

STANDARDIZATION OF PROCEDURES IN QUANTITY RECIPES
THROUGH THE TASK-UNIT CONCEPT

by

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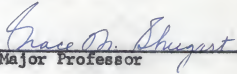
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INTRODUCTION

The unstable labor market, with a shortage of skilled workers and high rate of turnover, is one of the foremost problems of today's food service industry. This problem is especially critical in the case of cooks and has emphasized a need for more efficient food preparation procedures and effective training methods. Many food services are handicapped in their training efforts by lack of standardized recipes and detailed procedures for production of quality food.

A standardized recipe tailored to a particular organization is the most effective management tool according to Aldrich and Miller (1963). They further stated that standardized recipes assure consistent quality, cost, and production control.

Little work has been done to provide detailed instructions for standardized recipes. Techniques and principles for quantity food preparation procedures need to be established and food service workers must be taught how to apply the principles of basic cookery to large quantity recipes.

Directions for these recipes in most books and files tend to be vague. A cook's interpretation of procedures in combining and processing ingredients could result in lack of quality in the finished product.

Too often managers find it difficult to prescribe clear, concise and understandable work sequences. An approach to this problem is the task-unit concept, developed by Welch (1966).

Each unit or finished product is the end result of a series of task-breakdowns which when simply defined may be useable in other work areas. Each task is designed to meet management's standards.

This study was made to develop a system for standardizing procedures for quantity recipes using the task-unit concept; and secondly, to evaluate its effectiveness as a training method in quantity food production.

REVIEW OF LITERATURE

Work Systems

Work Improvement. Work improvement is an organized approach to solving work problems and reducing costs through the use of systematic analysis. Close (1960, p. 10-11) reported that the broad objective of work improvement is to make the operation pay. This goal can be achieved through the elimination of waste of time, human energy, and material. The development of techniques to increase productivity of each job operation as a whole can only be obtained by first surveying the over-all operation and then concentrating on details. A systematic analysis of the total functions might result in the discovery that certain parts of the work functions could be confined or rearranged to advantage. Close (1960) maintains that an analysis of the remaining duties can be made to determine methods of improvement.

In Close's (1960) opinion, procedures should be studied to ascertain assignment of work responsibility, sequence of operations and duplication of work before an individual operation is attacked. Thorough study of the sequence of work processes provides an opportunity to rearrange, divide, combine or eliminate operations.

Operations research was cited by Newman et al. (1967, p. 31) as a useful tool for obtaining answers to particular types of problems that dealt with the decision making aspect of planning. Its unique contribution is more in analysis and choice than in diagnosis and finding alternatives.

A related technique, which could prove useful to managers in the food service industry, is called systems engineering (Newman, et al., 1967, p. 32). The emphasis is on interrelation of components and on the inputs and outputs of the total system, thus the relating of ideas into a workable scheme and the ultimate translation into the jargon of the industry.

Welch (1966) advocated use of a systems approach, where operations must follow a work sequence: Materials + tools + operation performed = product. A food service systems approach is a total approach that requires:

1. The identification, definition and description of all tasks needed to operate the establishment in line with the standards desired by management.
2. The breakdown of the identified tasks into their operations and/or prices.
3. The determination of the "best method" or procedure to accomplish each task most efficiently and economically.

4. The assignment of each task specifically to an individual worker.
5. Training the assigned worker to perform each task in a prescribed manner.
6. Scheduling of time and frequency when the assigned worker will perform each task assigned to him.
7. Supervision to see whether the trained assigned employee performs the specific task in the manner prescribed and at the time and place specified.
8. Control to see that the employee carries out the task.

Work Design. Use of a work design method to develop a systems approach in food service operations was advocated by Avery (1967) to achieve effective goals. Work design is the systematic investigation of contemplated and present work systems that produce the most effective means of reaching optimal work capacity. The work design approach uses the "what, when, who, where, why and how else can it be done" method of work simplification. Use of brainstorming, associations, buzz-groups, and other creative techniques are effective methods of achieving these new concepts. Through these techniques, Avery (1967) stated, as many alternatives as possible should be devised. Then by objective evaluation, the best should be selected. This method is first done for the over-all food service operation and is then repeated for each work area of the kitchen. With each area of the operation optimized, integration into the over-all optimal facility would result.

Management has developed a theory of "modular management" that allows a new way of thinking in areas where people and their behavior affect the management process (Pieper, 1958, p. 11). "Modular" is a "standard or unit of measurement." In all types of work, measurements are being effected. Hence it becomes a modular unit standard enough that when the same task is measured it could be interchanged. Management by measurement or "modular management" tends to reduce men to modular units; however, Pieper believes that scientific management must avoid this pitfall. The worker's ability to produce and his ability to work effectively at any task depends upon his feelings. He must feel that his psychological needs are satisfied on the job.

Work Methods. After finding the most economical way of performing an operation, it is essential that a permanent record be made. This record is frequently called a "standard practice" or procedure. In addition to serving as a permanent record of the operation, the "standard practice" is often used as an instruction sheet for the operator or as an aid for the foreman or instructor in training the operator (Barnes, 1963). The design for such a process employs the general problem solving approach. The five steps of such a study are:

1. Problem definition: prepare general statement of goals or objectives.
2. Analysis of problem: obtain facts and determine their specifications and restrictions.

3. Search for possible solutions: try the elimination approach through use of check lists, application of the principles of motion economy, and creative imagination.
4. Evaluation of alternatives: determine the preferred solution or the method that produces the highest quality and the lowest waste.
5. Recommendations for action.

One example of a standard practice is the tool developed by Welch (1966) called a Related Technical Information sheet. It contains the precise definition of terms appearing in the recipe, the procedures for each operation necessary to complete the task, and any other pertinent information necessary for training food production workers.

The Related Technical Information sheets serve three purposes: (1) a guide for instructors in presenting various phases of food production techniques, (2) a reference for the trainee, and (3) a check list on approved procedures for the supervisors.

Tasks, with the Related Technical Information sheets, can be assembled into a training program that is useable when a new employee enters an organization, when a person is promoted or upgraded, during review in retraining, during technological changes, and in review when work performance is substandard (Buchanan, 1967).

Close (1960) observed that the human factor must be of prime consideration in the application of a scientific approach. He summarized a six-step method of solving work

problems based on systematic analysis as: aim, observe, question, think, decide, and act. Maintenance of a questioning attitude throughout application of these techniques was stressed.

Training

Training Methods. Job instructors who have not received training in the techniques of "How to Instruct" are usually ineffective teachers (Tested Management Techniques, Standard Brands). A good instructor can organize the information into proper learning order, knows how to break instructional units of information into the appropriate size for the learner, knows how to include fundamental information without assuming the learner knows, knows why a thing is done a certain way, knows the job and sequence of learning the job (Tested Management Techniques, Standard Brands).

During World War II, Lundberg and Armatas (1964) developed the Four-Step Job Instruction Training Method:

- Step 1. Preparation
- Step 2. Demonstration
- Step 3. Repetition
- Step 4. Supervision.

The Job Instruction Training Method of training is an individual method, between a trainer and an individual trainee, and is limited largely to operations and tasks of a "skill", or manual proficiency nature. Welch (1967) suggested lecture, lecture-demonstrations, group discussions, laboratory, and

other group techniques in presenting related technical information of a general nature. Such information as methods of weighing and measuring food ingredients, use and nomenclature of cooks' tools and equipment or general food handling principles can be taught by this method.

In training programs West et al. (1966, p. 374) declared that emphasis must be given to certain requirements common to all good job instruction: (1) job knowledge, (2) manipulative skills, (3) human relations, (4) adaptability, and (5) ability to express oneself. Lacking these characteristics, the instructor cannot function as a capable teacher.

Hannon (1967) stated that performance standards are being raised because of competition, technical advances, and customer demand for more and varied products. To achieve higher standards, industry must discard traditional training methods and institute a combination of teaching methods, such as programmed instruction materials for use with teaching machines, sound-color movies, laboratory experiments or workshop practice, texts and reference materials, workbooks, and person-to-person counselling. Emphasis is placed on spaced repetition and getting the trainee to participate in the training activity. The chief distinguishing characteristic of this training approach is that individuals, not groups, are trained. Evidence has proved that this individualized training provides better training than group methods. The trainee's learning schedule is flexible, and he learns at his own pace; hence,

the retention of knowledge is greater.

Four major advantages of this type of training were listed by Hannon (1967):

1. The variety of training keeps trainees motivated and minimizes boredom.
2. Trainees learn at their own pace.
3. Uniformity of course material guarantees course quality.
4. The training director's effectiveness is increased.

Because of a shortage of skilled people at all levels, Brandt (1969) noted that business either must do a better job of upgrading its existing employees or train the hard-core unemployed, many of whom have no employment skills of any kind. Four principles that would aid in achieving a workable training program are:

1. Determine specifically the employees' duties after they are trained.
2. Decide what experiences the employees must have in order to fulfill the job assignment.
3. Work from a written training plan.
4. Avoid common training errors such as
 - (a) Failing to communicate clear training objectives,
 - (b) Relying too much on verbal instructions,
 - (c) Failing to discuss abnormal business occurrences,
 - (d) Assuming that the trainee can apply the training.

Buchanan (1967) believes there is no one best method for effective training. Methods could be structured according to the individual operation. He stressed the use of inexpensive visual aids such as handouts that list key points, transparencies, slides, charts, magnetic or felt board, films, and

chalkboard in the development of training programs. Formal training, which covers the fundamentals and forms a base for further development, is only the beginning of a sequence to develop and train effective employees.

The objectives of a well-developed training program for food service workers were enumerated by West et al. (1966, p. 374) as:

1. To reduce time spent perfecting production skills.
2. To assure service of attractive, wholesome food at a reasonable cost.
3. To lessen the chance of accidents and damage to kitchen equipment.
4. To promote a better understanding between supervisors and employees.

Several authors offered advantages and benefits from effective training methods (Hannon, 1967; Brandt, 1969; Denova, 1968; Close, 1960, p. 11):

1. Reduces the cost of the operation through duplication of efforts.
2. Makes work safer and less fatiguing.
3. Improves customer service through standardization of tasks and products.
4. Develops a climate receptive to change within the organization.
5. Makes the organization aware of the analytical approach to problem solving.
6. Generally increases productivity.

A Systems Approach to Employee Training. Welch (1966, p. 13) asserted that the task-unit concept of employee

training was primarily applicable to training for technical and manual abilities or skills. In the food service industry, where 80-90% of the new work force is termed "unskilled" each year, and since this concept of training is best given "on-the-job", Welch stated it would be a beneficial method for management to adopt.

The task-unit concept of training is a total approach to training that requires identification of all tasks needed to operate within standards set by management: (1) a breakdown of all identified tasks into their operations, (2) use of the best procedures known to accomplish that task efficiently, (3) a specific work assignment to an individual worker, (4) training the worker to perform the task in the prescribed manner, (5) proper scheduling of time and frequency for each assigned task, (6) supervision of a specific task performed by an assigned worker, and (7) control of the unit to see that the task is completed (Welch, 1966).

In personal communications to Welch (1966), Elliott and Pope wrote that the criteria for training by this concept were:

1. Training is planned to cover all the skills the worker would need to perform required tasks.
2. Training is efficiently programmed to cover required subject matter in a minimum amount of time consistent with the learning ability of the individual worker.
3. Subject matter must be presented to the learner in a manner that can be understood, and learned easily. Then the learner must be able to apply knowledge of skills taught.

Standardized Recipes

Definition. A standardized recipe is one that is constructed to be practical for a particular operation (Ericson, 1960). West et al. (1966, p. 55) and Sister Rose Genevieve (1968) agreed that a recipe is considered standardized when it has been tried in a given situation and has repeatedly produced good results. Kotschevar (1966) stated that a standardized recipe produces a known quantity of food of a desired quality.

