

A COMPARISON OF PROGRAMMED INSTRUCTIONAL METHODS  
FOR TRAINING FOOD SERVICE WORKERS

by

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## INTRODUCTION

Food service industries throughout the country are continually seeking means for more efficient utilization of manpower. Each year approximately 250,000 individuals enter the food service industry (Hall, 1970). Carefully planned training programs are needed to assist these persons in developing their abilities and to inform them of technological advances and new methods of food preparation and customer service.

One training method receiving increased attention is self-learning through programmed instruction. Programming is the process of organizing and presenting materials in a series of small steps designed to lead an individual from previous knowledge to new areas and principles of increased complexity. The presentation of the material demands active participation of the trainee; the trainee determines his own rate of speed to complete the program, and immediately following each component step, he is informed of the results of his participatory response.

Programmed instruction as a training method in food service fulfills the primary objective of training which is to develop individuals to their fullest ability in performing given tasks. Quality of the material presented is uniform and there is no variation in technique for successfully completing the task nor in the method of instructing the trainee. Self-learning through programmed instruction has the added advantage of enabling the trainee to study job procedures directly at the operation site.

Objective evaluation of training programs for food service personnel have rarely been used, and quite frequently, the programs have been evaluated in terms of verbal comments of the participants and impressions

of the instructor (Obert and Burr, 1963). The purpose of this research was to compare, using objective criteria, two types of programmed instructional media for training food service workers.

## REVIEW OF LITERATURE

### Overview of Training

Need for Training. Without fear of disputation, there is a chronic shortage of adequately trained personnel at all levels of the food service industry (Perkins and Penn, 1970; Carter et al., 1964; Schoff, 1967; Brandt, 1969; Riley, 1969). Responsible industry leaders recognize that the single most important problem confronting them in the 1970's may well be that of obtaining, training and retaining the vast numbers of men and women required to fill untried positions and for replacements in existing jobs. Each year 250,000 new workers enter the food service industry, and in order to draw and keep such numbers, the industry must provide continuous training to assist them in progressing to positions of greater responsibility (Hall, 1970).

In school food services, it is now an accepted fact that training classes are necessary in any successful school lunch program (Williams, 1969). The average person commencing as a school lunch worker is a housewife unskilled in serving large groups and in quantity food preparation. Training can equip the workers for promotional examinations required of school lunch personnel in order to advance to higher classifications. Williams points out that training for such promotions can be carried out by several methods or a combination of methods:

1. On-the-job training.

2. Classes by outside agencies, such as technical schools or community colleges.
3. Classes provided by the Food Service Division.
4. Printed material covering the operation of the cafeterias.
5. Television.

Because of the deficit of skilled personnel at all levels of the food service trade, the industry must make improved efforts to upgrade existing employees. Termination interviews indicate employees' frustration regarding unclear assignments and inadequate instruction on techniques in performing the tasks and in following the procedures utilized in their departments (Anonymous, 1970).

The importance of training, however, extends beyond training the unskilled. Additional training of the recent university graduate is often required to supplement college courses in the study of food service management. Very often, the existing courses are handicapped by deficient facilities, scarcity of qualified instructors, problems of financing the procurement of food products, and providing an outlet for the finished products (Bruce, 1964).

As a consequence, a technologically based society requires the full utilization of all its members who must be trained and educated to the highest level of their potential; hence, the need for training clearly exists (Nadler, 1969).

Labor Turnover. Labor cost in the food service industry continues to be one of the highest of all industries with respect to sales (Riley, 1969). Labor turnover is one of the most costly problems confronting the food service industry, particularly university food services and

hospital dietary departments (Gray and Donaldson, 1967). These labor turnover expenditures include not only the expense of actual performance work involved when persons move through the employment and termination procedures but also the costs associated with training the new employees, i.e., the cost of the person executing the training function and the cost of reduced efficiency until the neophyte is trained. An additional cost is the expense of strain on other employees, propagating extraordinary job dissatisfaction and even greater instability of the work force (Pelto and Sweatt, 1965).

The worker who leaves the organization represents an additional cost of tantamount importance; the financial loss to the employer. Industry has estimated the minimum cost of this loss at \$300.00, but it may run as high as \$6,000.00 for those members higher in the organization (Gray and Donaldson, 1967).

Analysis of turnover statistics indicate clearly that termination is most likely to occur during the first three (3) months of employment (Anonymous, 1970). Many employees are recruited, interviewed, hired, given a brief orientation with no training, and then put to work under the old philosophy of "sink or swim." As a result, many "drownings," thus requiring the old process of recruiting, interviewing, and hiring over again.

G. H. Halsey (1953) listed some additional clues to possible sources of job dissatisfaction resulting in excessive turnover:

1. Poor selection or induction procedures.
2. Poor training or lack of adequate review to discover employees who are exceptionally efficient and entitled to a salary increase before the "regular" time.

3. An inadequate promotion plan.

Structuring a Training Program. Significant technological advances in foods, ways of preparation, and modes of customer service have facilitated expansion and will continue to insure industry growth. These technological advances are competently researched, effectively documented and well disseminated.

Yet, there is no corresponding body of research and little documentation on another major factor which can inhibit or assist the industry growth in the future--upgrading food service manpower (Hall, 1970). When it is time to squeeze costs, the training function is one of the first to be affected. Programs are dropped and staffs reduced well ahead of such action in many other areas of a company.

A major shortcoming of numerous training programs is their seeming inability to hold up under close scrutiny as a function necessary to justify existence (Fleuter, 1969).

Because training and upgrading employees for the various opportunities is a major responsibility of management (Bruce, 1964), what can be done to increase the effectiveness of a training program? Brandt (1969) suggests four principles to follow to get more performance out of the training dollar:

1. Determine what you want employees to do after they are trained.
2. Decide what experiences the employees must have in order to do well that which you want them to do.
3. Communicate clearly the training objectives.
4. Work from a written training plan.

Brandt continues in pointing out that five goals can be satisfied

through a written training plan:

1. The training programs are consistent from one employee to another.
2. All points are covered in the proper sequence.
3. A ready reference is provided for the trainees.
4. Employees may be scheduled for the training programs in digestible bites.
5. The training material will more likely be lively and interesting.

In a study conducted by the School of Hotel Administration at Cornell University, the U. S. Department of Labor, and the National Restaurant Association, Hall (1970) concluded that training and development of non-management personnel in the food service industry works best if:

1. There is an understanding that training and development is a company responsibility.
2. There is an understanding that training and development are only parts of a clearly defined and visible career progression program which provides opportunities commensurate with individual abilities and desires for advancement.
3. Training and development are recognized as continuous and never complete activities at all employee levels.
4. Someone is both responsible and accountable for training, development and counseling at each operational level.
5. There is a budgeted commitment of company resources (time, money, men, and materials) for training and development.
6. The company's arrangement of rewards, promotions, wage scales, fringe benefits and status are mobilized to support and reinforce the career progression program.
7. Training and development starts with effective orientation of new employees, continues with scheduled common denominator subject matter (sanitation, safety, fire prevention, etc.), with skill training for individual jobs, and with supervisory training as appropriate.

8. Training and development facilities outside the company (public and private schools, junior/community colleges) are utilized to supplement in company programs.

### Adult Learning Ability

Learning and education are continuous processes, not only to keep up but to extend beyond that which is known. Adult education is proving that continuing study can be a source of satisfaction and pleasure, not only by improving work competence but by enriching the additional 20-35 years of life allotted to those who live in the second half of the century (Patterson, 1964).

Adult education commonly is directed toward people who are not primarily full-time students, but who are wage earners, parents, and citizens (Kintzer, 1967). Adult education may be defined as:

all activities with an education purpose that are carried on by people engaged in the ordinary business of life. In terms of age groups, we are concerned with the working life of the individual, that is, from approximately twenty to sixty years of age (Wagner, 1964).

In considering an approach to adult learning, the teacher-dietitian must keep foremost in mind that learning endeavors to change or modify behavior (Craig, 1971; Kintzer, 1967; Butterworth, 1966). The dietitian can insure the proper learning environment to promote change by, first, assuring that the learning environment is well-lighted, has a comfortable temperature, effective seating arrangement, and that all equipment is servicable. Second, it is desirable to familiarize oneself with the background (age, education, work experience) of the individuals to be instructed (Schindler, 1960).

Further, learning is more rapid and efficient when the learner is a

participant (Wagner, 1964; Craig, 1971). The learner must be constantly aware of his relative success or failure. Thus, it is imperative that the individual relate himself in some way to the learning activity. A principle consistently verified by research is that frequent and obvious feedback sharpens the learner's retention and performance (Kintzer, 1967). To illustrate, Craig (1971) points out the study of the Socony Vacuum Company in which learners were tested on their ability to recall given information studied. The learners were able to recollect:

10% of what they read.

20% of what they heard.

30% of what they saw.

50% of what they saw and heard.

70% of what they said as they talked.

90% of what they said as they executed some task.

Thus, retention and learning were directly related to involvement. As the learners became more involved, more information was learned and retained.

In opposition to some research Wagner (1964) found that adults learn almost as well as when they were children. Further, Lorge (1955) indicated that the evidence is clear that the ability to learn does not change significantly from age twenty to sixty. However, Martin (1963) pointed out that some changes occur in the normal aging process which may inhibit learning:

1. Impaired vision and hearing.
2. Decreased speed, intensity and endurance of neuromuscular reactions.
3. Some decrease in strength.



Thus, the following suggestions should be kept in mind in the planning and organization of material for adult education purposes (Martin, 1963):

1. Use simple, well chosen words that are clear and meaningful. Avoid words that are difficult.
2. Plan material in logical and step-by-step sequence.
3. Plan short units of work.
4. Use as many of the senses as possible.
5. Work with individuals in small groups.

#### Instructional Media and Method

The Video Tape Recorder. The video tape recorder system is a portable, closed circuit television system for producing television programs. The system commonly includes a recorder (quite similar to a voice tape recorder), television, camera and lens, cables and carrying case, retailing for around \$3,000.00 (Nadler, 1969). Audio and video programs are recorded on magnetic tape simultaneously, or, if so desired, the audio portion may be "dubbed" in at a later time.

Some advantages of the video tape recorder system are:

1. Tapes may be produced and then reviewed instantly. This characteristic lends itself to application in reviewing the performance of an individual completing a given task. The trainer-dietitian may assist in the review by pointing out strengths, weaknesses, and areas of improvement during the replay.
2. A video tape training program may be prepared within a few hours, depending upon the length of the program, the personnel assisting in the production of the tape, whether audio is recorded simultaneously or at a later date, and the number of camera angles desired.
3. If it is found that production quality of the tape is inferior, there is no need to dispose of the tape. New programs may be produced on the same tape over 1,000 times.

4. If a phase of a training program becomes obsolete through technological advance, that portion of the tape may be reproduced without altering other portions of the program.
5. The same video tape recorded program may be replayed innumerable times without reduction in the quality of the projected images.
6. The production of the video tape programs requires minimal technical competency in the operation of the camera and video tape equipment.

