
26.	Sufficient space left for saucer in lower right hand corner	___	___	___	___	___
27.	Saucer – placed lower right hand corner – no spaces	___	___	___	___	___
28.	Cup – placed – middle of saucer	___	___	___	___	___

METHOD

	1	2	3	4	5

29. Cup - handle pointing
    toward lower right hand
    corner

Task II. Placing Served Food on Tray

METHOD		REPETITION				
		1	2	3	4	5
1.	Pie plate – picked up – right hand	___	___	___	___	___
2.	Pie plate – only rim and bottom touched	___	___	___	___	___
3.	Pie plate – placed – upper left hand corner – no space	___	___	___	___	___
4.	Pie – tip – straight down	___	___	___	___	___
5.	Salad bowl – picked up – right hand	___	___	___	___	___
6.	Salad bowl – only rim and bottom touched	___	___	___	___	___
7.	Salad bowl – placed lower right hand corner of napkin	___	___	___	___	___
8.	Salad bowl – against bottom right corner but not on napkin	___	___	___	___	___
9.	Plastic glove – touched on outside top and edgetop only	___	___	___	___	___
10.	Plastic glove – placed on right hand	___	___	___	___	___
11.	Butter chips – picked up – right hand	___	___	___	___	___
12.	Butter chip – placed 2" from left edge	___	___	___	___	___
13.	Butter chip – parallel to left edge	___	___	___	___	___
14.	Bread – picked up right hand	___	___	___	___	___
15.	Bread – placed – 2 half slices – edges matched	___	___	___	___	___
16.	Bread – placed in center of bread & butter plate	___	___	___	___	___

METHOD   REPETITION

		1	2	3	4	5
17.	Creamer - picked up right hand	___	___	___	___	___
18.	Creamer - only base touched	___	___	___	___	___
19.	Creamer - placed above teaspoon	___	___	___	___	___
20.	Milk glass - picked up - right hand	___	___	___	___	___
21.	Milk glass - touched only base	___	___	___	___	___
22.	Milk glass - placed 1" above saucer	___	___	___	___	___
23.	Coffee pot - picked up - right hand	___	___	___	___	___
24.	Coffee pot - picked up - by handle	___	___	___	___	___
25.	Coffee pot - placed 2" above glass	___	___	___	___	___
26.	Coffee pot - handle - pointing toward lower right hand corner	___	___	___	___	___
27.	Dinner plate - picked up - right hand	___	___	___	___	___
28.	Dinner plate - only rim and bottom touched	___	___	___	___	___
29.	Dinner plate - placed between knife and fork	___	___	___	___	___
30.	Dinner plate - touching bottom edge of tray - no space	___	___	___	___	___
31.	Dinner plate - meat directly at bottom	___	___	___	___	___

Task III. Stripping Trays

METHOD		REPETITION				
		1	2	3	4	5
1.	Dinner plate – picked up – left hand	___	___	___	___	___
2.	Dinner plate – wiped off – right hand	___	___	___	___	___
3.	Leftovers – into garbage	___	___	___	___	___
4.	Dinner plate – placed in one pile	___	___	___	___	___
5.	Pie plate – picked up – left hand	___	___	___	___	___
6.	Pie plate – wiped off – right hand	___	___	___	___	___
7.	Leftovers – into garbage	___	___	___	___	___
8.	Pie plate – placed in one pile	___	___	___	___	___
9.	Salad bowl – picked up – left hand	___	___	___	___	___
10.	Salad bowl – wiped off – right hand	___	___	___	___	___
11.	Leftovers – into garbage	___	___	___	___	___
12.	Salad bowls – placed in one pile	___	___	___	___	___
13.	Bread and butter plate – picked up left hand	___	___	___	___	___
14.	Bread & butter plate – wiped off – right hand	___	___	___	___	___
15.	Leftovers – into garbage	___	___	___	___	___
16.	Bread & butter plate – placed in one pile	___	___	___	___	___
17.	Creamer – picked up – left hand	___	___	___	___	___
18.	Glass – picked up – right hand	___	___	___	___	___

METHOD   REPETITION

                                          1   2   3   4   5

19. Remaining liquids dumped in sink   ___   ___   ___   ___   ___

20. Glasses - grouped together above
    tray   ___   ___   ___   ___   ___

21. Creamers - grouped together
    above tray   ___   ___   ___   ___   ___

22. Cup - picked up - right hand   ___   ___   ___   ___   ___

23. Saucer - picked up left hand   ___   ___   ___   ___   ___

24. Remaining liquids dumped in
    sink   ___   ___   ___   ___   ___

25. Cups - grouped together   ___   ___   ___   ___   ___

26. Saucer - placed in one pile   ___   ___   ___   ___   ___

27. Coffee pot - picked up - right
    hand   ___   ___   ___   ___   ___

28. Remaining liquid dumped in sink   ___   ___   ___   ___   ___

29. Coffee pots - group together   ___   ___   ___   ___   ___

30. Fork - picked up - left hand   ___   ___   ___   ___   ___

31. Knife & spoons, picked up -
    right hand   ___   ___   ___   ___   ___

32. Utensils - placed in container   ___   ___   ___   ___   ___

33. Tray cover - both hands used   ___   ___   ___   ___   ___

34. Paper - into paper container   ___   ___   ___   ___   ___

APPENDIX C

INSTRUCTIONS TO SUBJECTS PRIOR TO PERFORMANCE

You will now be given instructions to perform three tasks. Follow the instructions and take the necessary steps and precautions you have read (for Video Tape Recorder – seen and heard). Your work will be timed and checked for errors. This is not a test of you, but is meant to gather information as to whether the method of instruction you have used was effective. You will not be able to ask me any questions once we start. Work as quickly but as accurately as you can. Please follow the steps in order. Please do not discuss this experiment with any other persons until I have completed the experiment.

A COMPARISON OF THE EFFECTIVENESS OF TWO MEDIA
FOR TRAINING FOOD SERVICE PERSONNEL

by

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A shortage of skilled personnel and high turnover rates in the food service industry require a formalized, dynamic training program to supplement guidance and supervision given on the job. Present training methods are inefficient resulting in poor service and productivity. The value of training remains more a matter of faith than of fact. Training research is essential if the benefits of training methods are to be confirmed and if present training is to be improved.

The effectiveness of the typed list and the video tape recorder for teaching typical hospital food service tasks were compared. The tasks used were setting trays, placing served food on trays, and stripping trays. The training procedure for the tasks was developed and then the tasks were taped on the video tape recorder. Thirty-two female food service workers were used as subjects. Sixteen of the subjects performed the tasks using the typed list and 16 subjects used video tape recorder.

Performance time and errors were used to evaluate the results. The video tape recorder had significantly less errors than the typed list ($p < .001$) for task I and II, and ($p < .01$) for task III. Average errors for the video tape recorder were 1.5, 1.3, and 1.5 for task I, II, and III respectively while for the typed list the average errors were 7.3, 7.1, and 5.3. Performance times were significantly lower for the typed list for task I ($p < .01$) and task II ($p < .05$) but there was no significant difference for task III.

Subjects using the video tape recorder expressed favorable comments for this medium.