Advantages of Standardized Recipes. Standardized recipes provide management tools for accurate cost, quality and production control, according to Welch (1966). Simplified and routinized production of food decreases labor cost (Callahan, 1965). Cranmore (1960) indicated that food service operators should free themselves from dependence on the human factor whenever possible. Standardized recipes should have a high acceptability to the patron and at the same time be profitable and easy to prepare.

Kotschevar (1966) considers the standardized recipe an important tool that can be adapted to every type of feeding operation in order to maintain quality and cost control. A standardized recipe is based on portion size and yield requirements of the individual operation. Portion control is accurate and leftovers are at a minimum. Standardized recipes are especially adapted to the operator's equipment

and purchasing procedure, according to Vince (1967) and Ericson (1960).

Welch (1966) cited use of standardized recipes as a safeguard against pilferage. They increase labor efficiency by utilizing workers at the maximum skill level and provide flexibility for a more efficient use of lower skilled workers. Through elimination of unskilled tasks from the work of highly skilled personnel, the time saved would be used optimally for more production, and thus tend to reduce labor cost.

Development of Standardized Recipes. Seven major steps to be considered by Miller and Goodenow (1962) in the initial planning and development of food production and cost control programs are:

1. Recognizing the need and responsibility for and values to be gained through a production control program.
2. Developing basic plans for the program.
3. Surveying the adequacy of the available physical facilities.
4. Selecting and scheduling specific menu items for standardization.
5. Formulating procedures for testing and developing selected recipes.
6. Systematically calculating and standardizing recipe yield.
7. Constructing the written recipe.

A "working" recipe must be easily read and useable. Specific directions for combining ingredients, panning and portioning the product, and essential information or

precautions should be as briefly stated as clarity will permit (Aldrich, 1963).

Accurate yield in recipes is essential. Special techniques and tools for easy calculation of ingredients were developed by Miller and Aldrich (1967). They devised several charts whereby the quantity of each ingredient in a given recipe can be adjusted for any yield by reading the new amount from special tables of weights or measures. Another table can be used for adjusting recipes with yields between 8 and 96 portions. With little practice, these direct-reading tables can eliminate many of the problems encountered in calculating recipe yields to specific needs.

Callahan (1965) developed a tool called the "Recipe Magician" which is a conversion chart with slide rule type bar. Recipe adjustments must be simple or guesswork will be substituted for actual calculations within the food service operation.

Recipe Content. Vince (1967) likened a recipe to a blueprint. He believes that a standardized recipe should list certain ingredients by brand names for control of quality and that no substitutions should be made. He also recommended that ingredient specifications be reviewed every six months because of changes in quality that occur.

According to Shugart (1962), recipe information should include the following eight points: (1) name of product, with

classification for ease in filing; (2) total yield; (3) portion size; (4) ingredients, with amounts listed in order used; (5) number and size of baking pans; (7) cooking temperature and approximate time required; (8) directions for serving. Kotschevar (1966, p. 24) added that the lower the skill of the employee, the more information must be given. Cost and standard of quality expected should be included also on the recipe card.

Recipe Format. To be workable, a system for standardizing recipes should include adoption of a format, both for ingredients and procedures (Sister Rose Genevieve, 1967). Consistency in use of the same form throughout the feeding operation is vital; otherwise, use of a recipe is difficult for the worker.

Authorities differ in their opinion of a good recipe format. Kotschevar (1966, p. 26) recommended use of a card 5 x 8 inches while Pope advocated heavy typing paper 8 1/2 x 11 inches (Sister Rose Genevieve, 1968). Miller (1963) also endorsed use of the larger size so that the printed recipe contained essential information with enough blank space to allow quick easy reading at a distance of 18-20 inches.

Uniformity of the printed recipe is essential if the worker is to become accustomed to one format. Sister Rose Genevieve (1968), Miller (1963), and Miller and Aldrich (1967) suggested placing the name of the item in the center at the top of the card. Portion size, total yield, and number of portions are also included at the top. Ingredients should be

listed on the left-hand side in order of use. The method of mixing should be either on the right-hand side of ingredients or listed directly below them; then pan sizes and the quantities placed in each pan (Sister Rose Genevieve; Cranmore; Kotschevar, p. 26-27). An extra column should be provided for increasing or decreasing the recipe, but the number of yield columns should be limited to three (Miller, 1963). The recipe card should have a neat, uncluttered appearance with ample margins. Abbreviations should be consistent. Serving suggestions, garnishes, or special handling precautions should be included (West et al. 1966, p. 60). Triplicate copies of standardized recipes help insure against loss.

Welch (1966, p. 40) listed these features as an integral part of a standardized recipe task breakdown. The heading should provide a recipe number for easy reference, the name and classification of the menu item, and dates upon which recipe was approved, costed, first served, and due for review. Format of the recipe consisted of eight columns: recipe ingredients in the first column; weight, measure or number of each ingredient in the second column. The third column indicated whether ingredients were used as purchased (A/P) or as edible portion (E/P). The fourth and fifth columns were for checking and initialling by ingredient room personnel. The sixth column provided space for costing. In column seven, "What To Do" referred to general procedures, while column eight "How To Do It" referred to a serial number of a Related

Technical Information sheet. At the bottom of the recipe was listed: total food cost, yield, portions, pan size, and cost per portion.

Welch (1966) further related that a standardized recipe should provide for portion size, for plate or other service, utensil placement, and for garniture. Placement and garniture were best detailed by a color photograph of the standard portion as it would be served. It was suggested that a photograph of the recipe be laminated and filed with the recipe to be used every time the menu item was prepared.

Standardized Recipes as a Training Concept. Welch advocated development of the task-unit concept as a method of recipe standardization. Each recipe becomes a task breakdown for a menu item. The standardized recipe for that item plus the appropriate related technical information sheets may be utilized both as instructional resources and as check lists for quality food standards.

Standardized recipes in the task breakdown form provide a means for rapid and precise training. The employee, however must have the ability to read accurately and comprehensively, know the meaning of terms frequently used in food preparation, and possess enough dexterity to recognize and use tools and equipment that will produce desired results.

A standardized recipe (Welch, 1966, p. 44) used as a training method must: (1) be accurate; (2) use familiar terms that have meaning for the employee; (3) include definite

and complete directions in the What To Do column; (4) contain specific reference to an available file of "Related Technical Information" sheets for each step to which the worker may refer in case of any question.

Standardization of recipes simplifies the task of training new employees. Because of the lack of trained cooks and food supervisors, multi-unit organizations should develop detailed recipe methods and thus put training on the recipe card (Buchanan, 1967). A thorough orientation program plus daily training sessions was recommended to cut many work difficulties.

Standardization of recipes allows not only for the development of unskilled workers into excellent employees through training, but produces a happier, more secure employee. A secure employee is more apt to stay on the job and thus reduce employee turnover (Sister Rose Genevieve, 1967).

PROCEDURE

Definitions

The following terms were adapted for use in this study (Sister R. Genevieve, 1967; West, et al., 1966, p. 60; and Welch, 1966, pp. 10-11):

1. STANDARDIZED RECIPE: A recipe adapted to a particular operation that has been tested for quantity and quality of food produced.
2. OPERATION: The basic unit of work-activity, the completion of which results in a specific step in the completion of a work-sequence that terminates in a result.

3. **PROCEDURE:** Is the most efficient method of performing that operation that is known at present.
4. **PROCESS:** An intermediate unit composed of several sequential operations, either single or cumulative, which must be combined with results from other processes to achieve an independent end, result, or product for the total work sequence.
5. **RELATED TECHNICAL INFORMATION SHEETS:** Detailed instructions for work procedure.
6. **TASK:** An operation, process, or combination of operations and/or processes forming a work-sequence which culminates in an independent end or result. Each task is independent; therefore any task may be delegated to an employee who has the ability to perform that task.
7. **TASK BREAKDOWN:** Combination of the task, the procedure, and the technical information required to complete such a task. Task breakdowns form check lists for proper work performance of each task.
8. **TASK-UNIT:** Can be broken down into its included processes and/or operations, which may be precisely identified and described.

Development of RTI and Recipe Forms

Related Technical Information (RTI) sheets, adapted from Welch (1966) were developed (Appendix A). Two columns were included, "What to Do" for enumerating each step and "How to Do It" for specific directions for performing that operation. Information on equipment and supplies needed and a code number for the RTI were also included.

A recipe form also was adapted from Welch (1966) to use with the RTI's (Appendix A). Columns were set up for: Food Materials; Weight, Measure, and/or Number; As Purchased (A.P.) or Edible Portion (E.P.); Item Cost; Ingredient Room

Check lists 1 and 2; What to Do, and How to Do It or RTI code number. Space was provided at the bottom of the recipe form for recording information on cost, yield, and portion size.

Identification of Tasks and Processes

Four recipes from Food for Fifty (Fowler et al., 1961) were chosen for this study: Plain Cake (p. 90), Chicken Croquettes (p. 213), Tossed Green Salad (p. 244), and Chicken-Rice Casserole (p. 213). Ingredients were listed on the recipe forms in the exact order and amounts given in Food for Fifty. The key points from these directions were then transferred onto the "What to Do" column of the RTI form. These directions were reviewed and expanded to include more specific instructions in the "How to Do It" column. The processes were identified from the recipe directions and developed into completed RTI's.

The Experimental Study of Foods by Griswold (1962) and Standards, Principles, and Techniques in Quantity Food Production by Kotschevar (1966) were the basic texts used as references in the development of the RTI's.

Tasks and processes identified were:

TASK: How to Make Plain Cake:

Processes

How to Weigh and Measure Ingredients
 How to Use a Beam-Balance Scale
 How to Use a Food Mixer
 How to Combine Ingredients for a Plain Cake
 How to Prepare Pans for Baking a Plain Cake
 How to Scale and Pan Batter

How to Bake and Cool a Cake
 How to Make Cake Frosting
 How to Frost Cakes

TASK: How to Make Tossed Green Salad:

Processes

How to Clean Salad Greens
 How to Prepare Vegetables for Salads
 How to Cut or Tear Leafy Vegetables for Salads
 How to Mix a Salad
 How to Serve a Tossed Green Salad

TASK: How to Assemble a Casserole Dish:

Processes

How to Weigh and Measure Ingredients
 How to Cook Rice in a Steamer
 How to Make White Sauce
 How to Cook Chicken in a Steam Kettle
 How to Bone and Dice Chicken
 How to Assemble a Casserole Dish

TASK: How to Make Chicken Croquettes:

Processes

How to Weigh and Measure Ingredients
 How to Cook Rice in a Steamer
 How to Cook Chicken in a Steam Kettle
 How to Bone and Dice Chicken
 How to Combine Ingredients for Making Croquettes
 How to Shape a Croquette
 How to Bread, Using Egg and Crumb Mixture
 How to Deep Fat Fry

The identified tasks, with accompanying RTI's, are included in Appendix B.

Two dietitians and a home economist engaged in the management of food service units were asked to evaluate for clarity, sequence of work, detailed instructions, and consistency of thought (Appendix A). They were questioned about possible use of such RTI sets in their food service

organizations.

Selection of Subjects

Twelve subjects without formal training in baking were asked to participate. The only stipulation was that a subject had been a food service worker for one year sometime prior to being selected for this project. Eight were employed in college feeding units on the Kansas State University campus, two were fraternity house cooks, and two had been cooks in a school lunch program. The workers were paid for the time involved in this study.

Evaluation

The task How to Make Plain Cake was chosen for testing. For this study, a recipe for 50 portions of Plain Cake (Fowler et al., p. 90) using the Batter-Dough method of mixing was chosen. The recipe was written in two forms:

1. Recipe No. 1, typed exactly as it appeared in Food for Fifty (Appendix B).
2. Recipe No. 2, identical to Recipe No. 1 except that directions had been developed by using the task-unit concept (Appendix B).