Thus far, the prime use of video tape in industry has been in the training of employees (Groundwater, 1969). A significant finding is the possibility of teaching efficiently with programmed instruction materials on television (Kimble and Wulff, 1961; Staab, 1964). In preparing video continuity, the first task is to determine what subject matter has been developed and should be emphasized for the video viewer. Next, one should consider organizing the script with utmost simplicity and logic to facilitate and insure absorption by the viewer (Dolkas, 1969).

Even though utilization of the video tape recorder system in training employees is limited, some application has been made in the banking and food service industries. The American Security and Trust Company of Washington, D.C., utilizes the video tape recorder system in training newly hired tellers. Reports of the media indicate that the training programs are very successful (Groundwater, 1969).

In food service research, Moroz (1969) compared the effectiveness of training food service employees using a typed list of instructions for one group and a video tape recorder for a second group. The workers were trained in three tasks:

1. Setting serving trays with required articles (bread, cup and saucer, etc.).
2. Placing served foods on trays.

### 3. Stripping of trays and sorting dishes.

An error was recorded when the subject did not follow the correct operational procedures. Moroz found that the group trained using the video tape recorder had significantly fewer errors than those trained with the typed list, and concluded that, even though the cost per presentation was higher than the typed instructions, the video tape recorder would be most useful in the food service industry.

Programmed Instruction. To keep training techniques abreast of dynamic technology, business and industry are turning more and more to programmed learning (Dyer, 1969; Carter et al., 1964). Programmed learning is not a new technique for education, however. In 1926, Sidney L. Pressey, an Ohio State University psychologist, developed the first recognized teaching machine, designed to present a series of questions to an individual and immediately inform him whether his response was correct or incorrect (Pressey, 1960). Since then more than 2,200 published programs are available at all levels of education, from preschool to continuing professional education (Hickey, 1969).

Programming is the process of organizing materials for learning in a series of small steps designed to lead the learner from previous knowledge to new areas and principles of increased complexity (Lysaught and Williams, 1963). Programmed instruction (PI) is characterized by four primary points (Pipe, 1966):

1. Small steps; a large number of small steps.
2. Active participation; the trainees continually interact with the program, responding with each step.
3. Immediate knowledge of results.

4. Self-pacing; the student or trainee determines his own rate of progress through the program.

Programmed instruction can be an effective and efficient method of instruction, as demonstrated by the wide acceptance in industry and the armed forces. Introduced at all levels of formal education, PI can be used successfully with individuals of any age level, provided they can read and see (Moore and Klachke, 1967). Further, PI offers many advantageous characteristics for the adult audience (Kaufman, 1965). Each individual receives the same quality of standardized information, not dependent on the knowledge, teaching competency, or available time of the instructor-trainer. The trainee participates in a guided program of self-study that he pursues independently.

In addition to applications of PI to the various educational situations and audiences, the program can be presented by a wide variety of media, ranging in complexity and cost from mimeographed material to scrambled books, from simple roller type machines with windows to automated electronic equipment (Moore and Klachke, 1967).

Flexibility of scheduling is an additional advantage of self-study through programmed instruction. With printed material, each individual may have his own copy to study at his leisure (Kaufman, 1965). With the aid of these programs, one dietitian-trainer, if she is familiar with all areas, can teach several subjects simultaneously (Chidesten, 1967). If she has seven trainees, for example, each may be studying a different subject; each may progress at his own rate which is probably the single greatest advantage of programmed instruction (Schramm, 1964).

Chadock and Gehring (1968) pointed out the need for programmed instruction in business and industry:

1. Many operations cannot afford, neither financially nor physically to send a trainee to another operation to be trained.
2. Oftentimes, when trained with a better branch of a food service, the person training will outline various work procedures and then give the trainee reading assignments. Occasionally, these references will contain jargon and technical terminology unfamiliar to the trainee.
3. Many operations see that the operation will not allow time for training.

Programmed Instruction in the Food Service Industry. An examination of the literature of programmed instruction disclosed few studies in the area of food service. However, the studies reported did shed favorable light on the potential of this technique for learning.

In one study utilizing teaching machines, Carter et al. (1964) prepared a basic course in sanitation for training food service employees. With one control and one experimental group of 34 employees each, the control group received no formal instruction while the experimental group was instructed by the teaching machine. Results indicated that programmed instruction was potentially an effective tool for use in training unskilled food service employees, regardless of age, level of education, or reading ability.

In another study, Apley (1968) reported using audio visual programmed instruction in the form of 35 mm. slides and tape recorded script. The subjects were trained in spatial relationships of a banquet place setting and body positions and movements of a banquet waitress during service of a place setting. Performance and program effectiveness were based upon learning, retention, and the subjects' attitudes toward the training program. Based on the results of the study and the favorable attitudes of the participants, Apley concluded that the

training method appeared to merit consideration.

Sumbingco (1967) developed a programmed textbook containing colored photographs and detailed step-by-step instructions of two food service tasks. Eleven employees of residence hall food service at Kansas State University were trained and then tested for post and delayed retention. Sumbingco concluded that the programmed textbook presentation would be applicable for teaching food service personnel.

Middleton and Konz (1967) used slides plus recorded commentary in instructing food service employees on two techniques for breading foods. The authors believed that programmed instruction could assist in resolving the training problem by enabling workers to instruct themselves.

## PROCEDURE

### Development of Training Programs

Training programs for two food preparation procedures were developed for use with a video tape recorder and a training manual. Procedures selected for this study were breading and deep-fat frying foods and making sliced meat sandwiches. Both procedures are commonly used in quantity food preparation and are relatively simple to perform. Perch fish portions were selected for breading and deep-fat frying, and bologna was used for the sliced meat sandwich programs. Procedures were adapted from Kotschevar (1964), Wheat Flour Institute (1953), American Institute of Baking (1964), and slide programs previously developed in the Department of Institutional Management.

Directions for preparing the two food items were written in programmed form with questions covering the subject matter in each step.

Steps, instructions, and questions adapted to the two instructional media were identical except for some changes in wording in the video tape.

Video Tape Programs. The video tape programs were taped at the K-State Union food service by the investigator and one assistant. A Sony video tape camera, recorder, microphone, and monitor were used in recording the training programs on black and white, one-half inch electromagnetic tape. Video portions were taped first in their entirety, and the audio portions were "dubbed in" at a later time. Each step of the program was followed by a time allotted pause in the video tape for answering questions in a question booklet (Appendices A and B). The breading and deep-fat frying training program was 35 minutes in length, and the sliced meat sandwich training program was 25 minutes.

Training Manuals. Training manuals for breading and deep-fat frying food and making sliced meat sandwiches were developed. Procedures were typed on 8 1/2 x 11 in. paper in step-by-step manner (Appendices C and D). Each step was supplemented by a black and white picture taken at the K-State Union food service by a professional photographer. Following each step was a multiple choice question on the subject matter.

Program Review. The four training programs were reviewed for completeness, simplicity and logical sequence by members of the Institutional Management faculty at Kansas State University. Improvements and alterations were made based upon these recommendations.

### Selection of Subjects

Twenty participants, five in each of the four training programs, were selected from female employees of the K-State Union food service. A job information sheet (Appendix E), distributed to all female employees of the food service, aided in the selection process. Ages of the subjects ranged from 19 to 65 years, while education varied from 8 to 16 years (Table 1). None of the participants had previous commercial experience in food preparation other than their employment at the K-State Union food service. Thus, assignment of the participants to the four training groups was based primarily upon age and education. To be selected for the training programs, however, subjects were to have no previous experience in the two procedures being studied. In addition, participants in the sliced meat sandwich training programs were to be right-handed because the training program illustrated the cutting of sandwiches with the knife in the right hand.

Groups were trained according to the following assignments:

<u>Group</u>	<u>Procedure</u>	<u>Instructional Method</u>
I	Breading and deep-fat frying	Video Tape Recorder
II	Breading and deep-fat frying	Training Manual
III	Making sliced meat sandwiches	Video Tape Recorder
IV	Making sliced meat sandwiches	Training Manual

### Testing

Subjects were trained individually during selected periods of work



Table 1. Age and education of subjects

Deep-Fat Frying			Sliced Meat Sandwich		
Group I: Video Tape			Group III: Video Tape		
Subject No.	Age yrs.	Education yrs.	Subject No.	Age yrs.	Education yrs.
1	19	13	11	19	12
2	29	16	12	23	14
3	51	12	13	43	12
4	54	12	14	64	8
5	<u>59</u>	<u>12</u>	15	<u>60</u>	<u>12</u>
Av.	42.4	13	Av.	41.8	11.6
Group II: Training Manual			Group IV: Training Manual		
Subject No.	Age yrs.	Education yrs.	Subject No.	Age yrs.	Education yrs.
6	21	15	16	21	14
7	23	11	17	25	16
8	45	12	18	43	12
9	58	12	19	54	8
10	<u>60</u>	<u>13</u>	20	<u>65</u>	<u>12</u>
Av.	41.4	12.6	Av.	41.6	12.4

activity over a ten day period. The investigator read the instructions for the training programs with the subjects and answered questions. The video tape recorder was turned on for subjects in video tape groups. All subjects were alone during the training sessions. Partitioned sections of the K-State Union dining rooms and linen room were selected for the training areas. Both facilities were characterized by quiet atmosphere, adequate lighting, comfortable temperature, seating areas, and power source required for the video tape recorder.

Time spans for completing the video tape training programs (35 minutes for the breading and deep-fat frying program and 25 minutes for the sliced meat sandwich program) were used as the basis for time guidelines for subjects in the training manual groups. Subjects using the training manual in deep-fat frying were given 35 minutes to complete the program, while the sliced meat sandwich training program participants were allowed 25 minutes.

Immediately following the training sessions, each trainee was given a post retention test (trial 1) performing the entire sequence of the operation in which she was trained. With the aid of a performance scorecard (Appendix F), trainees were graded according to the most important phases of the food procedure. A check mark (✓) was recorded when the trainee performed the step correctly in the proper sequence according to the scorecard; an "X" was recorded when the step was performed correctly but in improper sequence; an "O" was recorded when the step was executed incorrectly.

Two weeks from the day of the training session and post retention test (trial 1), each trainee again performed the entire sequence of the

operation to determine delayed retention (trial 2). Trainees were then given a questionnaire (Appendix G) to determine their views of training and reactions to the training media.

### Statistical Analysis

Data obtained from performance scorecards were analyzed using the Friedman test (Conover, 1971) by the Department of Statistics, Kansas State University.

### RESULTS AND DISCUSSION

Criteria for evaluating the effectiveness of the two media were the number of steps performed correctly in the proper sequence and reactions of subjects to the training programs.

The total number of steps performed correctly by subjects trained in the same procedure were compared: Group I (video tape) and Group II (training manual) for deep-fat frying were compared, and Group III (video tape) was compared to Group IV (training manual) for making sliced meat sandwiches.