The evaluation was done in the Institutional Management laboratory at Kansas State University. Subjects were scheduled four at a time, with each person working individually. Gas stack ovens were used for baking all cakes. Ovens were pre-heated and all ingredients and utensils were pre-assembled

and placed on a nearby counter to avoid the frustration of strange surroundings. The testing period was divided into seven parts:

1. Each worker was given a sheet called "Instructions to Worker" which outlined all phases of the test (Appendix C). She was instructed to sit down and read it through until she understood what she was to do.
2. Using Recipe No. 1, the worker mixed ingredients, according to recipe instructions. She then portioned the batter into four layer cake pans and placed them in the pre-heated oven. The worker was given no pre-instruction except for verbal assignment of work space, location of ingredients, ovens, small equipment, and instructions on use of a decimal minute stop watch for recording the mixing time.
3. While cake No. 1 was baking, the worker was given a written multiple choice test (Appendix C) to ascertain her knowledge of cake mixing and baking.
4. After completion of Step 3, the worker was asked to study a set of RTI's necessary to complete the task "How to Bake a Cake" (Appendix B). She was requested in the "Instructions to Worker" to sit down at the desk provided and to spend a minimum of 30 minutes studying the RTI sheets. The length of time was chosen to make the worker relax and overcome any

- nervousness from the laboratory surroundings.
5. After completion of Step 4, the worker was given Recipe No. 2, which had been developed by using the task-unit concept. The directions on the recipe form were more detailed, and RTI's were listed by code number. Each worker was given a set of RTI's in a loose-leaf notebook for referral as needed.
 6. While the cake from Recipe No. 2 was baking, the worker was given a written multiple choice test on "How to Bake a Cake." No reference was made to the fact that the test was identical to the one given previously. This was done to see what the worker learned from the more detailed instructions.
 7. The worker was asked to complete a questionnaire (Appendix C) that solicited her opinion of the two types of recipes.

Time required for mixing each cake was determined by a decimal minute stop watch to record the actual mixing time in minutes. Timing started with turning on the mixer after ingredients had been weighed and measured, and ended on completion of portioning batter into pans. The cakes were baked in four layers to allow for shorter baking time, further use of RTI follow-through, and to determine clarity of instructions.

Finished products from both recipes were judged for internal and external appearance and flavor by a taste panel of six persons from the Department of Institutional Management

at Kansas State University.

Cake samples were judged in the Organoleptic Laboratory, Department of Foods and Nutrition, at Kansas State University. The cakes were cut in half, and one inch slices from the center were placed at random on marked trays for judging. All cakes were placed under the Macbeth lantern using the sunlight ray for judging of external appearance. A score card with a total value of 100 was used (Appendix C) to evaluate the cakes.

The two recipe methods evaluated by the taste panel were graded on three factors: external appearance (30 points), internal appearance (30 points), and flavor (40 points).

Statistical Analysis

Data on mixing time, testing, and product evaluation were analyzed by the Statistical Laboratory at Kansas State University using the t test.

RESULTS AND DISCUSSION

The criteria for evaluation of the task-unit concept as a method of procedural standardization for quantity recipes were: The difference in length of time needed to complete mixing Recipe No. 1 and Recipe No. 2; the quality of products baked from both recipes as evaluated by a taste panel; scores on the written pre-test and post-test; and individual personal reactions to the training method as obtained by a questionnaire.

Mixing Time

Recipe No. 1. One worker was not included in the test results because she failed to record the mixing time. Using Recipe No. 1 (Table 1) mixing time ranged from 16.34 minutes to 31.80 minutes, with a mean of 23.27 minutes.

Recipe No. 2. Using Recipe No. 2, the shortest mixing time recorded was 21.28 minutes, and the longest was 35.4 minutes. The mean for the group was 26.42 minutes. Mixing time for Recipe No. 2 was significantly higher than for Recipe No. 1 at the 5% level.

Product Evaluation

Recipe No. 2 was significantly higher at the 5% level (Table 2) on flavor and on the total score, and was significant on internal appearance scores at the 10% level. On external appearance, the differences were not significant.

The mean score on cakes baked using Recipe No. 1 was 65.96 and on Recipe No. 2, it was 74.50. The results of the finished product tested inferred that Recipe No. 2 in use with the Related Technical Information sheets would produce a standard product of higher quality.

On the individual average scores, (Table 2) four workers (Subjects 8, 9, 11, 12) did not show improvement over Recipe No. 1 when using the second recipe method. After testing was completed, it was discovered that subject No. 12 did not

Table 1. Comparison of mixing times.

Subject	Length of Mixing Time		Time Difference Minutes
	Recipe No. 1 Minutes	Recipe No. 2 Minutes	
1	23.4	25.10	+ 1.70
2	28.22	28.28	+ .06
3	18.30	21.37	+ 3.07
4	29.0	26.52	- 2.48
5	22.38	23.32	+ .94
6	16.34	--	--
7	--	--	--
8	18.10	21.28	+ 3.18
9	18.70	30.20	+11.50
10	31.80	35.40	+ 3.60
11	24.45	25.42	+ .97
12	25.36	27.36	+ 2.00
Average Mixing Time	23.27	26.42*	+ 2.50*

* Significant at the 5% level.

Table 2. Average taste panel scores for cakes made from two recipes.

Subject	Recipe No. 1			Recipe No. 2			Total Score	Flavor	Internal Appearance	Flavor	Total Score
	External Appearance	Internal Appearance	Total Score	External Appearance	Internal Appearance	Flavor					
1	18	15.7	27.3	61.0	21.1	24.2	34.9	80.2			
2	12.9	19.2	29.4	61.5	23.8	24.4	33.1	81.3			
3	19.3	25.3	33.5	78.1	23.1	22.7	34.3	80.1			
4	9.6	12.8	17.6	40.1	23.7	26.2	32.3	82.2			
5	26.7	26.1	35.3	88.1	23.0	24.2	35.6	82.8			
6	17.8	18.2	27.6	63.6	23.6	24.0	31.1	78.7			
7	15.4	19.5	21.1	56.0	16.4	23.2	32.1	71.7			
8	20.2	21.8	30.9	72.9	22.8	21.6	28.3	72.7			
9	21.8	23.1	31.1	76.0	22.1	23.6	23.5	69.2			
10	--	--	--	--	--	--	--	--			
11	26.7	24.9	33.9	85.5	27.3	25.4	28.4	81.1			
12	13.6	11.9	17.3	42.8	3.4	9.4	13.6	26.4			
Average Scores	18.3 ^{ns}	19.1	27.6	65.96 ^a	20.93 ^{ns}	22.56	30.70	74.50			
Highest possible Score	30	30	40	100	30	30	40	100			

^{ns} Not significant.

^a Significant at 5% level.

^a Significant at 10% level.

possess the reading ability necessary for following the specific directions in Recipe No. 2, and it was then assumed that her higher score on Recipe No. 1 was mere chance. The highest quality score on Recipe No. 1 was 88.1 while the highest score using Recipe No. 2 was 82.8. Both cakes were made by the same worker.

Difference in Test Scores

The range in pre-test scores was from 11 to 16, with a mean of 13.6. The highest possible score was 16 (Table 3).

Post-test scores ranged from 12 to 16 with a mean of 14.7. Test results after using Recipe No. 2, with accompanying RTI's, were significant at the 1% level.

Evaluation of Training Method

Eleven subjects found Recipe No. 2 easier to use than Recipe No. 1 (Table 4). Eight responded they had difficulty with Recipe No. 1, while three apparently had no problems in using it. Because of the wording of the last question in section II of the questionnaire no conclusions could be reached concerning the clarity of directions; however, comments from the subjects were favorable concerning use of Recipe No. 2 and the RTI's.

Eleven workers commented that use of the RTI's enabled them to make a better product because of the detailed recipe and work procedures. Twelve women replied that they would

Table 3. Differences in scores on pre-test and post-test.

Subject	Pre-test	Post-test
1	15	15
2	15	15
3	14	16
4	14	16
5	12	16
6	11	12
7	13	15
8	14	15
9	14	15
10	11	12
11	16	16
12	12	12
Mean Score	13.6	14.7 ^{**}
Highest possible score	16	16

^{**}Significant at the 1% level.

Table 4. Summary of responses to questionnaire concerning uses of Recipes No. 1 and No. 2.

Question	Responses	
	Yes	No
II. <u>Recipes used in this Test</u>		
A. Which recipe was easier to follow?		
1. Recipe No. 1	1	
2. Recipe No. 2	11	
B. Were the directions in the recipe clear? Did you find them difficult to use?		
1. Recipe No. 1	8	3
2. Recipe No. 2	6	5
III. <u>Printed Instruction Sheets</u>		
A. Do you think they help you to produce a better product during this test?	11	1
B. Did the printed instruction sheets help you in using Recipe No. 2?	11	1
C. In your own working situation, would you like to have more detailed recipes?	9	3
D. If you had a question regarding a work procedure, would you use these instruction sheets if you had them at your place of work?	10	2
E. If you had a question regarding a work procedure, would you rather		
1. use these printed sheets	6	
2. ask the dietitian for help	5	
3. do the best you can	1	
4. do nothing	0	
F. Would you like to have these detailed instructions for all the recipes available to you so that you could refer to them without having to ask someone a question?	12	0

Table 4. (cont.)

Question	Responses	
	Yes	No
G. If you had these printed instruction sheets available on your present job, would you use them?	11	1
H. Were any of the RTI's easier to use than others?	3	8
If yes, indicate by name	2	Useage of scales
I. Were any of the RTI's not clear?	3	8
If yes, indicate by name	1	How to use a mixer

use printed instruction sheets at work if provided. They liked the idea of having the instructions available for referral without having to consult a supervisor. Three workers replied that they found some RTI's easier to use than others. The RTI sheet on "How to use a Beam-Balance Scale" was specifically mentioned by two of the subjects. Three workers found the RTI "How to Use a Mixer" difficult to follow.

When questioned about their feeling toward training six replied that their training was adequate, while six responded that it was not (Table 5). Ten subjects said they could perform their present duties better with additional training. Eleven persons believed that training was important to a food service employee. These women believed that training should be done by a supervisor, manager, or dietitian in a group situation. Of the twelve subjects, ten had been employed as food service workers during the past eight months. Five had been trained by another worker, four by a dietitian, and three by a supervisor. The length of training ranged from one day to eighteen months.

Table 5. Summary of responses and attitudes regarding on-the-job training from questionnaire given at completion of study.

Question	Responses	
	Yes	No
I. <u>Your Feeling about Training</u>		
A. Are you employed as a food service worker during eight or more months of the year?	10	2
B. If you answered yes, who trained you in your present job?		
1. Dietitian	4	
2. Supervisor	3	
3. Worker	5	
4. Other	0	
C. How long were you trained at your present job?		
1. Day	1	
2. Week	2	
3. Month	4	
9 months	2	
18 months	2	
D. Do you think your training was adequate?	10	2
E. Do you think you could learn to perform your duties better with additional training in your present job?	10	2
F. Do you think training is important to an employee in food service work?	11	1
G. Do you prefer to be trained		
1. By a supervisor	6	
2. By another employee	1	
3. In a group or classroom situation	6	
4. By a dietitian or manager	5	
5. Not at all	0	

SUMMARY

The shortage of trained cooks in the food service industry has emphasized a need for more efficient food preparation procedures and effective training methods. The development of four standardized recipe procedures for this study emphasized a duplication of operations in food preparation.

The task-unit concept developed by Welch (1966) has each unit or finished product as the end result of a series of task-breakdowns which may be useable in other work areas. This method of procedural standardization of recipes provides many advantages to a food service manager. Because of the many duplicated operations in food preparation only operations not previously written would need to be done. The task development series would draw from those already written.

The purpose of the study was to develop a system for standardizing procedures for quantity recipes using the task-unit concept; and to evaluate its effectiveness as a training method in quantity food production.