#### Steps Performed Correctly

Deep-Fat Frying. No significant difference was found in the number of correct steps performed in the two methods of training for breading and deep-fat frying (Table 2). Out of a possible 17 steps, the average number of steps performed correctly in trial 1 was 14.4 for Group I and 13.6 for Group II. The average number of steps performed correctly by Group I two weeks later (trial 2), however, increased to 14.6, while

Table 2. Deep-fat frying--steps performed correctly<sup>1</sup>

Group I			Group II		
Subject No.	Video Tape Program		Subject No.	Training Manual Program	
	trial 1	trial 2		trial 1	trial 2
1	17	16	6	12	14
2	16	16	7	12	11
3	17	12	8	15	13
4	10	13	9	15	14
5	12	16	10	14	13
Av.	14.4	14.6		13.6	13.0
n.s.					
%	84.7	85.9		80.0	76.5

<sup>1</sup>total number of steps = 17

n.s. = no significant difference between groups in steps performed correctly

Group II decreased to 13.0. Although no statistically significant difference existed, Group I trained with the video tape recorder performed slightly better on the average in both trials than the training manual group.

Sliced Meat Sandwich. Group III, instructed by video tape, performed better ( $P < 0.01$ ) than Group IV using the training manual (Table 3). Out of a possible ten steps, Group III averaged 9.2 steps performed correctly in trial 1 while Group IV performed 7.6 steps correctly. On the second trial, Group III increased the average number of steps performed correctly by 0.4, but Group IV had a 0.4 decrease.

#### Instructional Media

Video Tape. The video tape group performed significantly better than the training manual group in making sliced meat sandwiches but only slightly better in the deep-fat frying program. Group III (Table 3) trained with the video tape recorder in making sliced meat sandwiches consisting of ten steps was correct in 92% and 96% of the total steps in the two trials. Subjects trained with the video tape recorder in bread-ing and deep-fat frying correctly performed 84.7% of the 17 steps in trial 1 and 85.9% in trial 2 (Table 2). Thus, in the procedures with the higher number of steps, the percentage of steps performed correctly was lower.

Training Manual. A positive relationship existed between the total number of steps in the programs and the percentage of correct steps by subjects using the training manuals; the higher the total number of

Table 3. Sliced meat sandwich--steps performed correctly<sup>1</sup>

Group III			Group IV		
Subject No.	Video Tape Program		Subject No.	Training Manual Program	
	trial 1	trial 2		trial 1	trial 2
11	10	9	16	9	10
12	9	9	17	8	8
13	10	10	18	8	8
14	8	10	19	6	3
15	9	10	20	7	7
Av.	9.2	9.6		7.6	7.2
**					
%	92.0	96.0		76.0	72.0

<sup>1</sup>total number of steps = 10

\*\* = significant difference between groups at the 1% level of probability

steps, the greater the percentage performed correctly. In the more lengthy deep-fat frying training program (Table 2), 80.0% and 76.5% of the steps were performed correctly, as opposed to 76.0% and 72.0% of the steps of the shorter sliced meat sandwich training program (Table 3). Thus, the total number of steps in the program apparently did not affect the number of steps learned by subjects in this method of instruction.

#### Reaction to Training Programs

In response to a questionnaire given at completion of study, all subjects cited the importance of training. In addition, 19 of the 20 subjects indicated preference for being trained in a job rather than learning on their own. One subject in Group III, preferring to learn on her own, indicated that training was important (Question 1).

All subjects in Groups I and III trained with the video tape recorder (Table 4) agreed that instructions for the video tape program, the steps on the television, and the questions asked in the booklets were clear and easily understood. One subject in Group I reported difficulty keeping up with the steps in the training program.

Groups II and IV using the manual (Table 5) indicated that training was important and that they would prefer to be trained in a job rather than learn on their own. Reflecting on the training manual, all subjects reported they had adequate time to complete the program. All subjects indicated that instructions for using the manual and steps given in the manual for preparing food items were clear and easily understood.

Table 4. Affirmative responses to questionnaire by video tape groups

Question	Responses		Total
	Group I	Group III	
	yes	yes	
1. Is training important to you?	5	5	10
2. Would you prefer to be trained in performing a job, or would you rather learn it on your own?			
( ) I would prefer to be trained	5	4	9
( ) I would prefer to learn on my own			
3. Were the instructions for taking the television training program clear and easily understood?	5	5	10
4. Did you find yourself having difficulty keeping up with the steps in the training program?	1	0	1
5. Were the steps on the television clear and easily understood?	5	5	10
6. Were the questions in the question booklet clear and easily understood?	5	5	10



Table 5. Affirmative responses to questionnaire by training manual groups

Question	Responses		
	Group II	Group IV	Total
	yes	yes	
1. Is training important to you?	5	5	10
2. Would you prefer to be trained in performing a job, or would you rather learn it on your own?			
( ) I would prefer to be trained	5	5	10
( ) I would prefer to learn on my own			
3. Did you feel you had enough time to complete the training manual?	5	5	10
4. Were the instructions for using the training manual clear and easily understood?	5	5	10
5. Were the steps in the training manual for preparing the food items clear and easily understood?	5	5	10

## SUMMARY

Food service industries throughout the country are continually seeking means for more efficient utilization of manpower. This problem, coupled with shortages of personnel, increasing labor costs, and technological advances, has indicated the need for research in training food service employees.

The purpose of this study was to compare the use of a video tape recorder and a written manual in training food service workers in two food preparation procedures. Procedures for preparing the food items were developed in detailed steps, each followed by a question covering the subject matter of the step.

Subjects for the study were selected from employees of the K-State Union food service and were trained according to the following assignments, five in each group:

<u>Group</u>	<u>Procedure</u>	<u>Instructional Method</u>
I	Breading and deep-fat frying	Video Tape Recorder
II	Breading and deep-fat frying	Training Manual
III	Making sliced meat sandwiches	Video Tape Recorder
IV	Making sliced meat sandwiches	Training Manual

Subjects performed the steps described in the programs immediately after the training session (trial 1) and two weeks after the training session (trial 2). Criteria for determining the effectiveness of the training media was the number of steps performed correctly. Subjects were given a questionnaire at the completion of the study to assess

their reactions to the training programs.

No significant difference was found in the number of steps performed correctly by Groups I and II trained in breadng and deep-fat frying foods. However, on both trials, Group I using the video tape recorder averaged a higher number of steps performed correctly than Group II.

Group III trained with the video tape recorder in making sliced meat sandwiches performed better ( $P < 0.01$ ) than Group IV instructed with the training manual.

Subjects' reactions to both instructional media were favorable. Subjects using the video tape recorder indicated that instruction, steps, and questions in the training programs were clear and easily understood. Further, nine of the ten subjects in video tape groups found no difficulty keeping up with the steps in the training programs. In addition to indicating that instructions and steps in the training programs were clear and easily understood, groups using the training manuals reported they had adequate time to complete the manuals.

#### CONCLUSIONS AND RECOMMENDATIONS

Video tape instructions were superior to the training manual in making sliced meat sandwiches but only slightly better in deep-fat frying procedures. These results, in part, support research by Moroz (1969) in which a group trained with a video tape recorder in hospital dietary tasks performed better than a group with a typed list of instructions.

Results indicate there may be a relationship between the number of steps and the effectiveness of the training method. However, additional

research is required to support this conclusion.

Results of this study indicate the following research in:

1. Application of additional food preparation procedures to the video tape recorder and training manual in programmed instructional form.

2. Relationship between numbers of steps and effectiveness of training programs when using the video tape recorder and training manual.

## ACKNOWLEDGMENTS

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A special note of appreciation to my wife, Barbara, for her patience and encouragement in completing this manuscript.

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## APPENDIX A

## Instructions for Video-Tape Training Program

### Deep-fat Frying Fish Portions

This training program is not intended to rate you on your ability to do work, nor does it have anything to do with your work at the K-State Union. It is only meant to determine the effectiveness of the method by which the material in this program is presented to you. When answering the questions in this booklet, of course you will want to choose the correct answer, but if you choose an incorrect answer, do not worry. You will not be graded.

The training program we are dealing with involves breading and deep-fat frying fish portions. After we finish going over these instructions, we will begin.

On the television in front of you, you will see the first step in the training program. Try to remember everything you see and hear on the television. After the step, you will be instructed to answer the multiple-choice question in this booklet by marking the box with the correct answer. REMEMBER, YOU WILL NOT BE GRADED WHEN ANSWERING THESE QUESTIONS.

During the time you are answering the questions, nothing will be shown on the television. So if you answer the question and check your answer before the next step on the television, go back and restudy the question and answer.

After all of the steps have been shown on the television and all of the questions have been answered, you will then view all of the steps

once more, only this time the steps will be shown in one long process, one step after another with no questions. Following this, you will then be asked to actually perform the steps or tasks described over the television.

It is very important that you understand these instructions. Are there any questions at this time?

1. The cooking process we are dealing with involves three (3) steps.

Check the box with the steps in the correct order.

- ( ) A. Panning the deep-fat fried fish portions, breading fish portions for deep-fat frying, and deep-fat frying the fish portions.
- ( ) B. Deep-fat frying the fish portions, breading fish portions for deep-fat frying, and panning the deep-fat fried fish portions.
- ( ) C. Breading fish portions for deep-fat frying, deep-fat frying the fish portions, and panning the deep-fat fried fish portions.

2. At what temperature should the temperature dial be set?

( ) A. 460° F.

( ) B. 350° F.

( ) C. 50° F.

3. The deep-fat fryer basket should be setting on:

( ) A. the floor

( ) B. the table to the left of the deep-fat fryer

( ) C. either of the basket holders

4. The use of plastic gloves on the hands during the breeding process is most important in:

( ) A. protecting the fish portions from bacteria that may be carried on your hands.

( ) B. keeping your hands clean.

( ) C. preventing the fish portions from slipping out of your hands.

5. Check the box that has the materials for the breading process in the correct order:

( ) A. egg and milk mixture, colander in a drip pan, and crumbs for breading.

( ) B. colander in a drip pan, egg and milk mixture, and crumbs for breading.

( ) C. egg and milk mixture, crumbs for breading, and colander in a drip pan.



6. In starting the breading process, which hand is used in picking up a fish portion from the lower right-hand corner of the tray?

( ) A. right hand

( ) B. left hand

( ) C. both the right and the left hands

7. After picking up the fish portion in the left hand, release the fish portion in the:

( ) A. colander

( ) B. egg and milk mixture

( ) C. sink

8. When lifting the fish portion out of the egg and milk mixture, use:

☐ A. your left hand

☐ B. your right hand

☐ C. both hands

9. After lifting the fish portion out of the egg and milk mixture with the left hand, place the fish portion in:

( ) A. the bread crumbs

( ) B. the colander

( ) C. the waste basket

10. What should be done while the fish portion is draining in the colander?

( ) A. Pick up a second fish portion with the left hand.

( ) B. Pick up a second fish portion with the right hand.

( ) C. Nothing.

11. When releasing the second fish portion in the egg and milk mixture with the left hand, what should be done with the right hand?

☐ A. Nothing.

☐ B. Stir the bread crumbs.

☐ C. Gently lift the first fish portion out of the colander.

12. The \_\_\_\_\_ hand is used to move the fish portion from the egg and milk mixture to the colander and the \_\_\_\_\_ hand is used to move the fish portion from the colander to the bread crumbs.

(The first word goes in the first blank, and the second word goes in the second blank.)

( ) A. right, left

( ) B. left, right

( ) C. right, right

13. When lifting the fish portion out of the bread crumbs with the \_\_\_\_\_ hand, pick up the third, unbreaded fish portion with the \_\_\_\_\_ hand.

(The first word goes in the first blank, and the second word goes in the second blank.)

☐ A. right, right

☐ B. right, left

☐ C. left, right



14. After picking up the fish portion in the \_\_\_\_\_ hand, release the fish portion in the egg and milk mixture.

( ) A. left

( ) B. right

15. When releasing the fish portion in the egg and milk mixture with the left hand, what should be done with the right hand?

( ) A. Nothing.

( ) B. Stir the bread crumbs.

( ) C. Gently lift the fish portion out of the colander

16. The \_\_\_\_\_ hand is used to move the fish portion from the egg and milk mixture to the colander, and the \_\_\_\_\_ hand is used to move the fish portion from the colander to the bread crumbs.

(The first word goes in the first blank, and the second word goes in the second blank.)

☐ A. right, left

☐ B. left, right

☐ C. right, right

17. When lifting the fish portion out of the bread crumbs with the \_\_\_\_\_ hand, pick up the fourth, unbreaded fish portion with the \_\_\_\_\_ hand.

(The first word goes in the first blank and the second word goes in the second blank.)

☐ A. right, right

☐ B. right, left

☐ C. left, right

18. After completing the breading process, the tray of breaded fish should be set on which side of the deep-fat fryer?

☐ A. left

☐ B. right

☐ C. front

19. In picking up the fish portions for deep-fat frying:

( ) A. Pick up two fish portions in the right hand.

( ) B. Use only the left hand.

( ) C. Pick up one fish portion in each hand.

20. After picking up a fish portion in each hand, gently lay the fish portion in:

( ) A. the waste basket

( ) B. the deep-fat fryer basket

~~( ) C. the egg and milk mixture~~

21. How many fish portions should be picked up in each hand?

☐ A. one

☐ B. two

☐ C. as many as possible



22. When laying the fish portions in the deep-fat fryer basket, be careful not to let the fish portions:

- ☐ A. touch each other
- ☐ B. lay in the deep-fat fryer
- ☐ C. jump out of the basket

23. When lowering the fryer basket into the deep-fat fryer, how many fish portions should be in the basket?

☐ A. four (4)

☐ B. eight (8)

☐ C. as many as possible

24. The fish portions should be deep-fat fried:

( ) A. until they sink

( ) B. for about 45 minutes

( ) C. for about 3 minutes or until the fish float to the surface  
of the frying fat and are golden brown

25. After the fish portions are finished deep-fat frying:

( ) A. set the fryer basket on either of the basket holders.

( ) B. turn the deep-fat fryer switch to the "OFF" position.

( ) C. take a break.

26. On which side of the deep-fat fryer is the serving pan placed?

☐ A. front

☐ B. left

☐ C. right

27. What utensil is used in lifting a fish portion out of the basket?

☐ A. fork

☐ B. tongs

☐ C. spoon

28. When panning the fish portions, the row should run from:

( ) A. upper left to upper right

( ) B. upper left to lower right

( ) C. lower left to lower right





**APPENDIX B**

## Instructions for Video-Tape Training Program

### Making Sliced Meat Sandwiches

This training program is not intended to rate you on your ability to do work, nor does it have anything to do with your work at the K-State Union. It is only meant to determine the effectiveness of the method by which the material in this program is presented to you. When answering the questions in this booklet, of course you will want to choose the correct answer, but if you choose an incorrect answer, do not worry. You will not be graded.

The training program we are dealing with involves making sliced meat sandwiches. After we finish going over these instructions, we will begin.

On the television in front of you, you will see the first step in the training program. Try to remember everything you see and hear on the television. After the step, you will be instructed to answer the multiple-choice question in this booklet by marking the box with the correct answer. Then, check your answer by carefully lifting up the lower right-hand corner of the page. There you will see the correct answer. REMEMBER, YOU WILL NOT BE GRADED WHEN ANSWERING THESE QUESTIONS.

During the time you are answering the questions, nothing will be shown on the television. So if you answer the question and check your answer before the next step on the television, go back and restudy the question and answer.

After all of the steps have been shown on the television and all of the questions have been answered, you will then view all of the steps once more, only this time the steps will be shown in one long process, one step after another with no questions. Following this, you will then be asked to actually perform the steps or tasks described over the television.

It is very important that you understand these instructions. Are there any questions at this time?

1. Check the box with the materials for making sliced meat sandwiches in the correct order from left to right:

( ) A. (1) an electric knife, (2) a pan of sandwich spread, (3) a cutting board, and (4) a tray of meat and bread slices.

( ) B. (1) a tray of meat and bread slices, (2) a cutting board, (3) a pan of sandwich spread, and (4) an electric knife.

( ) C. The order of the items is not important.

2. The use of plastic gloves on the hands when making sandwiches is most important in:

- ☐ A. Protecting the food items from bacteria that may be carried on your hands.
- ☐ B. Keeping your hands clean.
- ☐ C. Preventing the food items from slipping out of your hands.

3. How many bread slices should be picked up in each hand?

☐ A. two (2)

☐ B. four (4)

☐ C. as many as possible

4. When placing the bread slices on the cutting board, the rows should run from:

( ) A. left to right

( ) B. upper right to upper left

( ) C. top to bottom

5. What should be done after placing the first two rows of bread slices on the cutting board?

( ) A. begin making the sandwiches.

( ) B. pick up the remaining bread slices, four (4) in each hand, and place in rows from the top to the bottom of the cutting board.

( ) C. take a break.



6. How much sandwich spread should be on the spreader after dipping into the sandwich spread pan?

☐ A. about one (1) tablespoon

☐ B. about three (3) tablespoons

☐ C. as much as possible

7. In spreading the sandwich spread on a bread slice, use an "S" motion starting:

- ( ) A. at the lower left corner of the bread slice and moving to the upper right corner.
- ( ) B. at the bottom of the bread slice.
- ( ) C. at the upper right corner of the bread slice and moving to the lower left corner.

8. When spreading the sandwich spread on the bread slices:

( ) A. start at the top of the cutting board and work from left to right.

( ) B. start at the bottom of the cutting board and work from left to right.

( ) C. start at the bottom of the cutting board and work from right to left.

9. When picking up the meat slices:

( ) A. pick up four (4) meat slices in the left hand.

( ) B. pick up eight (8) meat slices in the left hand.

( ) C. pick up eight (8) meat slices in the right hand.

10. In placing a single meat slice on each bread slice, working from top to bottom, on which two rows of bread is the meat placed?

☐ A. two rows on the left side of the cutting board

☐ B. two outside rows

☐ C. two inside rows

11. To close the sandwiches:

- ( ) A. turn two (2) bread slices (one bread slice in each hand) from the outside rows over the inside rows, matching the edges of the bread.
- ( ) B. with the left hand, turn one bread slice from the outside row over the inside row.
- ( ) C. turn one bread slice from the inside row over the outside row.

12. It is important to remove the plastic glove from the right hand when cutting with a knife because:

( ) A. you may have to tie your apron.

( ) B. you can hold the knife more safely and without fear of it slipping out of your hand.

( ) C. you have to wash your right hand.

13. Where do you begin cutting sandwiches on the cutting board?

☐ A. Lower left

☐ B. lower right

☐ C. upper right



14. In cutting the sandwiches, cut the sandwiches in rows from:

( ) A. upper right to lower right

( ) B. lower right to lower left

( ) C. upper left to lower right



**APPENDIX C**

## Instructions for Training Manual Program

### Deep-fat Frying Fish Portions

This training program is not intended to rate you on your ability to do work, nor does it have anything to do with your work at the K-State Union. It is only meant to determine the effectiveness of the method by which the material in this training program is presented to you. When answering the questions in this manual, of course you will want to choose the correct answer, but if you choose an incorrect answer, do not worry. You will not be graded.

The training program we are dealing with involves breadng and deep-fat frying fish portions.

After you have finished reading the instructions on this page, turn to the next page and begin.

You will see a photograph of the first step of the program, along with comments to clear up anything you do not understand. When you finish studying the photograph and comments, turn the page and answer the multiple-choice question by marking the box with the correct answer. Then, check your answer with the correct answer by carefully lifting up the lower right-hand corner of the page. There you will see the correct answer. REMEMBER, YOU WILL

**NOT BE GRADED WHEN ANSWERING THESE QUESTIONS.**

If your answer is correct, go on to the next page. If your answer is not correct, turn back and restudy the picture and comments until you feel you can answer the question correctly.

Repeat this process until you answer the question correctly, and then go on to the next page. Continue through the program until you finish the booklet.

You will be given 35 minutes to complete the booklet. This should be enough time to finish the booklet without hurrying. If you finish before the 35 minutes are up, you may go back and restudy any part of the booklet. When time is up, you will be asked to perform the tasks described in the booklet.

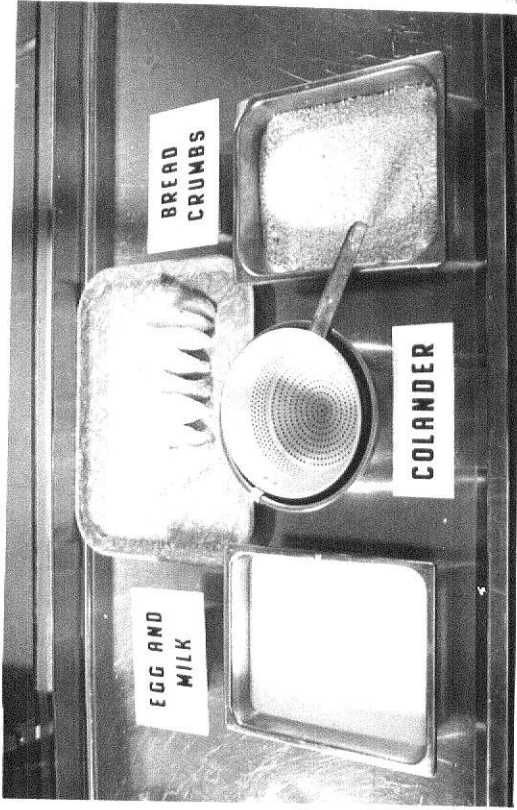
It is very important that you understand these instructions. Are there any questions at this time?

**THIS BOOK  
CONTAINS  
NUMEROUS  
PICTURES THAT  
ARE ATTACHED  
TO DOCUMENTS  
CROOKED.**

**THIS IS AS  
RECEIVED FROM  
CUSTOMER.**

**THIS BOOK  
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**THIS IS AS  
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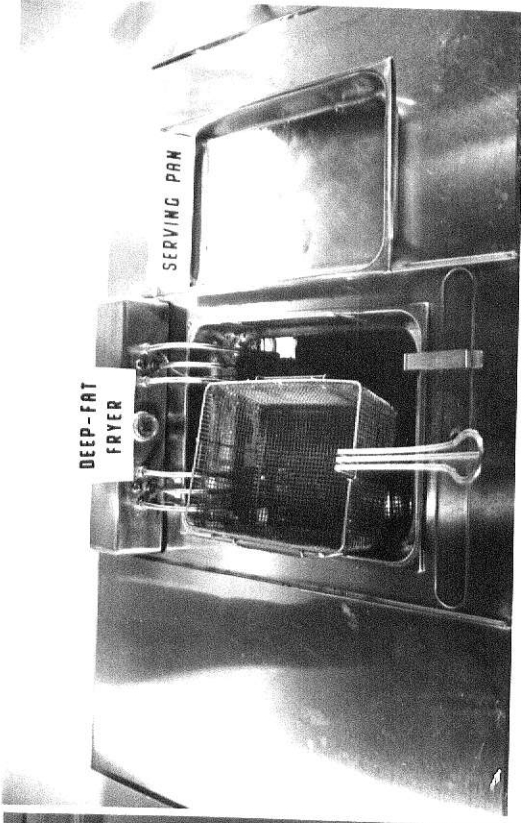


1.