The task-unit concept was adapted to four recipes from Food for Fifty for this study. Each finished product is the end result of a series of task breakdowns. The following were selected for standardization of procedures and development into tasks: Plain Cake, Chicken-Rice Casserole, Tossed Green Salad, and Chicken Croquettes.

Related Technical Information sheets which are detailed instructions for work procedures were developed for each task.

These information sheets contained definition of terms in the recipes, procedures needed for each operation necessary to complete the task, and equipment and supplies needed for each work sequence. RTI's were developed for each task, coded and placed in a loose-leaf notebook.

The task, "How to Make Plain Cake," was evaluated by twelve subjects who had previous experience as cooks in quantity food service. They prepared plain cakes using the same ingredients by two different recipe procedures. Recipe No. 1 was used exactly as it appeared in Food for Fifty. Recipe No. 2 was identical to Recipe No. 1 except that recipe directions had been developed using the task-unit concept.

The four criteria used in the evaluation of the task-unit concept as a method for procedural standardization of quantity recipes and training were: length of mixing time needed; quality of finished products as evaluated by a taste panel; scores on written pre- and post-tests; and individual subject reaction to the training method.

Flavor and taste of the cakes baked using Recipe No. 2 were significantly higher at the 5% level using the t test. There was a significant relationship between improvement of flavor and internal differences at the 10% level. External appearances were not significant. The mean total score on cakes baked using Recipe No. 1 was 65.96 and on Recipe No. 2 was 74.50 out of a possible 100. Recipe No. 2 took 2.50 minutes longer preparation time than Recipe No. 1. Results

for time differences were significant at the 1% level. The pre-test mean score was 13.6 while the post-test mean was 14.7, which showed an improvement in knowledge of the recipe procedures using the second recipe.

Subject's responses to the use of Recipe No. 2, with Related Technical Information Sheets was favorable. They liked the task-unit concept as a training method and stated they would use RTI's at work if provided by their employer.

CONCLUSIONS AND RECOMMENDATIONS

Quality of the finished product resulting from use of Recipe No. 2 with detailed instruction was significantly higher than that of Recipe No. 1. Differences in test scores before and after use of Recipe No. 2 indicated a gain in knowledge of cake making procedures.

The relationship between the longer mixing time and increased quality seemed to indicate that although use of the RTI's and Recipe No. 2 took longer preparation time, the quality improvement would justify their use.

The results of data collected in this study showed the successful application of the task-unit concept to standardizing quantity food preparation recipe procedures and as a training method for food service workers.

The duplication of processes in the RTI development would be simplified as the standardization of procedures progressed. Examples of duplications of RTI's developed for this study

were:

How To Use a Food Mixer
How To Use a Beam-Balance Scale
How To Weigh and Measure Ingredients
How To Combine Ingredients for a Plain Cake
How to Prepare Pans for Baking a Plain Cake
How To Scale and Pan Batter
How To Bake and Cool A Cake.

Essential to the use of the task-unit concept for a complete recipe file would be the development of a coding system for the RTI's.

As a training method, the results from this study indicate that the task-unit concept could be developed to cover all phases of large quantity cookery. Detailed recipe procedures should be developed and then checked for clarity, simplicity of language, and proper work sequence. The subject's learning experiences should be tested over a longer period of time to study both transfer and retention of knowledge and skill compared with finished product results. A more detailed study of the auto-instructional aspects of the task-unit concept should be developed, and, in conjunction with industrial engineering, a new and more scientific approach could be made to the use of systems, sub-systems, and sub-sub systems in quantity food preparation.

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APPENDIX A



2000 1073

RECIPE NO. _____ CLASSIFICATION _____ TITLE _____
 DATES: Approved _____ Costed _____, First Served _____ Due for Review _____

FOOD MATERIALS	WEIGHT/ Measure/ Number/	A/P or E/P	Item Cost	I		WHAT TO DO	How to do it * R.T.I.
				R	2		
						READ RECIPE---ASSEMBLE MATERIALS AND EQUIPMENT	

Total Food Cost _____
 Yield: _____ lbs. _____ oz. or gal.: _____ Portions^d (No.) _____ (Unit) _____ : No. pans, _____ size _____ X _____ X _____ or _____
 wt. or qts./pan _____ portions
 Cost/portion (total food cost) _____
 Selling Price/portion _____
 Food cost per cent (cost/portion) _____ %
 *Related Technical Information

RELATED TECHNICAL INFORMATION (RTI) FORMS

RTI _____

Equipment and supplies needed:

WHAT TO DO	HOW TO DO IT

REQUEST FOR EVALUATION OF RTI'S

The four completed tasks which you find in this packet represent but a fraction of what we feel might be the possibility for development of a system for training the food service worker. Dovetailed with recipe standardization this might help the food service operator who does not have the time or the money to hire a person whose sole function is to train.

The four tasks are: To Make a Butter Cake, To Make a Tossed Vegetable Salad, To Make Chicken-Rice Casserole, and To Make Chicken Croquettes.

Under the tasks you will find the detailed RTI's (Related Technical Information) which are designed to function with the standardized recipe as a guide for a new employee or even an old one who has a question. The recipe would be in the file--All the RTI's are kept in one loose leaf note book in a central location--easily accessible to the kitchen personnel. Should the employee have a question, he merely refers to the coded RTI book. Here he will find them coded--and in one completed task, you will find that many of the RTI's are exact duplicated used in another task.

This is based on the monograph developed and written by John Welch, Ph.D. on the Task-Unit Concept.

It is hoped that this type of simplified instruction will help to cut turnover, establish better food standards, and make the employee feel that this tool was designed to aid her to do a better job as a food service worker.

All and any comments will be greatly appreciated. The check list will help to answer some of the questions--I believe these are the major things that I want to know.

If possible, I would like to have these returned by the morning of June 14, 1967. If you will call me at JE 9-2173, I will pick up the packet.

Thank you for your cooperation.

Ruth Titus



CHECK LIST FOR DIETITIAN'S EVALUATION OF RTI'S

Pretend You Are An Untrained Employee

1. Were the steps listed in the RTI's in a work sequence?
2. Were the steps clearly stated?
3. Are the instructions detailed enough?
4. Were the sentences phrased in simple language that an untrained employee could understand?
5. Did you find the RTI's to be consistent in thoughts and phraseology?
6. Did you find the RTI's confusing? (These will be available in loose-leaf form in an area easily accessible to the employee.)
7. Would you consider using the Task-Unit concept in your own food service operation?

APPENDIX B

RECIPE NO. 1

Plain Cake

Amount	Ingredient	Method
1 lb.	9 oz. Fat	} Mix 2 min. in mixer bowl (low speed). } Scrape down bowl and mix 3 min. more.
2	1/2 T. Baking powder	
	Add	
1 lb.	14 oz. 1 1/2 t. 1 1/4 c.	} Mix 2 min. (low speed) and scrape down } bowl; mix 3 min. more.
	Sugar	
	Salt	
	Milk	} Add 1/2 following mixture; mix 30 sec. Scrape down bowl; } mix 1 min. Add remainder of mixture. Mix 1 min. } Scrape down. Mix 2 1/2 min.
	Eggs, whole	
	Milk	
1	2/3 c	} Mixed.
1	T.	
	Vanilla	} Pour into oiled pan 12 x 20 in.

Bake 30-35 min. at 350° F.

Serving: 2 x 2 1/2 in.

Note: 1. For 4 9 in. layer pans, use 1 recipe.

Task: How To Make Plain Cake

RTI No's.RTI Name

<u>A,1</u>	How to Weigh and Measure Ingredients	
<u>A,2</u>	How to Use a Beam-Balance Scale	
<u>A,3</u>	How to Use a Food Mixer	
<u>C,1</u>	How to Combine Ingredients for a Plain Cake	
<u>C,2a</u> <u>C,2b</u>	How to Prepare Pans for Baking a Plain Cake	
<u>C,3</u>	How to Scale and Pan Batter	
<u>C,4</u>	How to Bake and Cool a Cake	
<u>C,5</u>	How to Make Cake Frosting	<input type="checkbox"/> OMIT THIS STEP FOR TESTING
<u>C,6</u>	How to Frost Cakes	

RECIPE NO. _____ CLASSIFICATION Cakes TITLE Plain White
 DATES: Approved Costed _____ First Served _____ Due for Review _____
 RECIPE NO. 2

FOOD MATERIALS	WEIGHT/ Measure/ Number/	A/P or E/P	I		WHAT TO DO	How to do it R.T.I.*
			R	R		
Flour	1 lb. 9 oz.				READ RECIPE--ASSEMBLE MATERIALS AND EQUIPMENT 1. Put flour, fat, and baking powder in mixer bowl. Mix together for 2 minutes. Scrape down bowl and mix 3 minutes. Add sugar, salt, and milk. Mix at low speed 2 minutes. Scrape down bowl. Mix 3 minutes. Add 1/2 of egg, milk and vanilla. Mix for 30 seconds. Scrape down bowl. Mix 1 minute. Add remainder of the mixture. Mix 1 minute. Scrape down. Mix 2 1/2 minutes. Brush cake pans with flour-shortening mixture. Scale batter into pans. Bake for 30-35 minutes at 350° F. Cool. Frost as directed on production sheet.	A, 1 A, 2 A, 3 C, 1
Fat	10 oz.					
Baking powder	2 1/2 T.					
Sugar	1 lb. 14 oz.					
Salt	1 1/2 t.					
Milk	1 1/4 c.					
Eggs, whole	5					
Milk	1 2/3 c					
Vanilla	1 T.					C, 2 C, 3 C, 4 C, 4 C, 5 & C, 6

Total Food Cost _____
 Yield: lbs. _____ oz. or gal.: _____ Portions @ 48 _____ : No. Pans, size 12 x 20 x 2 or
 Batter Scale--16 oz. - 9" pan _____ (No.) (Unit) _____
 3 3/4 - 12x20x2 _____
 wt. or qts./pan _____ portions
 Cost/portion (total food cost) _____
 *Related Technical Information. _____ Selling Price/portion _____
 Food cost per cent (cost/portion) _____ %

RTI A,2 HOW TO USE A BEAM-BALANCE SCALE

Equipment and supplies needed:

1. These scales indicate by the pointing of an arrow to a graduation on the face, or by manual moving of a weight along the beam--the weight of the load which has been placed on the platform.
2. Assemble all dry ingredients on portable food cart--scale is in balance and cannot be moved. Wheel dry ingredients to the scale.

WHAT TO DO	HOW TO DO IT
1. Check recipe for the weight of dry ingredients needed. Place scale in position for this weight. Weigh ingredients in the order that they appear in recipe.	1. <ol style="list-style-type: none"> a. Set the poise (metal weight) on left platform of scale. b. Adjust weight on beam so that the weight of the poise plus weight on beam equals the amount needed for recipe.
2. Set scale pan on right scale platform. Add poise (weight) which counter balances pan to the left hand platform.	2. There will now be two sets of weights--one to counter balance the pans and one to counter balance the ingredient weight.
3. Add dry ingredients to the scale pan until scale balances.	3. Use small spoon to increase and decrease size of portion so scale will balance.
4. Remove dry ingredients from scale pan. Place on brown or waxed paper and then set aside.	
5. To weigh shortening, follow same procedure for all dry ingredients, but line scale pan with paper first.	5. Repeat procedure for use of weights. Weigh shortening and set aside.

RTI A,3 HOW TO OPERATE A FOOD MIXER

Equipment and supplies needed:

1. Bowl: of size specified by recipe
2. Beater: of type specified by recipe

WHAT TO DO	HOW TO DO IT
1. Put mixer in place.	<ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> a. Turn hand wheel to left to lower saddle (fixed arms). b. Select appropriate bowl: Large bowl: place in saddle, fitting holes or lugs of bowl over corresponding pins in saddle OR Small bowl: place adapter in saddle; set bowl in adapter.
2. Fill bowl.	2. Place ingredient (or ingredients) in bowl as recipe directs.
3. Attach beater.	<ol style="list-style-type: none"> 3. <ol style="list-style-type: none"> a. Select appropriate beater: Flat Beater: for general use with heavy mixtures Dough Hook: for bread doughs Wing Beater (Batter Beater): for mashing potatoes, squash, turnips, etc. Wire Whip (Spiral Whip): for mayonnaise, cream, etc. b. Insert beater in spindle; push upward and turn until firmly seated and secured by spring.
4. Raise bowl.	4. Turn hand wheel to right until it reaches automatic stop. IMPORTANT: For heavy duty beating, place bowl at lowest position and raise gradually to lessen strain on mixer.

RTI A,3 HOW TO OPERATE A FOOD MIXER (continued)

WHAT TO DO	HOW TO DO IT
5. Start machine.	5. <ol style="list-style-type: none"> a. Be sure gear is in neutral position (handle vertical). b. Push "start" button. c. Set gear to speed required by recipe:* <ol style="list-style-type: none"> (1) Turn handle slightly to right, and <ol style="list-style-type: none"> (a) For low gear, push shaft halfway in. (b) For medium gear, pull shaft all the way out. (c) For high gear, push shaft all the way in. (2) Turn handle to horizontal position. d. Let mixer operate for length of time specified by recipe, and <u>no longer</u>.
6. Stop machine.	6. <ol style="list-style-type: none"> a. Shift to neutral gear (handle vertical). b. Push "stop" button. <p>IMPORTANT: Gears may be shifted without turning off motor. Unnecessary starting and stopping cause undue wear.*</p>
7. Remove food.	7. <ol style="list-style-type: none"> a. Turn hand wheel to left to lower bowl. b. Lift spring to release beater; pull beater down and free of shank. c. Shake excess food from beater. d. Deliver beater to pot washer. <p>IMPORTANT: Do not strike beater against bowl.</p> <ol style="list-style-type: none"> e. Remove bowl.

RTI A,3 HOW TO OPERATE A FOOD MIXER (continued)

WHAT TO DO	HOW TO DO IT
	<p>DANGER: If mixer is so located that projecting gear handle and saddle offer hazard:</p> <ol style="list-style-type: none">(1) Turn wheel to right to raise saddle.(2) Turn gear handle slightly to right, push shaft all the way in, turn handle to neutral position (vertical).

* Do not grind gears. Shift gears with power turned off. Grinding gears will cause more wear than turning motor on and off.

RTI A,1 HOW TO WEIGH AND MEASURE INGREDIENTS

Equipment and supplies needed:

- | | |
|----------------------------|-----------------------------|
| 1. Recipe | 7. Marking pencil |
| 2. Beam-Balance scale | 8. 15 x 20 tray |
| 3. Metal spatula | 9. Aluminum measure |
| 4. Rubber spatula | 10. Set of measuring spoons |
| 5. Plastic wrapping paper | 11. Portable food cart |
| 6. Plastic bowls with lids | |

WHAT TO DO	HOW TO DO IT
1. Read recipe through.	1. Be certain that procedures are clear.
2. Assemble measuring equipment.	2. Place equipment needed on the portable food cart and proceed to dry storage area.
3. Assemble ingredients.	3. Place on tray. Cover with plastic wrapping paper.
4. Weigh dry ingredients.	4. Use the beam scale for weighing all dry ingredients. Be sure that your weights are accurate. (See RTI <u>A,2</u> How to Use a Beam Scale.
5. Measure liquid ingredients.	5. Use an aluminum measure for all liquid ingredients. Be sure that you can identify the 1 cup, 1 pint, and 1 quart, and 1 gallon measure. Remember that all measures are level.
6. Double check all ingredients against the recipe.	6. Return to work unit. Re-read the recipe. Check on cart to see that you have collected all ingredients.

RTI C.1 HOW TO COMBINE A PLAIN CAKE BATTER USING THE
BATTER-DOUGH METHOD

Equipment and supplies needed:

1. Recipe
2. Pre-measured or weighed ingredients
3. Proper size mixer bowl
4. Flat beater for mixer
5. Long-handled rubber spatula
6. Timer

WHAT TO DO	HOW TO DO IT
<ol style="list-style-type: none"> 1. Put shortening, flour and baking powder into mixer bowl. 	<p><u>Have all ingredients at room temperature.</u></p> <ol style="list-style-type: none"> 1. Insert flat beater into mixer. Set mixer for low speed and turn to ON. Raise bowl.
<ol style="list-style-type: none"> 2. Mix at low speed for 2 minutes, then scrape down. 	<ol style="list-style-type: none"> 2. Turn mixer to OFF. Use long-handled rubber spatula to scrape down bowl. Scrape completely around the inside of the bowl. This will insure even mixing of all ingredients. <p>SET TIMER FOR EACH PERIOD OF MIXING.</p>
<ol style="list-style-type: none"> 3. Mix at low speed for 3 minutes, then scrape down. 	<ol style="list-style-type: none"> 3. Turn mixer to ON. Set timer and mix for 3 more minutes. Turn mixer to OFF. Scrape down sides of mixing bowl.
<ol style="list-style-type: none"> 4. Add the sugar, salt, and milk to shortening-flour mixture. <p>Mix at low speed for 2 minutes, then scrape down.</p> <ol style="list-style-type: none"> 5. Mix at low speed for 3 minutes, then scrape down. 	<ol style="list-style-type: none"> 4. <p>Turn mixer to ON for 2 minutes. Set timer for 2 minutes. Turn mixer to OFF. Use rubber spatula to scrape down bowl.</p> <p>Turn mixer to ON. Set timer and mix for 3 more minutes. Turn mixer to OFF. Scrape down sides of mixing bowl.</p>

RTI C,1 HOW TO COMBINE A PLAIN CAKE BATTER USING THE
BATTER-DOUGH METHOD (continued)

WHAT TO DO	HOW TO DO IT
<p>6. Add one-half of eggs, milk and vanilla.</p> <p>Mix at low speed for 30 seconds, then scrape down.</p>	<p>6. Pour one-half of egg, milk and vanilla mixture into batter in mixer bowl. Turn mixer to ON for 30 seconds. Stop mixer. Scrape down the sides with rubber spatula.</p>
<p>7. Mix at low speed for one minute.</p> <p>Add remainder of eggs, milk and vanilla.</p>	<p>7. After remainder of egg, milk and vanilla, turn mixer to ON. Mix for one minute. Stop mixer. Scrape down bowl.</p>
<p>8. Mix for 2 1/2 minutes on low speed.</p>	<p>8. Turn mixer to ON. Mix for 2 1/2 minutes. Scrape down bowl.</p>
<p>9. Scale and pan batter.</p>	<p>9. Refer to RTI <u>C,3</u>.</p>

RTI C,2a HOW TO PREPARE PANS FOR BAKING A PLAIN CAKE

Equipment and supplies needed:

1. Recipe
2. Pastry brush
3. Kind, size, and number of pans needed
4. Pre-blended flour-shortening mixture

7 lbs. shortening
 1 lb. margarine
 1 pt. salad oil
 4 lbs. flour

Mix all ingredients together. Mix in mixer on medium speed until well blended. Store in a covered jar or can. Keep on shelf during working hours--refrigerate at night. It is necessary the mixture be kept at room temperature for easy spreading.

I. WHAT TO DO	HOW TO DO IT
1. Read recipe for number, size and kind of pans needed.	1.
2. Count out pans needed. Set pans on work table in front of you.	2.
3. Put pastry brush into flour and shortening mixture. Spread flour-mixture into bottom of cake pan.	3. Dip pastry brush into mixture. Use a painting motion to spread it evenly over the bottoms of the cake pan.

Note: #II

Alternate: RTI C,2b HOW TO PREPARE PANS FOR BAKING A
PLAIN CAKE

Equipment and supplies needed:

1. Recipe
2. Kind, size, and number of pans needed
3. Parchment paper cut for standard pan sizes

II. WHAT TO DO	HOW TO DO IT
1. Read recipe for number, size and kind of pans needed.	1.
2. Count out pans needed.	2.
3. Use pre-cut parchment paper as pan liner.	3. Place cut paper in bottom of each round, square, or 18" x 26" x 2" pan.

RTI C,3 HOW TO SCALE AND PAN BATTER FOR A PLAIN CAKE

Equipment and supplies needed:

1. Beam-Balance scales
2. Large ladle, size #6
3. Cake pans, lined with parchment
or
3. Cake pans, greased and floured
4. Rubber spatula

WHAT TO DO	HOW TO DO IT
1. Weigh one greased and floured cake pan on the beam scale or Weigh one cake pan with parchment liner on the beam scale.	1. Set cake pan on scale. Weigh it while empty. This one pan will approximate the weight of all the pans to be used at this baking. Set scale for amount of batter needed in each pan.
2. Place cake pan on the platform of the beam scale.	2. Recipe will tell you how much batter to put into each pan. a. 8" round cake pan - 12 oz. b. 12" x 18" x 2" pan - 3 3/4 lbs. c. 18" x 26" x 2" pan - 8 lb. batter
3. Dip batter into cake pan.	3. Use #6 ladle to dip batter from mixer bowl.
4. Weigh correct amount of batter into the cake pans.	4. Read scale carefully for accuracy. If too much batter is in the cake pan, remove from the pan with a spatula. Take out a small amount at a time.
5. Use rubber spatula to smooth batter into corners and distribute evenly in pans.	5. Each pan should contain the same amount of batter.

RTI C,4 HOW TO BAKE AND COOL A PLAIN CAKE

Equipment and supplies needed:

WHAT TO DO	HOW TO DO IT
1. Pre-heat oven.	1. Set thermostat. Turn oven to ON. Allow 10 minutes for oven to reach correct temperature. The thermostat regulates oven heat.
2. When oven temperature is reached, place filled cake pans into the oven.	2. Space pans evenly on rack to allow for even heat distribution.
3. Set timer.	3. Check recipe for correct length of baking time. Set timer for correct number of minutes.
4. When the timer rings, check cake for doneness.	4. Test for doneness by pressing index finger lightly into center of cake. If cake springs back, it is done.
5. Remove cake from oven.	5.
6. Place freshly baked hot cake (still in pans) on the cooling racks to permit circulation of air. Cakes should be cooled in the pans for 15 minutes before they are removed from the pan.	In many institutions, cakes will be cooled and frosted in the pans.
7. Use a spatula to loosen edges of cake from pan. Turn out on to cooling rack.	7. If parchment liner has been used in bottom of pan, peel off cake just as soon as cake is removed from pan.

RTI C,5 HOW TO MAKE CAKE FROSTING (Butter Cream)

Equipment and supplies needed:

1. Recipe
2. Pre-measured and/or weighed ingredients
3. Correct size mixer bowl
4. Flat beater for mixer
5. Rubber spatula
6. Timer

WHAT TO DO	HOW TO DO IT
1. Read recipe.	1. Have all ingredients at room temperature.
2. Place all ingredients into mixer bowl.	2. SET THE TIMER.
3. Mix ingredients on slow speed for 5 minutes.	3. Put bowl into place on the mixer. Lift the flat beater into place. Lock. Turn on mixer. Raise bowl. Mix for 5 minutes - then turn mixer to OFF.
4. Scrape down sides of bowl with rubber spatula.	4.
5. Beat at medium speed until mixture is light and fluffy. (Approximately 5-8 minutes.)	5. Turn mixer speed to medium. Stop mixer every minute and scrape down sides. Mixture should appear well-blended and light and fluffy in appearance. Turn mixer to OFF.
6. Frost cakes as soon as they are cooled.	6.