We are dealing with a cooking process involving three (3) steps in the following order: (1) Breading fish portions for deep-fat frying, (2) deep-fat frying the fish portions, and (3) panning the deep-fat fried fish portions.

2.

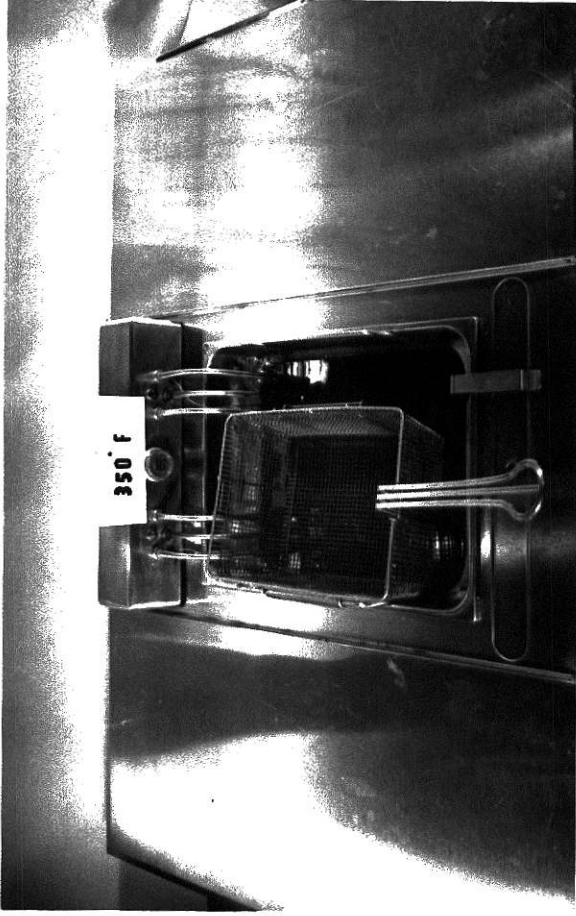
3.





1. The cooking process we are dealing with involves three (3) steps. Check the box with the steps in the correct order:

- ( ) A. Panning the deep-fat fried fish portions, breading fish portions for deep-fat frying, and deep-fat frying the fish portions.
- ( ) B. Deep-fat frying the fish portions, breading fish portions for deep-fat frying, and panning the deep-fat fried fish portions.
- ( ) C. Breading fish portions for deep-fat frying, deep-fat frying the fish portions, and panning the deep-fat fried fish portions.



Before breading the fish, the first step is to be sure that the deep-fat fryer is turned "ON" and the temperature dial is set at the proper temperature. In this case, the proper temperature for deep-fat frying fish is 350° F. Set the deep-fat fryer temperature dial at 350° F.

2. At what temperature should the temperature dial be set?

☐ A. 460° F.

☐ B. 350° F.

☐ C. 50° F.



Next, check to see if the deep-fat fryer basket is setting on one of the basket holders as shown in the picture. If it is not, set the basket on either of the basket holders.

Question #2: B

3. The deep-fat fryer basket should be setting on:

( ) A. the floor.

( ) B. the table to the left of the deep fat fryer.

( ) C. on one of the basket holders.



Now that the deep-fat fryer is ready for use, you are now ready to begin the breading process. The use of plastic gloves during the breading process is most important in protecting the fish portions from bacteria that may be carried on your hands.

Question #3: C

4. The use of plastic gloves on the hands during the breadng process is most important in:

- ( ) A. preventing the food product from slipping out of your hands.
- ( ) B. keeping your hands clean.
- ( ) C. protecting the fish portions from bacteria that may be carried on your hands.



This picture shows the materials necessary for breading fish for the deep-fat frying process. The items are placed on the work table in the following order from left to right: (1) egg and milk mixture, (2) colander in a drip pan, and (3) crumbs for breading. The tray of unbreaded fish are placed directly above the colander.

Question #4: C



5. Check the box that has the materials of the breading process in the correct order:

☐ A. egg and milk mixture, colander in a drip pan, and crumbs for breading.

☐ B. colander in a drip pan, egg and milk mixture, and crumbs for breading.

☐ C. egg and milk mixture, crumbs for breading, and colander in a drip pan.



After setting up the breading materials in the correct order, begin the breading process. Standing directly in front of the colander, begin with the left hand. Carefully pick up a fish portion from the lower right hand corner of the tray.

Question #5: A

6. In starting the breading process, which hand is used in picking up a fish portion from the lower right hand corner of the tray?

☐ A. right hand

☐ B. left hand

☐ C. both the right and left hands



After picking up the fish portion in the left hand, release the fish portion in the egg and milk mixture.

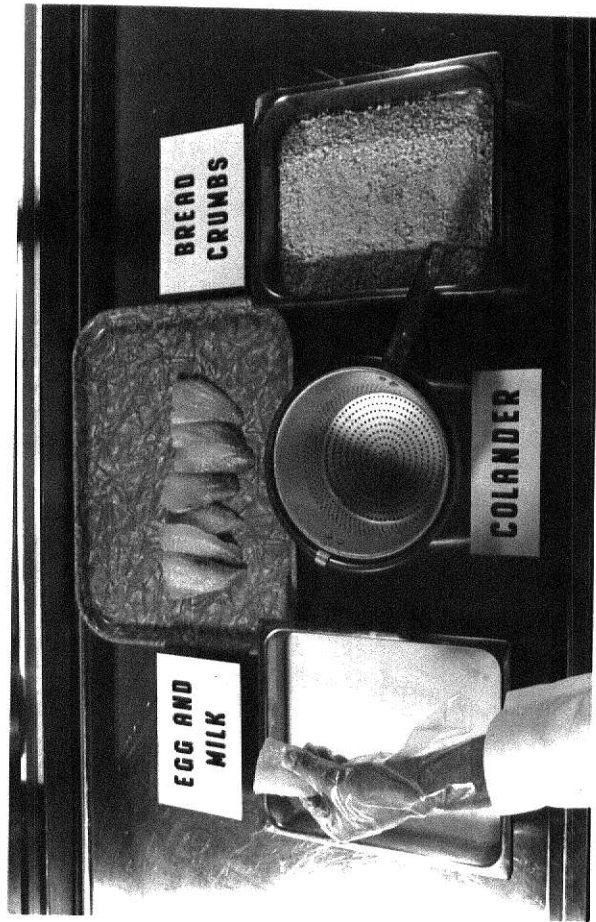
Question #6: B

7. After picking up the fish portion, release the fish portion in the:

☐ A. colander

☐ B. egg and milk mixture

☐ C. sink



After releasing the fish portion in the egg and milk mixture, gently lift the fish portion out of the egg and milk mixture with the left hand.

Question #7: B

8. When lifting the fish portion out of the egg and milk mixture, use:

☐ A. your left hand

☐ B. your right hand

☐ C. both hands



After lifting the fish portion out of the egg and milk mixture with the left hand, gently place the fish portion in the colander.



9. After lifting the fish portion out of the egg and milk mixture with the left hand, place the fish portion in:

☐ A. the bread crumbs

☐ B. the colander

☐ C. the waste basket



While the fish portion is draining in the colander, pick up a second fish portion with the left hand as shown in the picture.

Question #9: B

10. What should be done while the fish portion is draining in the colander?

☐ A. Pick up a second fish portion with the left hand.

☐ B. Pick up a second fish portion with the right hand.

☐ C. Nothing.



Next, with the fish portion in the left hand, release the fish portion in the egg and milk mixture. At the same time, with the right hand, gently lift the first fish portion out of the colander.

Question #10: A

11. When releasing the second fish portion in the egg and milk mixture with the left hand, what should be done with the right hand?

( ) A. Nothing.

( ) B. Stir the bread crumbs.

( ) C. Gently lift the first fish portion out of the colander.



Next, gently lift the fish portion out of the egg and milk mixture with the left hand and place it in the colander. At the same time, with the fish portion in the right hand, move the fish portion to the bread crumbs. Carefully cover with crumbs. As can be seen in the two pictures, both hands simply move to the right one step; the left hand lifts the fish portion out of the egg and milk mixture and moves it to the colander, while the right hand lifts the drained fish portion out of the colander and moves it to the bread crumbs.

Question #11: C

12. The \_\_\_\_\_ hand is used to move the fish portion from the egg and milk mixture to the colander, and the \_\_\_\_\_ hand is used to move the fish portion from the colander to the bread crumbs.

(The first word goes in the first blank, and the second word goes in the second blank.)

( ) A. right, left

( ) B. left, right

( ) C. right, right



After covering the entire fish portion with bread crumbs, gently lift the fish portion out of the bread crumbs with the right hand. Set the fish portion on the tray in its original spot in the lower right hand corner. At the same time pick up an unbreaded fish portion with the left hand.

Question #12: B



13. When lifting the fish portion out of the bread crumbs and setting it on the tray with the \_\_\_\_\_ hand, pick up the third, unbreaded fish portion with the \_\_\_\_\_ hand.

(The first word goes in the first blank, and the second word goes in the second blank.)

( ) A. right, right

( ) B. right, left

( ) C. left, right



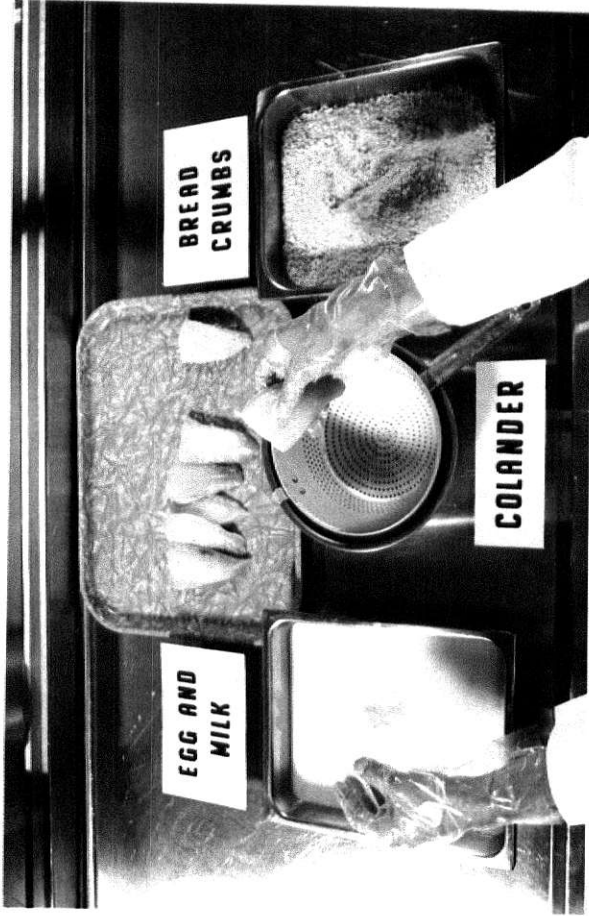
With the fish portion in the left hand, release the fish portion in the egg and milk mixture. At this point, the work table is set up as shown in the picture: (1) the breaded fish portion in the tray; (2) the second fish portion draining in the colander; and (3) the third fish portion in the egg and milk mixture.