RTI C,6 HOW TO FROST A CAKE

Equipment and supplies needed:

1. Frosting spatula - flexible (thin blade)
2. Pre-cooled cakes
3. Rubber spatula
4. Long-handled basting spoon
5. Frosting

WHAT TO DO	HOW TO DO IT
1. Prepare cakes for frosting.	1. Read directions for type of cake to be frosted. Layer . . . remove from pans. Crumb the cakes. Be certain they are placed on a solid serving rack. Sheet . . . leave the cake in the bun pans. Cool cake before frosting.
2. Dip frosting onto cakes.	2. Using long-handled basting spoon, dip approximately 2 quarts of icing per bun pan or 1 cup per nine inch layer.
3. Spread frosting over cake surface.	3. Use a frosting spatula or a spatula with a short, flexible blade to frost the cakes. Using butter cream frosting, cover the top of cake and then the sides. Always use a short firm motion to spread frosting evenly.
4. Place the frosted cake onto wire pastry racks.	4.
5. Wheel frosted cakes into bakery serving area.	5.

Task: How to Make a Tossed Green Salad

RTI No's.

RTI Name

- | | |
|------------|------------------------------------------------|
| <u>B,1</u> | How to Clean Salad Greens |
| <u>B,2</u> | How to Prepare Vegetables for Salads |
| <u>B,3</u> | How to Cut or Tear Leafy Vegetables for Salads |
| <u>B,4</u> | How to Mix a Salad |
| <u>B,5</u> | How to Serve a Tossed Green Salad |

RECIPE NO. _____ CLASSIFICATION Salads TITLE Tossed Green Salad
 DATES: Approved Costed First Served Due for Review _____

FOOD MATERIALS	WEIGHT/ Measure/ Number/	A/P or E/P	Item Cost	I R		WHAT TO DO	How to do it R.T.I.*
				1	2		
Leaf lettuce	2 lbs.					READ RECIPE--ASSEMBLE MATERIALS AND EQUIPMENT 1. Clean and wash salad greens--Crisp for 2 hours. 2. Clean cucumbers and green pepper Peel tomatoes Wash and core cabbage 3. Tear salad greens into bite size pieces. Put into mixing bowl. Cut cucumbers into thin slices-- the green pepper into julienne strips and the tomatoes into eights. 4. Place all cut vegetables on top of greens in the mixing bowl. Toss lightly. Use 2 skimmers for tossing. 5. Place into individual salad bowls. 6. Garnish 7. Refrigerate until served.	B,1
Head lettuce	5 lbs.						B,2
Cucumbers	4 each						B,3
Radishes	3 bunches						B,3
Red cabbage	2 lbs.						B,3
Green pepper	4 oz.						B,4
Tomatoes	4 lbs.						B,4
----- ---Add French Dressing before tossing							B,5

Total Food Cost _____ oz. or gal.: _____ Portions @ 50 _____ 1 cup : No. Pans, size _____ x _____ or
 Yield: _____ lbs. _____ oz. or gal.: _____ portions
 wt. or qts./pan _____ portions
 Cost/portion (total food cost) _____ Selling Price/portion _____
 *Related Technical Information. Food cost per cent (cost/portion) _____ %

RTI B,1 HOW TO CLEAN SALAD GREENS

Equipment and supplies needed:

1. Recipe
2. Mixing bowl
3. Sharp paring knife
4. French knife
5. Vegetable brush
6. Colander or perforated pan
7. Cutting board

WHAT TO DO	HOW TO DO IT
1. Read recipe--assemble all ingredients, and equipment.	1.
2. <u>Head Lettuce</u> A. Wash head lettuce thoroughly to remove dirt and insects.	2. A. In cleaning head lettuce, trim away imperfection. Remove heavy outside leaves. Discard.
B. Core head lettuce.	B. Rinse each head in water. Do not soak. Strike core end of head lettuce on edge of sink or cutting board. Grasp core with hand and fingers twist until core loosens. Remove and throw away core.
C. Separate leaves.	C. After core is removed, place head under briskly running cold water. The force of water will separate the leaves.
D. Drain and crisp.	D. Turn head lettuce with core end down in perforated pan on a tray in a salad pan so it does not drip on floor. Repeat until all are cored. Cover with clean damp cloth and refrigerate immediately. Lettuce should crisp at least 2 hours.

RTI B,1 HOW TO CLEAN SALAD GREENS (continued)

WHAT TO DO	HOW TO DO IT
3. <u>Leafy Greens</u> A. Wash leafy greens such as leaf lettuce, spinach, parsley, and endive thoroughly.	3. A. Remove crown. Carefully examine leaves.
B. Discard all wilted, dead or damaged leaves.	B. Pull from stem.
	C. Wash in cold water 4 or 5 times if necessary to free the leaves from bugs, sand, or other soil.

RTI B,2 HOW TO PREPARE VEGETABLES FOR SALADS

Equipment and supplies needed:

- | | |
|----------------------|--------------------------|
| 1. Recipe | 6. Fork with sharp tines |
| 2. French knife | 7. Vegetables for salad |
| 3. Cutting board | |
| 4. Large mixing bowl | |
| 5. Paring knife | |

WHAT TO DO	HOW TO DO IT
1. <u>Tomatoes</u> A. Wash tomatoes.	1. A. Scrub tomatoes with vegetable brush in cold water. Place in perforated pan to drain.
B. Core tomatoes. <u>Do not allow tomatoes to stand in the hot water.</u>	B. Use paring knife to core tomatoes.
C. Cut tomatoes as directed by the type of salad to be made.	C. Cut tomatoes in small wedges for use in most tossed salads. Tomatoes used for slicing are cut crosswise. Use slicer if it is available.
2. <u>Cucumbers</u> A. Score if time permits.	2. Scrub cucumbers with a brush in cold water. A. Then take cucumber in left hand. Take a sharp tined fork in right hand and pull down through the unpeeled cucumber. Turn cucumber in your hand and continue until the entire cucumber is scored. Repeat until all cucumbers are cleaned and scored.

RTI B,2 HOW TO PREPARE VEGETABLES FOR SALADS (continued)

WHAT TO DO	HOW TO DO IT
B. Slice	B. Place cucumbers on the cutting board, and using a French knife, slice the cucumber very thin. Cut and push off board into mixing bowl. In large establishments slice on salad attachment of mixer.
3. <u>Green Pepper</u> A. Slice.	3. Use a paring knife to cut off stem end of the green pepper. Wash away all seeds and remove all membrane. A. Slice pepper--using a paring knife--into long thin slices.
B. Dice.	B. Diced peppers are cut cross-wise of long thin slices.
C. Chop.	C. Chopped peppers are made by placing on cutting board and cutting through with French knife. Salad attachment should be used if available.
4. <u>Celery</u> A. Clean and trim celery. B. Dice.	4. Separate the outer stalks from the heart of the bunch. Wash each stalk with a vegetable brush. Trim and remove blemished and bruised parts of the stalk. Lay several stalks on a board across a tray. Cut through stalks with a pulling motion. With tip of knife, add cut celery to the salad mixture.
C. Crisp.	To crisp celery, put it in plastic bags and refrigerate for several hours.

RTI B,2 HOW TO PREPARE VEGETABLES FOR SALADS (continued)

WHAT TO DO	HOW TO DO IT
<p>5. <u>Radishes</u> A. Clean and trim radishes.</p> <p>B. Slice radishes.</p>	<p>5. Cut tops off radishes. Trim roots with paring knife. Scrub radishes. Drain well. Store in plastic bags in refrigerator until needed.</p> <p>Cut each radish about 1/10" thick cross-wise. Use dicer attachment if available.</p>
<p>6. <u>Cabbage</u> A. Clean cabbage</p> <p>B. Crisp cabbage</p>	<p>6. Remove outer leaves, wash each head and cut into 4-6 wedge shaped pieces, depending upon its size. Use French knife. Remove core of the cabbage with knife. Place edible portion in the colander to drain.</p> <p>Crisp until needed by placing in large plastic bag.</p>

RTI B,3 HOW TO CUT OR TEAR LEAFY VEGETABLES FOR SALADS

Equipment and supplies needed:

- | | |
|-----------------------|----------------------|
| 1. Recipe | 5. Paring knife |
| 2. Cleaned vegetables | 6. Large mixing bowl |
| 3. Cutting board | |
| 4. French knife | |

WHAT TO DO	HOW TO DO IT
1. Tear lettuce for tossed salad.	1. Leaf greens are torn into bite sized chunks. Cutting bruised the leafy vegetable. Other leafy greens requiring same method of tearing are spinach, leaf lettuce, endive, parsley, etc.
2. Shred cabbage	2. Attach shredder attachment to the mixer. Place proper blade in the attachment. Cut or shred cabbage on the shoulder. The Recipe should state whether you need finely chopped, medium chopped or coarsley chopped. Follow recipe directions for type cut needed.

RTI B.4 HOW TO MIX A SALAD

Equipment and supplies needed:

1. Recipe
2. Large mixing bowl
3. Two long-handled skimmers
4. Ingredients prepared
5. French dressing

WHAT TO DO	HOW TO DO IT
1. Place all salad ingredients in large mixing bowl. A. Combine lightly.	1. Using the two long-handled skimmers, gently work to the bottom of salad ingredients. Lightly bring skimmers through the greens. <u>Do not over mix.</u>
2. Add seasoning and French dressing. A. Combine lightly.	2. Pour French dressing over the salad ingredients. Add any seasonings necessary. Repeat the motions in step #1. Lightly toss until salad greens appear shiny and coated with the oil.
3. Serve. Garnish.	

RTI B,5 HOW TO SERVE A TOSSED GREEN SALAD

Equipment and supplies needed:

1. Recipe
2. Salad bowls
3. Trays for salads (16 x 25)
4. Tongs for dishing salad
5. Garnish

WHAT TO DO	HOW TO DO IT
1. Consult production sheet for number of portions to be prepared.	1. Count out salad bowls. Place bowls on tray. Place bowls in rows of 6 across the 16 x 25 tray. Repeat until all bowls are placed on trays. Stack bowls and trays on top of each other.
2. Put salad greens into salad bowls.	2. Take tongs in your right hand-- Grasp a medium amount of cut greens and vegetables. Transfer to the salad bowls until all are filled on one tray.
3. Garnish salad.	3. Garnish with item stated on your work production sheet. Some suggested garnishes for tossed salads are: <ol style="list-style-type: none"> 1. Tomato wedges. 2. Cheese balls, wedge, grated. 3. Spinach or endive (dark green contrast). 4. Ripe or green olives. 5. Parsley spears.
4. Refrigerate each tray as soon as it is completed.	
5. Serve salad while it is chilled.	

Task: How to Assemble a Casserole Dish**RTI No's.****RTI Name**

<u>A,1</u>	How to Weigh and Measure Ingredients
<u>D,1</u>	How to Cook Rice in a Steamer
<u>E,4</u>	How to Make a White Sauce
<u>D,2</u>	How to Cook Chicken in a Steam Kettle
<u>D,3</u>	How to Bone and Dice Chicken
<u>E,5</u>	How to Assemble a Casserole Dish

RECIPE NO. _____ CLASSIFICATION Luncheon dishes TITLE Chicken and Rice Casserole
 DATES: Approved _____ Costed _____, First Served _____ Due for Review _____

FOOD MATERIALS	WEIGHT/ Measure/ Number	A/P or E/P	Item Cost	I R R I 2	WHAT TO DO	How to do it R.T.I.*
<u>Rice</u>	<u>4 lbs.</u>				<u>READ RECIPE--ASSEMBLE MATERIALS AND EQUIPMENT</u>	<u>D, 1</u>
Chicken fat or Margarine	4 oz.				2. Make as medium white sauce.	E, 4
Flour	4 oz.					
Milk	2 1/2 qts.					
Broth	2 1/2 qts.					
Chicken, cooked and diced	5 lbs. or 4, 4 1/2-5 lbs. fowl				3. Stew chicken. Bone and dice.	E, 3 C, 2
Mushrooms	1 lb. 12 oz.				4. Assemble alternate layers of chicken, rice, mushrooms and pimiento in greased counter pans. 5. Cover the layers with cooked chicken sauce. Sprinkle top of pans with buttered bread crumbs.	E, 5
Almonds, cut	8 oz.					
Pimiento, diced	4 oz.					