Question #13: B

14. After picking up the fish portion in the \_\_\_\_\_ hand, release the fish portion in the egg and milk mixture.

( ) A. left

( ) B. right



Let us continue through the process once more. At the same time you release the fish portion in the egg and milk mixture with the left hand, gently lift the fish portion out of the colander with the right hand.

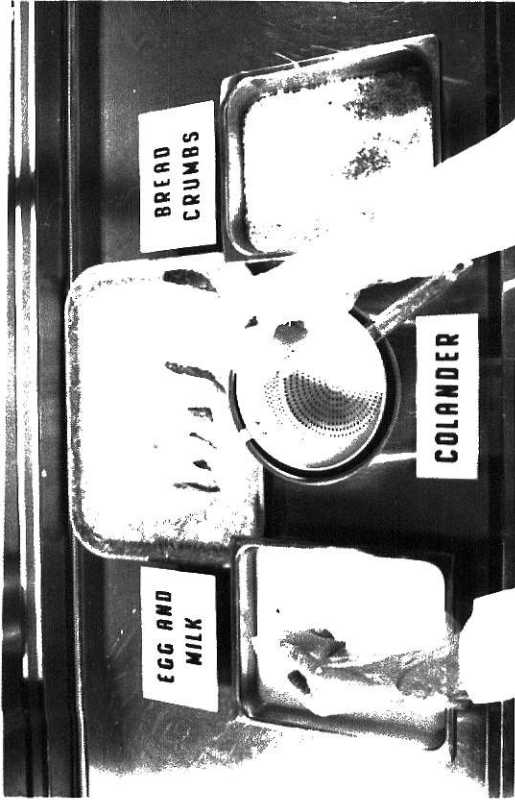
Question #14: A

15. When releasing the fish portion in the egg and milk mixture with the left hand, what should be done with the right hand?

( ) A. Nothing.

( ) B. Stir the bread crumbs.

( ) C. Gently lift the fish portion out of the colander.



Next, gently lift the fish portion out of the egg and milk mixture with the left hand and place it in the colander. At the same time, with the fish portion in the right hand, move the portion to the bread crumbs. Carefully cover with crumbs. As can be seen in the two pictures, both hands simply move one step to the right; the left hand lifts the fish portion out of the egg and milk mixture and moves it to the colander, while the right hand lifts the drained fish portion out of the colander and moves it to the bread crumbs.

Question #15: C

16. The \_\_\_\_\_ hand is used to move the fish portion from the egg and milk mixture to the colander, and the \_\_\_\_\_ hand is used to move the fish portion from the colander to the bread crumbs.

(The first word goes in the first blank, and the second word goes in the second blank.)

( ) A. right, left

( ) B. left, right

( ) C. right, right

**THE FOLLOWING  
PAGE WAS TORN  
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CUSTOMER.**





After covering the entire fish portion with bread crumbs, gently lift the fish portion out of the bread crumbs with the right hand. Set the fish portion on the tray in its original spot, in the lower right-hand corner next to the first breaded fish portion. At this time, gently pick up an unbreaded fish portion with the left hand.

17. When lifting the fish portion out of the bread crumbs and setting it on the tray, with the \_\_\_\_\_ hand, pick up an unbreaded fish portion with the \_\_\_\_\_ hand.

(The first word goes in the first blank, and the second word goes in the second blank.)

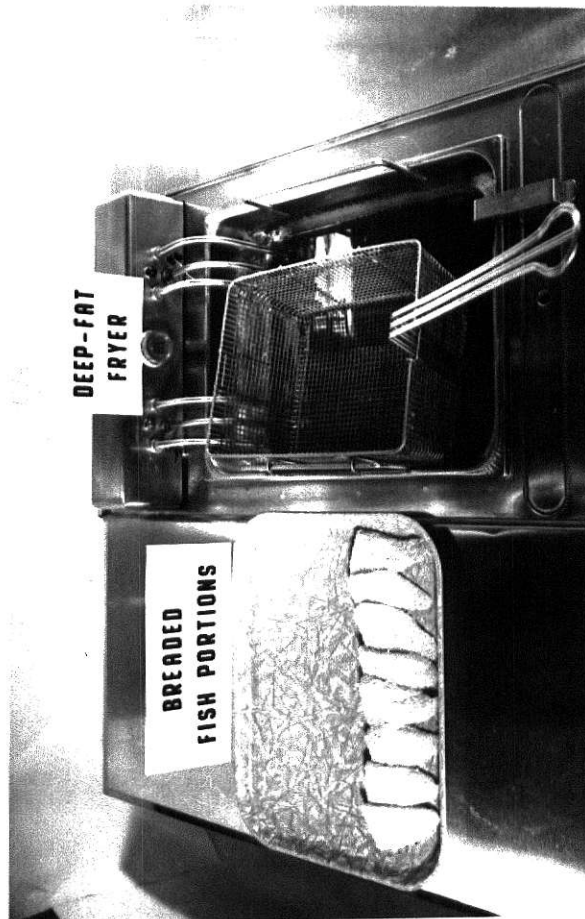
( ) A. right, right

( ) B. right, left

( ) C. left, right

At this point in the program, we have breaded two fish portions. During the actual breading process when you perform the task, bread the total number of fish portions in the tray.

We will now go on to the deep-fat frying process.



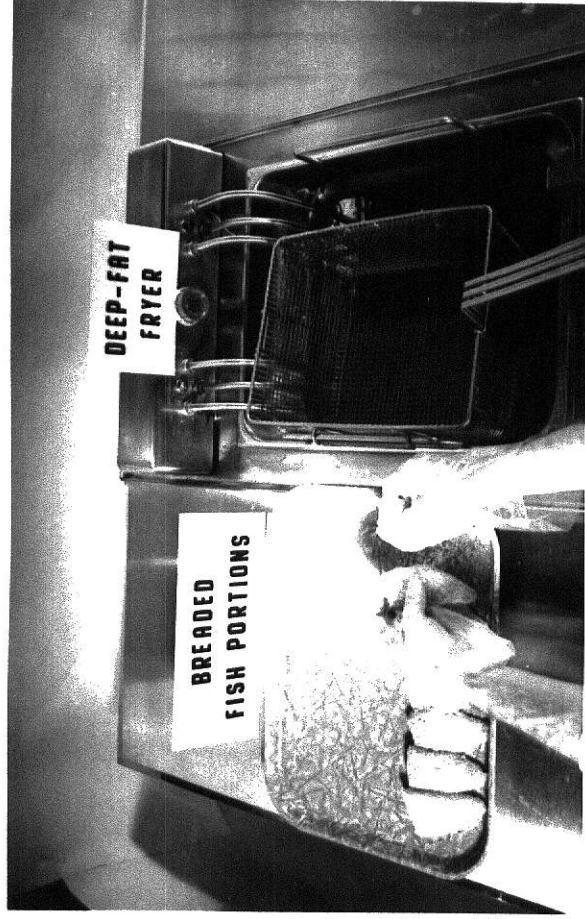
After you complete the breading process, set the tray of breaded fish portions on the table on the left side of the deep-fat fryer.

18. After completing the breading process, the tray of breaded fish should be set on which side of the deep-fat fryer?

☐ A. left

☐ B. right

☐ C. front



Next, starting in the lower right corner of the tray, pick up one fish portion in each hand.

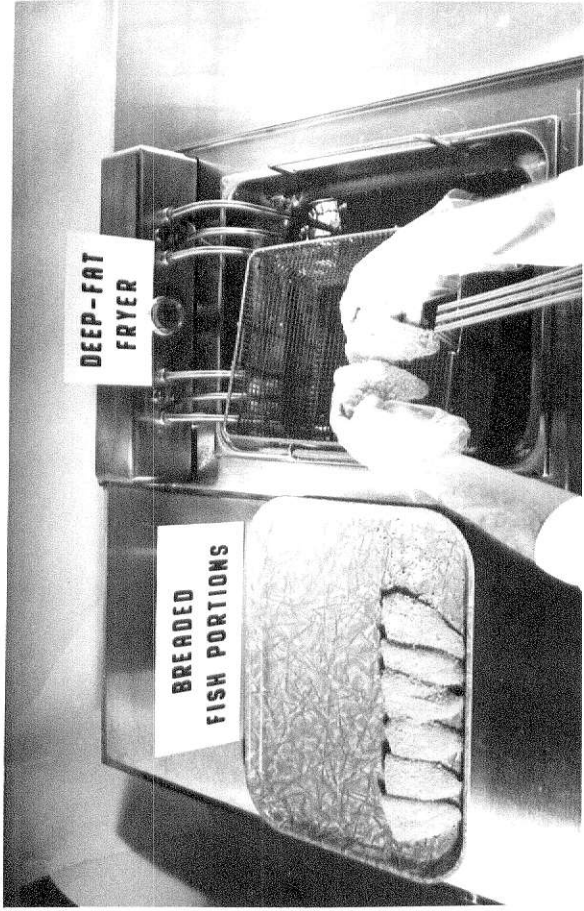
Question #18: A

19. In picking up the fish portions for deep-fat frying:

( ) A. pick up two fish portions in the right hand.

( ) B. use only the left hand.

( ) C. pick up one fish portion in each hand.



After picking up a fish portion in each hand, gently lay the portions in the bottom of the deep-fat fryer basket.

Question #19: C

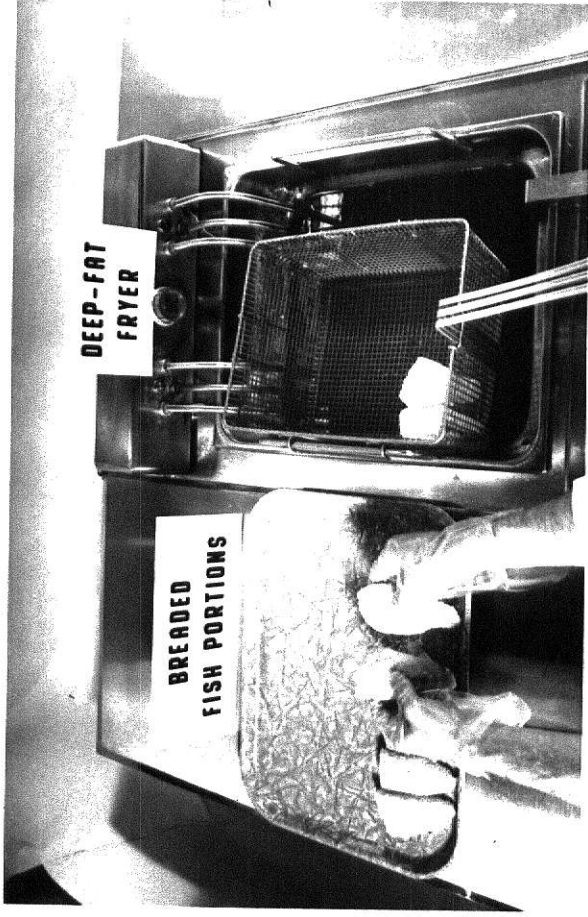


20. After picking up a fish portion in each hand, gently lay the fish portions in:

( ) A. the waste basket.