Total Food Cost _____ lbs. _____ oz. or gal.: _____ Portions @ 50 _____ 6 oz. (Unit) : No. pans, size 12 x 20 x 2 or
 Yield: _____ (No.) _____ Bake 1 hour at 350° F.

wt. or qts./pan _____ portions
 Cost/portion (total food cost) _____
 *Related Technical Information. _____
 Selling Price/portion _____
 Food cost per cent (cost/portion) _____ %

RECIPE NO. _____ CLASSIFICATION _____ TITLE Rice, Steamed
 DATES: Approved _____ Costed _____, First Served _____ Due for Review _____

Equipment:

1. Steam table pan - 12" x 20" x 4"
2. Quart measure
3. Basting spoon

FOOD MATERIALS	WEIGHT/ Measure/ Number/	A/P or E/P	Item		I		WHAT TO DO	How to do it R.T.I.*
			Measure/ cost	Number/	R	R		
Rice	4 lbs.						READ RECIPE--ASSEMBLE MATERIALS AND EQUIPMENT 1. Weigh Rice and place it in one - 12" x 20" x 4" counter pan. Pour water, oil and salt over rice. Mix well with a basting spoon. 2. Place rice mixture in steamer for approximately 25 minutes at 5# pressure. 3. Test for doneness before removing from steamer. 4. Rice should appear fluffy and dry.	A,1
Water	2 gals.							
Salt	2 T.							
Fat or oil	1/4 cup							

Yield: _____ lbs. _____ oz. or gal.: _____ Portions: 50 (No.)
 Total Food Cost _____
 wt. or qts./pan _____ portions
 Cost/portion (total food cost) _____
 Selling Price/portion _____
 Food cost per cent (cost/portion) _____

*Related Technical Information.

RTI E,4 HOW TO MAKE A WHITE SAUCE

Equipment and supplies needed:

1. Recipe for white sauce (for directions in making sauce).
2. Tilting kettle (if available) or a stock pot.
3. Wire whip

WHAT TO DO	HOW TO DO IT
1. Assemble and weigh ingredients	
2. Melt fat	2. Put fat into the steam kettle (tilting kettle, if one is available).
3. Add flour, salt, and pepper to melted fat.	
4. Blend flour and shortening. Cook for approximately two minutes on medium heat.	4. Blend with wire whip, using a back and forth motion.
5. Pour milk into fat-flour mixture. Mix well.	5. With wire whip in right hand, and container of milk in left hand, pour slowly over the fat-flour mixture. Stir briefly with a circular motion.
6. Add chicken broth. Cook until mixture is thick and smooth.	6. Continue stirring with wire whip. Cook for 15 minutes or until mixture is thick and smooth. Cook over moderate heat.
7. Turn off heat when done and dip or pour sauce into counter pan.	7. If you do not plan to use immediately, refrigerate until needed.

RTI D,2 HOW TO COOK CHICKEN IN A STEAM KETTLE

Equipment and supplies needed:

1. Hens, heavy 4 - 4 1/2 - 5# each
2. Seasonings
3. Steam kettle
4. Skimmer or Steam kettle dipper
5. Large shallow pan

WHAT TO DO	HOW TO DO IT
1. Wash chicken. Put the cleaned chickens into steam kettle.	1. Wash the chicken in cold water. Place the 4-5# chickens and 1/2 cup salt into the kettle. Have water one inch above chickens.
2. Simmer chickens until tender.	2. Turn steam kettle to medium. Allow water to come to boiling point. Turn to low as soon as temperature reaches boiling point. Chicken should simmer until tender approximately 2 1/2 hours.
3. Cool immediately. Remove cooked chicken from steamer with skimmer or steam kettle dipper. Place chicken in one layer in shallow pan. <u>Do not stack chicken in pan.</u>	3. Cool immediately by placing chicken in the refrigerator.
4. Remove broth from steam kettle and <u>CHILL</u> . Refrigerate broth in containers not more than 1/4 full of broth.	4. Strain broth through strainer. Discard seasonings.

RTI D,3 HOW TO BONE AND DICE CHICKEN

Equipment and supplies needed:

1. Sharp knife (boning)
2. Cutting board
3. Cold, boned chicken
4. Plastic gloves
5. Skimmer or steam kettle dipper

WHAT TO DO	HOW TO DO IT
1. Remove chicken from broth. Place in shallow pans.	1. Remove chicken from broth with skimmer or steam kettle dipper.
2. Cool.	2. Place pans of chicken on a portable food cart. Wheel into refrigerated area for two hours.
3. When chicken is cool enough to handle, bone.	3. Put plastic gloves on hands. Pick up chicken in left hand. Remove skin from cooked chicken. Squeeze the bones from legs and thighs, then wings. A small boning knife will be necessary to split the breast bone.
4. Place boned chicken in shallow pan. Cover-- and refrigerate. Dice --if to be used immediately.	4.
5. Place cutting board on work table. Put about 1/4 lb. chicken on the cutting board.	
6. Take Boning knife in right hand--hold chicken firmly with left hand. Slice through chicken left-wise.	6. Keep chicken firm on cutting board. Use the thumb of your left hand as a pusher. Grip the chicken with your fingers, pointing fingers back toward your thumb so you will not cut them.

RTI D,3 HOW TO BONE AND DICE CHICKEN (continued)

WHAT TO DO	HOW TO DO IT
7. Cut cross-wise across chicken. With knife point, guide diced chicken into pan.	7.
8. Continue until all chicken is diced.	8. Pieces should be about bite size or approximately 3/4" square.

RTI E,5 HOW TO ASSEMBLE A CASSEROLE DISH

Equipment and supplies needed:

1. 12 x 20 x 2 counter pan
2. Recipe
3. All ingredients for casserole--pre-weighed or pre-measured
4. Rubber spatula
5. Pastry brush

WHAT TO DO	HOW TO DO IT
1. Count out number of counter pans. Check recipe for size, and number of pans needed. Grease pans with oil. Place pans in row on counter.	1.
2. Assemble all ingredients. Layer the ingredients in the counter pans.	2. Start with rice--then diced chicken, mushrooms, slivered almonds, and pimiento.
3. Cover with sauce made from chicken broth and milk.	3. When all pans are covered with sauce, take a basting spoon and gently ease sauce into corners so that it will bake through the casserole.
4. Bake as directed.	4. Check recipe for time and temperature.

Task: How to Make Chicken Croquettes

<u>RTI No's.</u>	<u>RTI Name</u>
<u>A,1</u>	*How to Weigh and Measure Ingredients
<u>D,1</u>	*How to Cook Rice in a Steamer
<u>D,2</u>	*How to Cook Chicken in a Steam Kettle
<u>D,3</u>	How to Bone and Dice Chicken
<u>E,4</u>	*How to Make a White Sauce
<u>F,1</u>	How to Combine Ingredients for making Croquettes
<u>F,3</u>	How to Shape a Croquette
<u>F,4</u>	How to Bread, Using Egg and Crumb Mixture
<u>G,5</u>	How to Deep Fat Fry

*Indicates previous RTI.

May be found in How to Assemble a Casserole set of RTI's.

RECIPE NO. _____ CLASSIFICATION _____ Luncheon dishes TITLE Chicken Croquettes
 DATES: Approved _____ Costed _____, First Served _____ Due for Review _____

FOOD MATERIALS	WEIGHT/ Measure/ Number/	A/P or E/P	Item Cost	I R R 2	I R 1	WHAT TO DO	How to do it R.T.I.*
Rice, uncooked	1 lb. 8 oz.					READ RECIPE--ASSEMBLE MATERIALS AND EQUIPMENT 1. Place rice in pan 12 x 20 x 2. Substitute chicken broth for water. 2. Combine seasonings with uncooked rice. 3. Cook in steamer according to directions. 4. Remove from steamer and set aside to cool. 5. Make into thick sauce by combining flour with 1 pint cold stock. Add to 1 pint boiling stock. Cook until thick in small steam kettle. Use wire whip. Cook on medium heat. Using wire whip, stir constantly until mixture forms a thick sauce. Remove sauce from heat. Gently add cooked rice and cooked cubed chicken. Stir lightly. Do not over mix. 6. Dip croquettes with #12 dipper onto bun pan. 7. Dip in egg and crumb mixture to bread croquettes. 8. Transfer to a second tray. 9. Chill in freezer at least 15 minutes before deep fat frying. 10. Fry in deep fat @ 360-370°F for 3-4 minutes or until golden brown.	D,1
Chicken stock	3 quarts						D,1
Lemon Juice	1 T.						
Onion Juice	2 T.						
Salt	3 T.						
Celery salt	1 t.						
Flour	6 oz.						
Chicken stock	1 quart						E,4 E,3
Chicken, cubed	5 lbs. or 4 (4 1/2-5 lb. birds)						G,2 G,1
Total Food Cost							

Yield: _____ lbs. _____ oz. or gal.: _____ Portions @ 50 _____ 3 oz.: No. pans, size _____ x _____ or _____
 (Unit)
 wt. or qts./pan _____ portions
 Cost/portion (total food cost) _____
 Selling Price/portion _____
 *Related Technical Information. Food cost per cent (cost/portion) _____ %

RTI F,1 HOW TO COMBINE INGREDIENTS FOR CROQUETTES

Equipment and supplies needed:


1. Recipe
2. Cooked ingredients
3. Large mixing bowl
4. Wooden paddle
5. Wire whip

WHAT TO DO	HOW TO DO IT
1. Make white sauce.	1. Melt chicken fat in small steam kettle. Add flour and mix well. Cook rice for several minutes. Then using a wire whip, slowly add chicken broth and mix until well blended and lump free. Continue stirring until white sauce thickens; remove sauce from heat. Turn kettle to OFF.
2. Add cooked rice and cubed chicken to white sauce.	2. Stir rice and chicken into white sauce very gently. <u>Do not over mix.</u>

RTI F,3 HOW TO BREAD--Using Egg and Crumb Mixture

Equipment and supplies needed:

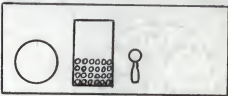
1. Bread crumbs
2. Egg and milk mixture
3. Chilled and shaped croquettes
4. Flour
5. Plastic gloves
6. Bun pans

WHAT TO DO	HOW TO DO IT
1. Make an egg and milk mixture. Grind bread crumbs.	1. Beat 3 eggs and add to 1 cup milk. Mix well - 1 quart for every 50 servings. Approximately 12 oz. of crumbs are needed for 50 servings.
2. Assemble ingredients and utensils in proper order.	2. Use line production for bread-ing foods. Work from left to right. Example:  Wear plastic gloves--use both hands to speed the breading time.
3. Dip in egg and milk mixture.	3. Dip in egg and milk mixture. Let go with your left hand. Remove from egg and milk mixture with your right hand.
4. Roll in crumbs.	4. Drain and roll in crumbs.
5. Place on bun pan about 1/2" apart.	5. Continue until pan is filled.
6. Refrigerate when bun pan is filled.	6. Chill until ready to fry in deep fat.

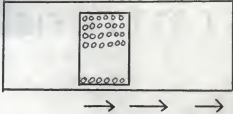
RTI F.4 HOW TO SHAPE A CROQUETTE

Equipment and supplies needed:

1. Recipe
2. Croquette mixture
3. Bun pan
4. #12 dipper
5. Rubber spatula

WHAT TO DO	HOW TO DO IT
1. Assemble utensils in proper order.	<p>1. Place mixture of chicken and rice to your left--and a bun pan directly in front of you. The pan should be placed vertically. Place #12 dipper to the extreme right.</p> <p>Example:</p> 
2. Dip mixture. Use #12 dipper to dip croquettes.	2. To dip mixture, place the dipper toward center. Grasp dipper firmly. Work back towards edge of bowl to fill dipper. To scrape off excess of mixture, touch edge of bowl and pull with hard motion.
3. Place dipped croquettes onto bun pans.	3. Start by placing the croquettes in lower left hand corner of bun pan. Work from left to right. Count first row--place an even number in each row. Work until one-half of pan is filled, then turn pan around. This prevents a long reach.