( ) B. the deep-fat fryer basket.

( ) C. the egg and milk mixture.



Again, pick up one fish portion in each hand.

Question #20: B

21. How many fish portions should be picked up in each hand?

☐ A. one

☐ B. two

☐ C. as many as possible



After picking up a fish portion in each hand, gently lay the portions in the bottom of the deep-fat fryer basket, being careful not to let the fish portions touch each other.

Question #21: A

22. When laying the fish portions in the deep-fat fryer basket, be careful not to let the fish portions:

( ) A. touch each other

( ) B. lay in the deep-fat fryer basket

( ) C. jump out of the basket



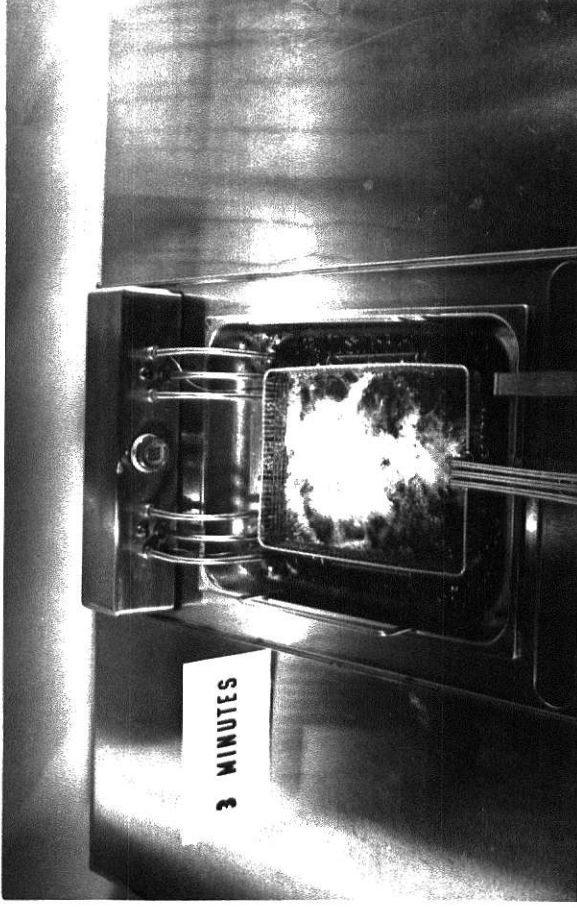
After filling the fryer basket with eight (8) fish portions, gently lower the deep-fat fryer basket into the deep-fat fryer.

23. When lowering the fryer basket into the deep-fat fryer, how many fish portions should be in the basket?

( ) A. four (4)

( ) B. eight (8)

( ) C. as many as the basket will hold



After lowering the basket into the deep-fat fryer, allow the fish to deep-fat fry for about 3 minutes or until the fish float to the surface of the frying fat and are golden brown.

Question #23: B



24. The fish portions should be deep-fat fried:

( ) A. until they sink.

( ) B. for about 45 minutes.

( ) C. for about 3 minutes or until the fish float to the surface of the frying fat  
and are golden brown.



After the fish portions are finished deep-fat frying, set the fryer basket on either of the basket holders.

25. After the fish portions are finished deep-fat frying:

( ) A. set the deep-fat fryer basket on either of the basket holders.

( ) B. turn the deep-fat fryer switch to the "OFF" position.

( ) C. take a break.



While the excess frying fat is dripping off the fish portions, set a serving pan on the table to the right of the deep-fat fryer. This pan will then be used for panning the fish portions.

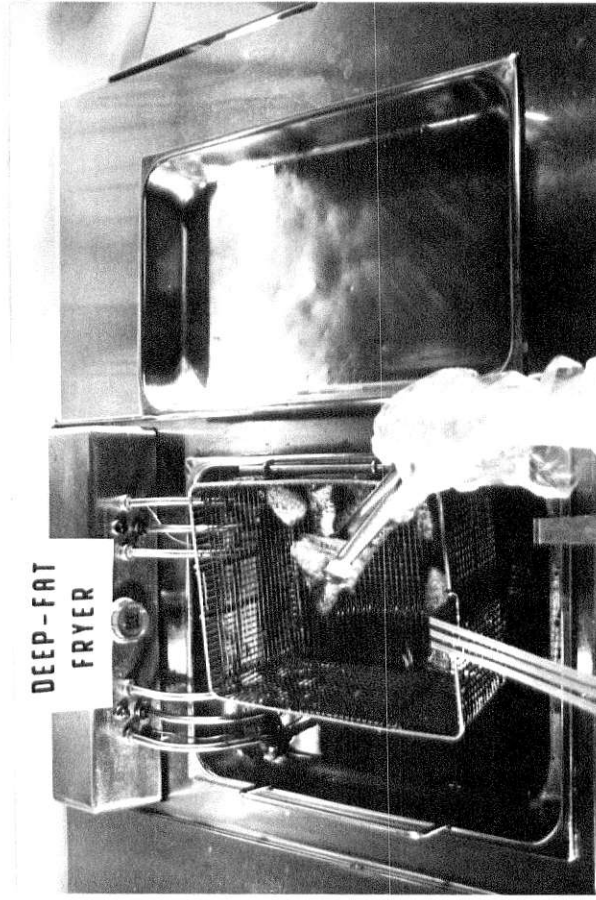
Question #25: A

26. On which side of the deep-fat fryer is the serving pan placed?

( ) A. front

( ) B. left

( ) C. right



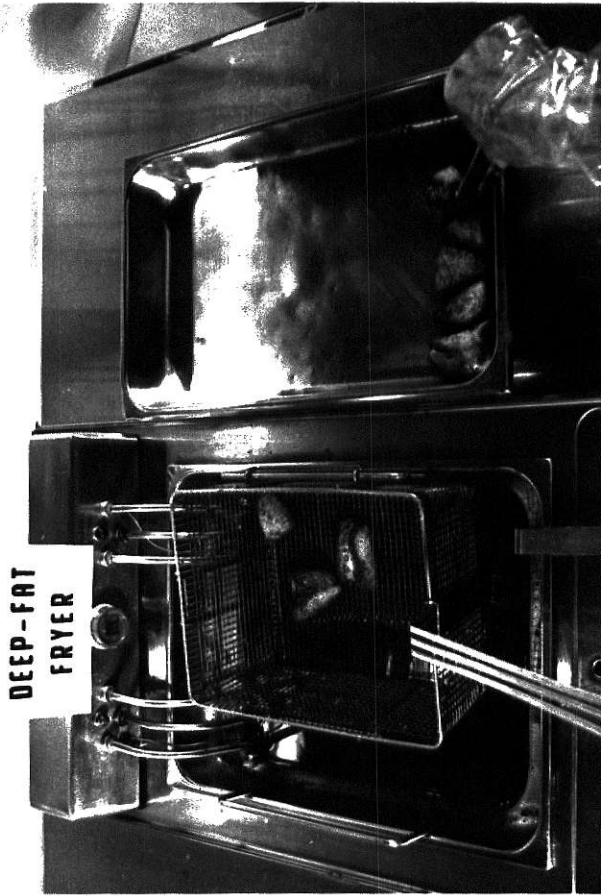
After setting the serving pan on the table, gently lift one of the fish portions out of the basket using a set of tongs, as shown in the picture.

27. What utensil is used in lifting a fish portion out of the basket?

☐ A. fork

☐ B. tongs

☐ C. spoon



Next, after lifting the fish portion out of the basket, gently lay the fish portion in the lower left corner of the serving pan. Continue this process with the rest of the fish portions, forming a row from the lower left corner to the lower right corner of the serving pan.

Question #27: B



28. When panning the fish portions, rows should run from:

( ) A. upper left to upper right

( ) B. upper left to lower left

( ) C. lower left to lower right



## APPENDIX D

## Instructions for Training Manual Program

### Making Sliced Meat Sandwiches

This training program is not intended to rate you on your ability to do work, nor does it have anything to do with your work at the K-State Union. It is only meant to determine the effectiveness of the method by which the material in this training program is presented to you. When answering the questions in this manual, of course you will want to choose the correct answer, but if you choose an incorrect answer, do not worry. You will not be graded.

The training program we are dealing with involves making sliced meat sandwiches. After you have finished reading the instructions on this page, turn to the next page and begin.

You will see a photograph of the first step of the program, along with comments to clear up anything you do not understand. When you finish studying the picture and comments, turn the page and answer the multiple-choice question by marking the box with the correct answer. Then, check your answer with the correct answer by carefully lifting up the lower right hand corner of the page. There you will see the correct answer. REMEMBER, YOU WILL NOT BE GRADED WHEN ANSWERING THESE QUESTIONS.

If your answer is correct, go on to the next page. If your answer is not correct, turn back and restudy the photograph and comments until you feel you can answer the question correctly. Repeat this process until you answer the question correctly, and then go on to the next page. Continue through the program until you finish the booklet.

You will be given 25 minutes to complete the booklet. This should be enough time to finish the booklet without hurrying. If you finish before the 25 minutes are up, you may go back and restudy any part of the booklet. When time is up, you will be asked to perform the tasks described in the booklet.

It is very important that you understand these instructions. Are there any questions at this time?



In this picture, you can see the utensils and food items required to make sliced meat sandwiches. It is very important that the items and utensils are set up in the correct order, as shown in the picture from left to right: (1) a tray of meat and bread slices, with the tray turned so that the bread slices are nearest you; (2) a cutting board; (3) a pan of sandwich spread to the right of the cutting board, and (4) an electric knife to the far right.

1. Check the box with the materials for making sliced meat sandwiches in the correct order from left to right:

- ( ) A. (1) an electric knife, (2) a pan of sandwich spread, (3) a cutting board, and (4) a tray of meat and bread slices.
- ( ) B. (1) a tray of meat and bread slices, (2) a cutting board, (3) a pan of sandwich spread, and (4) an electric knife.
- ( ) C. the order of the items is not important.



Now that the food items and utensils are set up in the correct order, you are now ready to begin making sandwiches. In making the sandwiches, be sure to wear plastic gloves. These gloves will protect the food items from bacteria that may be carried on your hands.

Question #1: B



2. The use of plastic gloves on the hands when making sandwiches is most important in:

( ) A. protecting the food items from bacteria that may be carried on your hands.

( ) B. keeping your hands clean.

( ) C. preventing the food items from slipping out of your hands.



To begin making the sandwiches, pick up four (4) bread slices in each hand.

Question #2: A

3. How many bread slices should be picked up in each hand?

( ) A. 2

( ) B. 4

( ) C. as many as possible



With four bread slices in each hand, place the bread in rows from the top to the bottom of the cutting board, as shown in the picture.

Question #3: B

4. When placing the bread slices on the cutting board, the rows should run from:

( ) A. left to right

( ) B. upper right to upper left

( ) C. top to bottom



After completing the first two rows of bread slices, again pick up the remaining bread slices, four (4) slices in each hand, and place in rows from the top to the bottom of the cutting board.