RTI F,4 HOW TO SHAPE A CROQUETTE (continued)

WHAT TO DO	HOW TO DO IT
	 <p data-bbox="530 489 926 532">Continue dipping until mixture is used.</p>
4. Refrigerate for 2 hours or longer.	
5. Shape croquettes by hand.	5. Place the chilled croquettes in left hand. With right hand begin a rolling motion. Continue shaping until croquette is cone shaped.
6. Bread-chill and Fry in deep fat.	6. See RTI <u>G,5</u> .

RTI G.5 HOW TO DEEP FAT FRY

Equipment and supplies needed:

1. Breaded and shaped foods
2. Fryer basket
3. Pan for unloading
4. Tongs
5. Plastic gloves

WHAT TO DO	HOW TO DO IT
1. Fill fryer with fat. USE RECOMMENDED AMOUNT!	1. Use a bland flavored fat with a high smoking point.
2. Set thermostat at 360°F. Turn on heat.	2. Pre-heat fat. (Fryer should have automatic indicator which will indicate desired temperature.
3. Remove one pan of prepared food from the refrigerator. Put food into basket with hands. Lower basket.	3. Be sure to wear plastic gloves. Space food carefully. Overloading fryer will result in grease soaked food.
4. Cook for 3-4 minutes.	4. Cooking time varies. Check recipe for time and temperature.
5. Remove basket from fryer. Allow basket to drain well. Place drained deep fried food in pan which has several layers of absorbent paper in bottom.	5. Use tongs to remove food from basket.

APPENDIX C

TEST - How to Bake a Cake

PLACE A CHECK MARK AT THE LEFT SIDE OF CORRECT ANSWER--

1. The proper temperature for ingredients used in baking a cake are:
 - a) chilled
 - b) room temperature
 - c) warmer than room temperature
2. When mixing a cake in an institutional kitchen, the type of mixer attachment to use is:
 - a) the wire whip
 - b) the dough hook
 - c) the flat beater
3. Frequent scraping down of the mixer bowl is necessary to:
 - a) insure even mixing of all ingredients
 - b) cut down time batter is mixed
 - c) insure against undermixing
4. Dry ingredients used in baking are measured by using which piece of equipment?
 - a) scale
 - b) measuring cup
 - c) ladle
5. Answer this question by underlining the correct answer.
To insure equal sized cakes, it is best to weigh the batter in each cake pan. True or False
6. Approximately how much batter should be scaled into each 9" pan?
 - a) 12 oz.
 - b) 1 pound
 - c) 2 pounds
7. An aluminum measure is used to measure _____ ingredients.
 - a) liquid
 - b) solid
 - c) dry
8. All measurements are _____ for accuracy.
 - a) heaping
 - b) level
 - c) scant

9. To pre-heat an oven the temperature should be regulated by the thermostat approximately how many minutes before use?
- thirty
 - twenty
 - ten
10. There are several ways to prepare a cake pan for the batter when baking a plain cake. Check two.
- plain parchment paper inserts
 - pre-blended flour-shortening mixture
 - flour
 - oil
 - sugar and flour mixture
11. To dip batter from the Mixer Bowl into the cake pan before baking use the following utensil:
- #6 ladle
 - spatula
 - tablespoon
12. A control located on the outside of an oven is called a thermostat. It is used to regulate:
- the heat of the oven's interior
 - the heat of the oven's outside wall
 - the heat of the oven's racks
13. Cake pans are spaced evenly on the oven rack to insure:
- proper oven heat
 - batter being level in the pans
 - proper heat circulation
14. The doneness of a cake is tested by:
- Pressing index finger lightly into the center of the cake and having it spring back if done.
 - Pressing index finger lightly into center of cake and having it leave a hole in the center of the cake.
 - Pressing the cake with a silver spoon to see if it is done.
15. Cakes should be cooled in the pan after removal from the oven for at least _____ minutes.
- five
 - thirty
 - fifteen
16. The best method for cooling a cake is to:
- leave cake in pan and place pan on cooling rack until cooled.
 - remove hot cake from pan and place on the rack.
 - cover cake with cloth and set on table until cool.

INSTRUCTIONS FOR WORKER

Thank you for helping me to do my research. I am testing the difference in training methods, so would appreciate your frank and honest opinions on the questionnaire.

The testing period is divided into five parts.

PLEASE READ THIS CAREFULLY.

Do not ask questions until you are absolutely sure that you can't figure them out for yourself. Then I will be glad to help you. Do not talk to anyone else in the laboratory.

The testing periods are divided into these parts:

1. Baking a plain cake using Recipe No. 1.

All ingredients and utensils will be placed on the counter in the laboratory and all ovens will be lighted.

2. Test. After baking cake #1, pick up the dittoed sheet marked "TEST.. How to Bake a Cake" and take it to a previously assigned place where you will sit down and answer the questions. The questions are simple. Do not worry, just do your best. When completed return test to me.

3. Baking a plain cake using Recipe No. 2.

Pick up the RTI packet which contains detailed instruction sheets for baking a cake, in addition to Recipe No. 2.

Sit down in the area provided and study the RTI's (instructions) very thoroughly. This should take you 20-30 minutes. When you are ready to bake the second

cake, take only Recipe No. 2 to your work area. Leave the RTI's on your desk. (You may go back and refer to them later if you need to.)

Bake the second cake and put it in the oven.

4. Test. Answer the questions and turn it in to me, being sure your name is on the test sheet.
5. Questionnaire. This questionnaire is very important. Tell me exactly what you think, not what you think I'd like to hear.

Clean your work area. Wash mixing bowls and utensils, and return them to where they were placed when you entered the laboratory.

Thank you again for helping me with my research. Do not leave without picking up your check.

Ruth Titus

EVALUATION OF TRAINING METHOD

Please read and answer the following questions as honestly as you know how. I appreciate your help on my research, but in order to make it an effective training program, I would appreciate your frank and honest opinions. Do not sign your name.

Check the answer which best describes your feelings.

I. Your feeling about training:

- A. Are you employed as a food service worker during eight or more months of the year?
1. Yes ____.
 2. No ____.
- B. If you answered yes, who trained you in your present job?
1. dietitian ____.
 2. another worker ____.
 3. supervisor ____.
 4. other ____.
- C. How long were you trained in your present job?
1. day ____.
 2. week ____.
 3. month ____.
- D. Do you think your training was adequate:
1. Yes ____.
 2. No ____.
- E. Do you think that you could learn to perform your duties better with additional training in your present job?
1. Yes ____.
 2. No ____.
- F. Do you think training is important to an employee in food service work?
1. Yes ____.
 2. No ____.

- G. Do you prefer to be trained
1. By a supervisor _____?
 2. By another employee _____?
 3. In a group or classroom instruction or _____?
 4. By a dietitian or manager _____?
 5. Not at all _____?

II. Recipes used in this test:

- A. Which recipe was easier to follow? Check your preference.
- Recipe No. 1 _____.
- Recipe No. 2 _____.
- B. Were the directions in the recipes clear, or did you find them difficult to use: Answer yes or no.
- Recipe No. 1 _____.
- Recipe No. 2 _____.

III. Printed instruction sheets:

- A. Do you think they help you to produce a better product during this test:
1. Yes _____.
 2. No _____.
- B. Did the printed instruction sheets help you in using Recipe No. 2?
1. Yes _____.
 2. No _____.
- C. In your own working situation, would you like to have more detailed recipes to use?
1. Yes _____.
 2. No _____.
- D. If you had a question regarding a work procedure, would you use these instruction sheets if you had them at your place of work:
1. Yes _____.
 2. No _____.
- E. If you had a question regarding a work procedure would you rather
1. use these printed sheets _____?
 2. ask the dietitian or supervisor for help _____?
 3. do the best you can without either _____?
 4. do nothing _____?

- F. Would you like to have these detailed instructions for all the recipes available to you so that you could refer to them without having to ask someone a question?
1. Yes ____.
 2. No ____.
- G. If you had these printed instruction sheets available on your present job, would you use them?
1. Yes ____.
 2. No ____.
- H. Were any of the RTI's (individual instruction sheets) easier to use than others?
1. Yes ____.
 2. No ____.

If answer is yes, please indicate by name.

- 1.
- 2.

- I. Were any of the RTI's not clear?
1. Yes ____.
 2. No ____.

If answer is yes, please list them by name.

- 1.
- 2.

SCORE CARD
Plain Cake

Factor	Qualities	Standard	Samples						
			1	2	3	4	5	6	
I. External Appearance									
a. shape-----	Regular, slightly rounded and free of cracks-----	10							
b. volume-----		15							
c. crust-----	Smooth and uniform; golden brown-----	5							
II. Internal Appearance									
	Texture								
	Tender-slightly moist								
	Velvety feel to tongue	15							
	Grain	10							
	Color of crumb	5							
III. Flavor									
Taste-----		30							
Odor-----		10							
Total Score									

Adapted from Food Service in Institutions, West et al., p. 181.

STANDARDIZATION OF PROCEDURES IN QUANTITY RECIPES
THROUGH THE TASK-UNIT CONCEPT

by

RUTH LOUISE TITUS

B.S., Lindenwood College, 1946

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

1969

The four criteria for evaluating the task-unit concept for development of standardized recipe procedures and training were: length of mixing time, quality of finished products as evaluated by a taste panel, scores on written pre-test and post-tests to determine subjects' knowledge of mixing and baking cakes, and individual subject's reaction to the training method. Results of the product scores and tests were statistically analyzed by the Statistical Laboratory, Kansas State University using the t test.

Recipe No. 2 was significantly higher at the 5% level on flavor and on total score and was significant on internal appearance scores at the 10% level. On external appearance, the differences were not significant. Results of the finished product inferred that Recipe No. 2 in use with the Related Technical Information sheets would produce a standard product of higher quality.

Recipe No. 2 took 2.50 minutes longer preparation time than Recipe No. 1. Results for time differences were significant at the 1% level. The relationship between the longer mixing time and increased quality indicated that although use of the RTI's and Recipe No. 2 took longer, the improvement would justify their use.

The mean score on the pre-test was 13.6, with a range from 11 - 16, out of a possible score of 16. The post-test scores ranged from 12 to 16 with a mean of 14.7. Test results after using Recipe No. 2 with accompanying RTI's were

Croquettes. A series of Related Technical Information sheets (operations and/or processes) were developed for each task, coded, and recorded on a recipe form adapted for this study.

The task "How to Make a Plain Cake" was evaluated by 12 subjects with previous experience as cooks in quantity food service. They baked plain cake using two recipes that were identical in ingredients, but had different recipe procedures. Recipe No. 1 was copied exactly as it appeared in Food for Fifty while Recipe No. 2 was developed using the task-unit concept.

significant at the 1% level.

Application of the task-unit concept to standardization of quantity recipe procedures and as an effective training method was indicated as the result of data collected in this study.

The shortage of trained cooks in the food service industry has emphasized a need for more efficient food preparation procedures and effective training methods. Many food services are handicapped in their training efforts by lack of standardized recipes and detailed procedures.

A possible approach to this problem is a task-unit concept developed by Welch (1966) in which the finished product is the end result of a series of task-breakdowns. A tool developed for recording these task breakdowns is the Related Technical Information sheets that contain precise definition of terms, procedures for each operation necessary for task completion, and other information necessary for training food production workers.

The objectives of this study were to develop a system for standardizing procedures for quantity recipes using the task-unit concept; and secondly, to evaluate its effectiveness as a training method in quantity food production.

The task-unit concept was adapted for this study to four recipes from Food for Fifty. Selected for standardization of procedures and development into tasks were: Plain Cake, Chicken-Rice Casserole, Tossed Green Salad, and Chicken