Question #4: C

5. What should be done after placing the first two rows of bread slices on the cutting board?

( ) A. begin making the sandwiches.

( ) B. pick up the remaining bread slices, four (4) in each hand, and place in rows from the top to the bottom of the cutting board.

( ) C. take a break.



After placing all of the bread slices on the cutting board, dip the spreader in the sandwich spread with about one (1) tablespoon of sandwich spread on the spreader as shown in the picture.

Question #5: B



6. How much sandwich spread should be on the spreader after dipping into the sandwich spread pan?

☐ A. about one (1) tablespoon

☐ B. about three (3) tablespoons

☐ C. as much as possible.



As shown in the two pictures, spread the sandwich spread on the bread slice using an "S" motion, starting in the upper right corner of the bread slice and completing the "S" motion to the lower left corner of the bread slice.

Question #6: A

7. In spreading the sandwich spread on a bread slice, use an "S" motion starting:

( ) A. at the lower left corner of the bread slice and moving to the upper right corner.

( ) B. at the bottom of the bread slice.

( ) C. at the upper right corner of the bread slice and moving to the lower left corner.



Repeat this process with all of the bread slices, starting at the top of the cutting board and working from left to right, as shown in the two pictures.

Question #7: C

8. When spreading the sandwich spread on the bread slices:

( ) A. start at the top of the cutting board, and work from left to right.

( ) B. start at the bottom of the cutting board, and work from left to right.

( ) C. start at the bottom of the cutting board, and work from right to left.



After spreading all bread slices with the sandwich spread, pick up eight (8) meat slices in the left hand.

Question #8: A

9. When picking up the meat slices:

( ) A. pick up four (4) meat slices in the left hand.

( ) B. pick up eight (8) meat slices in the left hand.

( ) C. pick up eight (8) meat slices in the right hand.



As shown in the first picture, start on the two inside rows of bread slices and place a single meat slice on each bread slice. Continue this process, working from top to bottom, as shown in the second picture.

Question #9: B



10. In placing a single meat slice on each bread slice, working from top to bottom, on which two rows of bread is the meat placed?

( ) A. two rows on the left side of the cutting board.

( ) B. two outside rows.

( ) C. two inside rows.



To close the sandwiches, turn two (2) bread slices (one bread slice with each hand) from the outside rows over the inside rows, matching the edges of the bread, as shown in the first picture. Working from top to bottom, continue this process with the rest of the bread slices, as shown in the second picture.

Question #10: C

11. To close the sandwiches:

( ) A. turn two (2) bread slices (one bread slice with each hand) from the outside rows over the inside rows, matching the edges of the bread.

( ) B. with the left hand, turn one bread slice from the outside row over the inside row.

( ) C. turn one bread slice from the inside row over the outside row.



With the sandwiches completed, you are now ready to cut each sandwich into two halves. First, remove the plastic glove from your right hand. By doing this, you can hold the knife safely and without fear of the knife slipping out of your hand when cutting the sandwiches.

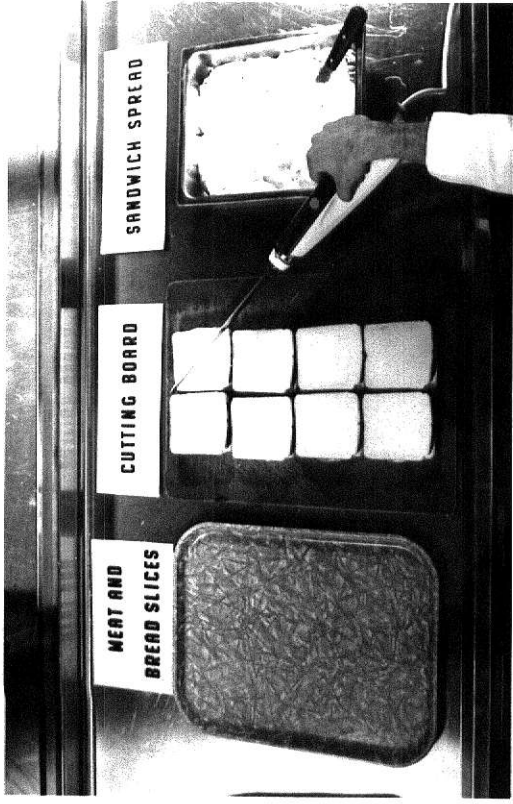
Question #11: A

12. It is important to remove the plastic glove from the right hand when cutting with a knife because:

( ) A. you may have to tie your apron.

( ) B. you can hold the knife more safely and without fear of it slipping out of your hand.

( ) C. you have to wash your right hand.



As shown in the first picture, begin by cutting the sandwich at the upper right of the cutting board, cutting the sandwich from corner to corner. As seen in the second picture, the thumb and forefinger of the left hand are used to hold the sandwich while cutting.

Question #12: B

13. Where do you begin cutting sandwiches on the cutting board?

☐ A. lower left

☐ B. lower right

☐ C. upper right



Continue cutting across the sandwiches in rows from upper left to lower right. This method of cutting sandwiches is generally used for cutting thicker sandwiches, as for example, bacon, lettuce and tomato sandwiches. The sandwiches you have just made may also be cut by stacking the sandwiches and cutting two at one time. The sliced meat sandwiches are now complete and ready for wrapping.

Question #13: C



14. In cutting the sandwiches, cut the sandwiches in rows from:

( ) A. upper right to lower right.

( ) B. lower right to lower left.

( ) C. upper left to lower right.



**APPENDIX E**



In any of your work experience outside of your home, have you ever made sandwiches? yes \_\_\_\_\_ no \_\_\_\_\_ If so, what kind of sandwiches (ex., meat, filling)? \_\_\_\_\_

In any of your work experience outside of your home, have you ever operated a deep-fat fryer (French fryer)? yes \_\_\_\_\_ no \_\_\_\_\_

**APPENDIX F**

## PERFORMANCE SCORECARD

GROUP:

## FOR DEEP-FAT FRYING

Trainee #:

Date :									
1 Temperature at 350.									
2 Frying basket on holder.									
3 Plastic gloves on hands.									
4 Breeding items set up in correct order (egg and milk, colander, bread crumbs).									
5 Begin breeding process with left hand.									
6 Remove fish portion from egg and milk with left hand.									
7 Pick up second fish portion with left hand while first fish portion is draining in colander.									
8 Drop second fish portion in egg and milk and take first fish portion out of colander simultaneously.									
9 Move both hands to the right one step.									
10 Cover first fish portion with breeding with right hand.									
11 Place breaded fish portion on tray with right hand and pick up unbreaded fish portion with left hand.									
12 Place tray of breaded fish portions on left side of deep-fat fryer.									
13 Pick up one fish portion in each hand.									
14 Place eight breaded fish portions in deep-fat fryer basket.									
15 Secure serving pan while deep-fat fried fish drain in basket.									
16 Use tongs to remove fish portions from basket.									
17 Place first fish portion in lower left corner of serving pan.									

CODE FOR SCORING: ✓ = step performed correctly in proper sequence  
according to standards.

x = step performed correctly but not in proper  
sequence according to standards.

o = step performed incorrectly according to standards.

## PERFORMANCE SCORECARD

GROUP:

## FOR MAKING SLICED MEAT SANDWICHES

Trainee #:

Date :

1 Items set up in correct order (meat and bread slices, cutting board, sandwich spread, electric knife).							
2 Plastic gloves on hands.							
3 Pick up four bread slices in each hand.							
4 Dip spreader with about 1 tablespoon of sandwich spread on spreader.							
5 In spreading sandwich spread on bread slices, use an "S" motion working from the top to the bottom and from left to right on the cutting board.							
6 Pick up meat slices in the left hand.							
7 Place meat on inside rows of bread slices.							
8 In closing sandwiches, turn bread slices from the outside rows over the inside rows.							
9 Remove right glove before cutting sandwiches.							
10 Cut sandwiches from upper left to lower right on the cutting board.							

CODE FOR SCORING: ✓ = step performed correctly in proper sequence according to standards.

x = step performed correctly but not in proper sequence according to standards.

o = step performed incorrectly according to standards.



## APPENDIX G

## QUESTIONNAIRE ON TRAINING (V)

1. Is training important to you?  
☐ yes  
☐ no
2. Would you prefer to be trained in performing a job, or would you rather learn it on your own?  
☐ I would prefer to be trained  
☐ I would prefer to learn on my own
3. Were the instructions for taking the television training program clear and easily understood?  
☐ yes  
☐ no
4. Did you find yourself having difficulty keeping up with the steps in the training program?  
☐ yes  
☐ no
5. Were the steps on the television clear and easily understood?  
☐ yes  
☐ no
6. Were the questions in the question booklet clear and easily understood?  
☐ yes  
☐ no

## QUESTIONNAIRE ON TRAINING (TM)

1. Is training important to you?  
☐ yes  
☐ no
2. Would you prefer to be trained in performing a job, or would you rather learn it on your own?  
☐ yes  
☐ no
3. Did you feel you had enough time to complete the training manual?  
☐ yes  
☐ no
4. Were the instructions for using the training manual clear and easily understood?  
☐ yes  
☐ no
5. Were the steps in the training manual for preparing the food items clear and easily understood?  
☐ yes  
☐ no

A COMPARISON OF PROGRAMMED INSTRUCTIONAL METHODS  
FOR TRAINING FOOD SERVICE WORKERS

by

C. JEFFREY FRAME

B. S., Purdue University, 1970

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Institutional Management

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1971

Food service industries throughout the country are continually seeking means for more efficient utilization of manpower. This problem, coupled with shortages of personnel, increasing labor costs, and technological advances, has indicated the need for research in training food service employees.

The purpose of this study was to compare the use of a video tape recorder and a written manual in training food service workers in two food preparation procedures. Procedures for preparing the food items were developed in detailed steps, each followed by a question covering the subject matter of the step.

Subjects for the study were selected from employees of the K-State Union food service and were trained according to the following assignments, five in each group:

<u>Group</u>	<u>Procedure</u>	<u>Instructional Method</u>
I	Breading and deep-fat frying	Video Tape Recorder
II	Breading and deep-fat frying	Training Manual
III	Making sliced meat sandwiches	Video Tape Recorder
IV	Making sliced meat sandwiches	Training Manual

Subjects performed the steps described in the programs immediately after the training session (trial 1) and two weeks after the training session (trial 2). Criteria for determining the effectiveness of the training method was the number of steps performed correctly. Subjects were given a questionnaire at the completion of the study to assess their reactions to the training programs.

No significant difference was found in the number of steps performed correctly by Groups I and II trained in breadng and deep-fat frying. However, on both trials, Group I trained with the video tape recorder averaged a higher number of steps performed correctly than Group II using the training manual.

Group III trained with the video tape recorder in making sliced meat sandwiches performed better ( $P < 0.01$ ) than Group IV instructed with the training manual.

Reactions to both instructional media were favorable. Subjects using the video tape recorder indicated that instructions, steps, and questions in the training programs were clear and easily understood. Nine of the ten subjects in video tape groups found no difficulty keeping up with the steps in the training programs. In addition to indicating that instructions and steps in the training programs were clear and easily understood, groups using the training manuals reported they had adequate time to complete the manuals.